

LAMPIRAN A

Data – data yang digunakan dalam pengolahan data adalah sebagai berikut :

1. Data 1

Waktu proses :

Job	Operasi			
	1	2	3	4
1	8	7	8	6
2	5	7	8	7
3	6	5	6	6

Mesin :

Job	Operasi			
	1	2	3	4
1	3	1	4	2
2	2	1	4	3
3	1	3	2	4

Due date :

Job	DD
1	38
2	36
3	37

2. Data 2

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	12	13	6	7	9	9
2	14	7	13	10	6	12
3	8	11	7	9	13	11
4	13	14	9	11	5	5
5	12	7	8	15	7	11

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	1	4	2	3	6	5
2	3	2	5	1	4	6
3	2	5	4	3	6	1
4	1	4	2	5	6	3
5	2	1	3	6	4	5

Due date :

Job	DD
1	89
2	94
3	97
4	87
5	88

3. Data 3

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	6	7	4	8	9
2	9	8	8	7	6
3	5	4	7	8	7
4	8	6	7	9	6
5	7	9	6	8	7

Mesin :

Job	Operasi				
	1	2	3	4	5
1	4	3	1	2	5
2	1	2	3	4	5
3	1	4	3	5	2
4	5	1	4	3	2
5	4	5	1	2	3

Due date :

Job	DD
1	48
2	50
3	52
4	53
5	51

4. Data 4

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	10	9	10	8	7	9
2	8	6	11	5	8	7
3	6	10	8	7	7	8
4	6	11	5	12	8	10

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	5	4	3	1	6	2
2	3	4	2	5	1	6
3	6	5	3	1	2	4
4	1	3	5	2	4	6

Due date :

Job	DD
1	70
2	62
3	58
4	67

5. Data 5

Waktu proses :

Job	Operasi			
	1	2	3	4
1	6	10	5	5
2	8	4	6	7
3	7	3	4	8
4	5	6	8	3
5	4	7	7	7
6	6	5	6	7

Mesin :

Job	Operasi			
	1	2	3	4
1	4	2	1	3
2	4	3	2	1
3	3	1	2	4
4	2	1	3	4
5	2	3	1	4
6	1	3	4	2

Due date :

Job	DD
1	41
2	46
3	42
4	44
5	51
6	50

6. Data 6

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	12	13	5	7	9	9
2	14	7	13	10	6	14
3	8	11	7	9	13	11
4	13	14	9	11	7	6
5	12	7	8	8	7	6
6	7	10	12	14	10	14

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	1	4	2	3	6	5
2	3	2	5	1	4	6
3	2	5	4	3	6	1
4	1	4	2	5	6	3
5	2	1	3	6	4	5
6	5	6	2	4	1	3

Due date :

Job	DD
1	90
2	95
3	91
4	92
5	89
6	88

7. Data 7

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	10	10	13	9	11
2	5	5	7	11	11
3	13	13	11	8	10
4	7	7	14	14	14
5	9	9	7	9	14
6	8	8	10	6	11

Mesin :

Job	Operasi				
	1	2	3	4	5
1	3	5	4	2	1
2	1	4	5	2	3
3	1	2	4	3	5
4	4	5	2	1	3
5	3	4	2	5	1
6	1	2	3	4	5

Due date :

Job	DD
1	80
2	85
3	79
4	98
5	84
6	82

8. Data 8

Waktu proses :

Job	Operasi			
	1	2	3	4
1	3	7	7	2
2	3	4	4	6
3	5	2	3	4
4	4	2	4	7

Mesin :

Job	Operasi			
	1	2	3	4
1	1	2	3	4
2	2	4	1	3
3	4	2	1	3
4	2	3	1	4

Due date :

Job	DD
1	36
2	26
3	21
4	20

9. Data 9

Waktu proses :

Job	Operasi			
	1	2	3	4
1	6	6	7	5
2	6	4	4	7
3	5	7	7	4
4	4	5	6	3
5	3	7	3	4

Mesin :

Job	Operasi			
	1	2	3	4
1	1	4	3	2
2	1	2	4	3
3	1	3	4	2
4	3	1	4	2
5	3	2	4	1

Due date :

Job	DD
1	35
2	38
3	37
4	36
5	30

10. Data 10

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	7	7	6	7	14	5
2	7	5	6	4	14	6
3	10	7	14	7	11	4
4	9	4	9	6	11	6

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	5	6	1	2	4	3
2	1	2	4	5	3	6
3	2	3	1	5	4	6
4	4	3	6	5	1	2

Duc date :

Job	DD
1	50
2	55
3	59
4	51

11. Data 11

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	14	3	7	3	6	2
2	11	4	13	4	11	4
3	6	7	11	4	11	4
4	6	4	11	8	14	4
5	14	7	10	7	7	4

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	1	3	6	4	5	2
2	1	6	4	5	3	2
3	3	5	6	4	1	2
4	6	1	2	5	4	3
5	6	4	2	1	3	5

Due date :

Job	DD
1	60
2	68
3	64
4	73
5	67

12. Data 12

Waktu proses :

Job	Operasi		
	1	2	3
1	5	5	6
2	8	3	5
3	6	6	6

Mesin :

Job	Operasi		
	1	2	3
1	1	3	2
2	3	1	2
3	1	2	3

Due date :

Job	DD
1	25
2	24
3	23

13. Data 13

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	12	11	2	8	5	5
2	12	9	7	13	7	4
3	6	5	4	11	10	8

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	4	3	2	6	5	1
2	1	5	3	2	6	4
3	3	2	4	1	5	6

Due date :

Job	DD
1	46
2	58
3	56

14. Data 14

Waktu proses :

Job	Operasi			
	1	2	3	4
1	10	6	5	5
2	8	4	7	4
3	11	5	10	8

Mesin :

Job	Operasi			
	1	2	3	4
1	4	2	1	3
2	1	4	2	3
3	3	2	4	1

Duc date :

Job	DD
1	30
2	38
3	40

15. Data 15

Waktu proses :

Job	Operasi		
	1	2	3
1	7	5	3
2	6	6	6
3	4	5	6

Mesin :

Job	Operasi		
	1	2	3
1	1	3	2
2	2	3	1
3	1	2	3

Due date :

Job	DD
1	19
2	21
3	22

16. Data 16

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	8	6	9	7	10
2	10	7	6	8	9
3	11	8	7	7	9

Mesin :

Job	Operasi				
	1	2	3	4	5
1	3	5	2	1	4
2	5	1	3	4	2
3	2	5	4	1	3

Due date :

Job	DD
1	52
2	45
3	49

17. Data 17

Waktu proses :

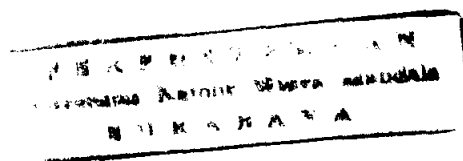
Job	Operasi				
	1	2	3	4	5
1	7	9	9	6	8
2	5	7	7	10	7
3	4	7	9	9	9

Mesin :

Job	Operasi				
	1	2	3	4	5
1	2	1	3	4	5
2	1	5	3	2	4
3	3	4	1	2	5

Due date :

Job	DD
1	48
2	45
3	55



18. Data 18

Waktu proses :

Job	Operasi		
	1	2	3
1	7	9	5
2	9	6	8
3	6	7	7
4	8	5	7

Mesin :

Job	Operasi		
	1	2	3
1	2	3	1
2	1	2	3
3	1	3	2
4	3	2	1

Due date :

Job	DD
1	32
2	35
3	30
4	29

19. Data 19

Waktu proses :

Job	Operasi			
	1	2	3	4
1	10	12	10	9
2	9	12	11	8
3	8	10	9	9
4	11	9	11	13

Mesin :

Job	Operasi			
	1	2	3	4
1	3	4	2	1
2	2	4	3	1
3	1	3	2	4
4	1	2	4	3

Due date :

Job	DD
1	60
2	45
3	55
4	61

20. Data 20

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	9	7	10	5	11
2	7	8	12	10	8
3	7	6	9	9	9
4	10	9	7	11	8

Mesin :

Job	Operasi				
	1	2	3	4	5
1	2	3	1	5	4
2	3	1	5	4	2
3	1	3	5	4	2
4	2	5	3	1	4

Due date :

Job	DD
1	70
2	71
3	65
4	66

21. Data 21

Waktu proses :

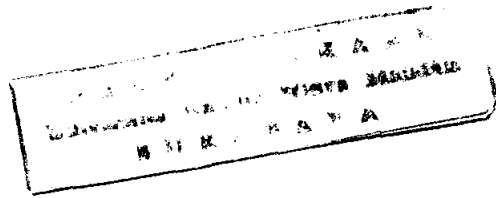
Job	Operasi		
	1	2	3
1	9	11	10
2	12	9	13
3	15	13	11
4	14	12	10
5	11	14	14

Mesin :

Job	Operasi		
	1	2	3
1	1	3	2
2	2	1	3
3	1	2	3
4	3	2	1
5	2	1	3

Due date :

Job	DD
1	70
2	68
3	82
4	66
5	75



22. Data 22

Waktu proses :

Job	Operasi			
	1	2	3	4
1	8	10	6	9
2	5	9	10	12
3	12	10	8	6
4	7	8	10	11
5	6	9	10	11

Mesin :

Job	Operasi			
	1	2	3	4
1	1	4	2	3
2	2	3	1	4
3	1	2	4	3
4	3	4	1	2
5	4	1	2	3

Due date :

Job	DD
1	60
2	65
3	80
4	68
5	66

23. Data 23

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	9	12	10	8	6
2	10	6	9	10	11
3	9	10	13	10	7
4	11	9	10	8	12
5	10	10	7	10	7

Mesin :

Job	Operasi				
	1	2	3	4	5
1	1	4	2	3	5
2	1	2	5	4	3
3	2	3	1	5	4
4	2	1	3	4	5
5	3	5	4	1	2

Due date :

Job	DD
1	69
2	68
3	78
4	80
5	66

24. Data 24

Waktu proses :

Job	Operasi		
	1	2	3
1	12	7	11
2	8	10	10
3	10	7	9
4	6	9	11
5	12	8	10
6	7	12	8

Mesin :

Job	Operasi		
	1	2	3
1	1	2	3
2	2	3	1
3	2	1	3
4	1	3	2
5	3	1	2
6	2	3	1

Due date :

Job	DD
1	68
2	48
3	57
4	59
5	50
6	55

25. Data 25

Waktu proses :

Job	Operasi			
	1	2	3	4
1	5	4	6	7
2	3	7	6	3
3	5	5	7	6
4	4	7	7	4
5	6	5	3	6
6	5	6	6	6

Mesin :

Job	Operasi			
	1	2	3	4
1	2	1	3	4
2	1	2	4	3
3	2	4	3	1
4	3	2	1	4
5	1	3	2	4
6	4	1	2	3

Due date :

Job	DD
1	48
2	49
3	45
4	43
5	55
6	46

26. Data 26

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	9	10	8	8	10
2	6	7	10	12	8
3	10	7	9	10	10
4	10	13	10	7	6
5	7	12	5	8	6
6	6	9	8	10	7

Mesin :

Job	Operasi				
	1	2	3	4	5
1	1	4	3	5	2
2	1	2	4	3	5
3	2	3	4	5	1
4	3	4	1	2	5
5	2	5	1	4	3
6	5	1	2	4	3

Due date :

Job	DD
1	96
2	75
3	90
4	78
5	75
6	76

27. Data 27

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	10	8	11	13	9	9
2	8	7	7	10	15	12
3	10	9	9	7	8	7

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	1	3	2	4	5	6
2	2	4	3	5	6	1
3	2	1	4	3	6	5

Duc date :

Job	DD
1	75
2	70
3	71

28. Data 28

Waktu proses :

Job	Operasi					
	1	2	3	4	5	6
1	10	9	10	8	7	9
2	8	6	11	9	8	7
3	6	9	8	7	7	8
4	6	11	5	12	8	15

Mesin :

Job	Operasi					
	1	2	3	4	5	6
1	2	1	3	5	4	6
2	1	3	4	5	6	2
3	3	1	2	4	5	6
4	2	1	4	5	3	6

Due date :

Job	DD
1	80
2	60
3	70
4	85

29. Data 29

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	14	8	10	6	9
2	10	5	9	10	12
3	9	12	10	8	6
4	9	7	8	10	11
5	10	6	5	10	11

Mesin :

Job	Operasi				
	1	2	3	4	5
1	1	3	5	2	4
2	2	5	3	4	1
3	5	1	3	2	4
4	2	4	1	3	5
5	3	5	2	4	1

Due date :

Job	DD
1	75
2	67
3	65
4	68
5	66

30. Data 30

Waktu proses :

Job	Operasi				
	1	2	3	4	5
1	12	11	14	14	17
2	10	12	15	16	16
3	13	18	15	11	10

Mesin :

Job	Operasi				
	1	2	3	4	5
1	3	5	2	1	4
2	5	1	3	4	2
3	2	5	4	1	3

Due date :

Job	DD
1	87
2	73
3	91

LAMPIRAN B

LAMPIRAN B

Iterasi penjadualan dengan metode *forward* untuk soal 1 :

1. *Earliest Due Date*

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0

(St) 1 1 3, (Cj) 0, (Tij) 8

(St) 2 1 2, (Cj) 0, (Tij) 5

(St) 3 1 1, (Cj) 0, (Tij) 6

Stage 2

Waktu Mesin

(1)6 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 8, (Tij) 7

(St) 2 2 1, (Cj) 6, (Tij) 7

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 3

Waktu Mesin

(1)13 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 4

Waktu Mesin

(1)13 (2)5 (3)13 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 3 2, (Cj) 13, (Tij) 6

Stage 5

Waktu Mesin

(1)20 (2)19 (3)13 (4)21

(St) 1 3 4, (Cj) 21, (Tij) 8

(St) 2 4 3, (Cj) 21, (Tij) 7

(St) 3 4 4, (Cj) 21, (Tij) 6

Stage 6

Waktu Mesin

(1)20 (2)19 (3)28 (4)27

(St) 1 3 4, (Cj) 27, (Tij) 8

Stage 7

Waktu Mesin

(1)20 (2)19 (3)28 (4)35

(St) 1 4 2, (Cj) 35, (Tij) 6

Stage 8

Waktu Mesin

(1)20 (2)41 (3)28 (4)35

Biaya Earlines = 18

Biaya Tardines = 6

Total Biaya = 24

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 3 = Awal (0), akhir (8)

1 2 1 = Awal (13), akhir (20)

1 3 4 = Awal (27), akhir (35)

1 4 2 = Awal (35), akhir (41)

Job 2

2 1 2 = Awal (0), akhir (5)

2 2 1 = Awal (6), akhir (13)

2 3 4 = Awal (13), akhir (21)

2 4 3 = Awal (21), akhir (28)

Job 3

3 1 1 = Awal (0), akhir (6)

3 2 3 = Awal (8), akhir (13)

3 3 2 = Awal (13), akhir (19)

3 4 4 = Awal (21), akhir (27)

2. *Shortest Processing Time*

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0

(St) 1 1 3, (Cj) 0, (Tij) 8

(St) 2 1 2, (Cj) 0, (Tij) 5

(St) 3 1 1, (Cj) 0, (Tij) 6

Stage 2

Waktu Mesin

(1)6 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 8, (Tij) 7

(St) 2 2 1, (Cj) 6, (Tij) 7

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 3

Waktu Mesin

(1)13 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 4

Waktu Mesin

(1)13 (2)5 (3)13 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 3 2, (Cj) 13, (Tij) 6

Stage 5

Waktu Mesin

(1)20 (2)19 (3)13 (4)21

(St) 1 3 4, (Cj) 21, (Tij) 8

(St) 2 4 3, (Cj) 21, (Tij) 7

(St) 3 4 4, (Cj) 21, (Tij) 6

Stage 6

Waktu Mesin

(1)20 (2)19 (3)28 (4)27

(St) 1 3 4, (Cj) 27, (Tij) 8

Stage 7

Waktu Mesin

(1)20 (2)19 (3)28 (4)35

(St) 1 4 2, (Cj) 35, (Tij) 6

Stage 8

Waktu Mesin

(1)20 (2)41 (3)28 (4)35

Biaya Earlines = 18

Biaya Tardines = 6

Total Biaya = 24

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 3 = Awal (0), akhir (8)

1 2 1 = Awal (13), akhir (20)

1 3 4 = Awal (27), akhir (35)

1 4 2 = Awal (35), akhir (41)

Job 2

2 1 2 = Awal (0), akhir (5)

2 2 1 = Awal (6), akhir (13)

2 3 4 = Awal (13), akhir (21)

2 4 3 = Awal (21), akhir (28)

Job 3

3 1 1 = Awal (0), akhir (6)

3 2 3 = Awal (8), akhir (13)

3 3 2 = Awal (13), akhir (19)

3 4 4 = Awal (21), akhir (27)

3. S / O P N

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0

(St) 1 1 3, (Cj) 0, (Tij) 8

(St) 2 1 2, (Cj) 0, (Tij) 5

(St) 3 1 1, (Cj) 0, (Tij) 6

Stage 2

Waktu Mesin

(1)6 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 8, (Tij) 7

(St) 2 2 1, (Cj) 6, (Tij) 7

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 3

Waktu Mesin

(1)13 (2)5 (3)8 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 2 3, (Cj) 8, (Tij) 5

Stage 4

Waktu Mesin

(1)13 (2)5 (3)13 (4)0

(St) 1 2 1, (Cj) 13, (Tij) 7

(St) 2 3 4, (Cj) 13, (Tij) 8

(St) 3 3 2, (Cj) 13, (Tij) 6

Stage 5

Waktu Mesin

(1)20 (2)19 (3)13 (4)21

(St) 1 3 4, (Cj) 21, (Tij) 8

(St) 2 4 3, (Cj) 21, (Tij) 7

(St) 3 4 4, (Cj) 21, (Tij) 6

Stage 6

Waktu Mesin

(1)20 (2)19 (3)28 (4)29

(St) 1 4 2, (Cj) 29, (Tij) 6

(St) 3 4 4, (Cj) 29, (Tij) 6

Stage 7

Waktu Mesin

(1)20 (2)35 (3)28 (4)35

Biaya Earlines = 13

Biaya Tardines = 0

Total Biaya = 13

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 3 = Awal (0), akhir (8)

1 2 1 = Awal (13), akhir (20)

1 3 4 = Awal (21), akhir (29)

1 4 2 = Awal (29), akhir (35)

Job 2

2 1 2 = Awal (0), akhir (5)

2 2 1 = Awal (6), akhir (13)

2 3 4 = Awal (13), akhir (21)

2 4 3 = Awal (21), akhir (28)

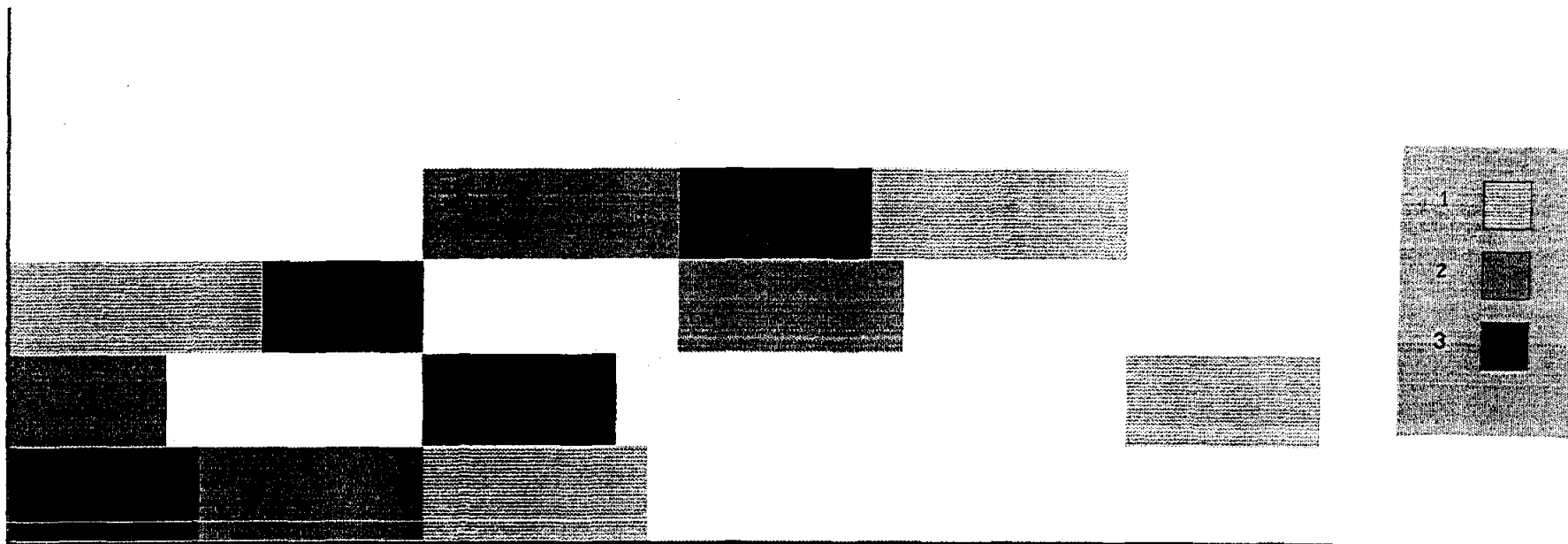
Job 3

3 1 1 = Awal (0), akhir (6)

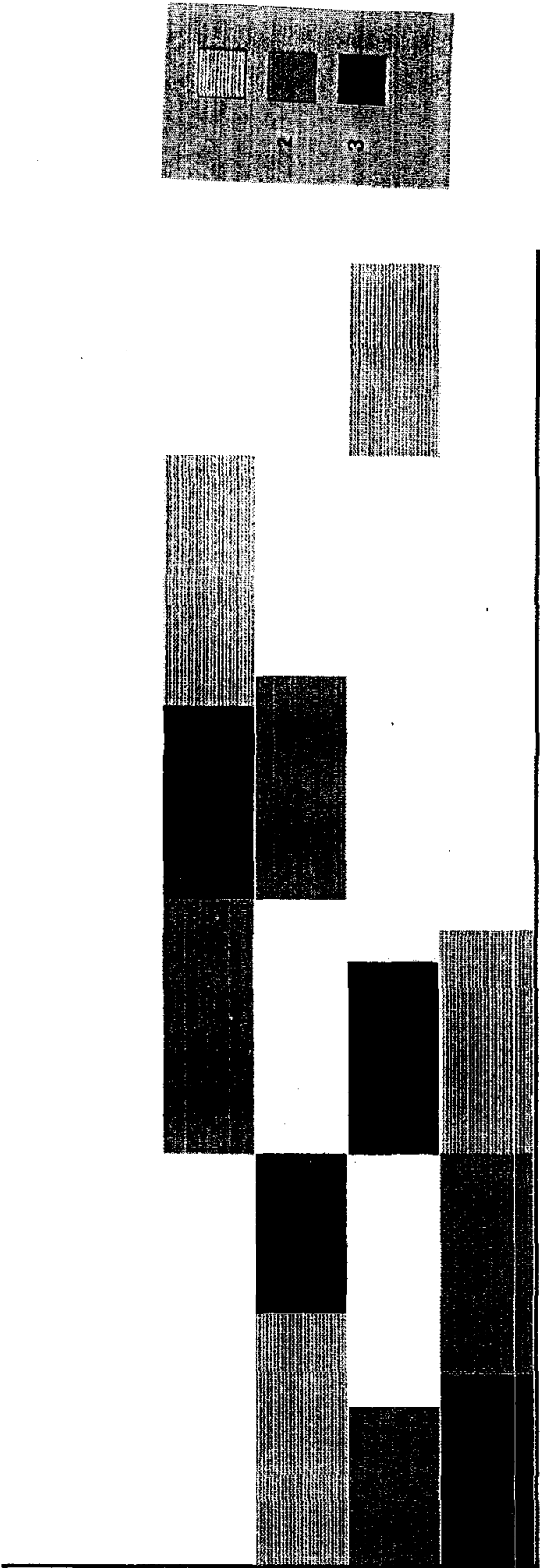
3 2 3 = Awal (8), akhir (13)

