

BAB VI

KESIMPULAN DAN SARAN

6.1 Kesimpulan

Kesimpulan yang dapat diambil berdasarkan hasil dan analisa pengolahan data yang dilakukan pada penelitian ini adalah sebagai berikut :

1. Nilai MAD terkecil untuk hasil peramalan lampu TL adalah TL 10 W sebesar 7496,94 ; TL 18 W sebesar 6928,55 ; TL 20 W sebesar 4088,48 ; TL 36 W sebesar 1817,04 dan TL 40 W sebesar 2341,94
2. Berdasarkan hasil peramalan, maka total masing-masing perencanaan produksi lampu TL periode tahun 2000 adalah :
TL 10 W sebesar 1.190.105,76 unit, TL 18 W sebesar 1.178.923,65 unit, TL 20 W sebesar 1.056.665,70 unit, TL 36 W sebesar 867.224,81 unit, TL 40 W sebesar 860.897,92 unit
3. Perencanaan produksi dengan metode linier programming dilihat dari kendala yang ada di perusahaan, maka produksi yang memberikan biaya produksi yang rendah adalah produksi pada lampu TL40 W dengan total minimasi biaya sebesar Rp.19.201.175 dan untuk lampu TL 36 W sebesar Rp.6.642.000

6.2 Saran-Saran

Dari hasil penelitian dalam tugas akhir ini, yaitu pengumpulan dan pengolahan data serta analisa yang telah dilakukan, maka penulis bermaksud untuk memberikan saran-saran sehubungan dengan perencanaan produksi dengan metode linier programming, yaitu :

1. Pembuatan Jadwal induk produksi (JIP) yang akurat sangat dibutuhkan dalam rangka membuat suatu rencana produksi. Data yang digunakan tidak hanya data hasil dari pengolahan peramalan saja. Tetapi untuk membuat suatu JIP yang baik juga memerlukan data mengenai kapasitas mesin, SDM, jam kerja dan sebagainya.
2. Perusahaan sudah selayaknya menggunakan suatu pemrograman komputer yang terintegrasi dengan seluruh departemen atau divisi. Dengan demikian, masukan dari semua bidang dapat langsung diolah komputer dan dengan beberapa pertimbangan khusus dapat dibuat suatu rencana produksi yang baik dan akurat. Selain itu, dengan adanya alat bantu komputer ini dapat mempermudah pengambilan suatu keputusan.
3. Pengarsipan data yang telah dilakukan perusahaan sudah cukup baik. Dengan adanya arsip data tersebut, perusahaan dapat menentukan suatu perencanaan yang benar-benar berdasarkan data yang aktual dan memang jelas sumbernya. Oleh karena itu,

sebaiknya pada masing-masing departemen atau divisi dapat membuat suatu arsip data dengan baik dan teliti



DAFTAR PUSTAKA

Assauri, Sofjan , *Manajemen Produksi dan Operasi* Edisi Empat, Jakarta: Lembaga Penerbit FE UI, 1984

A .Taha, Hamdy, *Riset Operasi – Suatu Pengantar* Edisi Kelima Jilid I, Binarupa Aksara, Jakarta, 1996

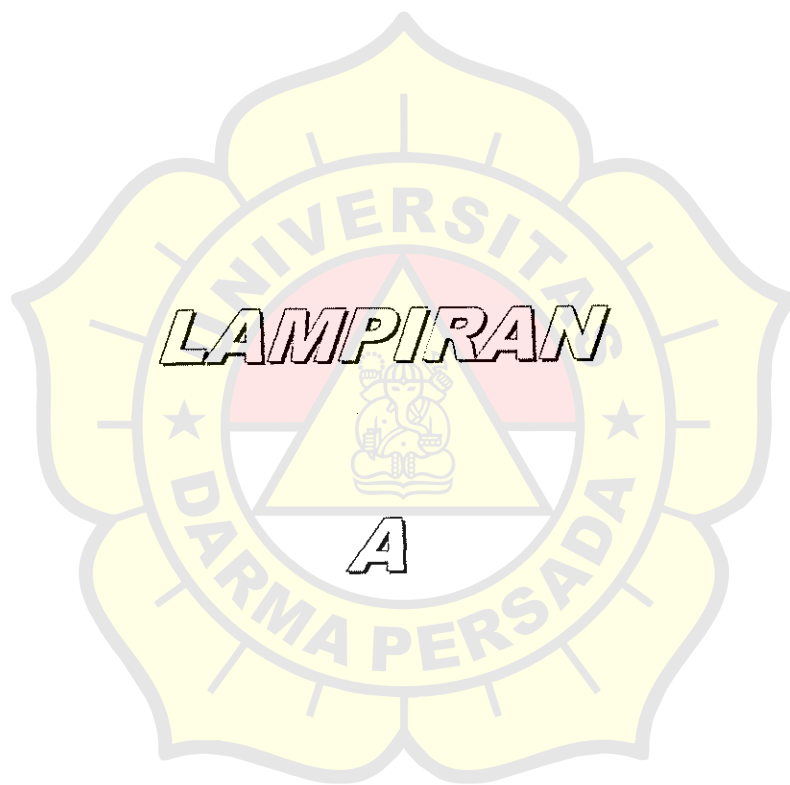
Bedworth, David D. James E. Bailey, *Integrated Production Control System – Management, Analysis, Design* 2E, New York: John Wiley & Sons, 1987

Biegel, John E, *Pengendalian Produksi – Suatu Pendekatan Kuantitatif*, Jakarta:CV Akademika Pressindo,1992

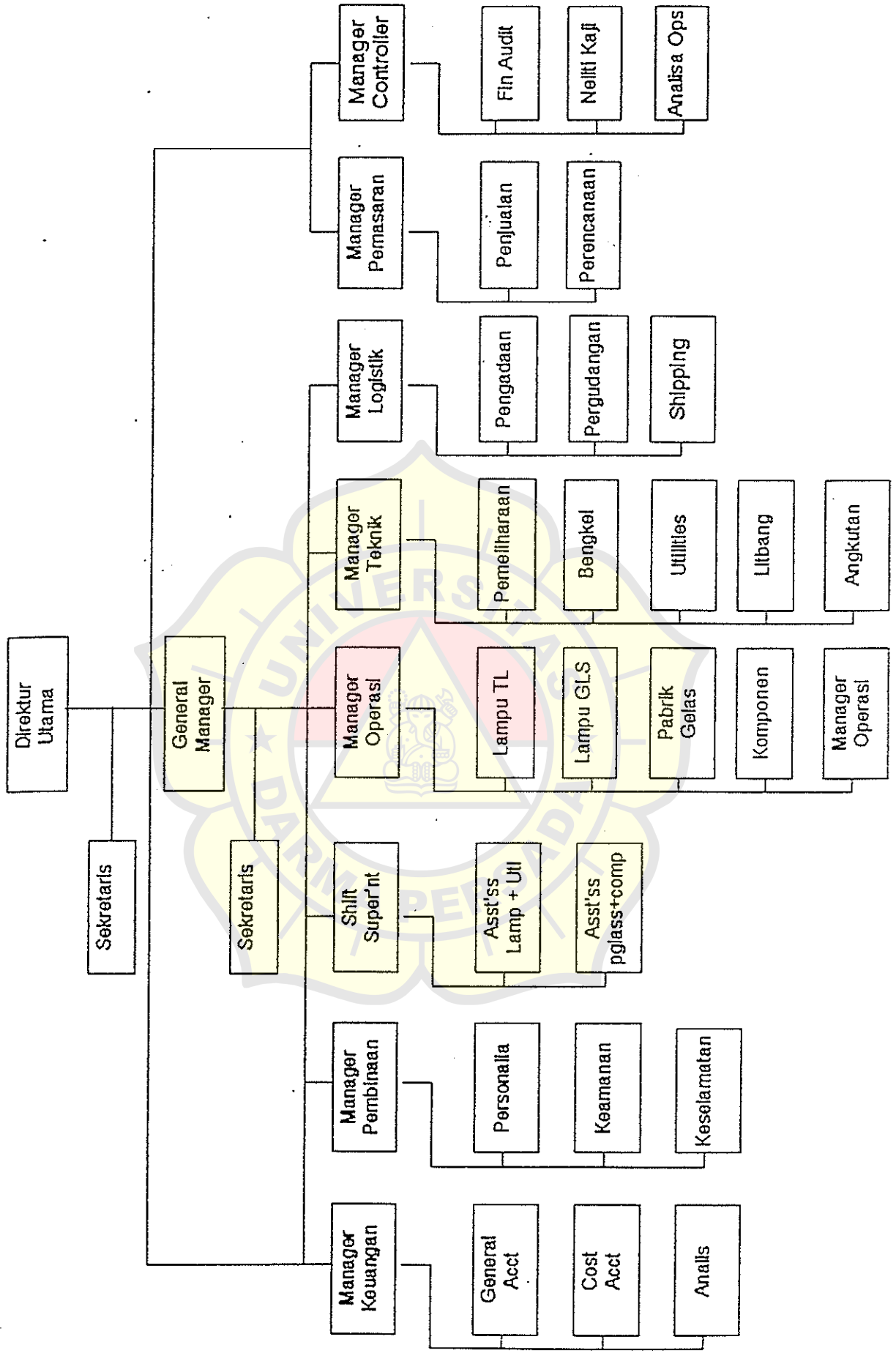
Buffa, Elwood S. *Manajemen Produksi/Operasi* Jilid I Edisi Keenam, Penerbit Erlangga, Jakarta, 1986