3 3 2 = Awal (13), akhir (19)

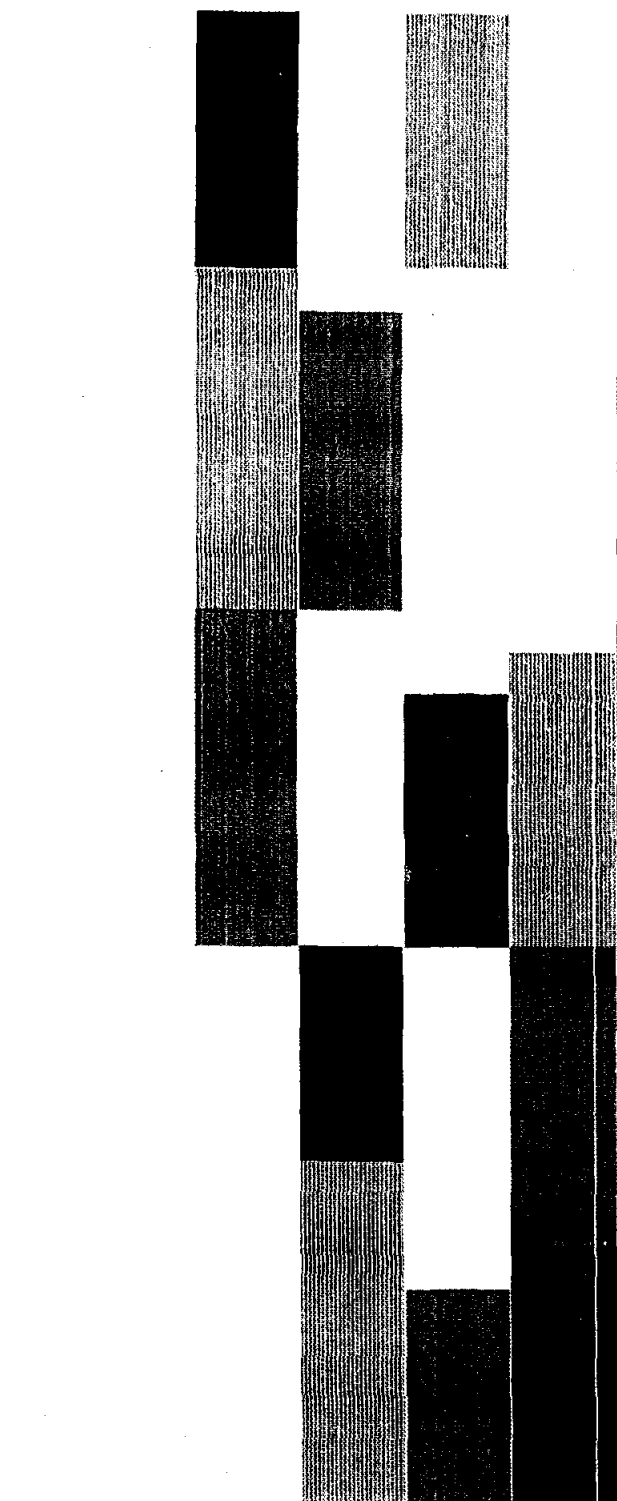
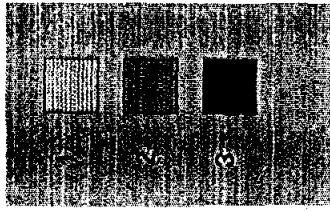
3 4 4 = Awal (29), akhir (35)



Gantt Chart penjadualan dengan metode *forward* (EDD) soal 1



Gantt Chart penjadualan dengan metode *forward* (SPT) soal 1



Gantt Chart penjadualan dengan metode *forward* (S/OPN) soal 1

Iterasi penjadualan dengan metode *forward* untuk soal 2 :

1. Earliest Due Date

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 0, (Tij) 12

(St) 2 1 3, (Cj) 0, (Tij) 14

(St) 3 1 2, (Cj) 0, (Tij) 8

(St) 4 1 1, (Cj) 0, (Tij) 13

(St) 5 1 2, (Cj) 0, (Tij) 12

Stage 2

Waktu Mesin

(1)13 (2)12 (3)14 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 13, (Tij) 12

(St) 2 2 2, (Cj) 14, (Tij) 7

(St) 3 1 2, (Cj) 12, (Tij) 8

(St) 4 2 4, (Cj) 13, (Tij) 14

(St) 5 2 1, (Cj) 13, (Tij) 7

Stage 3

Waktu Mesin

(1)13 (2)20 (3)14 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 13, (Tij) 12

(St) 2 2 2, (Cj) 20, (Tij) 7

(St) 3 2 5, (Cj) 20, (Tij) 11

(St) 4 2 4, (Cj) 13, (Tij) 14

(St) 5 2 1, (Cj) 13, (Tij) 7

Stage 4

Waktu Mesin

(1)20 (2)20 (3)14 (4)27 (5)0 (6)0

(St) 1 1 1, (Cj) 20, (Tij) 12

(St) 2 2 2, (Cj) 20, (Tij) 7

(St) 3 2 5, (Cj) 20, (Tij) 11

(St) 4 3 2, (Cj) 27, (Tij) 9

(St) 5 3 3, (Cj) 20, (Tij) 8

Stage 5

Waktu Mesin

(1)32 (2)27 (3)28 (4)27 (5)31 (6)0

(St) 1 2 4, (Cj) 32, (Tij) 13

(St) 2 3 5, (Cj) 31, (Tij) 13

(St) 3 3 4, (Cj) 31, (Tij) 7

(St) 4 3 2, (Cj) 27, (Tij) 9

(St) 5 4 6, (Cj) 28, (Tij) 15

Stage 6

Waktu Mesin

(1)32 (2)36 (3)28 (4)27 (5)31 (6)0

(St) 1 2 4, (Cj) 32, (Tij) 13

(St) 2 3 5, (Cj) 31, (Tij) 13

(St) 3 3 4, (Cj) 31, (Tij) 7

(St) 4 4 5, (Cj) 36, (Tij) 11

(St) 5 4 6, (Cj) 28, (Tij) 15

Stage 7

Waktu Mesin

(1)32 (2)36 (3)28 (4)27 (5)31 (6)43

(St) 1 2 4, (Cj) 32, (Tij) 13

(St) 2 3 5, (Cj) 31, (Tij) 13

(St) 3 3 4, (Cj) 31, (Tij) 7

(St) 4 4 5, (Cj) 36, (Tij) 11

(St) 5 5 4, (Cj) 43, (Tij) 7

Stage 8

Waktu Mesin

(1)32 (2)36 (3)28 (4)38 (5)44 (6)43

(St) 1 2 4, (Cj) 38, (Tij) 13

(St) 2 4 1, (Cj) 44, (Tij) 10

(St) 3 4 3, (Cj) 38, (Tij) 9

(St) 4 4 5, (Cj) 44, (Tij) 11

(St) 5 5 4, (Cj) 43, (Tij) 7

Stage 9

Waktu Mesin

(1)32 (2)36 (3)47 (4)51 (5)44 (6)43

(St) 1 3 2, (Cj) 51, (Tij) 6

(St) 2 4 1, (Cj) 44, (Tij) 10

(St) 3 5 6, (Cj) 47, (Tij) 13

(St) 4 4 5, (Cj) 44, (Tij) 11

(St) 5 5 4, (Cj) 51, (Tij) 7

Stage 10

Waktu Mesin

(1)54 (2)36 (3)47 (4)51 (5)55 (6)43

(St) 1 3 2, (Cj) 51, (Tij) 6

(St) 2 5 4, (Cj) 54, (Tij) 6

(St) 3 5 6, (Cj) 47, (Tij) 13

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 51, (Tij) 7

Stage 11

Waktu Mesin

(1)54 (2)36 (3)47 (4)51 (5)55 (6)60

(St) 1 3 2, (Cj) 51, (Tij) 6
 (St) 2 5 4, (Cj) 54, (Tij) 6
 (St) 3 6 1, (Cj) 60, (Tij) 11
 (St) 4 5 6, (Cj) 60, (Tij) 5
 (St) 5 5 4, (Cj) 51, (Tij) 7

Stage 12

Waktu Mesin

(1)54 (2)57 (3)47 (4)58 (5)55 (6)60

(St) 1 4 3, (Cj) 57, (Tij) 7
 (St) 2 5 4, (Cj) 58, (Tij) 6
 (St) 3 6 1, (Cj) 60, (Tij) 11
 (St) 4 5 6, (Cj) 60, (Tij) 5
 (St) 5 6 5, (Cj) 58, (Tij) 11

Stage 13

Waktu Mesin

(1)54 (2)57 (3)64 (4)58 (5)55 (6)60

(St) 1 5 6, (Cj) 64, (Tij) 9
 (St) 2 5 4, (Cj) 58, (Tij) 6
 (St) 3 6 1, (Cj) 60, (Tij) 11
 (St) 4 5 6, (Cj) 60, (Tij) 5
 (St) 5 6 5, (Cj) 58, (Tij) 11

Stage 14

Waktu Mesin

(1)54 (2)57 (3)64 (4)64 (5)69 (6)60

(St) 1 5 6, (Cj) 64, (Tij) 9
 (St) 2 6 6, (Cj) 64, (Tij) 12
 (St) 3 6 1, (Cj) 60, (Tij) 11
 (St) 4 5 6, (Cj) 60, (Tij) 5

Stage 15

Waktu Mesin

(1)71 (2)57 (3)64 (4)64 (5)69 (6)65

(St) 1 5 6, (Cj) 65, (Tij) 9
 (St) 2 6 6, (Cj) 65, (Tij) 12
 (St) 4 6 3, (Cj) 65, (Tij) 5

Stage 16

Waktu Mesin

(1)71 (2)57 (3)70 (4)64 (5)69 (6)74

(St) 1 6 5, (Cj) 74, (Tij) 9
 (St) 2 6 6, (Cj) 74, (Tij) 12

Stage 17

Waktu Mesin

(1)71 (2)57 (3)70 (4)64 (5)83 (6)86

Biaya Earlines = 76

Biaya Tardines = 0

Total Biaya = 76

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (20), akhir (32)

1 2 4 = Awal (38), akhir (51)

1 3 2 = Awal (51), akhir (57)

1 4 3 = Awal (57), akhir (64)

1 5 6 = Awal (65), akhir (74)

1 6 5 = Awal (74), akhir (83)

Job 2

2 1 3 = Awal (0), akhir (14)

2 2 2 = Awal (20), akhir (27)

2 3 5 = Awal (31), akhir (44)

2 4 1 = Awal (44), akhir (54)

2 5 4 = Awal (58), akhir (64)

2 6 6 = Awal (74), akhir (86)

Job 3

3 1 2 = Awal (12), akhir (20)

3 2 5 = Awal (20), akhir (31)

3 3 4 = Awal (31), akhir (38)

3 4 3 = Awal (38), akhir (47)

3 5 6 = Awal (47), akhir (60)

3 6 1 = Awal (60), akhir (71)

Job 4

4 1 1 = Awal (0), akhir (13)

4 2 4 = Awal (13), akhir (27)

4 3 2 = Awal (27), akhir (36)

4 4 5 = Awal (44), akhir (55)

4 5 6 = Awal (60), akhir (65)

4 6 3 = Awal (65), akhir (70)

Job 5

5 1 2 = Awal (0), akhir (12)

5 2 1 = Awal (13), akhir (20)

5 3 3 = Awal (20), akhir (28)

5 4 6 = Awal (28), akhir (43)

5 5 4 = Awal (51), akhir (58)

5 6 5 = Awal (58), akhir (69)

2. Shortest Processing Time

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 0, (Tij) 12

(St) 2 1 3, (Cj) 0, (Tij) 14

(St) 3 1 2, (Cj) 0, (Tij) 8
 (St) 4 1 1, (Cj) 0, (Tij) 13
 (St) 5 1 2, (Cj) 0, (Tij) 12

Stage 2

Waktu Mesin

(1)12 (2)8 (3)14 (4)0 (5)0 (6)0

(St) 1 2 4, (Cj) 12, (Tij) 13
 (St) 2 2 2, (Cj) 14, (Tij) 7
 (St) 3 2 5, (Cj) 8, (Tij) 11
 (St) 4 1 1, (Cj) 12, (Tij) 13
 (St) 5 1 2, (Cj) 8, (Tij) 12

Stage 3

Waktu Mesin

(1)12 (2)20 (3)14 (4)0 (5)19 (6)0

(St) 1 2 4, (Cj) 12, (Tij) 13
 (St) 2 2 2, (Cj) 20, (Tij) 7
 (St) 3 3 4, (Cj) 19, (Tij) 7
 (St) 4 1 1, (Cj) 12, (Tij) 13
 (St) 5 2 1, (Cj) 20, (Tij) 7

Stage 4

Waktu Mesin

(1)25 (2)20 (3)14 (4)25 (5)19 (6)0

(St) 1 3 2, (Cj) 25, (Tij) 6
 (St) 2 2 2, (Cj) 20, (Tij) 7
 (St) 3 3 4, (Cj) 25, (Tij) 7
 (St) 4 2 4, (Cj) 25, (Tij) 14
 (St) 5 2 1, (Cj) 25, (Tij) 7

Stage 5

Waktu Mesin

(1)25 (2)27 (3)14 (4)25 (5)19 (6)0

(St) 1 3 2, (Cj) 27, (Tij) 6
 (St) 2 3 5, (Cj) 27, (Tij) 13
 (St) 3 3 4, (Cj) 25, (Tij) 7
 (St) 4 2 4, (Cj) 25, (Tij) 14
 (St) 5 2 1, (Cj) 25, (Tij) 7

Stage 6

Waktu Mesin

(1)32 (2)27 (3)14 (4)32 (5)19 (6)0

(St) 1 3 2, (Cj) 27, (Tij) 6
 (St) 2 3 5, (Cj) 27, (Tij) 13
 (St) 3 4 3, (Cj) 32, (Tij) 9
 (St) 4 2 4, (Cj) 32, (Tij) 14
 (St) 5 3 3, (Cj) 32, (Tij) 8

Stage 7

Waktu Mesin

(1)32 (2)33 (3)14 (4)32 (5)40 (6)0

(St) 1 4 3, (Cj) 33, (Tij) 7

(St) 2 4 1, (Cj) 40, (Tij) 10

(St) 3 4 3, (Cj) 32, (Tij) 9

(St) 4 2 4, (Cj) 32, (Tij) 14

(St) 5 3 3, (Cj) 32, (Tij) 8

Stage 8

Waktu Mesin

(1)32 (2)33 (3)40 (4)46 (5)40 (6)0

(St) 1 4 3, (Cj) 40, (Tij) 7

(St) 2 4 1, (Cj) 40, (Tij) 10

(St) 3 4 3, (Cj) 40, (Tij) 9

(St) 4 3 2, (Cj) 46, (Tij) 9

(St) 5 4 6, (Cj) 40, (Tij) 15

Stage 9

Waktu Mesin

(1)50 (2)33 (3)47 (4)46 (5)40 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 50, (Tij) 6

(St) 3 4 3, (Cj) 47, (Tij) 9

(St) 4 3 2, (Cj) 46, (Tij) 9

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 10

Waktu Mesin

(1)50 (2)55 (3)47 (4)46 (5)40 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 50, (Tij) 6

(St) 3 4 3, (Cj) 47, (Tij) 9

(St) 4 4 5, (Cj) 55, (Tij) 11

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 11

Waktu Mesin

(1)50 (2)55 (3)56 (4)46 (5)40 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 50, (Tij) 6

(St) 3 5 6, (Cj) 56, (Tij) 13

(St) 4 4 5, (Cj) 55, (Tij) 11

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 12

Waktu Mesin

(1)50 (2)55 (3)56 (4)56 (5)40 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 6 6, (Cj) 56, (Tij) 12

(St) 3 5 6, (Cj) 56, (Tij) 13

(St) 4 4 5, (Cj) 55, (Tij) 11

(St) 5 5 4, (Cj) 56, (Tij) 7

Stage 13

Waktu Mesin

(1)50 (2)55 (3)56 (4)56 (5)66 (6)64

(St) 1 6 5, (Cj) 66, (Tij) 9

(St) 2 6 6, (Cj) 64, (Tij) 12

(St) 3 5 6, (Cj) 64, (Tij) 13

(St) 4 5 6, (Cj) 66, (Tij) 5

(St) 5 5 4, (Cj) 56, (Tij) 7

Stage 14

Waktu Mesin

(1)50 (2)55 (3)56 (4)63 (5)66 (6)64

(St) 1 6 5, (Cj) 66, (Tij) 9

(St) 2 6 6, (Cj) 64, (Tij) 12

(St) 3 5 6, (Cj) 64, (Tij) 13

(St) 4 5 6, (Cj) 66, (Tij) 5

(St) 5 6 5, (Cj) 66, (Tij) 11

Stage 15

Waktu Mesin

(1)50 (2)55 (3)56 (4)63 (5)66 (6)76

(St) 1 6 5, (Cj) 66, (Tij) 9

(St) 3 5 6, (Cj) 76, (Tij) 13

(St) 4 5 6, (Cj) 76, (Tij) 5

(St) 5 6 5, (Cj) 66, (Tij) 11

Stage 16

Waktu Mesin

(1)50 (2)55 (3)56 (4)63 (5)75 (6)76

(St) 3 5 6, (Cj) 76, (Tij) 13

(St) 4 5 6, (Cj) 76, (Tij) 5

(St) 5 6 5, (Cj) 75, (Tij) 11

Stage 17

Waktu Mesin

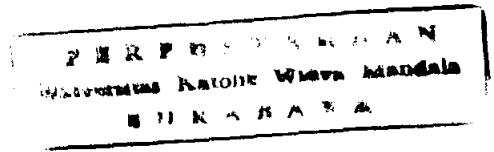
(1)50 (2)55 (3)56 (4)63 (5)86 (6)76

(St) 3 5 6, (Cj) 76, (Tij) 13

(St) 4 5 6, (Cj) 76, (Tij) 5

Stage 18

Waktu Mesin



(1)50 (2)55 (3)56 (4)63 (5)86 (6)81

(St) 3 5 6, (Cj) 81, (Tij) 13

(St) 4 6 3, (Cj) 81, (Tij) 5

Stage 19

Waktu Mesin

(1)50 (2)55 (3)86 (4)63 (5)86 (6)94

(St) 3 6 1, (Cj) 94, (Tij) 11

Stage 20

Waktu Mesin

(1)105 (2)55 (3)86 (4)63 (5)86 (6)94

Biaya Earlines = 35

Biaya Tardines = 16

Total Biaya = 51

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (0), akhir (12)

1 2 4 = Awal (12), akhir (25)

1 3 2 = Awal (27), akhir (33)

1 4 3 = Awal (40), akhir (47)

1 5 6 = Awal (55), akhir (64)

1 6 5 = Awal (66), akhir (75)

Job 2

2 1 3 = Awal (0), akhir (14)

2 2 2 = Awal (20), akhir (27)

2 3 5 = Awal (27), akhir (40)

2 4 1 = Awal (40), akhir (50)

2 5 4 = Awal (50), akhir (56)

2 6 6 = Awal (64), akhir (76)

Job 3

3 1 2 = Awal (0), akhir (8)

3 2 5 = Awal (8), akhir (19)

3 3 4 = Awal (25), akhir (32)

3 4 3 = Awal (47), akhir (56)

3 5 6 = Awal (81), akhir (94)

3 6 1 = Awal (94), akhir (105)

Job 4

4 1 1 = Awal (12), akhir (25)

4 2 4 = Awal (32), akhir (46)

4 3 2 = Awal (46), akhir (55)

4 4 5 = Awal (55), akhir (66)

4 5 6 = Awal (76), akhir (81)

4 6 3 = Awal (81), akhir (86)

Job 5

5 1 2 = Awal (8), akhir (20)

5 2 1 = Awal (25), akhir (32)

5 3 3 = Awal (32), akhir (40)
 5 4 6 = Awal (40), akhir (55)
 5 5 4 = Awal (56), akhir (63)
 5 6 5 = Awal (75), akhir (86)

3. S / O P N

Stage 1

Waktu Mesin

(1)0 (2)0 (3)0 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 0, (Tij) 12
 (St) 2 1 3, (Cj) 0, (Tij) 14
 (St) 3 1 2, (Cj) 0, (Tij) 8
 (St) 4 1 1, (Cj) 0, (Tij) 13
 (St) 5 1 2, (Cj) 0, (Tij) 12

Stage 2

Waktu Mesin

(1)13 (2)12 (3)14 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 13, (Tij) 12
 (St) 2 2 2, (Cj) 14, (Tij) 7
 (St) 3 1 2, (Cj) 12, (Tij) 8
 (St) 4 2 4, (Cj) 13, (Tij) 14
 (St) 5 2 1, (Cj) 13, (Tij) 7

Stage 3

Waktu Mesin

(1)13 (2)20 (3)14 (4)0 (5)0 (6)0

(St) 1 1 1, (Cj) 13, (Tij) 12
 (St) 2 2 2, (Cj) 20, (Tij) 7
 (St) 3 2 5, (Cj) 20, (Tij) 11
 (St) 4 2 4, (Cj) 13, (Tij) 14
 (St) 5 2 1, (Cj) 13, (Tij) 7

Stage 4

Waktu Mesin

(1)25 (2)20 (3)14 (4)27 (5)0 (6)0

(St) 1 2 4, (Cj) 27, (Tij) 13
 (St) 2 2 2, (Cj) 20, (Tij) 7
 (St) 3 2 5, (Cj) 20, (Tij) 11
 (St) 4 3 2, (Cj) 27, (Tij) 9
 (St) 5 2 1, (Cj) 25, (Tij) 7

Stage 5

Waktu Mesin

(1)25 (2)27 (3)14 (4)27 (5)31 (6)0

(St) 1 2 4, (Cj) 27, (Tij) 13
 (St) 2 3 5, (Cj) 31, (Tij) 13

(St) 3 3 4, (Cj) 31, (Tij) 7
 (St) 4 3 2, (Cj) 27, (Tij) 9
 (St) 5 2 1, (Cj) 25, (Tij) 7

Stage 6

Waktu Mesin

(1)32 (2)27 (3)14 (4)27 (5)31 (6)0

(St) 1 2 4, (Cj) 27, (Tij) 13
 (St) 2 3 5, (Cj) 31, (Tij) 13
 (St) 3 3 4, (Cj) 31, (Tij) 7
 (St) 4 3 2, (Cj) 27, (Tij) 9
 (St) 5 3 3, (Cj) 32, (Tij) 8

Stage 7

Waktu Mesin

(1)32 (2)36 (3)14 (4)40 (5)31 (6)0

(St) 1 3 2, (Cj) 40, (Tij) 6
 (St) 2 3 5, (Cj) 31, (Tij) 13
 (St) 3 3 4, (Cj) 40, (Tij) 7
 (St) 4 4 5, (Cj) 36, (Tij) 11
 (St) 5 3 3, (Cj) 32, (Tij) 8

Stage 8

Waktu Mesin

(1)32 (2)36 (3)14 (4)40 (5)44 (6)0

(St) 1 3 2, (Cj) 40, (Tij) 6
 (St) 2 4 1, (Cj) 44, (Tij) 10
 (St) 3 3 4, (Cj) 40, (Tij) 7
 (St) 4 4 5, (Cj) 44, (Tij) 11
 (St) 5 3 3, (Cj) 32, (Tij) 8

Stage 9

Waktu Mesin

(1)32 (2)36 (3)40 (4)40 (5)44 (6)0

(St) 1 3 2, (Cj) 40, (Tij) 6
 (St) 2 4 1, (Cj) 44, (Tij) 10
 (St) 3 3 4, (Cj) 40, (Tij) 7
 (St) 4 4 5, (Cj) 44, (Tij) 11
 (St) 5 4 6, (Cj) 40, (Tij) 15

Stage 10

Waktu Mesin

(1)32 (2)46 (3)40 (4)47 (5)44 (6)55

(St) 1 4 3, (Cj) 46, (Tij) 7
 (St) 2 4 1, (Cj) 44, (Tij) 10
 (St) 3 4 3, (Cj) 47, (Tij) 9
 (St) 4 4 5, (Cj) 44, (Tij) 11
 (St) 5 5 4, (Cj) 55, (Tij) 7

Stage 11

Waktu Mesin

(1)54 (2)46 (3)40 (4)47 (5)55 (6)55

(St) 1 4 3, (Cj) 46, (Tij) 7

(St) 2 5 4, (Cj) 54, (Tij) 6

(St) 3 4 3, (Cj) 47, (Tij) 9

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 12

Waktu Mesin

(1)54 (2)46 (3)53 (4)47 (5)55 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 54, (Tij) 6

(St) 3 4 3, (Cj) 53, (Tij) 9

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 13

Waktu Mesin

(1)54 (2)46 (3)62 (4)47 (5)55 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 5 4, (Cj) 54, (Tij) 6

(St) 3 5 6, (Cj) 62, (Tij) 13

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 55, (Tij) 7

Stage 14

Waktu Mesin

(1)54 (2)46 (3)62 (4)60 (5)55 (6)55

(St) 1 5 6, (Cj) 55, (Tij) 9

(St) 2 6 6, (Cj) 60, (Tij) 12

(St) 3 5 6, (Cj) 62, (Tij) 13

(St) 4 5 6, (Cj) 55, (Tij) 5

(St) 5 5 4, (Cj) 60, (Tij) 7

Stage 15

Waktu Mesin

(1)54 (2)46 (3)62 (4)60 (5)55 (6)60

(St) 1 5 6, (Cj) 60, (Tij) 9

(St) 2 6 6, (Cj) 60, (Tij) 12

(St) 3 5 6, (Cj) 62, (Tij) 13

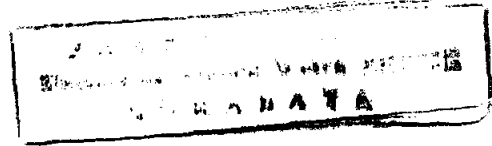
(St) 4 6 3, (Cj) 62, (Tij) 5

(St) 5 5 4, (Cj) 60, (Tij) 7

Stage 16

Waktu Mesin

(1)54 (2)46 (3)62 (4)67 (5)55 (6)69



(St) 1 6 5, (Cj) 69, (Tij) 9
 (St) 2 6 6, (Cj) 69, (Tij) 12
 (St) 3 5 6, (Cj) 69, (Tij) 13
 (St) 4 6 3, (Cj) 62, (Tij) 5
 (St) 5 6 5, (Cj) 67, (Tij) 11

Stage 17

Waktu Mesin

(1)54 (2)46 (3)67 (4)67 (5)55 (6)69

(St) 1 6 5, (Cj) 69, (Tij) 9
 (St) 2 6 6, (Cj) 69, (Tij) 12
 (St) 3 5 6, (Cj) 69, (Tij) 13
 (St) 5 6 5, (Cj) 67, (Tij) 11

Stage 18

Waktu Mesin

(1)54 (2)46 (3)67 (4)67 (5)78 (6)69

(St) 1 6 5, (Cj) 78, (Tij) 9
 (St) 2 6 6, (Cj) 69, (Tij) 12
 (St) 3 5 6, (Cj) 69, (Tij) 13

Stage 19

Waktu Mesin

(1)54 (2)46 (3)67 (4)67 (5)78 (6)82

(St) 1 6 5, (Cj) 78, (Tij) 9
 (St) 2 6 6, (Cj) 82, (Tij) 12
 (St) 3 6 1, (Cj) 82, (Tij) 11

Stage 20

Waktu Mesin

(1)54 (2)46 (3)67 (4)67 (5)87 (6)82

(St) 2 6 6, (Cj) 82, (Tij) 12
 (St) 3 6 1, (Cj) 82, (Tij) 11

Stage 21

Waktu Mesin

(1)93 (2)46 (3)67 (4)67 (5)87 (6)94

Biaya Earlines = 36

Biaya Tardines = 0

Total Biaya = 36

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (13), akhir (25)
 1 2 4 = Awal (27), akhir (40)
 1 3 2 = Awal (40), akhir (46)
 1 4 3 = Awal (46), akhir (53)
 1 5 6 = Awal (60), akhir (69)
 1 6 5 = Awal (78), akhir (87)

Job 2

2 1 3 = Awal (0), akhir (14)
2 2 2 = Awal (20), akhir (27)
2 3 5 = Awal (31), akhir (44)
2 4 1 = Awal (44), akhir (54)
2 5 4 = Awal (54), akhir (60)
2 6 6 = Awal (82), akhir (94)

Job 3

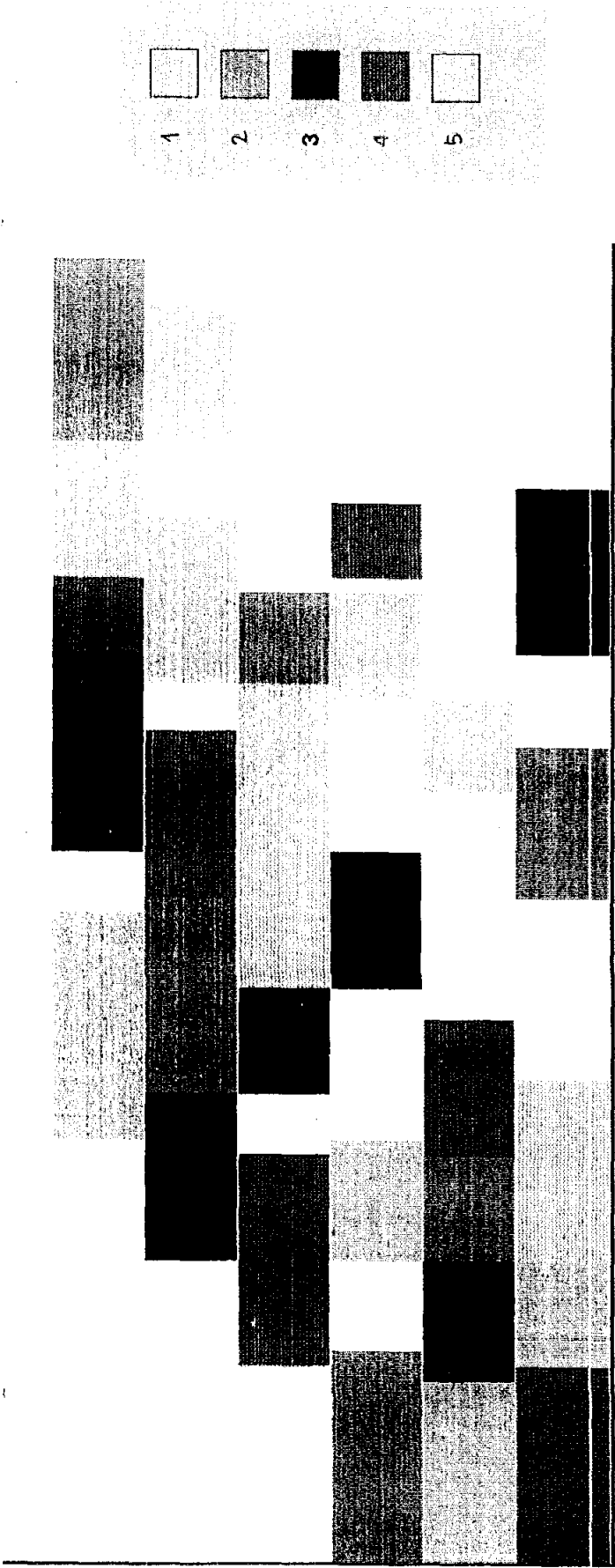
3 1 2 = Awal (12), akhir (20)
3 2 5 = Awal (20), akhir (31)
3 3 4 = Awal (40), akhir (47)
3 4 3 = Awal (53), akhir (62)
3 5 6 = Awal (69), akhir (82)
3 6 1 = Awal (82), akhir (93)

Job 4

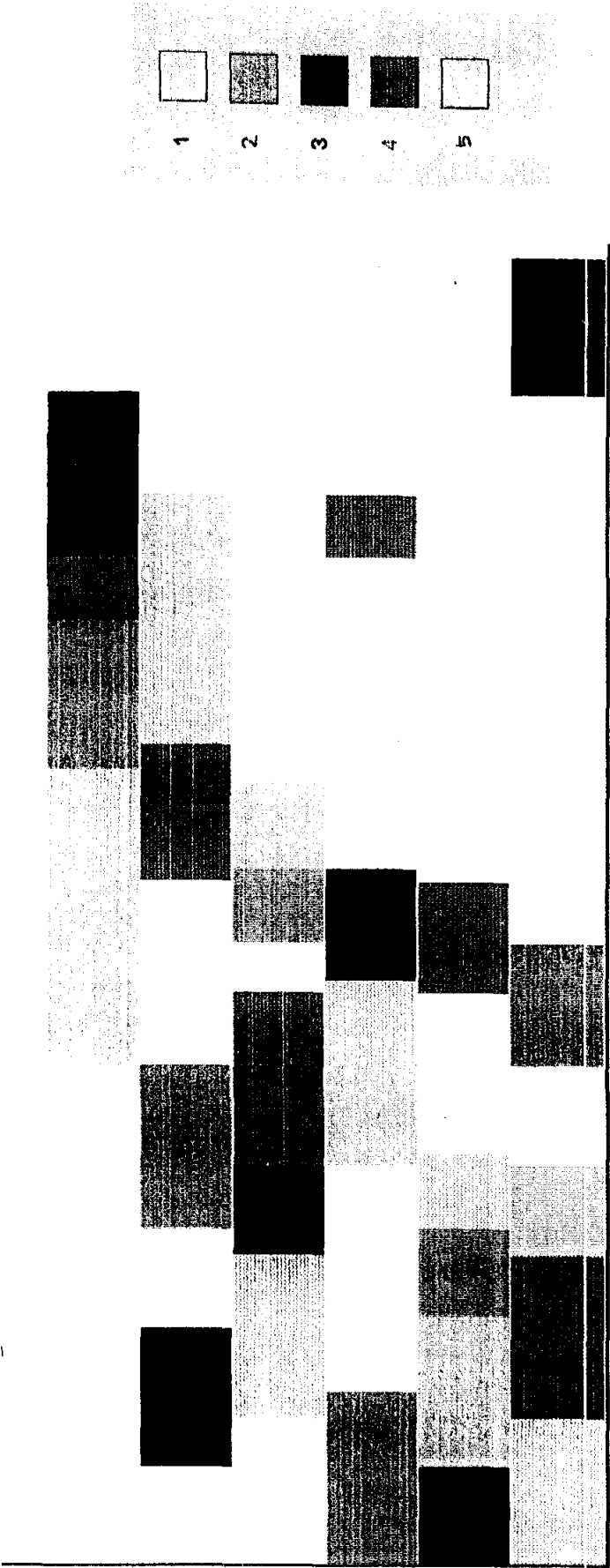
4 1 1 = Awal (0), akhir (13)
4 2 4 = Awal (13), akhir (27)
4 3 2 = Awal (27), akhir (36)
4 4 5 = Awal (44), akhir (55)
4 5 6 = Awal (55), akhir (60)
4 6 3 = Awal (62), akhir (67)

Job 5

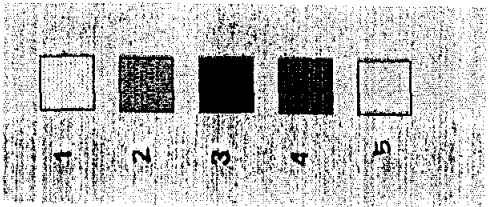
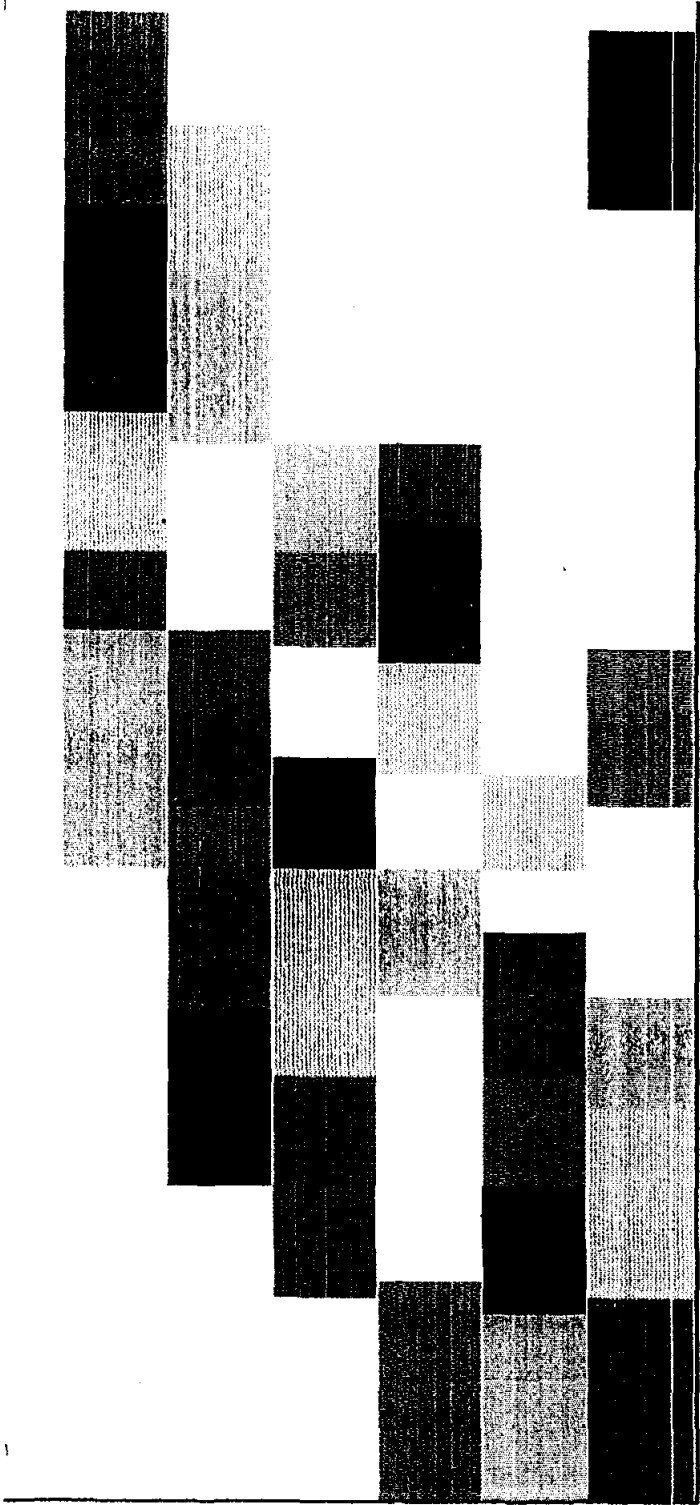
5 1 2 = Awal (0), akhir (12)
5 2 1 = Awal (25), akhir (32)
5 3 3 = Awal (32), akhir (40)
5 4 6 = Awal (40), akhir (55)
5 5 4 = Awal (60), akhir (67)
5 6 5 = Awal (67), akhir (78)



Gantt Chart penjadualan dengan metode *forward* (EDD) soal 2



Gantt Chart penjadualan dengan metode *forward* (SPT) soal 2



Gantt Chart penjadualan dengan metode forward (S / OPN) soal 2

Iterasi penjadualan dengan metode *backward* untuk soal 1 :

1. *Last Due Date*

Stage 1

Waktu Mesin

(1)24 (2)38 (3)36 (4)37

(St) 1 4 2, (Cj) 38, (Tij) 6 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 4 4, (Cj) 37, (Tij) 6 (Di) 37

Stage 2

Waktu Mesin

(1)24 (2)32 (3)36 (4)37

(St) 1 3 4, (Cj) 32, (Tij) 8 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 4 4, (Cj) 37, (Tij) 6 (Di) 37

Stage 3

Waktu Mesin

(1)24 (2)32 (3)36 (4)31

(St) 1 3 4, (Cj) 31, (Tij) 8 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 3 2, (Cj) 31, (Tij) 6 (Di) 37

Stage 4

Waktu Mesin

(1)24 (2)32 (3)29 (4)31

(St) 1 3 4, (Cj) 31, (Tij) 8 (Di) 38

(St) 2 3 4, (Cj) 29, (Tij) 8 (Di) 36

(St) 3 3 2, (Cj) 31, (Tij) 6 (Di) 37

Stage 5

Waktu Mesin

(1)24 (2)25 (3)29 (4)23

(St) 1 2 1, (Cj) 23, (Tij) 7 (Di) 38

(St) 2 3 4, (Cj) 23, (Tij) 8 (Di) 36

(St) 3 2 3, (Cj) 25, (Tij) 5 (Di) 37

Stage 6

Waktu Mesin

(1)24 (2)25 (3)20 (4)23

(St) 1 2 1, (Cj) 23, (Tij) 7 (Di) 38

(St) 2 3 4, (Cj) 23, (Tij) 8 (Di) 36

(St) 3 1 1, (Cj) 20, (Tij) 6 (Di) 37

Stage 7

Waktu Mesin

(1)16 (2)25 (3)20 (4)15

(St) 1 1 3, (Cj) 16, (Tij) 8 (Di) 38
 (St) 2 2 1, (Cj) 15, (Tij) 7 (Di) 36
 (St) 3 1 1, (Cj) 16, (Tij) 6 (Di) 37

Stage 8

Waktu Mesin

(1)10 (2)25 (3)8 (4)15

(St) 2 2 1, (Cj) 10, (Tij) 7 (Di) 36

Stage 9

Waktu Mesin

(1)3 (2)25 (3)8 (4)15

(St) 2 1 2, (Cj) 3, (Tij) 5 (Di) 36

Stage 10

Waktu Mesin

(1)3 (2)-2 (3)8 (4)15

Biaya Earlines = 0

Biaya Tardines = 12

Total Biaya = 12

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 3 = Awal (10), akhir (18)

1 2 1 = Awal (18), akhir (25)

1 3 4 = Awal (25), akhir (33)

1 4 2 = Awal (34), akhir (40)

Job 2

2 1 2 = Awal (0), akhir (5)

2 2 1 = Awal (5), akhir (12)

2 3 4 = Awal (17), akhir (25)

2 4 3 = Awal (31), akhir (38)

Job 3

3 1 1 = Awal (12), akhir (18)

3 2 3 = Awal (22), akhir (27)

3 3 2 = Awal (27), akhir (33)

3 4 4 = Awal (33), akhir (39)

2. Longest Processing Time

Stage 1

Waktu Mesin

(1)24 (2)38 (3)36 (4)37

(St) 1 4 2, (Cj) 38, (Tij) 6 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 4 4, (Cj) 37, (Tij) 6 (Di) 37

Stage 2

Waktu Mesin

(1)24 (2)32 (3)36 (4)37

(St) 1 3 4, (Cj) 32, (Tij) 8 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 4 4, (Cj) 37, (Tij) 6 (Di) 37

Stage 3

Waktu Mesin

(1)24 (2)32 (3)36 (4)31

(St) 1 3 4, (Cj) 31, (Tij) 8 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 3 2, (Cj) 31, (Tij) 6 (Di) 37

Stage 4

Waktu Mesin

(1)24 (2)32 (3)29 (4)31

(St) 1 3 4, (Cj) 31, (Tij) 8 (Di) 38

(St) 2 3 4, (Cj) 29, (Tij) 8 (Di) 36

(St) 3 3 2, (Cj) 31, (Tij) 6 (Di) 37

Stage 5

Waktu Mesin

(1)24 (2)25 (3)29 (4)23

(St) 1 2 1, (Cj) 23, (Tij) 7 (Di) 38

(St) 2 3 4, (Cj) 23, (Tij) 8 (Di) 36

(St) 3 2 3, (Cj) 25, (Tij) 5 (Di) 37

Stage 6

Waktu Mesin

(1)24 (2)25 (3)20 (4)23

(St) 1 2 1, (Cj) 23, (Tij) 7 (Di) 38

(St) 2 3 4, (Cj) 23, (Tij) 8 (Di) 36

(St) 3 1 1, (Cj) 20, (Tij) 6 (Di) 37

Stage 7

Waktu Mesin

(1)16 (2)25 (3)20 (4)15

(St) 1 1 3, (Cj) 16, (Tij) 8 (Di) 38

(St) 2 2 1, (Cj) 15, (Tij) 7 (Di) 36

(St) 3 1 1, (Cj) 16, (Tij) 6 (Di) 37

Stage 8

Waktu Mesin

(1)10 (2)25 (3)8 (4)15

(St) 2 2 1, (Cj) 10, (Tij) 7 (Di) 36

Stage 9

Waktu Mesin

(1)3 (2)25 (3)8 (4)15

(St) 2 1 2, (Cj) 3, (Tij) 5 (Di) 36

Stage 10

Waktu Mesin

(1)3 (2)-2 (3)8 (4)15

Biaya Earlines = 0

Biaya Tardines = 12

Total Biaya = 12

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 3 = Awal (10), akhir (18)

1 2 1 = Awal (18), akhir (25)

1 3 4 = Awal (25), akhir (33)

1 4 2 = Awal (34), akhir (40)

Job 2

2 1 2 = Awal (0), akhir (5)

2 2 1 = Awal (5), akhir (12)

2 3 4 = Awal (17), akhir (25)

2 4 3 = Awal (31), akhir (38)

Job 3

3 1 1 = Awal (12), akhir (18)

3 2 3 = Awal (22), akhir (27)

3 3 2 = Awal (27), akhir (33)

3 4 4 = Awal (33), akhir (39)

3. S / O P N

Stage 1

Waktu Mesin

(1)24 (2)38 (3)36 (4)37

(St) 1 4 2, (Cj) 38, (Tij) 6 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 4 4, (Cj) 37, (Tij) 6 (Di) 37

Stage 2

Waktu Mesin

(1)24 (2)32 (3)36 (4)37

(St) 1 3 4, (Cj) 32, (Tij) 8 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 4 4, (Cj) 37, (Tij) 6 (Di) 37