Subagyo, Pangestu, *Forecasting Konsep dan Aplikasi* Edisi dua, BPFE Yogyakarta, 1986

Sharma S.C, Shenoy G.V, Srivastava U.K, *Teknik Kuantitatif untuk Keputusan Manajemen* Edisi II, Penerbit Universitas Indonesia, Jakarta,1996



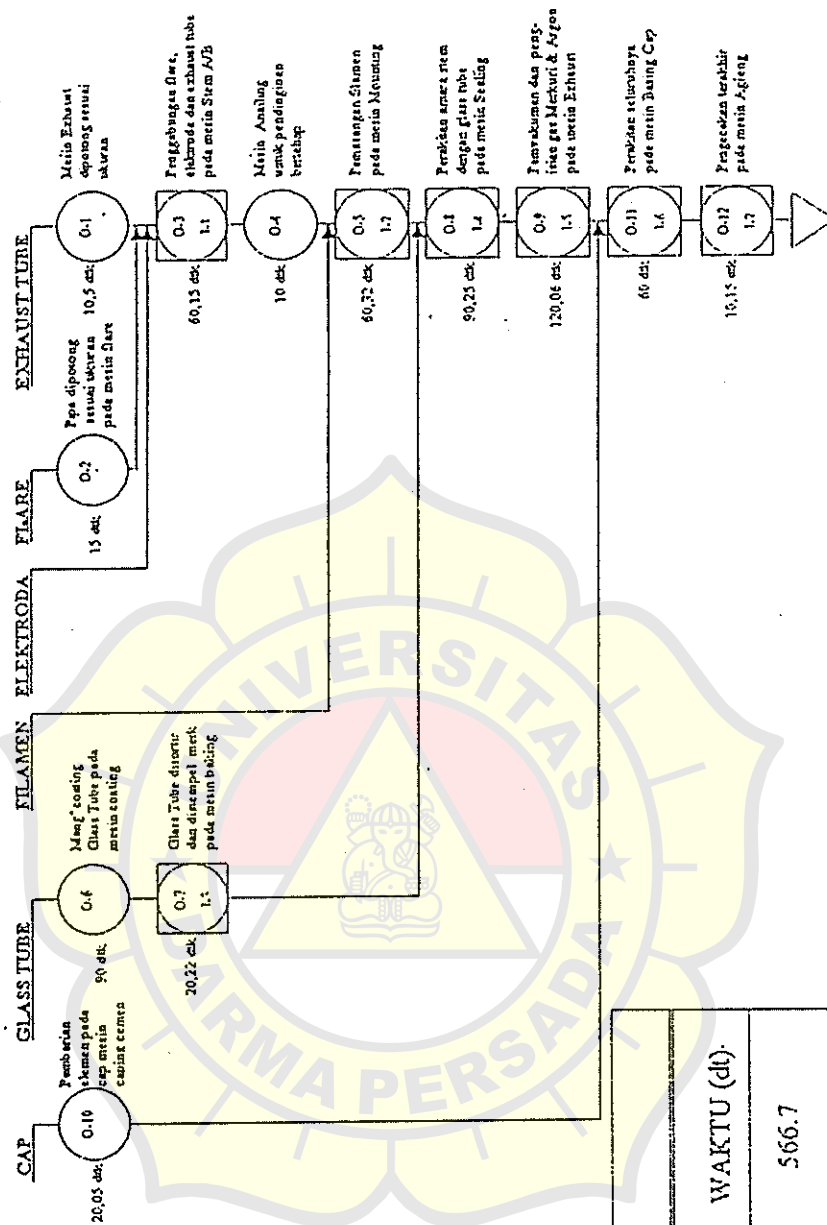
**SIRUKTUR ORGANISASI
PT. SARANA GATRA UTAMA**





PETA PROSES OPERASI

NAMA OBYEK : LAMPU LISTRIK TL
 NOMOR PETA : 1
 DIPETAKAN OLEH : ANDRI KUSUMAH
 TANGGAL DIPETAKAN : 20 JUNI 2000



RINGKASAN		
KEGIATAN	JUMLAH	WAKTU (dt)
○ OPERASI	12	566.7
□ PEMERIKSAAN	7	.
TOTAL	19	566.7

Peta Proses Operasi Produksi Lampu Listrik





1. Metode Peramalan Konstan

Bangle

No.	Bulan	Pemakaian
1	Mei	100,101.00
2	Juni	63,254.00
3	Juli	99,735.00
4	Agustus	107,198.00
5	September	98,803.00
6	Oktober	101,525.00
7	November	115,835.00
8	Desember	99,375.00
9	Januari	89,265.00
10	Februari	93,001.00
11	Maret	91,275.00
12	April	105,245.00
TOTAL		1,164,612.00

$$a = \frac{1,164,612.00}{12}$$

$$= 97,051.00$$

$$Y(t) = 97,051.00$$

Menghitung Tingkat Kesalahan

No	Bulan	Pemakaian Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Mei	100,101.00	97,051.00	3,050.00	3,050.00	9,302,500.00
14	Juni	63,254.00	97,051.00	-33,797.00	33,797.00	1,142,237,209.00
15	Juli	99,735.00	97,051.00	2,684.00	2,684.00	7,203,856.00
16	Agustus	107,198.00	97,051.00	10,147.00	10,147.00	102,961,609.00
17	September	98,803.00	97,051.00	1,752.00	1,752.00	3,069,504.00
18	Oktober	101,525.00	97,051.00	4,474.00	4,474.00	20,016,676.00
19	November	115,835.00	97,051.00	18,784.00	18,784.00	352,838,656.00
20	Desember	99,375.00	97,051.00	2,324.00	2,324.00	5,400,976.00
21	Januari	89,265.00	97,051.00	-7,786.00	7,786.00	60,621,796.00
22	Februari	93,001.00	97,051.00	-4,050.00	4,050.00	16,402,500.00
23	Maret	91,275.00	97,051.00	-5,776.00	5,776.00	33,362,176.00
24	April	105,245.00	97,051.00	8,194.00	8,194.00	67,141,636.00
JUMLAH			1,164,612.00	-	102,818.00	1,820,559,094.00

$$\text{MAD} = \frac{102,818.00}{12} = 8,568.17$$

$$\text{MSE} = \frac{1,820,559,094.00}{12} = 151,713,257.83$$

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			S _t	S _t ²	
1	May	100,101.00	100,101.00	100,101.00	97,766.58
2	Jun	63,254.00	96,416.30	99,732.53	97,707.48
3	Jul	99,735.00	96,748.17	99,434.09	97,648.37
4	Aug	107,198.00	97,793.15	99,270.00	97,589.27
5	Sep	98,803.00	97,894.14	99,132.41	97,530.17
6	Oct	101,525.00	98,257.22	99,044.89	97,471.07
7	Nov	115,835.00	100,015.00	99,141.91	97,411.97
8	Dec	99,375.00	99,951.00	99,222.81	97,352.86
9	Jan	89,265.00	98,882.40	99,188.77	97,293.76
10	Feb	93,001.00	98,294.26	99,099.32	97,234.66
11	Mar	91,275.00	97,592.34	98,948.62	97,175.56
12	Apr	105,245.00	98,357.60	98,889.52	97,116.46
JUMLAH		1,164,612.00	1,180,302.59	1,191,205.89	1,169,298.21

a = $2S_t - S_t^2$ = 97,825.68
 b = (59.10)

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	100,101.00	97,766.58			-
14	Jun	63,254.00	97,707.48	(34,453.48)	34,453.48	1,187,042,089.41
15	Jul	99,735.00	97,648.37	2,086.63	2,086.63	4,354,004.05
16	Aug	107,198.00	97,589.27	9,608.73	9,608.73	92,327,639.36
17	Sep	98,803.00	97,530.17	1,272.83	1,272.83	1,620,094.84
18	Oct	101,525.00	97,471.07	4,053.93	4,053.93	16,434,362.02
19	Nov	115,835.00	97,411.97	18,423.03	18,423.03	339,408,177.56
20	Dec	99,375.00	97,352.86	2,022.14	2,022.14	4,089,034.40
21	Jan	89,265.00	97,293.76	(8,028.76)	8,028.76	64,461,014.27
22	Feb	93,001.00	97,234.66	(4,233.66)	4,233.66	17,923,872.57
23	Mar	91,275.00	97,175.56	(5,900.56)	5,900.56	34,816,576.04
24	Apr	105,245.00	97,116.46	8,128.54	8,128.54	66,073,242.95
JUMLAH		1,164,612.00	1,169,298.21	(7,020.63)	98,212.28	1,828,550,107.48

MAD = $\frac{98,212.28}{12}$ = 8,928.39
 MSE = $\frac{1,828,550,107.48}{12}$ = 152,379,175.62