Stage 3

Waktu Mesin

(1)24 (2)32 (3)36 (4)31

(St) 1 3 4, (Cj) 31, (Tij) 8 (Di) 38

(St) 2 4 3, (Cj) 36, (Tij) 7 (Di) 36

(St) 3 3 2, (Cj) 31, (Tij) 6 (Di) 37

Stage 4

Waktu Mesin

(1)24 (2)32 (3)29 (4)31

(St) 1 3 4, (Cj) 31, (Tij) 8 (Di) 38

(St) 2 3 4, (Cj) 29, (Tij) 8 (Di) 36

(St) 3 3 2, (Cj) 31, (Tij) 6 (Di) 37

Stage 5

Waktu Mesin

(1)24 (2)25 (3)29 (4)23

(St) 1 2 1, (Cj) 23, (Tij) 7 (Di) 38

(St) 2 3 4, (Cj) 23, (Tij) 8 (Di) 36

(St) 3 2 3, (Cj) 25, (Tij) 5 (Di) 37

Stage 6

Waktu Mesin

(1)24 (2)25 (3)20 (4)23

(St) 1 2 1, (Cj) 23, (Tij) 7 (Di) 38

(St) 2 3 4, (Cj) 23, (Tij) 8 (Di) 36

(St) 3 1 1, (Cj) 20, (Tij) 6 (Di) 37

Stage 7

Waktu Mesin

(1)16 (2)25 (3)20 (4)15

(St) 1 1 3, (Cj) 16, (Tij) 8 (Di) 38

(St) 2 2 1, (Cj) 15, (Tij) 7 (Di) 36

(St) 3 1 1, (Cj) 16, (Tij) 6 (Di) 37

Stage 8

Waktu Mesin

(1)10 (2)25 (3)8 (4)15

(St) 2 2 1, (Cj) 10, (Tij) 7 (Di) 36

Stage 9

Waktu Mesin

(1)3 (2)25 (3)8 (4)15

(St) 2 1 2, (Cj) 3, (Tij) 5 (Di) 36

Stage 10

Waktu Mesin

(1)3 (2)-2 (3)8 (4)15

Biaya Earlines = 0
Biaya Tardines = 12
Total Biaya = 12

Data Waktu Untuk Masing - Masing Job

Job 1

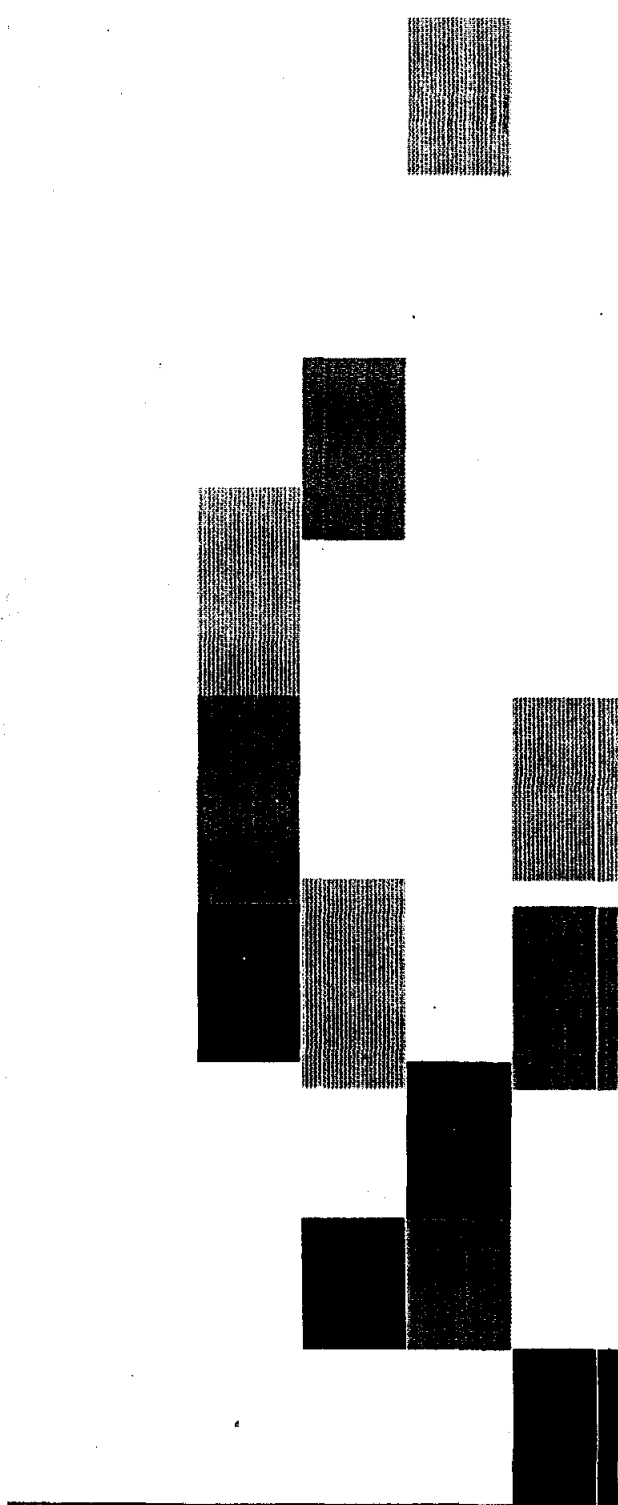
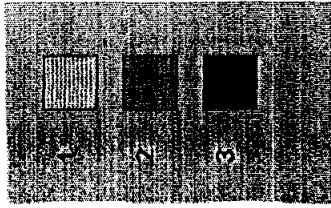
1 1 3 = Awal (10), akhir (18)
1 2 1 = Awal (18), akhir (25)
1 3 4 = Awal (25), akhir (33)
1 4 2 = Awal (34), akhir (40)

Job 2

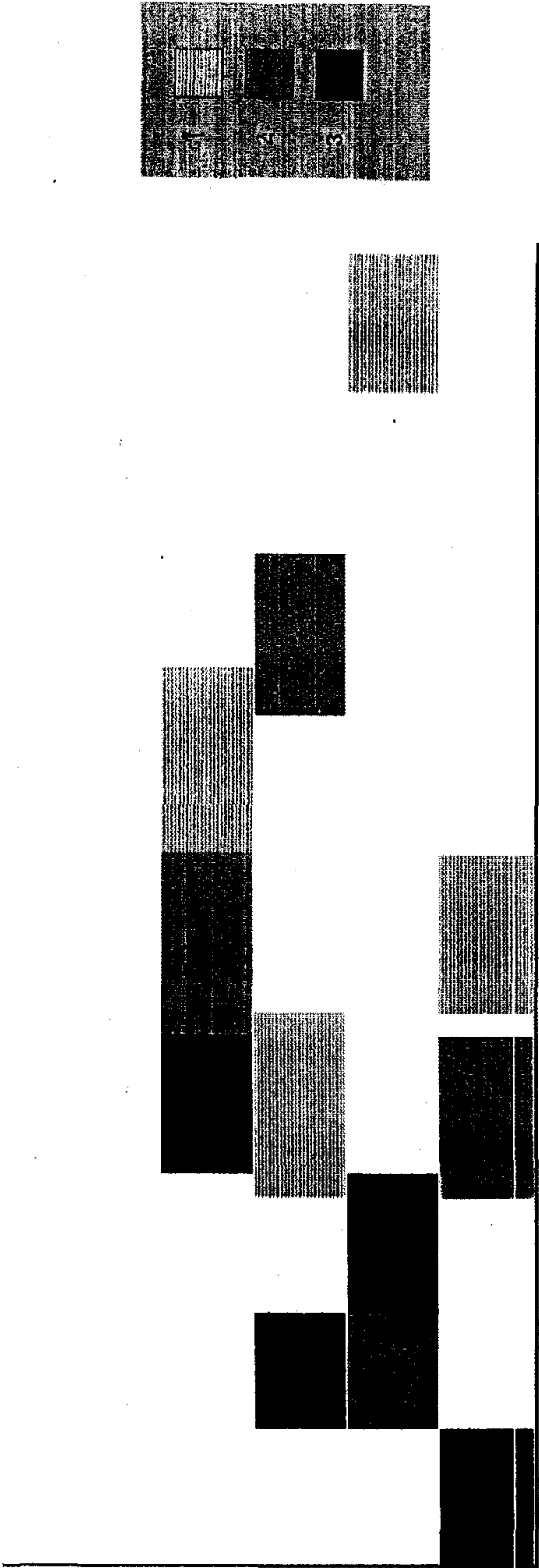
2 1 2 = Awal (0), akhir (5)
2 2 1 = Awal (5), akhir (12)
2 3 4 = Awal (17), akhir (25)
2 4 3 = Awal (31), akhir (38)

Job 3

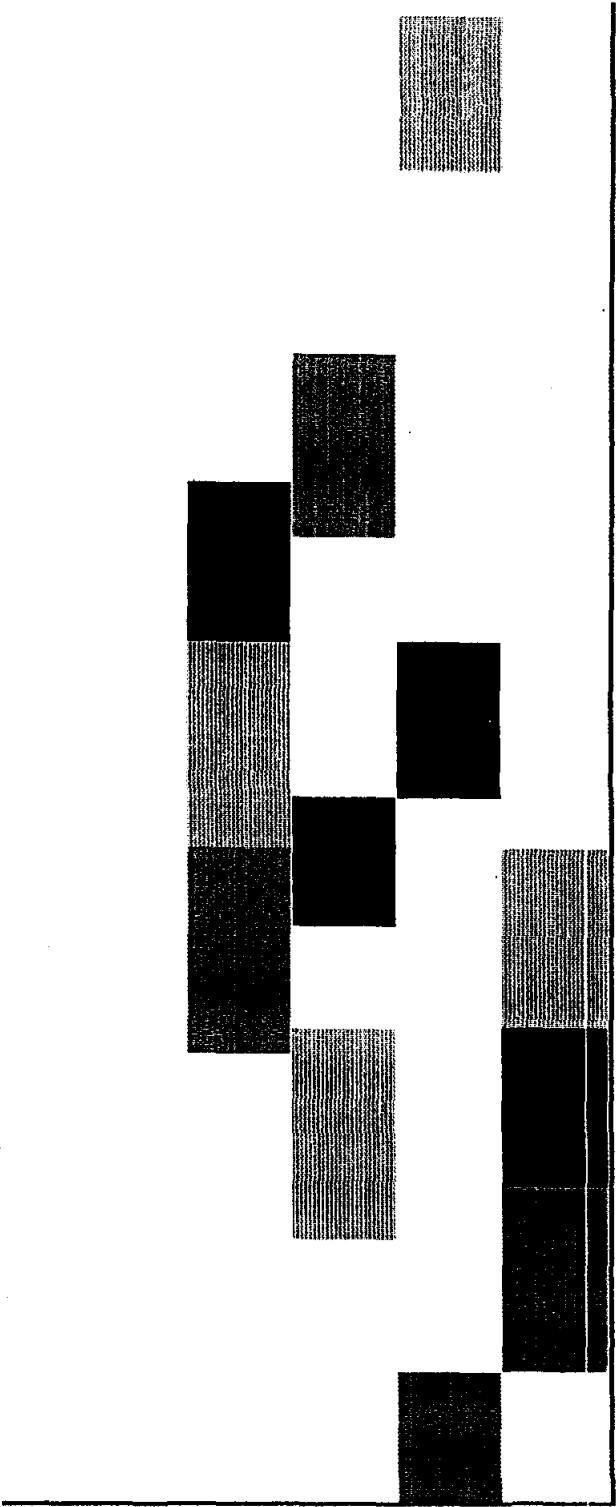
3 1 1 = Awal (12), akhir (18)
3 2 3 = Awal (22), akhir (27)
3 3 2 = Awal (27), akhir (33)
3 4 4 = Awal (33), akhir (39)



Gantt Chart penjadualan dengan metode *backward* (LDD) soal 1



Gantt Chart penjadualan dengan metode *backward* (LPT) soal 1



Gantt Chart penjadualan dengan metode *backward* (S/OPN) soal 1.

Iterasi penjadualan dengan metode *backward* untuk soal 2 :

1. *Last Due Date*

Stage 1

Waktu Mesin

(1)97 (2)66 (3)87 (4)82 (5)89 (6)94

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89

(St) 2 6 6, (Cj) 94, (Tij) 12 (Di) 94

(St) 3 6 1, (Cj) 97, (Tij) 11 (Di) 97

(St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87

(St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 2

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)89 (6)94

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89

(St) 2 6 6, (Cj) 94, (Tij) 12 (Di) 94

(St) 3 5 6, (Cj) 86, (Tij) 13 (Di) 97

(St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87

(St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 3

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)89 (6)82

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89

(St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94

(St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97

(St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87

(St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 4

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)80 (6)82

(St) 1 5 6, (Cj) 80, (Tij) 9 (Di) 89

(St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94

(St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97

(St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87

(St) 5 6 5, (Cj) 80, (Tij) 11 (Di) 88

Stage 5

Waktu Mesin

(1)86 (2)66 (3)82 (4)82 (5)80 (6)82

(St) 1 5 6, (Cj) 80, (Tij) 9 (Di) 89

(St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94

(St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97

(St) 4 5 6, (Cj) 82, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 80, (Tij) 11 (Di) 88

Stage 6

Waktu Mesin

(1)86 (2)66 (3)82 (4)76 (5)80 (6)69

(St) 1 5 6, (Cj) 69, (Tij) 9 (Di) 89
 (St) 2 4 1, (Cj) 76, (Tij) 10 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 80, (Tij) 11 (Di) 88

Stage 7

Waktu Mesin

(1)86 (2)66 (3)82 (4)76 (5)69 (6)69

(St) 1 5 6, (Cj) 69, (Tij) 9 (Di) 89
 (St) 2 4 1, (Cj) 76, (Tij) 10 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 5 4, (Cj) 69, (Tij) 7 (Di) 88

Stage 8

Waktu Mesin

(1)66 (2)66 (3)82 (4)76 (5)69 (6)69

(St) 1 5 6, (Cj) 69, (Tij) 9 (Di) 89
 (St) 2 3 5, (Cj) 66, (Tij) 13 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 5 4, (Cj) 69, (Tij) 7 (Di) 88

Stage 9

Waktu Mesin

(1)66 (2)66 (3)60 (4)62 (5)69 (6)60

(St) 1 4 3, (Cj) 60, (Tij) 7 (Di) 89
 (St) 2 3 5, (Cj) 66, (Tij) 13 (Di) 94
 (St) 3 3 4, (Cj) 60, (Tij) 7 (Di) 97
 (St) 4 5 6, (Cj) 60, (Tij) 5 (Di) 87
 (St) 5 4 6, (Cj) 60, (Tij) 15 (Di) 88

Stage 10

Waktu Mesin

(1)66 (2)66 (3)60 (4)62 (5)53 (6)60

(St) 1 4 3, (Cj) 60, (Tij) 7 (Di) 89
 (St) 2 2 2, (Cj) 53, (Tij) 7 (Di) 94
 (St) 3 3 4, (Cj) 60, (Tij) 7 (Di) 97

(St) 4 5 6, (Cj) 60, (Tij) 5 (Di) 87
 (St) 5 4 6, (Cj) 60, (Tij) 15 (Di) 88

Stage 11

Waktu Mesin

(1)66 (2)66 (3)53 (4)53 (5)53 (6)45

(St) 1 3 2, (Cj) 53, (Tij) 6 (Di) 89
 (St) 2 2 2, (Cj) 53, (Tij) 7 (Di) 94
 (St) 3 2 5, (Cj) 53, (Tij) 11 (Di) 97
 (St) 4 5 6, (Cj) 45, (Tij) 5 (Di) 87
 (St) 5 3 3, (Cj) 45, (Tij) 8 (Di) 88

Stage 12

Waktu Mesin

(1)66 (2)46 (3)53 (4)53 (5)42 (6)45

(St) 1 3 2, (Cj) 46, (Tij) 6 (Di) 89
 (St) 2 1 3, (Cj) 46, (Tij) 14 (Di) 94
 (St) 3 1 2, (Cj) 42, (Tij) 8 (Di) 97
 (St) 4 5 6, (Cj) 45, (Tij) 5 (Di) 87
 (St) 5 3 3, (Cj) 45, (Tij) 8 (Di) 88

Stage 13

Waktu Mesin

(1)66 (2)40 (3)32 (4)53 (5)42 (6)45

(St) 1 2 4, (Cj) 40, (Tij) 13 (Di) 89
 (St) 3 1 2, (Cj) 40, (Tij) 8 (Di) 97
 (St) 4 5 6, (Cj) 45, (Tij) 5 (Di) 87
 (St) 5 3 3, (Cj) 32, (Tij) 8 (Di) 88

Stage 14

Waktu Mesin

(1)66 (2)40 (3)32 (4)53 (5)42 (6)40

(St) 1 2 4, (Cj) 40, (Tij) 13 (Di) 89
 (St) 3 1 2, (Cj) 40, (Tij) 8 (Di) 97
 (St) 4 4 5, (Cj) 40, (Tij) 11 (Di) 87
 (St) 5 3 3, (Cj) 32, (Tij) 8 (Di) 88

Stage 15

Waktu Mesin

(1)66 (2)32 (3)32 (4)27 (5)29 (6)40

(St) 1 1 1, (Cj) 27, (Tij) 12 (Di) 89
 (St) 4 3 2, (Cj) 29, (Tij) 9 (Di) 87
 (St) 5 3 3, (Cj) 32, (Tij) 8 (Di) 88

Stage 16

Waktu Mesin

(1)66 (2)32 (3)24 (4)27 (5)29 (6)40

(St) 1 1 1, (Cj) 27, (Tij) 12 (Di) 89

(St) 4 3 2, (Cj) 29, (Tij) 9 (Di) 87

(St) 5 2 1, (Cj) 24, (Tij) 7 (Di) 88

Stage 17

Waktu Mesin

(1)66 (2)20 (3)24 (4)27 (5)29 (6)40

(St) 1 1 1, (Cj) 27, (Tij) 12 (Di) 89

(St) 4 2 4, (Cj) 20, (Tij) 14 (Di) 87

(St) 5 2 1, (Cj) 24, (Tij) 7 (Di) 88

Stage 18

Waktu Mesin

(1)15 (2)20 (3)24 (4)27 (5)29 (6)40

(St) 4 2 4, (Cj) 20, (Tij) 14 (Di) 87

(St) 5 2 1, (Cj) 15, (Tij) 7 (Di) 88

Stage 19

Waktu Mesin

(1)15 (2)20 (3)24 (4)6 (5)29 (6)40

(St) 4 1 1, (Cj) 6, (Tij) 13 (Di) 87

(St) 5 2 1, (Cj) 15, (Tij) 7 (Di) 88

Stage 20

Waktu Mesin

(1)8 (2)20 (3)24 (4)6 (5)29 (6)40

(St) 4 1 1, (Cj) 6, (Tij) 13 (Di) 87

(St) 5 1 2, (Cj) 8, (Tij) 12 (Di) 88

Stage 21

Waktu Mesin

(1)8 (2)-4 (3)24 (4)6 (5)29 (6)40

(St) 4 1 1, (Cj) 6, (Tij) 13 (Di) 87

Stage 22

Waktu Mesin

(1)-7 (2)-4 (3)24 (4)6 (5)29 (6)40

Biaya Earlines = 1
 Biaya Tardines = 56
 Total Biaya = 57

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (22), akhir (34)
 1 2 4 = Awal (34), akhir (47)
 1 3 2 = Awal (47), akhir (53)
 1 4 3 = Awal (60), akhir (67)
 1 5 6 = Awal (67), akhir (76)
 1 6 5 = Awal (87), akhir (96)

Job 2

2 1 3 = Awal (39), akhir (53)
 2 2 2 = Awal (53), akhir (60)
 2 3 5 = Awal (60), akhir (73)
 2 4 1 = Awal (73), akhir (83)
 2 5 4 = Awal (83), akhir (89)
 2 6 6 = Awal (89), akhir (101)

Job 3

3 1 2 = Awal (39), akhir (47)
 3 2 5 = Awal (49), akhir (60)
 3 3 4 = Awal (60), akhir (67)
 3 4 3 = Awal (67), akhir (76)
 3 5 6 = Awal (76), akhir (89)
 3 6 1 = Awal (93), akhir (104)

Job 4

4 1 1 = Awal (0), akhir (13)
 4 2 4 = Awal (13), akhir (27)
 4 3 2 = Awal (27), akhir (36)
 4 4 5 = Awal (36), akhir (47)
 4 5 6 = Awal (47), akhir (52)
 4 6 3 = Awal (89), akhir (94)

Job 5

5 1 2 = Awal (3), akhir (15)
 5 2 1 = Awal (15), akhir (22)
 5 3 3 = Awal (31), akhir (39)
 5 4 6 = Awal (52), akhir (67)
 5 5 4 = Awal (69), akhir (76)
 5 6 5 = Awal (76), akhir (87)

2. Longest Processing Time

Stage 1

Waktu Mesin

(1)97 (2)66 (3)87 (4)82 (5)89 (6)94

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89
 (St) 2 6 6, (Cj) 94, (Tij) 12 (Di) 94
 (St) 3 6 1, (Cj) 97, (Tij) 11 (Di) 97
 (St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 2

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)89 (6)94

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89
 (St) 2 6 6, (Cj) 94, (Tij) 12 (Di) 94
 (St) 3 5 6, (Cj) 86, (Tij) 13 (Di) 97
 (St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 3

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)89 (6)82

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89
 (St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94
 (St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97
 (St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 4

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)78 (6)82

(St) 1 6 5, (Cj) 78, (Tij) 9 (Di) 89
 (St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94
 (St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97
 (St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87
 (St) 5 5 4, (Cj) 78, (Tij) 7 (Di) 88

Stage 5

Waktu Mesin

(1)86 (2)66 (3)82 (4)82 (5)78 (6)82

(St) 1 6 5, (Cj) 78, (Tij) 9 (Di) 89
 (St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94
 (St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97
 (St) 4 5 6, (Cj) 82, (Tij) 5 (Di) 87
 (St) 5 5 4, (Cj) 78, (Tij) 7 (Di) 88

Stage 6

Waktu Mesin

(1)86 (2)66 (3)82 (4)76 (5)78 (6)69

(St) 1 6 5, (Cj) 78, (Tij) 9 (Di) 89
 (St) 2 4 1, (Cj) 76, (Tij) 10 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 5 4, (Cj) 76, (Tij) 7 (Di) 88

Stage 7

Waktu Mesin

(1)86 (2)66 (3)82 (4)76 (5)69 (6)69

(St) 1 5 6, (Cj) 69, (Tij) 9 (Di) 89
 (St) 2 4 1, (Cj) 76, (Tij) 10 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 5 4, (Cj) 76, (Tij) 7 (Di) 88

Stage 8

Waktu Mesin

(1)66 (2)66 (3)82 (4)69 (5)69 (6)69

(St) 1 5 6, (Cj) 69, (Tij) 9 (Di) 89
 (St) 2 3 5, (Cj) 66, (Tij) 13 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 4 6, (Cj) 69, (Tij) 15 (Di) 88

Stage 9

Waktu Mesin

(1)66 (2)66 (3)60 (4)69 (5)69 (6)54
 (St) 1 5 6, (Cj) 54, (Tij) 9 (Di) 89
 (St) 2 3 5, (Cj) 66, (Tij) 13 (Di) 94
 (St) 3 3 4, (Cj) 60, (Tij) 7 (Di) 97
 (St) 4 5 6, (Cj) 54, (Tij) 5 (Di) 87
 (St) 5 3 3, (Cj) 54, (Tij) 8 (Di) 88

Stage 10

Waktu Mesin

(1)66 (2)66 (3)60 (4)69 (5)53 (6)54

(St) 1 5 6, (Cj) 54, (Tij) 9 (Di) 89
 (St) 2 2 2, (Cj) 53, (Tij) 7 (Di) 94
 (St) 3 3 4, (Cj) 60, (Tij) 7 (Di) 97
 (St) 4 5 6, (Cj) 54, (Tij) 5 (Di) 87
 (St) 5 3 3, (Cj) 54, (Tij) 8 (Di) 88

Stage 11

Waktu Mesin

(1)66 (2)66 (3)60 (4)53 (5)53 (6)54

(St) 1 5 6, (Cj) 54, (Tij) 9 (Di) 89
 (St) 2 2 2, (Cj) 53, (Tij) 7 (Di) 94
 (St) 3 2 5, (Cj) 53, (Tij) 11 (Di) 97
 (St) 4 5 6, (Cj) 54, (Tij) 5 (Di) 87
 (St) 5 3 3, (Cj) 54, (Tij) 8 (Di) 88

Stage 12

Waktu Mesin

(1)66 (2)66 (3)46 (4)53 (5)53 (6)45

(St) 1 4 3, (Cj) 45, (Tij) 7 (Di) 89
 (St) 2 2 2, (Cj) 53, (Tij) 7 (Di) 94
 (St) 3 2 5, (Cj) 53, (Tij) 11 (Di) 97
 (St) 4 5 6, (Cj) 45, (Tij) 5 (Di) 87
 (St) 5 2 1, (Cj) 46, (Tij) 7 (Di) 88

Stage 13

Waktu Mesin

(1)66 (2)46 (3)46 (4)53 (5)42 (6)45

(St) 1 4 3, (Cj) 45, (Tij) 7 (Di) 89
 (St) 2 1 3, (Cj) 46, (Tij) 14 (Di) 94
 (St) 3 1 2, (Cj) 42, (Tij) 8 (Di) 97
 (St) 4 5 6, (Cj) 45, (Tij) 5 (Di) 87
 (St) 5 2 1, (Cj) 46, (Tij) 7 (Di) 88

Stage 14

Waktu Mesin

(1)39 (2)46 (3)32 (4)53 (5)42 (6)45

(St) 1 4 3, (Cj) 32, (Tij) 7 (Di) 89
 (St) 3 1 2, (Cj) 42, (Tij) 8 (Di) 97
 (St) 4 5 6, (Cj) 45, (Tij) 5 (Di) 87
 (St) 5 1 2, (Cj) 39, (Tij) 12 (Di) 88

Stage 15

Waktu Mesin

(1)39 (2)46 (3)32 (4)53 (5)42 (6)40

(St) 1 4 3, (Cj) 32, (Tij) 7 (Di) 89
 (St) 3 1 2, (Cj) 42, (Tij) 8 (Di) 97
 (St) 4 4 5, (Cj) 40, (Tij) 11 (Di) 87
 (St) 5 1 2, (Cj) 39, (Tij) 12 (Di) 88

Stage 16

Waktu Mesin

(1)39 (2)34 (3)32 (4)53 (5)42 (6)40

(St) 1 4 3, (Cj) 32, (Tij) 7 (Di) 89
 (St) 4 4 5, (Cj) 40, (Tij) 11 (Di) 87
 (St) 5 1 2, (Cj) 34, (Tij) 12 (Di) 88

Stage 17

Waktu Mesin

(1)39 (2)34 (3)32 (4)53 (5)29 (6)40

(St) 1 4 3, (Cj) 32, (Tij) 7 (Di) 89
 (St) 4 3 2, (Cj) 29, (Tij) 9 (Di) 87
 (St) 5 1 2, (Cj) 34, (Tij) 12 (Di) 88

Stage 18

Waktu Mesin

(1)39 (2)22 (3)32 (4)53 (5)29 (6)40

(St) 1 4 3, (Cj) 32, (Tij) 7 (Di) 89
 (St) 4 3 2, (Cj) 22, (Tij) 9 (Di) 87

Stage 19

Waktu Mesin

(1)39 (2)22 (3)25 (4)53 (5)29 (6)40

(St) 1 3 2, (Cj) 22, (Tij) 6 (Di) 89
 (St) 4 3 2, (Cj) 22, (Tij) 9 (Di) 87

Stage 20

Waktu Mesin

(1)39 (2)13 (3)25 (4)53 (5)29 (6)40

(St) 1 3 2, (Cj) 13, (Tij) 6 (Di) 89
 (St) 4 2 4, (Cj) 13, (Tij) 14 (Di) 87

Stage 21

Waktu Mesin

(1)39 (2)7 (3)25 (4)-1 (5)29 (6)40

(St) 1 2 4, (Cj) -1, (Tij) 13 (Di) 89
 (St) 4 1 1, (Cj) -1, (Tij) 13 (Di) 87

Stage 22

Waktu Mesin

(1)-14 (2)7 (3)25 (4)-14 (5)29 (6)40

(St) 1 1 1, (Cj) -14, (Tij) 12 (Di) 89

Stage 23

Waktu Mesin

(1)-26 (2)7 (3)25 (4)-14 (5)29 (6)40

Biaya Earlines = 0

Biaya Tardines = 240

Total Biaya = 240

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (0), akhir (12)

1 2 4 = Awal (12), akhir (25)

1 3 2 = Awal (33), akhir (39)

1 4 3 = Awal (51), akhir (58)

1 5 6 = Awal (71), akhir (80)

1 6 5 = Awal (95), akhir (104)

Job 2

2 1 3 = Awal (58), akhir (72)

2 2 2 = Awal (72), akhir (79)

2 3 5 = Awal (79), akhir (92)

2 4 1 = Awal (92), akhir (102)

2 5 4 = Awal (102), akhir (108)

2 6 6 = Awal (108), akhir (120)

Job 3

3 1 2 = Awal (60), akhir (68)

3 2 5 = Awal (68), akhir (79)

3 3 4 = Awal (79), akhir (86)

3 4 3 = Awal (86), akhir (95)

3 5 6 = Awal (95), akhir (108)

3 6 1 = Awal (112), akhir (123)

Job 4

4 1 1 = Awal (12), akhir (25)

4 2 4 = Awal (25), akhir (39)

4 3 2 = Awal (39), akhir (48)

4 4 5 = Awal (55), akhir (66)

4 5 6 = Awal (66), akhir (71)

4 6 3 = Awal (108), akhir (113)

Job 5

5 1 2 = Awal (48), akhir (60)

5 2 1 = Awal (65), akhir (72)

5 3 3 = Awal (72), akhir (80)

5 4 6 = Awal (80), akhir (95)

5 5 4 = Awal (95), akhir (102)

5 6 5 = Awal (104), akhir (115)

3. S / O P N

Stage 1

Waktu Mesin

(1)97 (2)66 (3)87 (4)82 (5)89 (6)94

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89
 (St) 2 6 6, (Cj) 94, (Tij) 12 (Di) 94
 (St) 3 6 1, (Cj) 97, (Tij) 11 (Di) 97
 (St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 2

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)89 (6)94

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89
 (St) 2 6 6, (Cj) 94, (Tij) 12 (Di) 94
 (St) 3 5 6, (Cj) 86, (Tij) 13 (Di) 97
 (St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 3

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)89 (6)82

(St) 1 6 5, (Cj) 89, (Tij) 9 (Di) 89
 (St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94
 (St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97
 (St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 89, (Tij) 11 (Di) 88

Stage 4

Waktu Mesin

(1)86 (2)66 (3)87 (4)82 (5)80 (6)82

(St) 1 5 6, (Cj) 80, (Tij) 9 (Di) 89
 (St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94
 (St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97
 (St) 4 6 3, (Cj) 87, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 80, (Tij) 11 (Di) 88

Stage 5

Waktu Mesin

(1)86 (2)66 (3)82 (4)82 (5)80 (6)82

(St) 1 5 6, (Cj) 80, (Tij) 9 (Di) 89
 (St) 2 5 4, (Cj) 82, (Tij) 6 (Di) 94
 (St) 3 5 6, (Cj) 82, (Tij) 13 (Di) 97
 (St) 4 5 6, (Cj) 82, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 80, (Tij) 11 (Di) 88

Stage 6

Waktu Mesin

(1)86 (2)66 (3)82 (4)76 (5)80 (6)69

(St) 1 5 6, (Cj) 69, (Tij) 9 (Di) 89
 (St) 2 4 1, (Cj) 76, (Tij) 10 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 6 5, (Cj) 80, (Tij) 11 (Di) 88

Stage 7

Waktu Mesin

(1)86 (2)66 (3)82 (4)76 (5)69 (6)69

(St) 1 5 6, (Cj) 69, (Tij) 9 (Di) 89
 (St) 2 4 1, (Cj) 76, (Tij) 10 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 5 4, (Cj) 69, (Tij) 7 (Di) 88

Stage 8

Waktu Mesin

(1)66 (2)66 (3)82 (4)76 (5)69 (6)69

(St) 1 5 6, (Cj) 69, (Tij) 9 (Di) 89
 (St) 2 3 5, (Cj) 66, (Tij) 13 (Di) 94
 (St) 3 4 3, (Cj) 69, (Tij) 9 (Di) 97
 (St) 4 5 6, (Cj) 69, (Tij) 5 (Di) 87
 (St) 5 5 4, (Cj) 69, (Tij) 7 (Di) 88

Stage 9

Waktu Mesin

(1)66 (2)66 (3)60 (4)62 (5)69 (6)60

(St) 1 4 3, (Cj) 60, (Tij) 7 (Di) 89
 (St) 2 3 5, (Cj) 66, (Tij) 13 (Di) 94
 (St) 3 3 4, (Cj) 60, (Tij) 7 (Di) 97
 (St) 4 5 6, (Cj) 60, (Tij) 5 (Di) 87
 (St) 5 4 6, (Cj) 60, (Tij) 15 (Di) 88

Stage 10

Waktu Mesin

(1)66 (2)66 (3)60 (4)62 (5)53 (6)60

(St) 1 4 3, (Cj) 60, (Tij) 7 (Di) 89
 (St) 2 2 2, (Cj) 53, (Tij) 7 (Di) 94
 (St) 3 3 4, (Cj) 60, (Tij) 7 (Di) 97
 (St) 4 5 6, (Cj) 60, (Tij) 5 (Di) 87
 (St) 5 4 6, (Cj) 60, (Tij) 15 (Di) 88

Stage 11

Waktu Mesin

(1)66 (2)66 (3)53 (4)53 (5)53 (6)55

(St) 1 3 2, (Cj) 53, (Tij) 6 (Di) 89
 (St) 2 2 2, (Cj) 53, (Tij) 7 (Di) 94
 (St) 3 2 5, (Cj) 53, (Tij) 11 (Di) 97
 (St) 4 4 5, (Cj) 53, (Tij) 11 (Di) 87
 (St) 5 4 6, (Cj) 55, (Tij) 15 (Di) 88

Stage 12

Waktu Mesin

(1)66 (2)66 (3)53 (4)53 (5)53 (6)40

(St) 1 3 2, (Cj) 53, (Tij) 6 (Di) 89
 (St) 2 2 2, (Cj) 53, (Tij) 7 (Di) 94
 (St) 3 2 5, (Cj) 53, (Tij) 11 (Di) 97
 (St) 4 4 5, (Cj) 53, (Tij) 11 (Di) 87
 (St) 5 3 3, (Cj) 40, (Tij) 8 (Di) 88

Stage 13

Waktu Mesin

(1)66 (2)47 (3)53 (4)53 (5)42 (6)40

(St) 1 2 4, (Cj) 47, (Tij) 13 (Di) 89
 (St) 2 2 2, (Cj) 47, (Tij) 7 (Di) 94
 (St) 3 2 5, (Cj) 42, (Tij) 11 (Di) 97
 (St) 4 3 2, (Cj) 42, (Tij) 9 (Di) 87
 (St) 5 3 3, (Cj) 40, (Tij) 8 (Di) 88

Stage 14

Waktu Mesin

(1)66 (2)40 (3)53 (4)34 (5)42 (6)40

(St) 1 1 1, (Cj) 34, (Tij) 12 (Di) 89
 (St) 2 1 3, (Cj) 40, (Tij) 14 (Di) 94
 (St) 3 2 5, (Cj) 42, (Tij) 11 (Di) 97
 (St) 4 3 2, (Cj) 40, (Tij) 9 (Di) 87
 (St) 5 3 3, (Cj) 40, (Tij) 8 (Di) 88

Stage 15

Waktu Mesin

(1)66 (2)40 (3)53 (4)34 (5)31 (6)40

(St) 1 1 1, (Cj) 34, (Tij) 12 (Di) 89
 (St) 2 1 3, (Cj) 40, (Tij) 14 (Di) 94
 (St) 3 1 2, (Cj) 31, (Tij) 8 (Di) 97
 (St) 4 3 2, (Cj) 40, (Tij) 9 (Di) 87
 (St) 5 3 3, (Cj) 40, (Tij) 8 (Di) 88

Stage 16

Waktu Mesin

(1)66 (2)31 (3)32 (4)34 (5)31 (6)40

(St) 1 1 1, (Cj) 34, (Tij) 12 (Di) 89
 (St) 2 1 3, (Cj) 32, (Tij) 14 (Di) 94
 (St) 3 1 2, (Cj) 31, (Tij) 8 (Di) 97
 (St) 4 2 4, (Cj) 31, (Tij) 14 (Di) 87
 (St) 5 2 1, (Cj) 32, (Tij) 7 (Di) 88

Stage 17

Waktu Mesin

(1)22 (2)31 (3)32 (4)34 (5)31 (6)40

(St) 2 1 3, (Cj) 32, (Tij) 14 (Di) 94
 (St) 3 1 2, (Cj) 31, (Tij) 8 (Di) 97
 (St) 4 2 4, (Cj) 31, (Tij) 14 (Di) 87
 (St) 5 2 1, (Cj) 22, (Tij) 7 (Di) 88

Stage 18

Waktu Mesin

(1)22 (2)31 (3)18 (4)34 (5)31 (6)40

(St) 3 1 2, (Cj) 31, (Tij) 8 (Di) 97
 (St) 4 2 4, (Cj) 31, (Tij) 14 (Di) 87
 (St) 5 2 1, (Cj) 22, (Tij) 7 (Di) 88

Stage 19

Waktu Mesin

(1)22 (2)23 (3)18 (4)17 (5)31 (6)40

(St) 4 1 1, (Cj) 17, (Tij) 13 (Di) 87
 (St) 5 2 1, (Cj) 22, (Tij) 7 (Di) 88

Stage 20

Waktu Mesin

(1)15 (2)23 (3)18 (4)17 (5)31 (6)40

(St) 4 1 1, (Cj) 15, (Tij) 13 (Di) 87
 (St) 5 1 2, (Cj) 15, (Tij) 12 (Di) 88

Stage 21

Waktu Mesin

(1)2 (2)3 (3)18 (4)17 (5)31 (6)40

Biaya Earlines = 8

Biaya Tardines = 0

Total Biaya = 8

Data Waktu Untuk Masing - Masing Job

Job 1

1 1 1 = Awal (22), akhir (34)
 1 2 4 = Awal (34), akhir (47)
 1 3 2 = Awal (47), akhir (53)
 1 4 3 = Awal (53), akhir (60)
 1 5 6 = Awal (60), akhir (69)
 1 6 5 = Awal (80), akhir (89)

Job 2

2 1 3 = Awal (18), akhir (32)
 2 2 2 = Awal (40), akhir (47)
 2 3 5 = Awal (53), akhir (66)
 2 4 1 = Awal (66), akhir (76)
 2 5 4 = Awal (76), akhir (82)
 2 6 6 = Awal (82), akhir (94)

Job 3

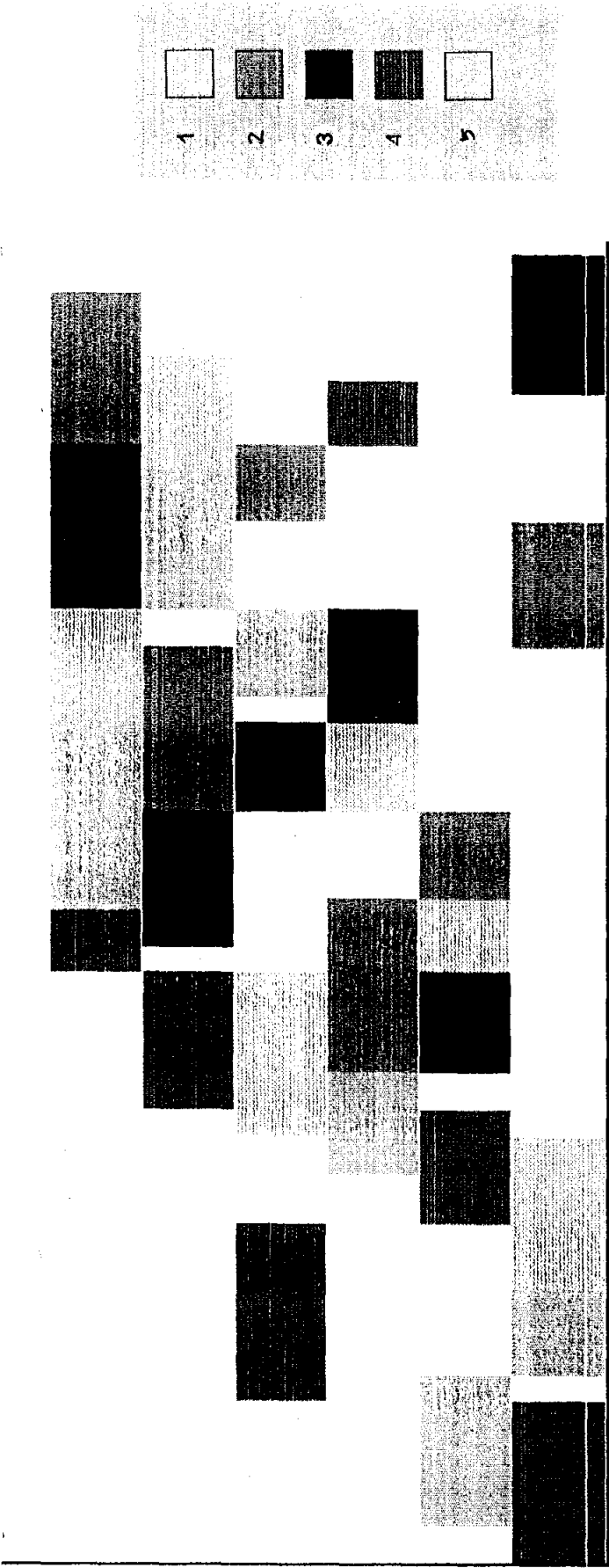
3 1 2 = Awal (23), akhir (31)
 3 2 5 = Awal (31), akhir (42)
 3 3 4 = Awal (53), akhir (60)
 3 4 3 = Awal (60), akhir (69)
 3 5 6 = Awal (69), akhir (82)
 3 6 1 = Awal (86), akhir (97)

Job 4

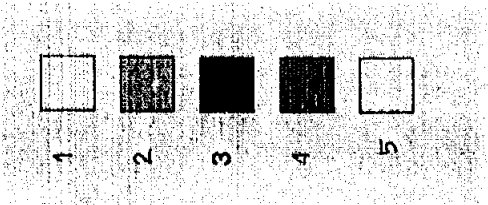
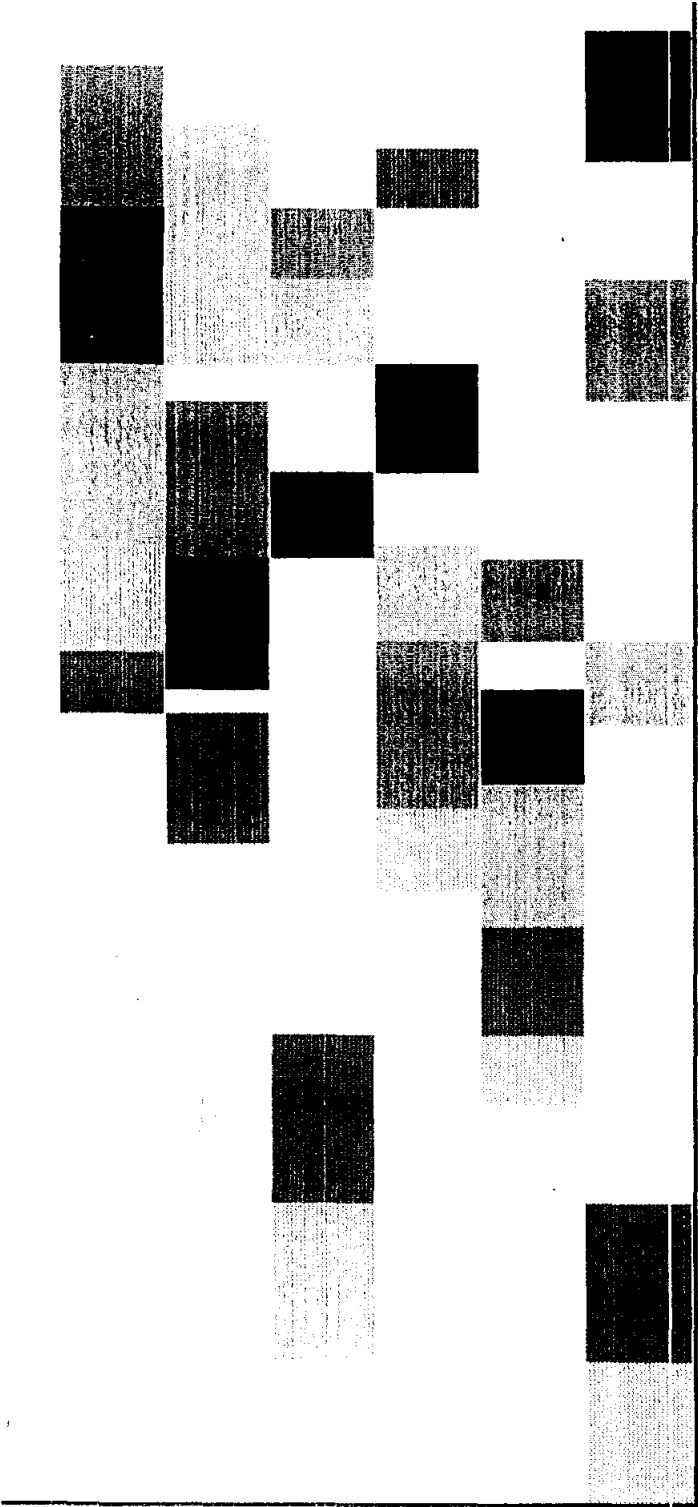
4 1 1 = Awal (2), akhir (15)
 4 2 4 = Awal (17), akhir (31)
 4 3 2 = Awal (31), akhir (40)
 4 4 5 = Awal (42), akhir (53)
 4 5 6 = Awal (55), akhir (60)
 4 6 3 = Awal (82), akhir (87)