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.9		PERAMALAN
			St	S ¹¹	
1	May	100,101.00	100,101.00	100,101.00	105,231.59
2	Jun	63,254.00	66,938.70	70,254.93	105,368.48
3	Jul	99,735.00	96,455.37	93,835.33	105,505.37
4	Aug	107,198.00	106,123.74	104,894.90	105,642.27
5	Sep	98,803.00	99,535.07	100,071.06	105,779.16
6	Oct	101,525.00	101,326.01	101,200.51	105,916.05
7	Nov	115,835.00	114,384.10	113,065.74	106,052.94
8	Dec	99,375.00	100,875.91	102,094.89	106,189.83
9	Jan	89,265.00	90,426.09	91,592.97	106,326.72
10	Feb	93,001.00	92,743.51	92,628.46	106,463.61
11	Mar	91,275.00	91,421.85	91,542.51	106,600.50
12	Apr	105,245.00	103,862.69	102,630.67	106,737.39
JUMLAH		1,164,612.00	1,164,194.03	1,163,912.96	1,271,813.91

$$a = 2S^t - S^{11} = 105,094.70$$

$$b = 136.89$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	100,101.00	105,231.59		-	-
14	Jun	63,254.00	105,368.48	(42,114.48)	42,114.48	1,773,629,771.32
15	Jul	99,735.00	105,505.37	(5,770.37)	5,770.37	33,297,226.75
16	Aug	107,198.00	105,642.27	1,555.73	1,555.73	2,420,309.08
17	Sep	98,803.00	105,779.16	(6,976.16)	6,976.16	48,666,760.37
18	Oct	101,525.00	105,916.05	(4,391.05)	4,391.05	19,281,297.10
19	Nov	115,835.00	106,052.94	9,782.06	9,782.06	95,688,733.05
20	Dec	99,375.00	106,189.83	(6,814.83)	6,814.83	46,441,894.57
21	Jan	89,265.00	106,326.72	(17,061.72)	17,061.72	291,102,283.87
22	Feb	93,001.00	106,463.61	(13,462.61)	13,462.61	181,241,885.74
23	Mar	91,275.00	106,600.50	(15,325.50)	15,325.50	234,870,995.55
24	Apr	105,245.00	106,737.39	(1,492.39)	1,492.39	2,227,234.77
JUMLAH		1,164,612.00	1,271,813.91	(102,071.32)	124,746.91	2,728,868,392.18

$$MAD = \frac{124,746.91}{12} = 11,340.63$$

$$MSE = \frac{2,728,868,392.18}{12} = 227,405,699.35$$

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.5		PERAMALAN
			S _t	S _{t+1}	
1	May	100,101.00	100,101.00	100,101.00	101,316.05
2	Jun	63,254.00	81,677.50	90,889.25	101,535.01
3	Jul	99,735.00	90,706.25	90,797.75	101,753.97
4	Aug	107,198.00	98,952.13	94,874.94	101,972.92
5	Sep	98,803.00	98,877.56	96,876.25	102,191.88
6	Oct	101,525.00	100,201.28	98,538.77	102,410.84
7	Nov	115,835.00	108,018.14	103,278.45	102,629.80
8	Dec	99,375.00	103,596.57	103,487.51	102,848.76
9	Jan	89,265.00	96,480.79	99,984.15	103,067.71
10	Feb	93,001.00	97,362.52	97,362.52	103,286.67
11	Mar	91,275.00	93,007.95	95,185.23	103,505.63
12	Apr	105,245.00	99,126.47	97,155.85	103,724.59
JUMLAH		1,164,612.00	1,165,586.53	1,168,531.67	1,230,243.82

$$a = 2S_t - S''_t = 101,097.09$$

$$b = 218.96$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs Error	Squared Error
13	May	100,101.00	101,316.05			
14	Jun	63,254.00	101,535.01	(38,281.01)	38,281.01	1,465,435,615.22
15	Jul	99,735.00	101,753.97	(2,018.97)	2,018.97	4,076,224.96
16	Aug	107,198.00	101,972.92	5,225.08	5,225.08	27,301,418.45
17	Sep	98,803.00	102,191.88	(3,388.88)	3,388.88	11,484,520.10
18	Oct	101,525.00	102,410.84	(885.84)	885.84	784,711.80
19	Nov	115,835.00	102,629.80	13,205.20	13,205.20	174,377,376.68
20	Dec	99,375.00	102,848.76	(3,473.76)	3,473.76	12,066,974.68
21	Jan	89,265.00	103,067.71	(13,802.71)	13,802.71	190,514,883.14
22	Feb	93,001.00	103,286.67	(10,285.67)	10,285.67	105,795,020.81
23	Mar	91,275.00	103,505.63	(12,230.63)	12,230.63	149,588,271.50
24	Apr	105,245.00	103,724.59	1,520.41	1,520.41	2,311,658.18
JUMLAH		1,164,612.00	1,230,243.82	(64,416.77)	104,318.16	2,143,736,675.50

$$MAD = \frac{104,318.16}{12} = 9,483.47$$

$$MSE = \frac{2,143,736,675.50}{12} = 178,644,722.96$$

2. METODE SINGLE MOVING AVERAGE

Periode (Bulan)	Pemakaian	12 Bulan Moving Average	Periode (Bulan)	Pemakaian	12 Bulan Moving Average
1	100,101.00		13	97,051.00	97,051.00
2	63,254.00		14	96,773.73	96,773.73
3	99,735.00		15	100,125.70	100,125.70
4	107,198.00		16	100,169.11	100,169.11
5	98,803.00		17	99,290.50	99,290.50
6	101,525.00		18	99,360.14	99,360.14
7	115,835.00		19	98,999.33	98,999.33
8	99,375.00		20	95,632.20	95,632.20
9	89,265.00		21	94,696.50	94,696.50
10	93,001.00		22	96,507.00	96,507.00
11	91,275.00		23	98,260.00	98,260.00
12	105,245.00		24	105,245.00	105,245.00

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan 12 Bln	Error	Abs. Error	Squared Error
13	May	100,101.00	97,051.00	3,050.00	3,050.00	9,302,500.00
14	Jun	63,254.00	96,773.73	-33,519.73	33,519.73	1,123,572,116.44
15	Jul	99,735.00	100,125.70	-390.70	390.70	152,646.49
16	Aug	107,198.00	100,169.11	7,028.89	7,028.89	49,405,279.01
17	Sep	98,803.00	99,290.50	-487.50	487.50	237,656.25
18	Oct	101,525.00	99,360.14	2,164.86	2,164.86	4,686,606.45
19	Nov	115,835.00	98,999.33	16,835.67	16,835.67	283,439,672.11
20	Dec	99,375.00	95,632.20	3,742.80	3,742.80	14,008,551.84
21	Jan	89,265.00	94,696.50	-5,431.50	5,431.50	29,501,192.25
22	Feb	93,001.00	96,507.00	-3,506.00	3,506.00	12,292,036.00
23	Mar	91,275.00	98,260.00	-6,985.00	6,985.00	48,790,225.00
24	Apr	105,245.00	105,245.00	0.00	-	-
	JUMLAH	1,164,612.00	1,182,110.21	-17,498.21	83,142.64	1,575,388,481.84

MAD = $\frac{83,142.64}{12}$ = 6,928.55

MSE = $\frac{1,575,388,481.84}{12}$ = 131,282,373.49



1. Metode Peramalan Konstan

Bangle

No.	Bulan	Pemakaian
1	Mei	88,142.00
2	Juni	76,321.00
3	Juli	78,912.00
4	Agustus	86,542.00
5	September	78,648.00
6	Oktober	92,781.00
7	November	89,901.00
8	Desember	81,100.00
9	Januari	83,657.00
10	Februari	92,879.00
11	Maret	90,587.00
12	April	89,651.00
TOTAL		1,029,121.00

$$a = \frac{1,029,121.00}{12}$$

$$= 85,760.08$$

$$Y(t) = 85,760.08$$

Menghitung Tingkat Kesalahan

No.	Bulan	Pemakaian Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Mei	88,142.00	85,760.08	2,381.92	2,381.92	5,673,527.01
14	Juni	76,321.00	85,760.08	-9,439.08	9,439.08	89,096,294.17
15	Juli	78,912.00	85,760.08	-6,848.08	6,848.08	46,896,245.34
16	Agustus	86,542.00	85,760.08	781.92	781.92	611,393.67
17	September	78,648.00	85,760.08	-7,112.08	7,112.08	50,581,729.34
18	Oktober	92,781.00	85,760.08	7,020.92	7,020.92	49,293,270.84
19	November	89,901.00	85,760.08	4,140.92	4,140.92	17,147,190.84
20	Desember	81,100.00	85,760.08	-4,660.08	4,660.08	21,716,376.67
21	Januari	83,657.00	85,760.08	-2,103.08	2,103.08	4,422,959.51
22	Februari	92,879.00	85,760.08	7,118.92	7,118.92	50,678,974.51
23	Maret	90,587.00	85,760.08	4,826.92	4,826.92	23,299,124.51
24	April	89,651.00	85,760.08	3,890.92	3,890.92	15,139,232.51
JUMLAH		1,029,121.00	1,029,121.00	0.00	60,324.83	374,556,318.92

$$\text{MAD} = \frac{60,324.83}{12} = 5,027.07$$

$$\text{MSE} = \frac{374,556,318.92}{12} = 31,213,026.58$$

2. METODE SINGLE MOVING AVERAGE

Periode (Bulan)	Pemakaian 12 Bulan Moving Average	Periode (Bulan)	Pemakaian 12 Bulan Moving Average
1	88,142.00	13	85,760.08
2	76,321.00	14	85,543.55
3	78,912.00	15	86,465.80
4	86,542.00	16	87,305.11
5	78,648.00	17	87,400.50
6	92,781.00	18	88,650.86
7	89,901.00	19	87,962.50
8	81,100.00	20	87,574.80
9	83,657.00	21	89,193.50
10	92,879.00	22	91,039.00
11	90,587.00	23	90,119.00
12	89,651.00	24	89,651.00

Menghitung Tingkat Kesalahan

No	Bulan	Y(t)	Peramalan 12 Bln	Error	Abs. Error	Squared Error
13	May	88,142.00	85,760.08	2,381.92	2,381.92	5,673,527.01
14	Jun	76,321.00	85,543.55	-9,222.55	9,222.55	85,055,344.66
15	Jul	78,912.00	86,465.80	-7,553.80	7,553.80	57,059,894.44
16	Aug	86,542.00	87,305.11	-763.11	763.11	582,338.57
17	Sep	78,648.00	87,400.50	-8,752.50	8,752.50	76,606,256.25
18	Oct	92,781.00	88,650.86	4,130.14	4,130.14	17,058,080.02
19	Nov	89,901.00	87,962.50	1,938.50	1,938.50	3,757,782.25
20	Dec	81,100.00	87,574.80	-6,474.80	6,474.80	41,923,035.04
21	Jan	83,657.00	89,193.50	-5,536.50	5,536.50	30,652,832.25
22	Feb	92,879.00	91,039.00	1,840.00	1,840.00	3,385,600.00
23	Mar	90,587.00	90,119.00	468.00	468.00	219,024.00
24	Apr	89,651.00	89,651.00	0.00	-	-
JUMLAH			1,056,665.70	-27,544.70	49,061.82	321,973,714.49

MAD = $\frac{49,061.82}{12}$ = 4,088.48

MSE = $\frac{321,973,714.49}{12}$ = 26,831,142.87

3. TIME SERIE DOUBLE EXPONENTIAL SIMULIHING

No	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			St	S''	
1	May	88,142.00	88,142.00	88,142.00	87,401.19
2	Jun	76,321.00	86,959.90	88,023.79	87,424.78
3	Jul	78,912.00	86,155.11	87,836.92	87,448.36
4	Aug	86,542.00	86,193.80	87,672.61	87,471.95
5	Sep	78,648.00	85,439.22	87,449.27	87,495.53
6	Oct	92,781.00	86,173.40	87,321.68	87,519.12
7	Nov	89,901.00	86,546.16	87,244.13	87,542.70
8	Dec	81,100.00	86,001.54	87,119.87	87,566.29
9	Jan	83,657.00	85,767.09	86,984.59	87,589.87
10	Feb	92,879.00	86,478.28	86,933.96	87,613.46
11	Mar	90,587.00	86,889.15	86,929.48	87,637.05
12	Apr	89,651.00	87,165.34	86,953.07	87,660.63
JUMLAH		1,029,121.00	1,037,910.98	1,048,611.38	1,050,370.93

a = $2S't - S''$ = 87,377.61
 b = 23.59

Menghitung Tingkat Kesalahan

No	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	88,142.00	87,401.19	-	-	-
14	Jun	76,321.00	87,424.78	(11,103.78)	11,103.78	123,293,848.62
15	Jul	78,912.00	87,448.36	(8,536.36)	8,536.36	72,869,473.16
16	Aug	86,542.00	87,471.95	(929.95)	929.95	864,802.02
17	Sep	78,648.00	87,495.53	(8,847.53)	8,847.53	78,278,837.04
18	Oct	92,781.00	87,519.12	5,261.88	5,261.88	27,687,398.80
19	Nov	89,901.00	87,542.70	2,358.30	2,358.30	5,561,560.87
20	Dec	81,100.00	87,566.29	(6,466.29)	6,466.29	41,812,897.59
21	Jan	83,657.00	87,589.87	(3,932.87)	3,932.87	15,467,504.36
22	Feb	92,879.00	87,613.46	5,265.54	5,265.54	27,725,908.11
23	Mar	90,587.00	87,637.05	2,949.95	2,949.95	8,702,229.66
24	Apr	89,651.00	87,660.63	1,990.37	1,990.37	3,961,567.48
JUMLAH		1,029,121.00	1,050,370.93	(21,990.74)	57,642.82	406,226,027.71

MAD = $\frac{57,642.82}{12}$ = 5,240.26

MSE = $\frac{406,226,027.71}{12}$ = 33,852,168.98

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.5		PERAMALAN
			S' ^t	S'' ^t	
1	May	88,142.00	88,142.00	88,142.00	90,419.61
2	Jun	76,321.00	82,231.50	85,186.75	90,500.75
3	Jul	78,912.00	80,571.75	82,879.25	90,581.89
4	Aug	86,542.00	83,556.88	83,218.06	90,663.03
5	Sep	78,648.00	81,102.44	82,160.25	90,744.16
6	Oct	92,781.00	86,941.72	84,550.98	90,825.30
7	Nov	89,901.00	88,421.36	86,486.17	90,906.44
8	Dec	81,100.00	84,760.68	85,623.43	90,987.58
9	Jan	83,657.00	84,208.84	84,916.13	91,068.72
10	Feb	92,879.00	88,543.92	86,730.03	91,149.85
11	Mar	90,587.00	89,565.46	88,147.74	91,230.99
12	Apr	89,651.00	89,608.23	88,877.99	91,312.13
JUMLAH		1,029,121.00	1,027,654.77	1,026,918.78	1,090,390.46

$$a = 2S^t - S''^t = 90,338.47$$

$$b = 81.14$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	88,142.00	90,419.61			
14	Jun	76,321.00	90,500.75	(14,179.75)	14,179.75	201,065,301.60
15	Jul	78,912.00	90,581.89	(11,669.89)	11,669.89	136,186,282.62
16	Aug	86,542.00	90,663.03	(4,121.03)	4,121.03	16,982,855.41
17	Sep	78,648.00	90,744.16	(12,096.16)	12,096.16	146,317,187.65
18	Oct	92,781.00	90,825.30	1,955.70	1,955.70	3,824,753.39
19	Nov	89,901.00	90,906.44	(1,005.44)	1,005.44	1,010,910.57
20	Dec	81,100.00	90,987.58	(9,887.58)	9,887.58	97,764,211.37
21	Jan	83,657.00	91,068.72	(7,411.72)	7,411.72	54,933,545.88
22	Feb	92,879.00	91,149.85	1,729.15	1,729.15	2,989,942.59
23	Mar	90,587.00	91,230.99	(643.99)	643.99	414,727.13
24	Apr	89,651.00	91,312.13	(1,661.13)	1,661.13	2,759,357.08
JUMLAH		1,029,121.00	1,090,390.46	(58,991.85)	66,361.53	664,249,075.29

$$MAD = \frac{66,361.53}{12} = 6,032.87$$

$$MSE = \frac{664,249,075.29}{12} = 55,354,089.61$$

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No	BULAN	Y(t)	ALFA = 0.9		PERAMALAN
			S _t	S _t '	
1	May	88,142.00	88,142.00	88,142.00	89,646.93
2	Jun	76,321.00	77,503.10	78,566.99	89,635.81
3	Jul	78,912.00	78,771.11	78,750.70	89,624.69
4	Aug	86,542.00	85,764.91	85,063.49	89,613.57
5	Sep	78,648.00	79,359.69	79,930.07	89,602.45
6	Oct	92,781.00	91,438.87	90,287.99	89,591.33
7	Nov	89,901.00	90,054.79	90,078.11	89,580.21
8	Dec	81,100.00	81,995.48	82,803.74	89,569.09
9	Jan	83,657.00	83,490.85	83,422.14	89,557.97
10	Feb	92,879.00	91,940.18	91,088.38	89,546.85
11	Mar	90,587.00	90,722.32	90,758.92	89,535.73
12	Apr	89,651.00	89,758.13	89,858.21	89,524.61
JUMLAH		1,029,121.00	1,028,941.43	1,028,750.74	1,075,029.28

$$a = 2S'_t - S''_t = 89,658.05$$

$$b = (11.12)$$

Menghitung Tingkat Kesalahan

No	Bulan	Y(t)	Peramalan	Error	Abs Error	Squared Error
13	May	88,142.00	89,646.93		-	-
14	Jun	76,321.00	89,635.81	(13,314.81)	13,314.81	177,284,238.02
15	Jul	78,912.00	89,624.69	(10,712.69)	10,712.69	114,761,787.24
16	Aug	86,542.00	89,613.57	(3,071.57)	3,071.57	9,434,560.02
17	Sep	78,648.00	89,602.45	(10,954.45)	10,954.45	120,000,039.87
18	Oct	92,781.00	89,591.33	3,189.67	3,189.67	10,173,975.25
19	Nov	89,901.00	89,580.21	320.79	320.79	102,904.22
20	Dec	81,100.00	89,569.09	(8,469.09)	8,469.09	71,725,539.81
21	Jan	83,657.00	89,557.97	(5,900.97)	5,900.97	34,821,485.78
22	Feb	92,879.00	89,546.85	3,332.15	3,332.15	11,103,201.16
23	Mar	90,587.00	89,535.73	1,051.27	1,051.27	1,105,161.36
24	Apr	89,651.00	89,524.61	126.39	126.39	15,973.54
JUMLAH		1,029,121.00	1,075,029.28	(44,403.34)	60,443.85	550,528,866.26

$$MAD = \frac{60,443.85}{12} = 5,036.98$$

$$MSE = \frac{550,528,866.26}{12} = 45,877,405.52$$



1. Metode Peramalan Konstan

Bangle

No.	Bulan	Pemakaian
1	May	76,112.00
2	Jun	78,354.00
3	Jul	70,987.00
4	Aug	72,664.00
5	Sep	72,100.00
6	Oct	69,892.00
7	Nov	75,613.00
8	Dec	74,369.00
9	Jan	70,112.00
10	Feb	72,189.00
11	Mar	69,638.00
12	Apr	73,549.00
TOTAL		875,579.00