Job 5

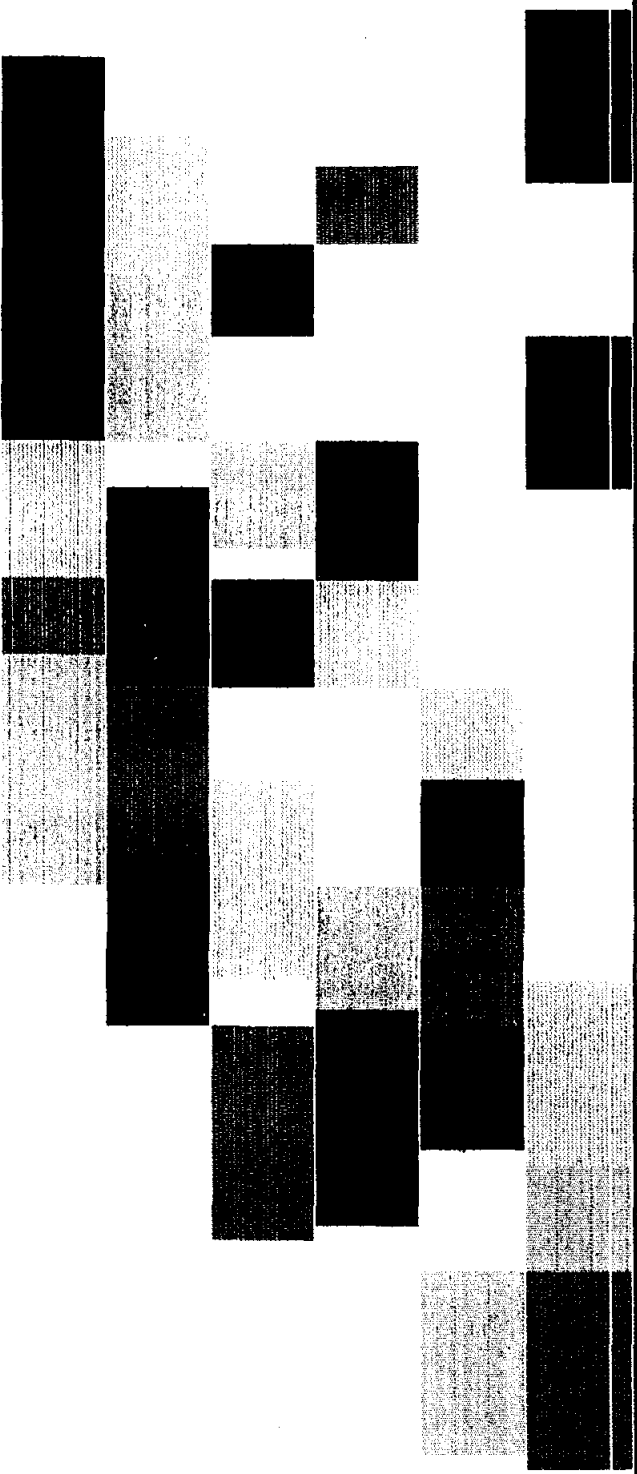
5 1 2 = Awal (3), akhir (15)
 5 2 1 = Awal (15), akhir (22)
 5 3 3 = Awal (32), akhir (40)
 5 4 6 = Awal (40), akhir (55)
 5 5 4 = Awal (62), akhir (69)
 5 6 5 = Awal (69), akhir (80)



Gantt Chart penjadualan dengan metode *backward* (LDD) soal 2



Gantt Chart penjadualan dengan metode *backward* (LPT) soal 2



Gantt Chart penjadualan dengan metode *backward* (S / OPN) soal 2

LAMPIRAN C

LAMPIRAN C

Persamaan LINDO :

1. Soal 1

Min $E14 + E24 + E34 + 2T14 + 2T24 + 2T34$

St

$C12 - C11 \geq 7$

$C13 - C12 \geq 8$

$C14 - C13 \geq 6$

$C22 - C21 \geq 7$

$C23 - C22 \geq 8$

$C24 - C23 \geq 7$

$C32 - C31 \geq 5$

$C33 - C32 \geq 6$

$C34 - C33 \geq 5$

$-C12 + C22 + 10000 Z1 \leq 9993$

$-C12 + C22 + 10000 Z1 \geq 7$

$-C12 + C31 + 10000 Z2 \leq 9993$

$-C12 + C31 + 10000 Z2 \geq 6$

$-C22 + C31 + 10000 Z3 \leq 9993$

$-C22 + C31 + 10000 Z3 \geq 6$

$-C14 + C21 + 10000 Z4 \leq 9994$

$-C14 + C21 + 10000 Z4 \geq 5$

$-C14 + C33 + 10000 Z5 \leq 9994$

$-C14 + C33 + 10000 Z5 \geq 6$

$-C21 + C33 + 10000 Z6 \leq 9995$

$-C21 + C33 + 10000 Z6 \geq 6$

$-C11 + C24 + 10000 Z7 \leq 9992$

$-C11 + C24 + 10000 Z7 \geq 7$

$-C11 + C32 + 10000 Z8 \leq 9992$

$-C11 + C32 + 10000 Z8 \geq 5$

$-C24 + C32 + 10000 Z9 \leq 9993$

$-C24 + C32 + 10000 Z9 \geq 5$

$-C13 + C23 + 10000 Z10 \leq 9994$

$-C13 + C23 + 10000 Z10 \geq 8$

$-C13 + C34 + 10000 Z11 \leq 9994$

$-C13 + C34 + 10000 Z11 \geq 5$

$-C23 + C34 + 10000 Z12 \leq 9992$

$-C23 + C34 + 10000 Z12 \geq 5$

$C11 \geq 8$

$C21 \geq 5$

$C31 \geq 6$

$C14 + E14 \geq 38$

$C14 - T14 \leq 38$
 $C24 + E24 \geq 36$
 $C24 - T24 \leq 36$
 $C34 + E34 \geq 37$
 $C34 - T34 \leq 37$
 End
 Int Z1
 Int Z2
 Int Z3
 Int Z4
 Int Z5
 Int Z6
 Int Z7
 Int Z8
 Int Z9
 Int Z10
 Int Z11
 Int Z12

2. Soal 2

Min $E16+E26+E36+E46+E56+2T16+2T26+2T36+2T46+2T56$
 St

$C12 - C11 \geq 13$
 $C13 - C12 \geq 6$
 $C14 - C13 \geq 7$
 $C15 - C14 \geq 9$
 $C16 - C15 \geq 9$
 $C22 - C21 \geq 7$
 $C23 - C22 \geq 13$
 $C24 - C23 \geq 10$
 $C25 - C24 \geq 6$
 $C26 - C25 \geq 12$
 $C32 - C31 \geq 11$
 $C33 - C32 \geq 7$
 $C34 - C33 \geq 9$
 $C35 - C34 \geq 13$
 $C36 - C35 \geq 11$
 $C42 - C41 \geq 14$
 $C43 - C42 \geq 9$
 $C44 - C43 \geq 11$
 $C45 - C44 \geq 5$
 $C46 - C45 \geq 5$
 $C52 - C51 \geq 7$
 $C53 - C52 \geq 8$
 $C54 - C53 \geq 15$

$C55 - C54 \geq 7$
 $C56 - C55 \geq 11$
 $-C11 + C24 + 10000 Z1 \leq 9988$
 $-C11 + C24 + 10000 Z1 \geq 10$
 $-C11 + C36 + 10000 Z2 \leq 9988$
 $-C11 + C36 + 10000 Z2 \geq 11$
 $-C11 + C41 + 10000 Z3 \leq 9988$
 $-C11 + C41 + 10000 Z3 \geq 13$
 $-C11 + C52 + 10000 Z4 \leq 9988$
 $-C11 + C52 + 10000 Z4 \geq 7$
 $-C24 + C36 + 10000 Z5 \leq 9990$
 $-C24 + C36 + 10000 Z5 \geq 11$
 $-C24 + C41 + 10000 Z6 \leq 9990$
 $-C24 + C41 + 10000 Z6 \geq 13$
 $-C24 + C52 + 10000 Z7 \leq 9990$
 $-C24 + C52 + 10000 Z7 \geq 7$
 $-C36 + C41 + 10000 Z8 \leq 9989$
 $-C36 + C41 + 10000 Z8 \geq 13$
 $-C36 + C52 + 10000 Z9 \leq 9989$
 $-C36 + C52 + 10000 Z9 \geq 7$
 $-C41 + C52 + 10000 Z10 \leq 9987$
 $-C41 + C52 + 10000 Z10 \geq 7$
 $-C13 + C22 + 10000 Z11 \leq 9994$
 $-C13 + C22 + 10000 Z11 \geq 7$
 $-C13 + C31 + 10000 Z12 \leq 9994$
 $-C13 + C31 + 10000 Z12 \geq 8$
 $-C13 + C43 + 10000 Z13 \leq 9994$
 $-C13 + C43 + 10000 Z13 \geq 9$
 $-C13 + C51 + 10000 Z14 \leq 9994$
 $-C13 + C51 + 10000 Z14 \geq 12$
 $-C22 + C31 + 10000 Z15 \leq 9993$
 $-C22 + C31 + 10000 Z15 \geq 8$
 $-C22 + C43 + 10000 Z16 \leq 9993$
 $-C22 + C43 + 10000 Z16 \geq 9$
 $-C22 + C51 + 10000 Z17 \leq 9993$
 $-C22 + C51 + 10000 Z17 \geq 12$
 $-C31 + C43 + 10000 Z18 \leq 9992$
 $-C31 + C43 + 10000 Z18 \geq 9$
 $-C31 + C51 + 10000 Z19 \leq 9992$
 $-C31 + C51 + 10000 Z19 \geq 12$
 $-C43 + C51 + 10000 Z20 \leq 9991$
 $-C43 + C51 + 10000 Z20 \geq 12$
 $-C14 + C21 + 10000 Z21 \leq 9993$
 $-C14 + C21 + 10000 Z21 \geq 14$
 $-C14 + C34 + 10000 Z22 \leq 9993$
 $-C14 + C34 + 10000 Z22 \geq 9$

-C14 + C46 + 10000 Z23 <= 9993
-C14 + C46 + 10000 Z23 >= 5
-C14 + C53 + 10000 Z24 <= 9993
-C14 + C53 + 10000 Z24 >= 8
-C21 + C34 + 10000 Z25 <= 9986
-C21 + C34 + 10000 Z25 >= 9
-C21 + C46 + 10000 Z26 <= 9986
-C21 + C46 + 10000 Z26 >= 5
-C21 + C53 + 10000 Z27 <= 9986
-C21 + C53 + 10000 Z27 >= 8
-C34 + C46 + 10000 Z28 <= 9991
-C34 + C46 + 10000 Z28 >= 5
-C34 + C53 + 10000 Z29 <= 9991
-C34 + C53 + 10000 Z29 >= 8
-C46 + C53 + 10000 Z30 <= 9995
-C46 + C53 + 10000 Z30 >= 8
-C12 + C25 + 10000 Z31 <= 9987
-C12 + C25 + 10000 Z31 >= 6
-C12 + C33 + 10000 Z32 <= 9987
-C12 + C33 + 10000 Z32 >= 7
-C12 + C42 + 10000 Z33 <= 9987
-C12 + C42 + 10000 Z33 >= 14
-C12 + C55 + 10000 Z34 <= 9987
-C12 + C55 + 10000 Z34 >= 7
-C25 + C33 + 10000 Z35 <= 9994
-C25 + C33 + 10000 Z35 >= 7
-C25 + C42 + 10000 Z36 <= 9994
-C25 + C42 + 10000 Z36 >= 14
-C25 + C55 + 10000 Z37 <= 9994
-C25 + C55 + 10000 Z37 >= 7
-C33 + C42 + 10000 Z38 <= 9993
-C33 + C42 + 10000 Z38 >= 14
-C33 + C55 + 10000 Z39 <= 9993
-C33 + C55 + 10000 Z39 >= 7
-C42 + C55 + 10000 Z40 <= 9986
-C42 + C55 + 10000 Z40 >= 7
-C16 + C23 + 10000 Z41 <= 9991
-C16 + C23 + 10000 Z41 >= 13
-C16 + C32 + 10000 Z42 <= 9991
-C16 + C32 + 10000 Z42 >= 11
-C16 + C44 + 10000 Z43 <= 9991
-C16 + C44 + 10000 Z43 >= 11
-C16 + C56 + 10000 Z44 <= 9991
-C16 + C56 + 10000 Z44 >= 11
-C23 + C32 + 10000 Z45 <= 9987
-C23 + C32 + 10000 Z45 >= 11

$-C23 + C44 + 10000 Z46 \leq 9987$
 $-C23 + C44 + 10000 Z46 \geq 11$
 $-C23 + C56 + 10000 Z47 \leq 9987$
 $-C23 + C56 + 10000 Z47 \geq 11$
 $-C32 + C44 + 10000 Z48 \leq 9989$
 $-C32 + C44 + 10000 Z48 \geq 11$
 $-C32 + C56 + 10000 Z49 \leq 9989$
 $-C32 + C56 + 10000 Z49 \geq 11$
 $-C44 + C56 + 10000 Z50 \leq 9989$
 $-C44 + C56 + 10000 Z50 \geq 11$
 $-C15 + C26 + 10000 Z51 \leq 9991$
 $-C15 + C26 + 10000 Z51 \geq 12$
 $-C15 + C35 + 10000 Z52 \leq 9991$
 $-C15 + C35 + 10000 Z52 \geq 13$
 $-C15 + C45 + 10000 Z53 \leq 9991$
 $-C15 + C45 + 10000 Z53 \geq 5$
 $-C15 + C54 + 10000 Z54 \leq 9991$
 $-C15 + C54 + 10000 Z54 \geq 15$
 $-C26 + C35 + 10000 Z55 \leq 9988$
 $-C26 + C35 + 10000 Z55 \geq 13$
 $-C26 + C45 + 10000 Z56 \leq 9988$
 $-C26 + C45 + 10000 Z56 \geq 5$
 $-C26 + C54 + 10000 Z57 \leq 9988$
 $-C26 + C54 + 10000 Z57 \geq 15$
 $-C35 + C45 + 10000 Z58 \leq 9987$
 $-C35 + C45 + 10000 Z58 \geq 5$
 $-C35 + C54 + 10000 Z59 \leq 9987$
 $-C35 + C54 + 10000 Z59 \geq 15$
 $-C45 + C54 + 10000 Z60 \leq 9995$
 $-C45 + C54 + 10000 Z60 \geq 15$
 $C11 \geq 12$
 $C21 \geq 14$
 $C31 \geq 8$
 $C41 \geq 13$
 $C51 \geq 12$
 $C16 + E15 \geq 89$
 $C16 - T16 \leq 89$
 $C26 + E26 \geq 94$
 $C26 - T26 \leq 94$
 $C36 + E36 \geq 97$
 $C36 - T36 \leq 97$
 $C46 + E46 \geq 87$
 $C46 - T46 \leq 87$
 $C56 + E56 \geq 88$
 $C56 - T56 \leq 88$

End

Int Z1

Int Z2

Int Z3

Int Z4

Int Z5

Int Z6

Int Z7

Int Z8

Int Z9

Int Z10

Int Z11

Int Z12

Int Z13

Int Z14

Int Z15

Int Z16

Int Z17

Int Z18

Int Z19

Int Z20

Int Z21

Int Z22

Int Z23

Int Z24

Int Z25

Int Z26

Int Z27

Int Z28

Int Z29

Int Z30

Int Z31

Int Z32

Int Z33

Int Z34

Int Z35

Int Z36

Int Z37

Int Z38

Int Z39

Int Z40

Int Z41

Int Z42

Int Z43

Int Z44

Int Z45

Int Z46
Int Z47
Int Z48
Int Z49
Int Z50
Int Z51
Int Z52
Int Z53
Int Z54
Int Z55
Int Z56
Int Z57
Int Z58
Int Z59
Int Z60

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MDIForm1



Source Code MDIForm1 :

Option Explicit

Private Sub MDIForm_Load()

```

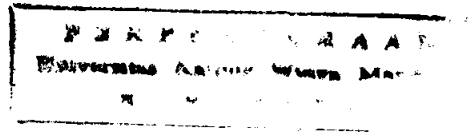
Konter1 = 2
Konter2 = 1
WarnaJob(0) = &HC0C0FF
WarnaJob(1) = &HFF0000
WarnaJob(2) = &H0&
WarnaJob(3) = &HFF00FF
WarnaJob(4) = &HC0C0C0
WarnaJob(5) = &HFFFF80
WarnaJob(6) = &HC0C0FF
WarnaJob(7) = &HFF8080
WarnaJob(8) = &HFF
WarnaJob(9) = &HC0
WarnaJob(10) = &H80
WarnaJob(11) = &H40
WarnaJob(12) = &HC0E0FF
WarnaJob(13) = &H80C0FF
WarnaJob(14) = &HFF

```

```

WarnaJob(15) = &H40C0
WarnaJob(16) = &H404080
WarnaJob(17) = &HC0FFFF
WarnaJob(18) = &HFFF
WarnaJob(19) = &HC0C
WarnaJob(20) = &H808
WarnaJob(21) = &H4040
WarnaJob(22) = &HC0FFC0
WarnaJob(23) = &H80FF80
WarnaJob(24) = &HFF
WarnaJob(25) = &HC00
WarnaJob(26) = &H800
WarnaJob(27) = &H400
WarnaJob(28) = &HFFFFC
WarnaJob(29) = &HFFFF8
WarnaJob(30) = &HFFFF0
WarnaJob(31) = &HC0C00
WarnaJob(32) = &H80800
WarnaJob(33) = &H40000
WarnaJob(34) = &HFFC0C
WarnaJob(35) = &HFF808
WarnaJob(36) = &HFF000
WarnaJob(37) = &HC0000
WarnaJob(38) = &H80000
WarnaJob(39) = &HFFC0F
WarnaJob(40) = &HFF80F
WarnaJob(41) = &HFF00F
WarnaJob(42) = &HC000C
WarnaJob(43) = &H80008
WarnaJob(44) = &H40004
WarnaJob(45) = &HC000C
WarnaJob(46) = &H4000F
WarnaJob(47) = &H400
WarnaJob(48) = &H4001
WarnaJob(49) = &H4002
WarnaJob(50) = &H4003
WarnaJob(51) = &H4004
WarnaJob(52) = &H4005
WarnaJob(53) = &H4006
WarnaJob(54) = &H4007
WarnaJob(55) = &H4008
WarnaJob(56) = &H4009
WarnaJob(57) = &H4010
WarnaJob(58) = &H4011
WarnaJob(59) = &H4012
WarnaJob(60) = &H4012
WarnaGaris = &HFF&
WarnaDasar = RGB(255, 255, 255)
BukaData = False
MDIForm1.mnuProject.Enabled = False
MDIForm1.mnuCloseProjectItem.Enabled = False
MDIForm1.mnuNewProjectItem.Enabled = True
MDIForm1.mnuOpenProjectItem.Enabled = True
MDIForm1.Caption = "Jadwal Job Shop"
End Sub

```



Private Sub mnuAboutItem_Click()

Form3.Show

End Sub

Private Sub mnuCloseProjectItem_Click()

If BukaData = True Then

con.Close

BukaData = False

MDIForm1.mnuProject.Enabled = False

MDIForm1.mnuCloseProjectItem.Enabled = False

MDIForm1.mnuNewProjectItem.Enabled = True

MDIForm1.mnuOpenProjectItem.Enabled = True

MDIForm1.Caption = "Jadwal Job Shop"

End If

End Sub

Private Sub mnuEditItem_Click()

Form6.Show

End Sub

Private Sub mnuExitItem_Click()

Unload Me

End Sub

Private Sub mnuMesinItem_Click()

Form5.Show

End Sub

Private Sub mnuNewProjectItem_Click()

Form1.Show

End Sub

Private Sub mnuOpenProjectItem_Click()

Form2.Show

End Sub

Private Sub mnuOptionItem_Click()

Form8.Show

End Sub

Private Sub mnuRunItem_Click()

Form7.Show

End Sub

Private Sub mnuViewItem_Click()

Form10.Show

End Sub

Private Sub mnuWaktuItem_Click()

Form4.Show

End Sub

Form1
Source Code Form1 :**Option Explicit**

```
Dim rs As ADODB.Recordset
```

```
Dim strSQL As String
```

Private Sub Command1_Click()

```
On Error GoTo Salah
```

```
Text4.Text = Text3.Text
```

```
If Trim(Text1.Text) <> "" And Trim(Text2.Text) <> "" And _  
Trim(Text3.Text) <> "" And Trim(Text4.Text) <> "" Then
```

```
Dim nError As Byte
```

```
nama = Trim(Text1.Text) & ".mdb"
```

```
nError = CopyFile(App.Path & "asli.mdb", App.Path & "save\" & nama, 1)
```

```
If nError = 0 Then
```

```
MsgBox "Nama Project Sudah Ada !", vbOKOnly + vbInformation, "Error"
```

```
Text1.Text = ""
```

```
Text1.SetFocus
```

```
Else
```

```
Dim i, j, k As Integer
```

```
If OpenProject(nama) = True Then
```

```
strsql = "select * from jumlah"
```

```
Set rs = New ADODB.Recordset
```

```
rs.Open strSQL, con, adOpenKeyset
```

```
strsql = "insert into jumlah values " & _  
"(" & Text2.Text & "," & Text3.Text & "," & Text4.Text & "," & Text1.Text & ",1)"
```

```
con.Execute strSQL
```

```
rs.Requery
```

```
rs.Close
```

```
SumJob = Text2.Text
```

```
SumOp = Text3.Text
```

```
SumMesin = Text4.Text
```

```
strsql = "select * from due_date"
```

```
Set rs = New ADODB.Recordset
```

```
rs.Open strSQL, con, adOpenKeyset
```

```
For i = 1 To SumJob
```

```
strsql = "insert into due_date values " & _
```

```

        "(" & i & ",1)"
        con.Execute strsql
        rs.Requery
        D(i) = 1
    Next i
    rs.Close
    strsql = "select * from data"
    Set rs = New ADODB.Recordset
    rs.Open strsql, con, adOpenKeyset
    For i = 1 To SumJob
        For j = 1 To SumOp
            WaktuProses(i, j) = 1
            Mesin(i, j) = 1
            strsql = "insert into data values " & _
                "(" & i & "," & j & ",1,1)"
            con.Execute strsql
            rs.Requery
        Next j
    Next i
    rs.Close
    strsql = "select * from hasil"
    Set rs = New ADODB.Recordset
    rs.Open strsql, con, adOpenKeyset
    For i = 1 To 6
        For j = 1 To SumJob
            For k = 1 To SumOp
                strsql = "insert into hasil values " & _
                    "(" & i & "," & j & "," & k & ",0,0)"
                con.Execute strsql
                rs.Requery
            Next k
        Next j
    Next i
    BukaData = True
    MDIForm1.mnuProject.Enabled = True
    MDIForm1.mnuCloseProjectItem.Enabled = True
    MDIForm1.mnuNewProjectItem.Enabled = False
    MDIForm1.mnuOpenProjectItem.Enabled = False
    MsgBox "Project Sudah Tersimpan !", vbOKOnly + vbInformation, "Save"
    MDIForm1.Caption = "Jadwal Job Shop - (" & nama & ")"
    Unload Me
Else
    Text1.Text = ""
    Text1.SetFocus
End If
End If
Else
    Text1.SetFocus
End If
Exit Sub
Salah:
    MsgBox "Salah Aturan Penamaan Project !", vbOKOnly + vbInformation, "Error"
    Text1.SetFocus
End Sub

```

Private Sub Command2_Click()

 Unload Me

End Sub

Private Sub Form_Activate()

 Text1.SetFocus

End Sub

Private Sub Text1_KeyPress(KeyAscii As Integer)

 If KeyAscii = 13 Then Text2.SetFocus

End Sub

Private Sub Text2_KeyPress(KeyAscii As Integer)