$$a = \frac{875,579.00}{12}$$

$$= 72,964.92$$

$$Y(t) = 72,964.92$$

Menghitung Tingkat Kesalahan

No.	Bulan	Pemakaian Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	76,112.00	72,964.92	3,147.08	3,147.08	9,904,133.51
14	Jun	78,354.00	72,964.92	5,389.08	5,389.08	29,042,219.17
15	Jul	70,987.00	72,964.92	-1,977.92	1,977.92	3,912,154.34
16	Aug	72,664.00	72,964.92	-300.92	300.92	90,550.84
17	Sep	72,100.00	72,964.92	-864.92	864.92	748,080.84
18	Oct	69,892.00	72,964.92	-3,072.92	3,072.92	9,442,816.84
19	Nov	75,613.00	72,964.92	2,648.08	2,648.08	7,012,345.34
20	Dec	74,369.00	72,964.92	1,404.08	1,404.08	1,971,450.01
21	Jan	70,112.00	72,964.92	-2,852.92	2,852.92	8,139,133.51
22	Feb	72,189.00	72,964.92	-775.92	775.92	602,046.67
23	Mar	69,638.00	72,964.92	-3,326.92	3,326.92	11,068,374.51
24	Apr	73,549.00	72,964.92	584.08	584.08	341,153.34
JUMLAH		875,579.00	875,579.00	(0.00)	26,344.83	82,274,458.92

$$\text{MAD} = \frac{26,344.83}{12} = 2,195.40$$

$$\text{MSE} = \frac{82,274,458.92}{12} = 6,856,204.91$$

2. METODE SINGLE MOVING AVERAGE

Periode (Bulan)	Pemakaian	12 Bulan Moving Average	Periode (Bulan)	Pemakaian	12 Bulan Moving Average
1	76,112.00		13	72,964.92	72,964.92
2	78,354.00		14	72,678.82	72,678.82
3	70,987.00		15	72,111.30	72,111.30
4	72,664.00		16	72,236.22	72,236.22
5	72,100.00		17	72,182.75	72,182.75
6	69,892.00		18	72,194.57	72,194.57
7	75,613.00		19	72,578.33	72,578.33
8	74,369.00		20	71,971.40	71,971.40
9	70,112.00		21	71,372.00	71,372.00
10	72,189.00		22	71,792.00	71,792.00
11	69,638.00		23	71,593.50	71,593.50
12	73,549.00		24	73,549.00	73,549.00

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan 12 Bin	Error	Abs. Error	Squared Error
13	May	76,112.00	72,964.92	3,147.08	3,147.08	9,904,133.51
14	Jun	78,354.00	72,678.82	5,675.18	5,675.18	32,207,688.67
15	Jul	70,987.00	72,111.30	-1,124.30	1,124.30	1,264,050.49
16	Aug	72,664.00	72,236.22	427.78	427.78	182,993.83
17	Sep	72,100.00	72,182.75	-82.75	82.75	6,847.56
18	Oct	69,892.00	72,194.57	-2,302.57	2,302.57	5,301,835.18
19	Nov	75,613.00	72,578.33	3,034.67	3,034.67	9,209,201.78
20	Dec	74,369.00	71,971.40	2,397.60	2,397.60	5,748,485.76
21	Jan	70,112.00	71,372.00	-1,260.00	1,260.00	1,587,600.00
22	Feb	72,189.00	71,792.00	397.00	397.00	157,609.00
23	Mar	69,638.00	71,593.50	-1,955.50	1,955.50	3,823,980.25
24	Apr	73,549.00	73,549.00	0.00	-	-
	JUMLAH	875,579.00	867,224.81	8,354.19	21,804.43	69,394,426.03

$$\text{MAD} = \frac{21,804.43}{12} = 1,817.04$$

$$\text{MSE} = \frac{69,394,426.03}{12} = 5,782,868.84$$

No.	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			St	S't	
1	May	76,112.00	76,112.00	76,112.00	72,015.20
2	Jun	78,354.00	76,336.20	76,134.42	71,858.44
3	Jul	70,987.00	75,801.28	76,101.11	71,701.68
4	Aug	72,664.00	75,487.55	76,039.75	71,544.92
5	Sep	72,100.00	75,148.80	75,950.66	71,388.16
6	Oct	69,892.00	74,623.12	75,817.90	71,231.40
7	Nov	75,613.00	74,722.11	75,708.32	71,074.64
8	Dec	74,369.00	74,686.79	75,606.17	70,917.87
9	Jan	70,112.00	74,229.32	75,468.48	70,761.11
10	Feb	72,189.00	74,025.28	75,324.16	70,604.35
11	Mar	69,638.00	73,586.56	75,150.40	70,447.59
12	Apr	73,549.00	73,582.80	74,993.64	70,290.83
JUMLAH		875,579.00	898,341.80	908,407.02	853,836.18

a = $2S't - S''t$ = 72,171.96
 b = (156.76)

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	76,112.00	72,015.20	-	-	-
14	Jun	78,354.00	71,858.44	6,495.56	6,495.56	42,192,343.87
15	Jul	70,987.00	71,701.68	(714.68)	714.68	510,762.21
16	Aug	72,664.00	71,544.92	1,119.08	1,119.08	1,252,349.00
17	Sep	72,100.00	71,388.16	711.84	711.84	506,722.31
18	Oct	69,892.00	71,231.40	(1,339.40)	1,339.40	1,793,980.03
19	Nov	75,613.00	71,074.64	4,538.36	4,538.36	20,596,756.00
20	Dec	74,369.00	70,917.87	3,451.13	3,451.13	11,910,265.18
21	Jan	70,112.00	70,761.11	(649.11)	649.11	421,349.63
22	Feb	72,189.00	70,604.35	1,584.65	1,584.65	2,511,102.33
23	Mar	69,638.00	70,447.59	(809.59)	809.59	655,442.27
24	Apr	73,549.00	70,290.83	3,258.17	3,258.17	10,615,648.35
JUMLAH		875,579.00	853,836.18	17,646.01	24,671.57	92,966,721.19

MAD = $\frac{24,671.57}{12}$ = 2,242.87

MSE = $\frac{92,966,721.19}{12}$ = 7,747,226.77

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No	BULAN	Y(t)	ALFA = 0.5		PERAMALAN
			S' ^t	S'' ^t	
1	May	76,112.00	76,112.00	76,112.00	72,524.89
2	Jun	78,354.00	77,233.00	76,672.50	72,556.44
3	Jul	70,987.00	74,110.00	75,391.25	72,587.98
4	Aug	72,664.00	73,387.00	74,389.13	72,619.52
5	Sep	72,100.00	72,743.50	73,566.31	72,651.07
6	Oct	69,892.00	71,317.75	72,442.03	72,682.61
7	Nov	75,613.00	73,465.38	72,953.70	72,714.16
8	Dec	74,369.00	73,917.19	73,435.45	72,745.70
9	Jan	70,112.00	72,014.59	72,725.02	72,777.25
10	Feb	72,189.00	72,101.80	72,413.41	72,808.79
11	Mar	69,638.00	70,869.90	71,641.65	72,840.33
12	Apr	73,549.00	72,209.45	71,925.55	72,871.88
JUMLAH		875,579.00	879,481.55	883,668.00	872,380.61

$$a = 2S't - S''t = 72,493.35$$

$$b = 31.54$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	76,112.00	72,524.89	-	-	-
14	Jun	78,354.00	72,556.44	5,797.56	5,797.56	33,611,752.96
15	Jul	70,987.00	72,587.98	(1,600.98)	1,600.98	2,563,136.38
16	Aug	72,664.00	72,619.52	44.48	44.48	1,978.11
17	Sep	72,100.00	72,651.07	(551.07)	551.07	303,676.22
18	Oct	69,892.00	72,682.61	(2,790.61)	2,790.61	7,787,517.94
19	Nov	75,613.00	72,714.16	2,898.84	2,898.84	8,403,292.57
20	Dec	74,369.00	72,745.70	1,623.30	1,623.30	2,635,099.97
21	Jan	70,112.00	72,777.25	(2,665.25)	2,665.25	7,103,531.53
22	Feb	72,189.00	72,808.79	(619.79)	619.79	384,138.82
23	Mar	69,638.00	72,840.33	(3,202.33)	3,202.33	10,264,940.17
24	Apr	73,549.00	72,871.88	677.12	677.12	458,494.52
JUMLAH		875,579.00	872,380.61	(388.72)	22,471.33	73,507,559.18

$$MAD = \frac{22,471.33}{12} = 2,042.85$$

$$MSE = \frac{73,507,559.18}{12} = 6,125,629.93$$

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.9		PERAMALAN
			S' ^t	S''	
1	May	76,112.00	76,112.00	76,112.00	73,526.34
2	Jun	78,354.00	78,129.80	77,928.02	73,560.80
3	Jul	70,987.00	71,701.28	72,323.95	73,595.26
4	Aug	72,664.00	72,567.73	72,543.35	73,629.72
5	Sep	72,100.00	72,146.77	72,186.43	73,664.18
6	Oct	69,892.00	70,117.48	70,324.37	73,698.63
7	Nov	75,613.00	75,063.45	74,589.54	73,733.09
8	Dec	74,369.00	74,438.44	74,453.55	73,767.55
9	Jan	70,112.00	70,544.64	70,935.54	73,802.01
10	Feb	72,189.00	72,024.56	71,915.66	73,836.47
11	Mar	69,638.00	69,876.66	70,080.56	73,870.92
12	Apr	73,549.00	73,181.77	72,871.64	73,905.38
JUMLAH					884,590.35