 On Error GoTo Salah_text2

 If KeyAscii = 13 Then

 If Text2.Text > 50 Then

 MsgBox "Maxsimal 50 Job"

 Text2.Text = ""

 Text2.SetFocus

 Else

 Text3.SetFocus

 End If

 End If

 Exit Sub

Salah_text2:

 MsgBox "Error Project !", vbOKOnly + vbInformation, "Error"

 Text2.Text = ""

 Text2.SetFocus

End Sub

Private Sub Text3_KeyPress(KeyAscii As Integer)

 On Error GoTo Salah_text3

 If KeyAscii = 13 Then

 If Text3.Text > 50 Then

 MsgBox "Maxsimal 50 Operasi"

 Text3.Text = ""

 Text3.SetFocus

 Else

 Text4.Text = Text3.Text

 Command1.SetFocus

 End If

 End If

 Exit Sub

Salah_text3:

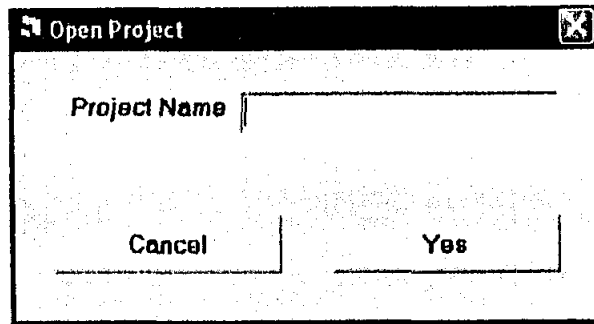
 MsgBox "Error Project !", vbOKOnly + vbInformation, "Error"

 Text3.Text = ""

 Text3.SetFocus

End Sub

Form2



Source Code Form2 :

Option Explicit

Dim rs As ADODB.Recordset

Private Sub Command1_Click()

On Error GoTo Salah

If Text1.Text <> "" Then

nama = Trim(Text1.Text) & ".mdb"

If OpenProject(nama) = True Then

Dim strSQL As String

strSQL = "select * from jumlah"

Set rs = New ADODB.Recordset

rs.Open strSQL, con, adOpenKeyset

rs.MoveFirst

SumJob = rs.Fields(0).Value

SumOp = rs.Fields(1).Value

SumMesin = rs.Fields(2).Value

rs.Close

strSQL = "select * from data"

Set rs = New ADODB.Recordset

rs.Open strSQL, con, adOpenKeyset

rs.MoveFirst

Do While Not rs.EOF

WaktuProses(rs.Fields(0).Value, rs.Fields(1).Value) = rs.Fields(3).Value

Mesin(rs.Fields(0).Value, rs.Fields(1).Value) = rs.Fields(2).Value

rs.MoveNext

Loop

rs.Close

strSQL = "select * from due_date"

Set rs = New ADODB.Recordset

rs.Open strSQL, con, adOpenKeyset

rs.MoveFirst

Do While Not rs.EOF

D(rs.Fields(0).Value) = rs.Fields(1).Value

rs.MoveNext

Loop

rs.Close

MsgBox "Project Sudah Dibuka !", vbOKOnly + vbInformation, "Sukses"

BukaData = True

```

MDIForm1.mnuProject.Enabled = True
MDIForm1.mnuCloseProjectItem.Enabled = True
MDIForm1.mnuNewProjectItem.Enabled = False
MDIForm1.mnuOpenProjectItem.Enabled = False
MDIForm1.Caption = "Jadwal Job Shop - ( " & nama & " )"
Unload Me
Else
    MsgBox "Project gagal dibuka", vbOKOnly + vbInformation, "Data tidak ditemukan"
    Text1.Text = ""
    Text1.SetFocus
End If
Else
    Text1.SetFocus
End If
Exit Sub

Salah:
    MsgBox "Proses gagal, inputkan lagi nama project", vbOKOnly + vbInformation, "Error"
    Text1.SetFocus
End Sub

Private Sub Command2_Click()
    Unload Me
End Sub

Private Sub Form_Activate()
    Text1.SetFocus
End Sub

Private Sub Text1_KeyPress(KeyAscii As Integer)
    If KeyAscii = 13 Then Command1.SetFocus
End Sub

```

Form7

The screenshot shows a Windows-style application window titled "Run". The window contains two side-by-side panels, "Forward" and "Backward". Each panel has a "Cost" label, a radio button for "All Methods", and three radio buttons for "Earliest Due Date", "Shortest Processing Time", and "S/OPN". Below these panels are two input fields: "Tardiness Cost" with the value "2" and "Earliest Cost" with the value "1". At the bottom right of the window are three buttons: "Run", "Print", and "Exit".

Source Code Form7 :

Option Explicit

```

Private Sub Command1_Click()
    On Error GoTo Salah

```

```

Konter1 = Text8.Text
Konter2 = Text9.Text
If Frame1.Enabled = True Then
    If Option3(0).Value = True Then
        F_1
        F_2
        F_3
    End If
    If Option3(1).Value = True Then F_1
    If Option3(2).Value = True Then F_2
    If Option3(3).Value = True Then F_3
Else
    If Option4(0).Value = True Then
        B_1
        B_2
        B_3
    End If
    If Option4(1).Value = True Then B_1
    If Option4(2).Value = True Then B_2
    If Option4(3).Value = True Then B_3
End If
Exit Sub
Salah:
    MsgBox "Kesalahan Proses (periksa data project) !", vbOKOnly + vbInformation, "Error"
End Sub

Private Sub Command2_Click()
    Unload Me
End Sub

Private Sub Command3_Click()
    Form7.PrintForm
End Sub

Private Sub Form_Load()
    Frame2.Enabled = False
    Text8.Text = Konter1
    Text9.Text = Konter2
End Sub

Private Sub Option1_Click(Index As Integer)
    If Index = 0 Then
        Frame1.Enabled = True
        Frame2.Enabled = False
    Else
        Frame2.Enabled = True
        Frame1.Enabled = False
    End If
End Sub

```

Form4

Job \ Op	1	2	3	4	5
1	8	6	9	7	10
2	10	7	6	8	9
3	11	8	7	7	9

Exit Save Print < Back Next >

Source Code Form4 :**Option Explicit**

```

Dim rs As ADODB.Recordset
Dim Awal_X, Awal_Y As Integer
Dim X, Y As Integer
Dim i, j As Integer
Dim posisi As Integer

```

Private Sub Gambar()

```

On Error GoTo SalahGambar
For i = 0 To 120
    Text1(i).Visible = False
Next i
For i = 0 To 10
    Label1(i).Visible = False
    Label2(i).Visible = False
Next i
For i = 0 To 10
    If i + Awal_X < SumOp Then
        Label1(i).Visible = True
        X = i + Awal_X
        Label1(i).Caption = Str(X + 1)
    End If
    If i + Awal_Y < SumJob Then
        Label2(i).Visible = True
        Y = i + Awal_Y
        Label2(i).Caption = Str(Y + 1)
    End If
Next i
For i = 0 To 10
    If i + Awal_X < SumOp Then
        For j = 0 To 10
            If j + Awal_Y < SumJob Then

```

```

        posisi = i + (j * 11)
        Text1(posisi).Visible = True
        Text1(posisi).Text = Str(WaktuProses(j + Awal_Y + 1, i + Awal_X + 1))
        Text1(posisi).Enabled = True
    End If
Next j
End If
Next i
If Awal_X = 0 And Awal_Y = 0 Then
    Command3(0).Enabled = False
Else
    Command3(0).Enabled = True
End If
If Awal_X + 10 > SumOp And Awal_Y + 10 > SumJob Then
    Command3(1).Enabled = False
Else
    Command3(1).Enabled = True
End If
Exit Sub
SalahGambar:
    MsgBox "Data kerancuan Dalam Gambar!", vbOKOnly + vbInformation, "Error"
End Sub

Private Sub Command2_Click()
    Form4.PrintForm
End Sub

Private Sub Form_Load()
On Error GoTo SalahFormLoad
    Dim strsql As String
    strsql = "select * from data"
    Set rs = New ADODB.Recordset
    rs.Open strsql, con, adOpenKeyset
    Awal_X = 0
    Awal_Y = 0
    Gambar
    Exit Sub
SalahFormLoad:
    MsgBox "Coba koreksi data Project !", vbOKOnly + vbInformation, "Error"
End Sub

Private Sub Command1_Click()
    'simpan
    On Error GoTo SalahCommand1Click
    For i = 0 To 10
        If i + Awal_X < SumOp Then
            For j = 0 To 10
                If j + Awal_Y < SumJob Then
                    posisi = i + (j * 11)
                    WaktuProses(j + Awal_Y + 1, i + Awal_X + 1) = Val(Text1(posisi).Text)
                End If
            Next j
        End If
    Next i
Exit Sub

```

SalahCommand1Click:

MsgBox "Data tidak disimpan karena ada kesalahan Input!", vbOKOnly + vbInformation, "Error"

End Sub

Private Sub Command3_Click(Index As Integer)

On Error GoTo SalahCommand3Click

Command1_Click

If Index = 0 Then

If Awal_X = 0 Then

Awal_Y = Awal_Y - 10

Else

Awal_X = Awal_X - 10

End If

Else

If Awal_X + 10 < SumOp Then

Awal_X = Awal_X + 10

Else

Awal_X = 0

Awal_Y = Awal_Y + 10

End If

End If

Gambar

Exit Sub

SalahCommand3Click:

MsgBox "Data kerancuan Data!", vbOKOnly + vbInformation, "Error"

End Sub

Private Sub Command4_Click()

On Error GoTo SalahCommand4Click

Dim strsql As String

Command1_Click

For i = 1 To SumJob

For j = 1 To SumOp

strsql = "update data " & _

"set waktu=" & Str(WaktuProses(i, j)) & " where (job=" & i & " and op=" & j & ")"

con.Execute strsql

rs.Requery

Next j

Next i

Unload Me

Exit Sub

SalahCommand4Click:

MsgBox "Data kerancuan Data!", vbOKOnly + vbInformation, "Error"

End Sub

Form5

Job \ Op	1	2	3	4	5
1	3	5	2	1	4
2	5	1	3	4	2
3	2	5	4	1	3

Source Code Form5 :**Option Explicit**

```

Dim rs As ADODB.Recordset
Dim i, j As Integer
Dim Awal_X, Awal_Y As Integer
Dim X, Y As Integer
Dim posisi As Integer

```

Private Sub Gambar()

```

On Error GoTo SalahGambar
For i = 0 To 120
    Text1(i).Visible = False
Next i
For i = 0 To 10
    Label1(i).Visible = False
    Label2(i).Visible = False
Next i
For i = 0 To 10
    If i + Awal_X < SumOp Then
        Label1(i).Visible = True
        X = i + Awal_X
        Label1(i).Caption = Str(X + 1)
    End If
    If i + Awal_Y < SumJob Then
        Label2(i).Visible = True
        Y = i + Awal_Y
        Label2(i).Caption = Str(Y + 1)
    End If
Next i
For i = 0 To 10
    If i + Awal_X < SumOp Then
        For j = 0 To 10
            If j + Awal_Y < SumJob Then
                posisi = i + (j * 11)
                Text1(posisi).Visible = True
            End If
        Next j
    End If
Next i

```

```

        Text1(posisi).Text = Str(Mesin(j + Awal_Y + 1, i + Awal_X + 1))
        Text1(posisi).Enabled = True
    End If
Next j
End If
Next i
If Awal_X = 0 And Awal_Y = 0 Then
    Command3(0).Enabled = False
Else
    Command3(0).Enabled = True
End If
If Awal_X + 10 > SumOp And Awal_Y + 10 > SumJob Then
    Command3(1).Enabled = False
Else
    Command3(1).Enabled = True
End If
Exit Sub
SalahGambar:
    MsgBox "Data kerancuan Dalam Gambar!", vbOKOnly + vbInformation, "Error"
End Sub

```

```

Private Sub Command2_Click()
    Form5.PrintForm
End Sub

```

```

Private Sub Form_Load()
    On Error GoTo SalahFormLoad
    Dim strsql As String
    strsql = "select * from data"
    Set rs = New ADODB.Recordset
    rs.Open strsql, con, adOpenKeyset
    Awal_X = 0
    Awal_Y = 0
    Gambar
    Exit Sub

```

```

SalahFormLoad:
    MsgBox "Coba koreksi data Project !", vbOKOnly + vbInformation, "Error"
End Sub

```

```

Private Sub Command1_Click()
    'simpan
    On Error GoTo SalahCommand1Click
    For i = 0 To 10
        If i + Awal_X < SumOp Then
            For j = 0 To 10
                If j + Awal_Y < SumJob Then
                    posisi = i + (j * 11)
                    Mesin(j + Awal_Y + 1, i + Awal_X + 1) = Val(Text1(posisi).Text)
                End If
            Next j
        End If
    Next i
    Exit Sub
SalahCommand1Click:

```

MsgBox "Data tidak disimpan karena ada kesalahan Input!", vbOKOnly + vbInformation, "Error"
End Sub

Private Sub Command3_Click(Index As Integer)

On Error GoTo SalahCommand3Click

Command1_Click

If Index = 0 Then

 If Awal_X = 0 Then

 Awal_Y = Awal_Y - 10

 Else

 Awal_X = Awal_X - 10

 End If

Else

 If Awal_X + 10 < SumOp Then

 Awal_X = Awal_X + 10

 Else

 Awal_X = 0

 Awal_Y = Awal_Y + 10

 End If

End If

Gambar

Exit Sub

SalahCommand3Click:

MsgBox "Data kerancuan Data!", vbOKOnly + vbInformation, "Error"

End Sub

Private Sub Command4_Click()

On Error GoTo SalahCommand4Click

Dim strSQL As String

Command1_Click

For i = 1 To SumJob

 For j = 1 To SumOp

 strSQL = "update data " & _

 "set mesin=" & Str(Mesin(i, j)) & " where (job=" & i & " and op=" & j & ")"

 con.Execute strSQL

 rs.Requery

 Next j

Next i

Unload Me

Exit Sub

SalahCommand4Click:

MsgBox "Data kerancuan Data!", vbOKOnly + vbInformation, "Error"

End Sub

Form6

Job	Due Date
1	45
2	45
3	45

Source Code Form6 :

Option Explicit

```
Dim rs As ADODB.Recordset
```

Private Sub Command1_Click()

```
On Error GoTo SalahCommand1
Dim a As Integer
Dim strsql As String
a = Text1.Text
strsql = "update due_date " & _
"set due=" & Text2.Text & " where (job=" & Text1.Text & ")"
con.Execute strsql
rs.Requery
D(Text1.Text) = Text2.Text
List1(1).List(Val(Text1.Text) - 1) = Text2.Text
Text2.Text = ""
Text1.Text = ""
Text1.SetFocus
Exit Sub
```

SalahCommand1:

```
MsgBox "Kesalahan Input !", vbOKOnly + vbInformation, "Error"
Text2.Text = ""
Text2.SetFocus
```

```
End Sub
```

Private Sub Command2_Click()

 Unload Me

End Sub

Private Sub Form_Activate()

 Text1.SetFocus

End Sub

Private Sub Form_Load()

 On Error GoTo SalahFormLoad

 Dim strsql As String

 strsql = "select * from due_date"

 Set rs = New ADODB.Recordset

 rs.Open strsql, con, adOpenKeyset

 Dim i As Integer

 For i = 1 To SumJob

 List1(0).AddItem (i)

 List1(1).AddItem (D(i))

 Next i

 Exit Sub

SalahFormLoad:

 MsgBox "Kesalahan Data Project !", vbOKOnly + vbInformation, "Error"

End Sub

Private Sub List1_Click(Index As Integer)

 List1(1).Selected(List1(Index).ListIndex) =

 List1(Index).Selected(List1(Index).ListIndex)

End Sub

Private Sub List1_DblClick(Index As Integer)

 Text1.Text = List1(0).List(List1(0).ListIndex)

 Text2.Text = List1(1).List(List1(1).ListIndex)

 Text2.SetFocus

End Sub

Private Sub Text1_KeyPress(KeyAscii As Integer)

 On Error GoTo SalahText1_KeyPress

 If KeyAscii = 13 Then

 If Text1.Text > SumJob Or Text1.Text <= 0 Then

 MsgBox "Job Tidak ada!", vbOKOnly + vbInformation, "Error"

 Text1.Text = ""

 Text1.SetFocus

 Else

 Text2.SetFocus

 End If

 End If

 Exit Sub

SalahText1_KeyPress:

 MsgBox "Salah Input !", vbOKOnly + vbInformation, "Error"

End Sub

Private Sub Text2_KeyPress(KeyAscii As Integer)

 If KeyAscii = 13 Then Command1.SetFocus

End Sub

Form8
Source Code Form8 :**Option Explicit****Private Sub Combo1_Click()**

```
On Error GoTo salah_combo1_Click
Shape1.FillColor = WarnaJob(Combo1.ListIndex)
Exit Sub
```

salah_combo1_Click:

```
MsgBox ("Ada Kesalahan Proses Manipulasi Data")
```

End Sub**Private Sub Command1_Click()**

```
On Error GoTo salah_Command1_Click
cd1.Flags = &H1&
cd1.ShowColor
WarnaJob(Combo1.ListIndex) = cd1.Color
Shape1.FillColor = WarnaJob(Combo1.ListIndex)
Exit Sub
```

salah_Command1_Click:

```
MsgBox ("Ada Kesalahan Proses Manipulasi Data Warna")
```

End Sub**Private Sub Command2_Click()**

```
Unload Me
```

End Sub

Private Sub Command3_Click()

```
On Error GoTo Salah_Command3_Click
```

```
cd1.Flags = &H1&
```

```
cd1.ShowColor
```

```
WarnaGaris = cd1.Color
```

```
Shape2.FillColor = WarnaGaris
```

```
Exit Sub
```

```
Salah_Command3_Click:
```

```
MsgBox ("Ada Kesalahan Proses Manipulasi Data Warna")
```

```
End Sub
```

Private Sub Command4_Click()

```
On Error GoTo Salah_Command4_Click
```

```
cd1.Flags = &H1&
```

```
cd1.ShowColor
```

```
WarnaDasar = cd1.Color
```

```
Shape3.FillColor = WarnaDasar
```

```
Exit Sub
```

```
Salah_Command4_Click:
```

```
MsgBox ("Ada Kesalahan Proses Manipulasi Data Warna")
```

```
End Sub
```

Private Sub Command5_Click()

```
Form10.Show
```

```
Unload Me
```

```
End Sub
```

Private Sub Form_Load()

```
Dim i As Integer
```

```
On Error GoTo Salah_Form_Load
```

```
For i = 0 To 49
```

```
Combo1.List(i) = i + 1
```

```
Next i
```

```
Combo1.ListIndex = 0
```

```
Shape1.FillColor = WarnaJob(0)
```

```
Shape2.FillColor = WarnaGaris
```

```
Shape3.FillColor = WarnaDasar
```

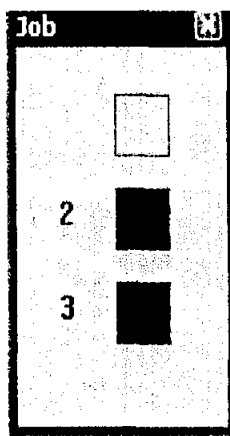
```
Exit Sub
```

```
Salah_Form_Load:
```

```
MsgBox ("Ada Kesalahan Proses Manipulasi Data")
```

```
Unload Me
```

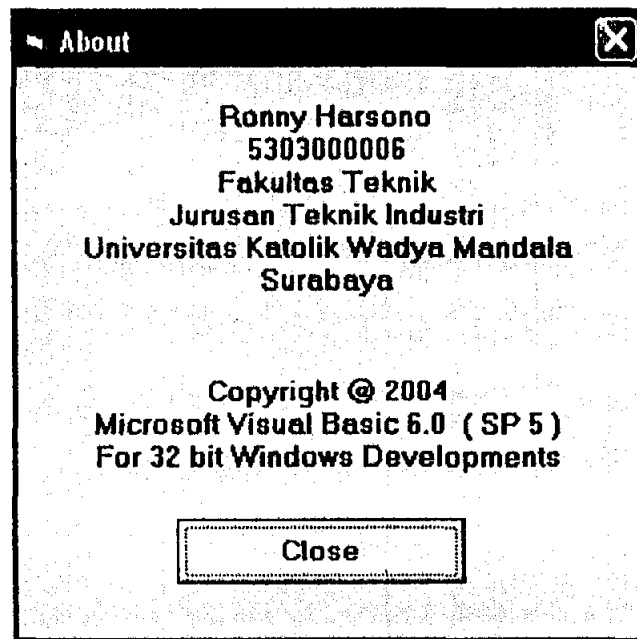
```
End Sub
```

Form10Source Code Form10 :

Option Explicit

```
Private Sub Form_DblClick()
    Form10.PrintForm
End Sub
```

```
Private Sub Form_Load()
    Dim i, j, k As Integer
    For i = 0 To 50
        Shape1(i).Visible = False
        Label1(i).Visible = False
    Next i
    j = 0
    k = 0
    For i = 0 To SumJob - 1
        Shape1(i).Visible = True
        Shape1(i).BackStyle = 1
        Shape1(i).BackColor = WarnaJob(i)
        Shape1(i).BorderColor = WarnaGaris
        Shape1(i).Width = 400
        Shape1(i).Height = 400
        Shape1(i).Top = 300 + j * 600
        Shape1(i).Left = 700 + k * 1200
        Label1(i).Visible = True
        Label1(i).Caption = i + 1
        Label1(i).Top = 350 + j * 600
        Label1(i).Left = 300 + k * 1200
        Label1(i).AutoSize = True
        Label1(i).ForeColor = WarnaJob(i)
        j = j + 1
        If i = SumJob - 1 Then
            Form10.Width = 1600 + 1200 * k
            If k = 0 Then
                Form10.Height = 1000 + j * 600
            Else
                Form10.Height = 7000
            End If
        End If
        If j = 10 Then
            j = 0
            k = k + 1
        End If
    Next i
End Sub
```

Form3Source Code Form3 :

Option Explicit

```
Private Sub Command1_Click()
    Unload Me
End Sub
```

```
Private Sub Form_Load()
    MDIForm1.Enabled = False
End Sub
```

```
Private Sub Form_Unload(Cancel As Integer)
    MDIForm1.Enabled = True
End Sub
```

Source Code Form9 (grafik) :

Option Explicit

```
Dim i, j As Integer
Dim SkalaMesin As Integer
Dim SkalaWaktu As Integer
Dim WaktuAkhir As Integer
Dim a1(1, 50, 50) As Integer
Dim Awal As Integer
Dim cek1 As Boolean
```

Function Berapa()

```

b1 = 0
b2 = 0
For i = 1 To SumJob
  If a1(1, i, SumOp) < D(i) Then b1 = b1 + (D(i) - a1(1, i, SumOp)) * Konter2
  If a1(1, i, SumOp) > D(i) Then b2 = b2 + (a1(1, i, SumOp) - D(i)) * Konter1
Next i
Berapa = b1 + b2

```

End Function

Private Sub Gambar_Grafik()

```

Scale (0, 10000)-(10000, 0)
Line (100, 100)-(120, 9900), WarnaGaris, BF
Line (100, 100)-(9900, 120), WarnaGaris, BF
For i = 1 To SumJob
  For j = 1 To SumOp
    Line (Awal + a1(0, i, j) * SkalaWaktu, Awal + 10 + (Mesin(i, j) - 1) * SkalaMesin)-
      (Awal + a1(1, i, j) * SkalaWaktu, Awal + (Mesin(i, j) * SkalaMesin) - 1), WarnaJob(i - 1),

```

BF

Next j

Next i

End Sub

Private Sub Form_Click()

```

On Error GoTo SalahFormLoad
Me.Cls
Me.BackColor = WarnaDasar
If (WaktuAkhir <= 9700) Then
  SkalaWaktu = 9700 \ WaktuAkhir
  If cek1 = False Then
    cek1 = True
    Me.Caption = Me.Caption & " ( Time = " & WaktuAkhir & " )" & " and ( Cost = " &
Berapa & " )"
  End If
  Gambar_Grafik

```

Else

MsgBox "Kapasitas melebihi"

End If

Exit Sub

SalahFormLoad:

MsgBox "Coba koreksi data Project !", vbOKOnly + vbInformation, "Error"

End Sub

Private Sub Form_KeyPress(KeyAscii As Integer)

```

If KeyAscii = 13 Then
  Printer.Scale (0, 10000)-(10000, 0)
  Printer.Print Me.Caption
  Printer.Line (100, 100)-(120, 9900), WarnaGaris, BF
  Printer.Line (100, 100)-(9900, 120), WarnaGaris, BF
  For i = 1 To SumJob
    For j = 1 To SumOp
      Printer.Line (Awal + a1(0, i, j) * SkalaWaktu, Awal + 10 + (Mesin(i, j) - 1) *
SkalaMesin)-
        (Awal + a1(1, i, j) * SkalaWaktu, Awal + (Mesin(i, j) * SkalaMesin) - 1), WarnaJob(i -
1), BF

```

```

        Next j
    Next i
    Printer.EndDoc
End If
End Sub

Private Sub Form_Load()
    Me.Width = 10000
    Me.Height = 10000
    For i = 1 To SumJob
        For j = 1 To SumOp
            a1(0, i, j) = a(0, i, j)
            a1(1, i, j) = a(1, i, j)
        Next j
    Next i
    Awal = 121
    If SumMesin <= 20 Then
        SkalaMesin = 485
    Else
        SkalaMesin = 9700 \ SumMesin
    End If
    WaktuAkhir = 0
    For i = 1 To SumJob
        If a1(1, i, SumOp) > WaktuAkhir Then WaktuAkhir = a1(1, i, SumOp)
    Next i
    cek1 = False
End Sub

```

Source Code Module1 :

Option Explicit

Public con As ADODB.Connection

'warna untuk grafik

Public WarnaJob(50) As Variant

Public WarnaGaris As Variant

Public WarnaDasar As Variant

' Data base

Public nama As String

Public BukaData As Boolean

' Copy file

**Declare Function CopyFile Lib "kernel32.dll" Alias "CopyFileA" (ByVal
lpExistingFileName As String, ByVal lpNewFileName As String, ByVal bFailIfExists As
Long) As Long**

' Data

Public SumJob As Integer

Public SumOp As Integer

Public SumMesin As Integer

Public WaktuProses(50, 50) As Integer

Public Mesin(50, 50) As Integer

Public D(50) As Integer

Public WaktuMesin(50) As Integer

Public WaktuMesinTemp(50) As Integer

Public Cj(50) As Integer

Public Cjtemp(50) As Integer

Public posisi(50) As Integer

Public posisitemp(50) As Integer

Public b1, b2 As Long

Public a(1, 50, 50) As Integer

Public Konter1, Konter2 As Integer

Function Hitung()

Dim i As Integer

b1 = 0

b2 = 0

For i = 1 To SumJob

If a(1, i, SumOp) < D(i) Then b1 = b1 + (D(i) - a(1, i, SumOp)) * Konter2

If a(1, i, SumOp) > D(i) Then b2 = b2 + (a(1, i, SumOp) - D(i)) * Konter1

Next i

Hitung = b1 + b2

End Function

Sub SetNilaiNull()

Dim i, j As Integer

For i = 1 To SumMesin

WaktuMesin(i) = 0

Next i

For i = 1 To SumJob

Cj(i) = 0

posisi(i) = 1

For j = 1 To SumOp

a(0, i, j) = 0

a(1, i, j) = 0

Next j

Next i

End Sub

Sub ShowDataFinal(urutan, k, judul, metode)

Dim i, j As Integer

k = k + 1

KalimatWord

Kalimat = "Stage " & k

KalimatWord

KalimatWord

Kalimat = "Waktu Mesin"

KalimatWord

For i = 1 To SumMesin

Kalimat = Kalimat & "(" & i & ")" & WaktuMesin(i) & " "

Next i

```

If metode Then Modifikasi
    KalimatWord
    Hitung
    KalimatWord
    KalimatWord
    Kalimat = "Biaya Earlines = " & b1
    KalimatWord
    Kalimat = "Biaya Tardines = " & b2
    KalimatWord
    Kalimat = "Total Biaya = " & b1 + b2
    KalimatWord
    Form7.Text1(urutan).Text = b1 + b2
    KalimatWord
    KalimatWord
    Kalimat = "Data Waktu Untuk Masing - Masing Job "
    KalimatWord
    KalimatWord
    For i = 1 To SumJob
        Kalimat = "Job " & i
        KalimatWord
        For j = 1 To SumOp
            Kalimat = i & " " & j & " " & Mesin(i, j) & " = " & "Awal (" & a(0, i, j) & "), akhir (" &
a(1, i, j) & ")
            KalimatWord
            Next j
            KalimatWord
        Next i
        Dim rs As ADODB.Recordset
        Dim strsql As String
        strsql = "select * from hasil"
        Set rs = New ADODB.Recordset
        rs.Open strsql, con, adOpenKeyset
        For i = 1 To SumJob
            For j = 1 To SumOp
                strsql = "update hasil " &
                "set awal=" & Str(a(0, i, j)) & ", akhir=" & Str(a(1, i, j)) & " where (job=" & i & " and op="
& j & "and Urut=" & urutan & ")
                con.Execute strsql
                rs.Requery
            Next j
        Next i
        Dim G As Form9
        Set G = New Form9
        G.Caption = judul
        G.Show
    End Sub

Sub ShowJudul(metode, jenis_metode)
    Kalimat = metode
    KalimatWord
    Kalimat = jenis_metode
    KalimatWord
End Sub

```

Function ProsesBack(k, wk)

```

Dim i As Integer
KalimatWord
Kalimat = "Stage " & k
KalimatWord
wk = -1000
For i = 1 To SumJob
    If Cj(i) > WaktuMesin(Mesin(i, posisi(i))) Then
        Cj(i) = WaktuMesin(Mesin(i, posisi(i)))
    End If
    Cjtemp(i) = Cj(i)
    posisitemp(i) = posisi(i)
Next i
' cek Cj yang terbesar
For i = 1 To SumJob
    If posisi(i) > 0 Then
        If wk < Cj(i) Then wk = Cj(i)
    End If
Next i
KalimatWord
Kalimat = "Waktu Mesin"
KalimatWord
For i = 1 To SumMesin
    Kalimat = Kalimat & "(" & i & ")" & WaktuMesin(i) & " "
Next i
KalimatWord
KalimatWord
For i = 1 To SumJob
    If posisi(i) > 0 Then
        Kalimat = "(St) " & i & " " & posisi(i) & " " & Mesin(i, posisi(i)) & ", "
        Kalimat = Kalimat & "(Cj) " & Cj(i) & ", " & "(Tij) " & WaktuProses(i, posisi(i))
        Kalimat = Kalimat & " " & "(Di) " & D(i)
        KalimatWord
    End If
Next i
KalimatWord
ProsesBack = wk
End Function

```

Function ProsesForward(k, wk)

```

Dim i As Integer
KalimatWord
Kalimat = "Stage " & k
KalimatWord
wk = 10000
For i = 1 To SumJob
    If Cj(i) < WaktuMesin(Mesin(i, posisi(i))) Then
        Cj(i) = WaktuMesin(Mesin(i, posisi(i)))
    End If
    Cjtemp(i) = Cj(i)
    posisitemp(i) = posisi(i)
Next i
' cek Cj yang terkecil
For i = 1 To SumJob

```

```

    If posisi(i) <= SumOp Then
        If wk > Cj(i) Then wk = Cj(i)
    End If
Next i
KalimatWord
Kalimat = "Waktu Mesin"
KalimatWord
For i = 1 To SumMesin
    Kalimat = Kalimat & "(" & i & ")" & WaktuMesin(i) & " "
Next i
KalimatWord
KalimatWord
For i = 1 To SumJob
    If posisi(i) <= SumOp Then
        Kalimat = "(St) " & i & " " & posisi(i) & " " & Mesin(i, posisi(i)) & ", "
        Kalimat = Kalimat & "(Cj) " & Cj(i) & ", " & "(Tij) " & WaktuProses(i, posisi(i))
        KalimatWord
    End If
Next i
KalimatWord
ProsesForward = wk
End Function

```

Function SalinData1(cek)

```

    Dim i As Integer
    For i = 1 To SumJob
        posisi(i) = posisitemp(i)
        Cj(i) = Cjtemp(i)
    Next i
    cek = False
    For i = 1 To SumJob
        If posisi(i) <= SumOp Then cek = True
    Next i
    SalinData1 = cek
End Function

```

Function SalinData2(cek)

```

    Dim i As Integer
    For i = 1 To SumJob
        posisi(i) = posisitemp(i)
        Cj(i) = Cjtemp(i)
    Next i
    cek = False
    For i = 1 To SumJob
        If posisi(i) > 0 Then cek = True
    Next i
    SalinData2 = cek
End Function

```

'due date

Sub F_1()

```

    Dim i, j, k, wk As Integer
    Dim cek, jalan As Boolean
    SetNilaiNull
    cek = True

```

```

k = 0
BukaWord
Call ShowJudul("Forward", "Earliest Due Date")
Do While cek = True
    k = k + 1
    wk = ProsesForward(k, wk)
    For i = 1 To SumJob
        If posisi(i) <= SumOp And wk = Cj(i) Then
            'cek ada mesin yang sama
            jalan = True
            For j = 1 To SumJob
                If i <> j And posisi(j) <= SumOp And wk = Cj(j) Then
                    If Mesin(i, posisi(i)) = Mesin(j, posisi(j)) And D(i) > D(j) Then
                        jalan = False
                    End If
                    If Mesin(i, posisi(i)) = Mesin(j, posisi(j)) And D(i) = D(j) And i < j Then
                        jalan = False
                    End If
                End If
            Next j
            If jalan = True Then
                a(0, i, posisi(i)) = Cj(i)
                a(1, i, posisi(i)) = Cj(i) + WaktuProses(i, posisi(i))
                Cjtemp(i) = Cjtemp(i) + WaktuProses(i, posisi(i))
                WaktuMesin(Mesin(i, posisi(i))) = a(1, i, posisi(i))
                posisitemp(i) = posisitemp(i) + 1
            End If
        End If
    Next i
    cek = SalinData1(cek)
Loop
Call ShowDataFinal(1, k, "Forward -- Earliest Due Date", False)
TutupWord
End Sub

'short prosesing time
Sub F_2()
    Dim i, j, k, wk As Integer
    Dim cek, jalan As Boolean
    SetNilaiNull
    cek = True
    k = 0
    BukaWord
    Call ShowJudul("Forward", "Shortest Procesing Time")
    Do While cek = True
        k = k + 1
        wk = ProsesForward(k, wk)
        For i = 1 To SumJob
            If posisi(i) <= SumOp And wk = Cj(i) Then
                'cek ada mesin yang sama
                jalan = True
                For j = 1 To SumJob
                    If i <> j And posisi(j) <= SumOp And wk = Cj(j) Then
                        If Mesin(i, posisi(i)) = Mesin(j, posisi(j)) And WaktuProses(i, posisi(i)) >
WaktuProses(j, posisi(j)) Then

```

```

        jalan = False
    End If
    If Mesin(i, posisi(i)) = Mesin(j, posisi(j)) And WaktuProses(i, posisi(i)) =
WaktuProses(j, posisi(j)) And i < j Then
        jalan = False
    End If
End If
Next j
If jalan = True Then
    a(0, i, posisi(i)) = Cj(i)
    a(1, i, posisi(i)) = Cj(i) + WaktuProses(i, posisi(i))
    Cjtemp(i) = Cjtemp(i) + WaktuProses(i, posisi(i))
    WaktuMesin(Mesin(i, posisi(i))) = a(1, i, posisi(i))
    posisitemp(i) = posisitemp(i) + 1
End If
End If
Next i
cek = SalinData1(cek)
Loop
Call ShowDataFinal(2, k, "Forward – Shortest Procesing Time", False)
TutupWord
End Sub

```

'critikal ratio

Sub F_3()

```

    Dim i, j, k, wk As Integer
    Dim cek, jalan As Boolean
    SetNilaiNull
    cek = True
    k = 0
    BukaWord
    Call ShowJudul("Forward", "S / O P N")
    Do While cek = True
        k = k + 1
        wk = ProsesForward(k, wk)
        For i = 1 To SumJob
            If posisi(i) <= SumOp And wk = Cj(i) Then
                'cek ada mesin yang sama
                jalan = True
                For j = 1 To SumJob
                    If i <> j And posisi(j) <= SumOp And wk = Cj(j) Then
                        If Mesin(i, posisi(i)) = Mesin(j, posisi(j)) Then
                            If posisi(i) < SumOp And posisi(j) < SumOp Then
                                If (D(i) - Cj(i)) / (SumOp - posisi(i)) > (D(j) - Cj(j)) / (SumOp - posisi(j)) Then
                                    jalan = False
                                If (D(i) - Cj(i)) / (SumOp - posisi(i)) = (D(j) - Cj(j)) / (SumOp - posisi(j)) And
i < j Then jalan = False
                            Else
                                If posisi(i) = SumOp And posisi(j) = SumOp Then
                                    If D(i) - Cj(i) < D(j) - Cj(j) Then jalan = False
                                    If D(i) - Cj(i) = D(j) - Cj(j) And i < j Then jalan = False
                                Else
                                    If posisi(i) = SumOp Then jalan = False
                                End If
                            End If
                        End If
                    End If
                Next j
            End If
        Next i
    End While
    cek = False
End Sub

```

```

        End If
    End If
Next j
If jalan = True Then
    a(0, i, posisi(i)) = Cj(i)
    a(1, i, posisi(i)) = Cj(i) + WaktuProses(i, posisi(i))
    Cjtemp(i) = Cjtemp(i) + WaktuProses(i, posisi(i))
    WaktuMesin(Mesin(i, posisi(i))) = a(1, i, posisi(i))
    posisitemp(i) = posisitemp(i) + 1
End If

End If
Next i
cek = SalinData1(cek)
Loop
Call ShowDataFinal(3, k, "Forward -- S / O P N", False)
TutupWord
End Sub

Sub Modifikasi()
    Dim i, j As Integer
    Dim selisih As Integer
    Dim kondisi As Boolean
    'Dim batas As Integer
    kondisi = True
    For i = 1 To SumMesin
        If WaktuMesin(i) < 0 Then
            kondisi = False
            If selisih > WaktuMesin(i) Then selisih = WaktuMesin(i)
        End If
    Next i
    selisih = selisih * (-1)
    If kondisi = False Then
        For i = 1 To SumJob
            For j = 1 To SumOp
                a(0, i, j) = a(0, i, j) + selisih
                a(1, i, j) = a(1, i, j) + selisih
            Next j
        Next i
    End If
End Sub

Sub SetNilaiAwalBackward()
    Dim i, j, k As Integer
    Dim cek As Boolean
    For i = 1 To SumMesin
        WaktuMesin(i) = 0
    Next i
    For i = 1 To SumJob
        Cj(i) = 0
        posisi(i) = SumOp
        posisitemp(i) = SumOp
        For j = 1 To SumOp
            a(0, i, j) = 0
            a(1, i, j) = 0
        Next j
    Next i

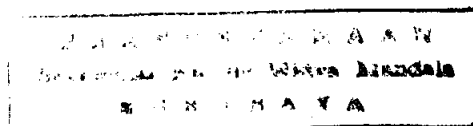
```

```

    Next j
Next i
For i = 1 To SumJob
    If WaktuMesin(Mesin(i, SumOp)) < D(i) Then
        WaktuMesin(Mesin(i, SumOp)) = D(i)
        For j = 1 To SumJob
            If i <> j And Mesin(i, SumOp) = Mesin(j, SumOp) Then Cj(j) = D(i)
        Next j
        Cj(i) = D(i)
    End If
Next i
cek = True
For i = 1 To SumMesin
    If WaktuMesin(i) = 0 Then cek = False
    WaktuMesinTemp(i) = WaktuMesin(i)
Next i
j = SumOp
For i = 1 To SumJob
    WaktuMesinTemp(i) = WaktuMesin(Mesin(i, j))
Next i
j = j - 1
Do While cek = False And j <> 0
    For i = 1 To SumJob
        WaktuMesinTemp(i) = WaktuMesinTemp(i) - WaktuProses(i, j + 1)
    Next i
    For i = 1 To SumJob
        If WaktuMesin(Mesin(i, j)) = 0 Then
            WaktuMesin(Mesin(i, j)) = WaktuMesinTemp(i)
            For k = 1 To SumJob
                If Mesin(i, j) = Mesin(k, j) And WaktuMesin(Mesin(i, j)) < WaktuMesinTemp(k)
Then
                    WaktuMesin(Mesin(i, j)) = WaktuMesinTemp(k)
                End If
            Next k
        End If
    Next i
    cek = True
    For i = 1 To SumMesin
        If WaktuMesin(i) = 0 Then cek = False
    Next i
    j = j - 1
Loop
End Sub

'LastDue Date
Sub B_1()
    Dim i, j, k, wk As Integer
    Dim cek, jalan As Boolean
    SetNilaiAwalBackward
    cek = True
    k = 0
    BukaWord
    Call ShowJudul("Backward", "Last Due Date")
    Do While cek = True
        k = k + 1

```



```

wk = ProsesBack(k, wk)
For i = 1 To SumJob
    If posisi(i) > 0 And wk = Cj(i) Then
        'cek ada mesin yang sama
        jalan = True
        For j = 1 To SumJob
            If i < j And posisi(j) > 0 And wk = Cj(j) Then
                If Mesin(i, posisi(i)) = Mesin(j, posisi(j)) Then
                    If D(i) < D(j) Then
                        jalan = False
                    ElseIf D(i) = D(j) And i > j Then
                        jalan = False
                    End If
                End If
            End If
        Next j
        If jalan = True Then
            a(1, i, posisi(i)) = Cj(i)
            a(0, i, posisi(i)) = Cj(i) - WaktuProses(i, posisi(i))
            Cjtemp(i) = Cjtemp(i) - WaktuProses(i, posisi(i))
            WaktuMesin(Mesin(i, posisi(i))) = a(0, i, posisi(i))
            posisitemp(i) = posisitemp(i) - 1
        End If
    End If
Next i
cek = SalinData2(cek)
Loop
Call ShowDataFinal(4, k, "Backward -- Last Due Date", True)
End Sub

```

'Longest Processing Time

Sub B_2()

```

Dim i, j, k, wk As Integer
Dim cek, jalan As Boolean
SetNilaiAwalBackward
cek = True
k = 0
BukaWord
Call ShowJudul("Backward", "Longest Processing Time")
Do While cek = True
    k = k + 1
    wk = ProsesBack(k, wk)
    For i = 1 To SumJob
        If posisi(i) > 0 And wk = Cj(i) Then
            'cek ada mesin yang sama
            jalan = True
            For j = 1 To SumJob
                If i < j And posisi(j) > 0 And wk = Cj(j) Then
                    If Mesin(i, posisi(i)) = Mesin(j, posisi(j)) Then
                        If WaktuProses(i, posisi(i)) < WaktuProses(j, posisi(j)) Then
                            jalan = False
                        ElseIf WaktuProses(i, posisi(i)) = WaktuProses(j, posisi(j)) And i > j Then
                            jalan = False
                        End If
                    End If
                End If
            Next j
        End If
    Next i
    cek = cek And jalan

```

```

        End If
    Next j
    If jalan = True Then
        a(1, i, posisi(i)) = Cj(i)
        a(0, i, posisi(i)) = Cj(i) - WaktuProses(i, posisi(i))
        Cjtemp(i) = Cjtemp(i) - WaktuProses(i, posisi(i))
        WaktuMesin(Mesin(i, posisi(i))) = a(0, i, posisi(i))
        posisitemp(i) = posisitemp(i) - 1
    End If
End If
Next i
cek = SalinData2(cek)
Loop
Call ShowDataFinal(5, k, "Backward -- Longest Processing Time", True)
TutupWord
End Sub

```

'S / O P N

Sub B_3()

```

    Dim i, j, k, wk As Integer
    Dim cek, jalan As Boolean
    SetNilaiAwalBackward
    cek = True
    k = 0
    BukaWord
    Call ShowJudul("Backward", "S / O P N")
    Do While cek = True
        k = k + 1
        wk = ProsesBack(k, wk)
        For i = 1 To SumJob
            If posisi(i) > 0 And wk = Cj(i) Then
                'cek ada mesin yang sama
                jalan = True
                For j = 1 To SumJob
                    If i <> j And posisi(j) > 0 And wk = Cj(j) Then
                        If Mesin(i, posisi(i)) = Mesin(j, posisi(j)) Then
                            If posisi(i) > 0 And posisi(j) > 0 Then
                                If Cj(i) / posisi(i) > Cj(j) / posisi(j) Then
                                    jalan = False
                                ElseIf Cj(i) / posisi(i) = Cj(j) / posisi(j) And i > j Then
                                    jalan = False
                                End If
                            End If
                        End If
                    End If
                Next j
                If jalan = True Then
                    a(1, i, posisi(i)) = Cj(i)
                    a(0, i, posisi(i)) = Cj(i) - WaktuProses(i, posisi(i))
                    Cjtemp(i) = Cjtemp(i) - WaktuProses(i, posisi(i))
                    WaktuMesin(Mesin(i, posisi(i))) = a(0, i, posisi(i))
                    posisitemp(i) = posisitemp(i) - 1
                End If
            End If
        End If
    End While
    End Sub

```

```

    Next i
    cek = SalinData2(cek)
Loop
Call ShowDataFinal(6, k, "Backward -- S / O P N", True)
TutupWord
End Sub

```

Source Code Module2 :

Option Explicit

Dim CekBukaData As Boolean

Function OpenProject(nama As String) As Boolean

```

On Error GoTo GAGAL_OPEN
Set con = New ADODB.Connection
con.CursorLocation = adUseClient
con.Open "Provider=Microsoft.Jet.OLEDB.4.0;Data Source=" & App.Path & "\save\" &
nama & ";User Id=admin;Password=;"

```

```

    CekBukaData = True
    OpenProject = True
Exit Function
GAGAL_OPEN:
MsgBox "Project Tidak Ditemukan", vbOKOnly + vbInformation
CekBukaData = False
OpenProject = False
End Function

```

Source Code Module3 :

Option Explicit

' Microsoft Word Aplikasi

Public wordApp As Object

Public pw As Object

Public Kalimat As String

Sub BukaWord()

```

Set wordApp = CreateObject("Word.Application")
With wordApp
    .Visible = True
    .Documents.Add
End With
End Sub

```

Sub TutupWord()

```

With wordApp
    .Quit
End With
End Sub

```

Sub KalimatWord()

```
With wordApp
    .ActiveDocument.Content.Text = .ActiveDocument.Content.Text & Kalimat
    Kalimat = ""
End With
End Sub
```