$$a = 2S^t - S'' = 73,491.89$$

$$b = 34.46$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	76,112.00	73,526.34			
14	Jun	78,354.00	73,560.80	4,793.20	4,793.20	22,974,744.56
15	Jul	70,987.00	73,595.26	(2,608.26)	2,608.26	6,803,020.94
16	Aug	72,664.00	73,629.72	(965.72)	965.72	932,611.28
17	Sep	72,100.00	73,664.18	(1,564.18)	1,564.18	2,446,646.20
18	Oct	69,892.00	73,698.63	(3,806.63)	3,806.63	14,490,460.58
19	Nov	75,613.00	73,733.09	1,879.91	1,879.91	3,534,055.47
20	Dec	74,369.00	73,767.55	601.45	601.45	361,742.69
21	Jan	70,112.00	73,802.01	(3,690.01)	3,690.01	13,616,154.48
22	Feb	72,189.00	73,836.47	(1,647.47)	1,647.47	2,714,141.77
23	Mar	69,638.00	73,870.92	(4,232.92)	4,232.92	17,917,638.23
24	Apr	73,549.00	73,905.38	(356.38)	356.38	127,007.42
JUMLAH					26,146.12	85,918,223.61

$$MAD = \frac{26,146.12}{12} = 2,376.92$$

$$MSE = \frac{85,918,223.61}{12} = 7,159,851.97$$



1. Metode Peramalan Konstan

Bangle

No.	Bulan	Pemakalan
1	Mei	67,165.00
2	Juni	70,115.00
3	Juli	70,198.00
4	Agustus	68,549.00
5	September	69,554.00
6	Oktober	68,023.00
7	November	72,100.00
8	Desember	65,987.00
9	Januari	67,436.00
10	Februari	67,598.00
11	Maret	68,500.00
12	April	81,527.00
TOTAL		836,752.00

$$a = \frac{836,752.00}{12}$$

12

$$= 69,729.33$$

$$Y(t) = 69,729.33$$

Menghitung Tingkat Kesalahan

No.	Bulan	Pemakalan Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	Mei	67,165.00	69,729.33	-2,564.33	2,564.33	6,575,805.44
14	Juni	70,115.00	69,729.33	385.67	385.67	148,738.78
15	Juli	70,198.00	69,729.33	468.67	468.67	219,648.44
16	Agustus	68,549.00	69,729.33	-1,180.33	1,180.33	1,393,186.78
17	September	69,554.00	69,729.33	-175.33	175.33	30,741.78
18	Oktober	68,023.00	69,729.33	-1,706.33	1,706.33	2,911,573.44
19	November	72,100.00	69,729.33	2,370.67	2,370.67	5,620,060.44
20	Desember	65,987.00	69,729.33	-3,742.33	3,742.33	14,005,058.78
21	Januari	67,436.00	69,729.33	-2,293.33	2,293.33	5,259,377.78
22	Februari	67,598.00	69,729.33	-2,131.33	2,131.33	4,542,581.78
23	Maret	68,500.00	69,729.33	-1,229.33	1,229.33	1,511,260.44
24	April	81,527.00	69,729.33	11,797.67	11,797.67	139,184,938.78
JUMLAH		836,752.00	836,752.00	0.00	30,045.33	181,402,972.67

$$\text{MAD} = \frac{30,045.33}{12} = 2,503.78$$

12

$$\text{MSE} = \frac{181,402,972.67}{12} = 15,116,914.39$$

12

2. METODE SINGLE MOVING AVERAGE

Periode (Bulan)	Pemakaian	12 Bulan Moving Average	Periode (Bulan)	Pemakaian	12 Bulan Moving Average
1	67,165.00		13	69,729.33	69,729.33
2	70,115.00		14	69,962.45	69,962.45
3	70,198.00		15	69,947.20	69,947.20
4	68,549.00		16	69,919.33	69,919.33
5	69,554.00		17	70,090.63	70,090.63
6	68,023.00		18	70,167.29	70,167.29
7	72,100.00		19	70,524.67	70,524.67
8	65,987.00		20	70,209.60	70,209.60
9	67,436.00		21	71,265.25	71,265.25
10	67,598.00		22	72,541.67	72,541.67
11	68,500.00		23	75,013.50	75,013.50
12	81,527.00		24	81,527.00	81,527.00

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan 12 Bin	Error	Abs. Error	Squared Error		
13	May	67,165.00	69,729.33	-2,564.33	2,564.33	6,575,805.44		
14	Jun	70,115.00	69,962.45	152.55	152.55	23,270.12		
15	Jul	70,198.00	69,947.20	250.80	250.80	62,900.64		
16	Aug	68,549.00	69,919.33	-1,370.33	1,370.33	1,877,813.44		
17	Sep	69,554.00	70,090.63	-536.63	536.63	287,966.39		
18	Oct	68,023.00	70,167.29	-2,144.29	2,144.29	4,597,961.22		
19	Nov	72,100.00	70,524.67	1,575.33	1,575.33	2,481,675.11		
20	Dec	65,987.00	70,209.60	-4,222.60	4,222.60	17,830,350.76		
21	Jan	67,436.00	71,265.25	-3,829.25	3,829.25	14,663,155.56		
22	Feb	67,598.00	72,541.67	-4,943.67	4,943.67	24,439,840.11		
23	Mar	68,500.00	75,013.50	-6,513.50	6,513.50	42,425,682.25		
24	Apr	81,527.00	81,527.00	0.00	-	-		
JUMLAH				836,752.00	860,897.92	-24,145.92	28,103.27	115,266,421.05

MAD = $\frac{28,103.27}{12}$ = 2,341.94

MSE = $\frac{115,266,421.05}{12}$ = 9,605,535.09

No	BULAN	Y(t)	ALFA = 0.1		PERAMALAN
			S ^t	S ^t	
1	May	67,165.00	67,165.00	67,165.00	71,135.91
2	Jun	70,115.00	67,460.00	67,194.50	71,306.49
3	Jul	70,198.00	67,733.80	67,248.43	71,477.07
4	Aug	68,549.00	67,815.32	67,305.12	71,647.65
5	Sep	69,554.00	67,989.19	67,373.53	71,818.23
6	Oct	68,023.00	67,992.57	67,435.43	71,988.81
7	Nov	72,100.00	68,403.31	67,532.22	72,159.39
8	Dec	65,987.00	68,161.68	67,595.16	72,329.97
9	Jan	67,436.00	68,089.11	67,644.56	72,500.56
10	Feb	67,598.00	68,040.00	67,684.10	72,671.14
11	Mar	68,500.00	68,086.00	67,724.29	72,841.72
12	Apr	81,527.00	69,430.10	67,894.87	73,012.30
JUMLAH			836,752.00	809,797.22	864,889.24
			70,965.33		
			170.58		

$$a = 2S^t - S^{t^2} =$$

$$b =$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	67,165.00	71,135.91			
14	Jun	70,115.00	71,306.49	(1,191.49)	1,191.49	1,419,648.30
15	Jul	70,198.00	71,477.07	(1,279.07)	1,279.07	1,636,021.94
16	Aug	68,549.00	71,647.65	(3,098.65)	3,098.65	9,601,641.21
17	Sep	69,554.00	71,818.23	(2,264.23)	2,264.23	5,126,747.90
18	Oct	68,023.00	71,988.81	(3,965.81)	3,965.81	15,727,673.39
19	Nov	72,100.00	72,159.39	(59.39)	59.39	3,527.63
20	Dec	65,987.00	72,329.97	(6,342.97)	6,342.97	40,233,327.36
21	Jan	67,436.00	72,500.56	(5,064.56)	5,064.56	25,649,721.69
22	Feb	67,598.00	72,671.14	(5,073.14)	5,073.14	25,736,711.02
23	Mar	68,500.00	72,841.72	(4,341.72)	4,341.72	18,850,506.46
24	Apr	81,527.00	73,012.30	8,514.70	8,514.70	72,500,153.94
JUMLAH			864,889.24	(24,166.33)	41,195.74	216,485,680.85

$$\text{MAD} = \frac{41,195.74}{12} = 3,745.07$$

$$\text{MSE} = \frac{216,485,680.85}{12} = 18,040,473.40$$

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.5		PERAMALAN
			S _t	S _t	
1	May	67,165.00	67,165.00	67,165.00	78,564.20
2	Jun	70,115.00	68,640.00	67,902.50	78,939.20
3	Jul	70,198.00	69,419.00	68,660.75	79,314.19
4	Aug	68,549.00	68,984.00	68,822.38	79,689.19
5	Sep	69,554.00	69,269.00	69,045.69	80,064.18
6	Oct	68,023.00	68,646.00	68,845.84	80,439.18
7	Nov	72,100.00	70,373.00	69,609.42	80,814.17
8	Dec	65,987.00	68,180.00	68,894.71	81,189.17
9	Jan	67,436.00	67,808.00	68,351.36	81,564.16
10	Feb	67,598.00	67,703.00	68,027.18	81,939.16
11	Mar	68,500.00	68,101.50	68,064.34	82,314.15
12	Apr	81,527.00	74,814.25	71,439.29	82,689.15
JUMLAH		836,752.00	829,102.75	824,828.46	967,520.08

$$a = 2S_t - S''_t = 78,189.21$$

$$b = 375.00$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	67,165.00	78,564.20	-	-	-
14	Jun	70,115.00	78,939.20	(8,824.20)	8,824.20	77,866,429.62
15	Jul	70,198.00	79,314.19	(9,116.19)	9,116.19	83,104,933.89
16	Aug	68,549.00	79,689.19	(11,140.19)	11,140.19	124,103,740.06
17	Sep	69,554.00	80,064.18	(10,510.18)	10,510.18	110,463,902.15
18	Oct	68,023.00	80,439.18	(12,416.18)	12,416.18	154,161,425.07
19	Nov	72,100.00	80,814.17	(8,714.17)	8,714.17	75,936,776.34
20	Dec	65,987.00	81,189.17	(15,202.17)	15,202.17	231,105,853.22
21	Jan	67,436.00	81,564.16	(14,128.16)	14,128.16	199,604,936.99
22	Feb	67,598.00	81,939.16	(14,341.16)	14,341.16	205,668,761.03
23	Mar	68,500.00	82,314.15	(13,814.15)	13,814.15	190,830,775.00
24	Apr	81,527.00	82,689.15	(1,162.15)	1,162.15	1,350,584.07
JUMLAH		836,752.00	967,520.08	(119,368.88)	119,368.88	1,454,198,117.44

$$MAD = \frac{119,368.88}{12} = 10,851.72$$

$$MSE = \frac{1,454,198,117.44}{12} = 121,183,176.45$$

3. METODE DOUBLE EXPONENTIAL SMOOTHING

No.	BULAN	Y(t)	ALFA = 0.9		PERAMALAN
			S ^t	S ^{t+1}	
1	May	67,165.00	67,165.00	67,165.00	81,536.55
2	Jun	70,115.00	69,820.00	69,554.50	81,668.71
3	Jul	70,198.00	70,160.20	70,099.63	81,800.86
4	Aug	68,549.00	68,710.12	68,849.07	81,933.01
5	Sep	69,554.00	69,469.61	69,407.56	82,065.16
6	Oct	68,023.00	68,167.66	68,291.65	82,197.32
7	Nov	72,100.00	71,706.77	71,365.25	82,329.47
8	Dec	65,987.00	66,558.98	67,039.60	82,461.62
9	Jan	67,436.00	67,348.30	67,317.43	82,593.77
10	Feb	67,598.00	67,573.03	67,547.47	82,725.92
11	Mar	68,500.00	68,407.30	68,321.32	82,858.08
12	Apr	81,527.00	80,215.03	79,025.66	82,990.23
JUMLAH		836,752.00	835,302.00	833,984.15	987,160.70

$$a = 2S^t - S^{t+1} = 81,404.40$$

$$b = 132.15$$

Menghitung Tingkat Kesalahan

No.	Bulan	Y(t)	Peramalan	Error	Abs. Error	Squared Error
13	May	67,165.00	81,536.55		-	-
14	Jun	70,115.00	81,668.71	(11,553.71)	11,553.71	133,488,123.36
15	Jul	70,198.00	81,800.86	(11,602.86)	11,602.86	134,626,322.71
16	Aug	68,549.00	81,933.01	(13,384.01)	13,384.01	179,131,743.11
17	Sep	69,554.00	82,065.16	(12,511.16)	12,511.16	156,529,201.27
18	Oct	68,023.00	82,197.32	(14,174.32)	14,174.32	200,911,217.26
19	Nov	72,100.00	82,329.47	(10,229.47)	10,229.47	104,642,010.40
20	Dec	65,987.00	82,461.62	(16,474.62)	16,474.62	271,413,107.05
21	Jan	67,436.00	82,593.77	(15,157.77)	15,157.77	229,758,065.01
22	Feb	67,598.00	82,725.92	(15,127.92)	15,127.92	228,854,107.83
23	Mar	68,500.00	82,858.08	(14,358.08)	14,358.08	206,154,378.30
24	Apr	81,527.00	82,990.23	(1,463.23)	1,463.23	2,141,040.43
JUMLAH		836,752.00	987,160.70	(136,037.15)	136,037.15	1,847,649,316.74

$$MAD = \frac{136,037.15}{12} = 12,367.01$$

$$MSE = \frac{1,847,649,316.74}{12} = 153,970,776.39$$

***NILAI
MAD DAN MSE
PERAMALAN LAMPU TL***



TL 10 W

Model Peramalan	MSE	MAD
Single Moving Average	90.894.265,11	7496,94
Double Exponential Smoothing ($\alpha=0.1$)	105.190.598,14	8508,85
Double Exponential Smoothing ($\alpha=0.5$)	281.179.267,49	14.508,68
Double Exponential Smoothing ($\alpha=0.9$)	361.739.841,88	17.064,90
Konstan	99.526.366,89	8003,78

TL 18 W

Model Peramalan	MSE	MAD
Single Moving Average	131.282.373,49	6928,55
Double Exponential Smoothing ($\alpha=0.1$)	152.379.175,62	8928,39
Double Exponential Smoothing ($\alpha=0.5$)	178.644.722,96	9483,47
Double Exponential Smoothing ($\alpha=0.9$)	227.405.699,35	11340,63
Konstan	151.713.257	8568,17

TL 20 W

Model Peramalan	MSE	MAD
Single Moving Average	26831142,87	4088,48
Double Exponential Smoothing ($\alpha=0.1$)	33852168,98	5240,26
Double Exponential Smoothing ($\alpha=0.5$)	55354089,61	6032,87
Double Exponential Smoothing ($\alpha=0.9$)	55354089,61	5494,90
Konstan	31213026,58	5027,07

TL 36 W

Model Peramalan	MSE	MAD
Single Moving Average	5782868,84	1817,04
Double Exponential Smoothing ($\alpha=0.1$)	7747226,77	2242,87
Double Exponential Smoothing ($\alpha=0.5$)	6125629,93	2042,85
Double Exponential Smoothing ($\alpha=0.9$)	7159851,97	2376,92
Konstan	6856204,91	2195,40

TL 40 W

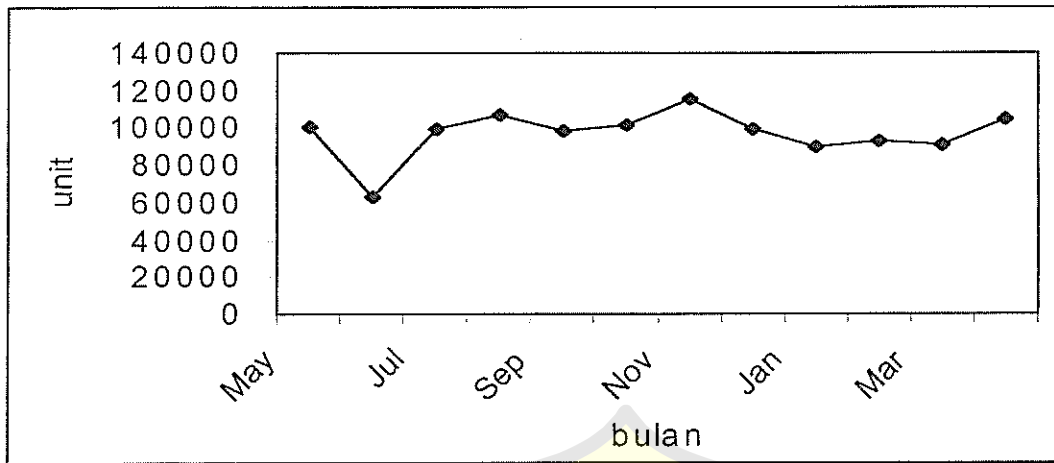
Model Peramalan	MSE	MAD
Single Moving Average	9605535,09	2341,94
Double Exponential Smoothing ($\alpha=0.1$)	18040473,40	3745,07
Double Exponential Smoothing ($\alpha=0.5$)	121183176,45	10851,72
Double Exponential Smoothing ($\alpha=0.9$)	153970776,39	12367,01
Konstan	15116914,39	2503,78

PLOT DATA

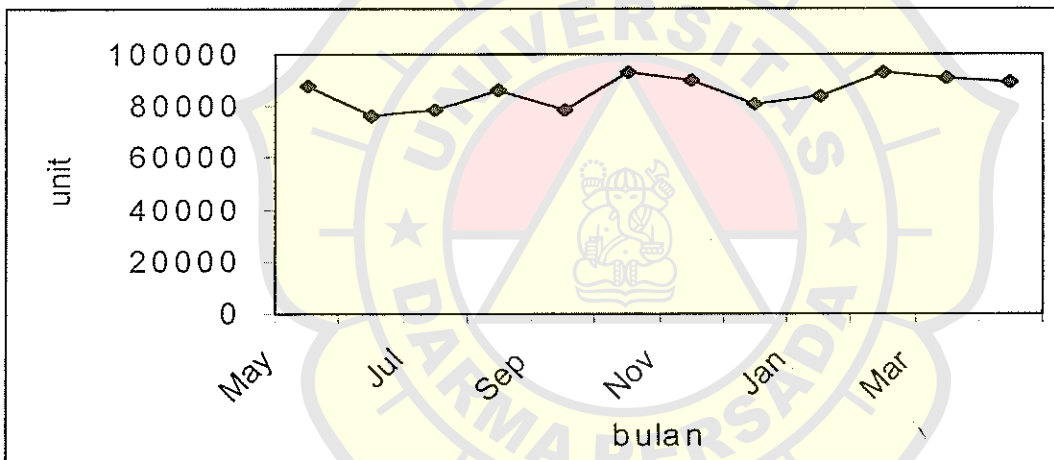
PERMINTAAN LAMPU TL



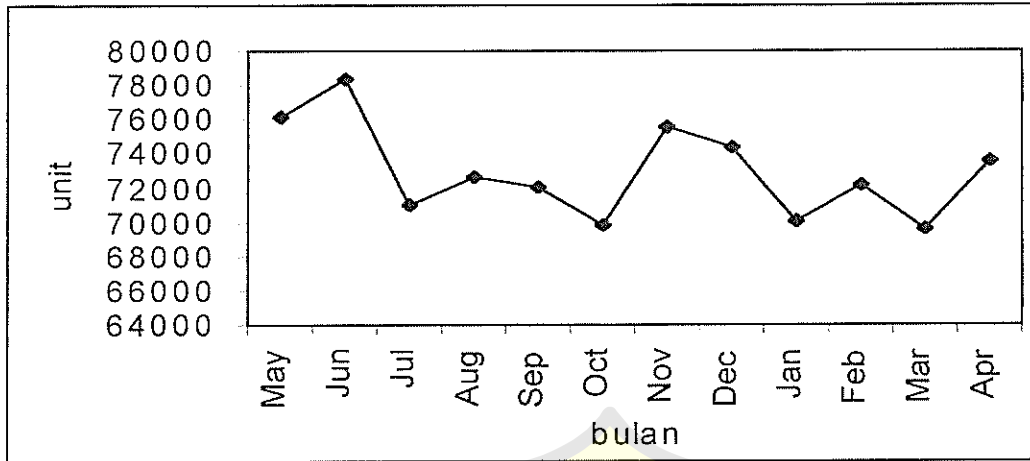
PLOT DATA 18 W



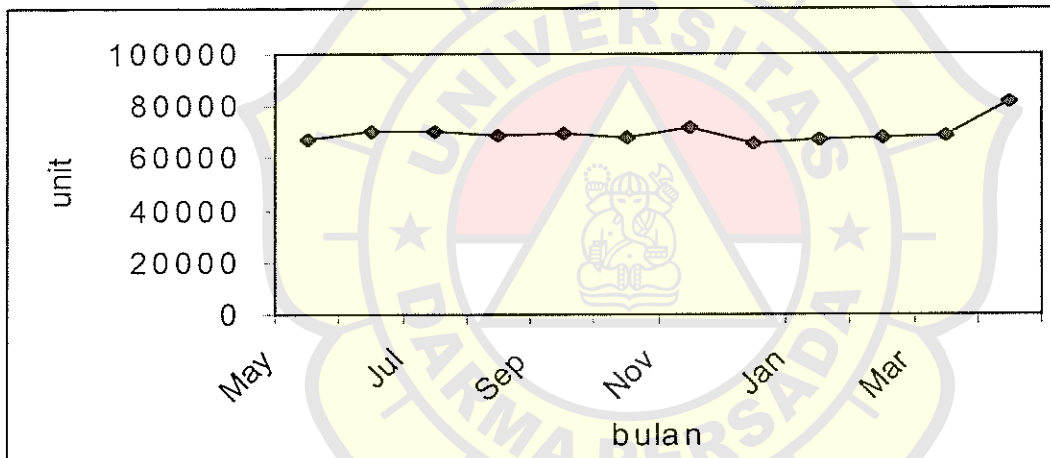
PLOT DATA 20 W



PLOT DATA 36 W



PLOT DATA 40 W





Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0852	.086	.0974	.1146	.1191	-1
A2	M	.013	.0132	.0149	.0176	.0182	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (8493.6 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0852	.086	.0974	.1146	.1191	-1
A2	M	.013	.0132	.0149	.0176	.0182	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-0.09819	-.0992	-.1123	-.1322	-.1373	1

Current OBJ (Min.) = 0 + (8493.6 M) IN: X5 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	0.000128	-0.00038	-0.00010	-0.00057	1.05E-17	-1
X5	30.6	.7142857	.7252747	.8186813	.9670329	1	0
c(j)-Z(j)		8.742858	8.406594	5.548353	1.008793	0	0
* Big M		-0.00012	0.000380	0.000104	0.000573	0	1

Current OBJ (Min.) = 269011 + (7286.567 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	0.000019	-0.00005	-0.00001	-0.00008	0	-.152812
X5	30.6	.7153652	.7220823	.8178002	.9622167	1	-8.39630
c(j)-Z(j)		8.709824	8.504281	5.575314	1.15617	0	256.927
* Big M		0	0	0	0	0	0

(Min.) Optimal OBJ value = 2141127

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Solution Summary for juni 2000

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Page: 1 of 1

Variable Number	Variable Name	Solution	Opportunity Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
1	X1	0	8.709824	21.89018	30.6	
2	X2	0	8.504281	22.09572	30.6	
3	X3	0	5.575314	25.02469	30.6	
4	X4	0	1.15617	29.44383	30.6	
5	X5	69971.45	0	0	30.6	31.8015

Minimized OBJ = 2141127 Iteration = 2 Elapsed CPU seconds = .109375

Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0936	.092	.1049	.1269	.1311	-1
A2	M	.0143	.0141	.0161	.0195	.0201	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (9342.96 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0936	.092	.1049	.1269	.1311	-1
A2	M	.0143	.0141	.0161	.0195	.0201	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.1079	-.1061	-.121	-.1464	-.1512	1

Current OBJ (Min.) = 0 + (9342.96 M) IN: X5 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	0.000329	0.000034	-0.00011	-0.00028	-3.6E-18	-1
X5	30.6	.7114428	.7014925	.8009951	.9701493	1	0
c(j)-Z(j)		8.82985	9.134328	6.08955	.9134313	0	0
* Big M		-0.00032	-0.00003	0.000110	0.000286	0	1

Current OBJ (Min.) = 267940.3 + (8019.02 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	
S2	0	0.000050	0.000005	-0.00001	-0.00004	0	-.153318
X5	30.6	.7139588	.7017544	.8001526	.9679634	1	-7.62776
c(j)-Z(j)		8.752861	9.126316	6.115331	.9803196	0	233.4096
* Big M		0	0	0	0	0	

(Min.) Optimal OBJ value = 2139657

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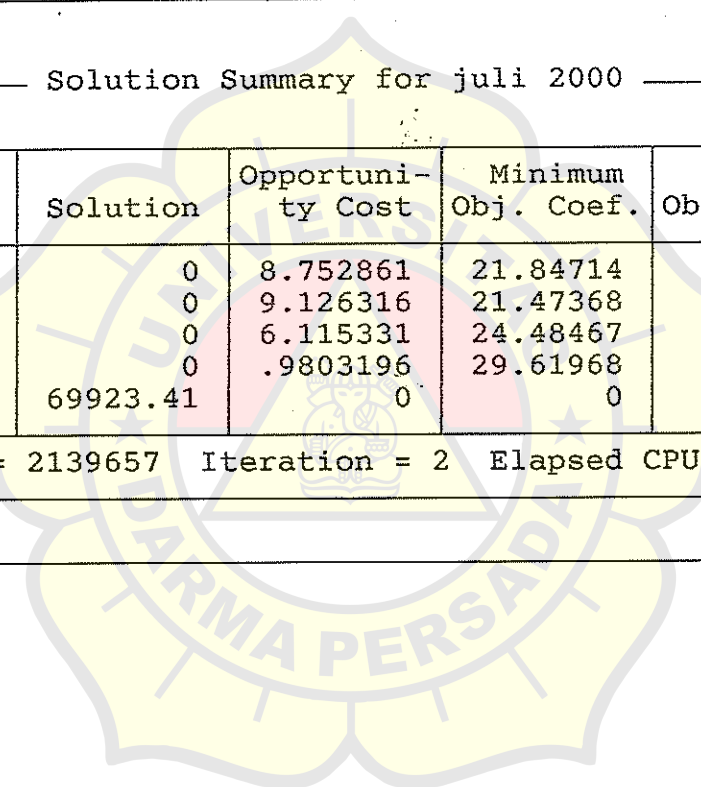
Solution Summary for juli 2000

-25-2000 18:53:24

Page: 1 of 1

Variable Number	Variable Name	Solution	Opportunity Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
1	X1	0	8.752861	21.84714	30.6	
2	X2	0	9.126316	21.47368	30.6	
3	X3	0	6.115331	24.48467	30.6	
4	X4	0	.9803196	29.61968	30.6	
5	X5	69923.41	0	0	30.6	31.6127

Minimized OBJ = 2139657 Iteration = 2 Elapsed CPU seconds = 0



Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0931	.092	.1049	.1269	.1311	-1
A2	M	.0143	.0141	.0161	.0195	.0201	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (9342.96 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0931	.092	.1049	.1269	.1311	-1
A2	M	.0143	.0141	.0161	.0195	.0201	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.1074	-.1061	-.121	-.1464	-.1512	1

Current OBJ (Min.) = 0 + (9342.96 M) IN: X5 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	-0.00017	0.000034	-0.00011	-0.00028	-3.6E-18	-1
X5	30.6	.7114428	.7014925	.8009951	.9701493	1	0
c(j)-Z(j)		.82985	9.134328	6.08955	.9134313	0	0
* Big M		0.000170	-0.00003	0.000110	0.000286	0	1

Current OBJ (Min.) = 267940.3 + (8019.02 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	-0.00002	0.000005	-0.00001	-0.00004	0	-.153318
X5	30.6	.7101449	.7017544	.8001526	.9679634	1	-7.62776
c(j)-Z(j)		8.869566	9.126316	6.115331	.9803196	0	233.4096
* Big M		0	0	0	0	0	0
(Min.) Optimal OBJ value = 2139657							
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Solution Summary for agustus 2000

5-2000 20:45:30

Page: 1 of 1

able ber	Variable Name	Solution	Opportuni- ty Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
1	X1	0	8.869566	21.73043	30.6	M
2	X2	0	9.126316	21.47368	30.6	M
3	X3	0	6.115331	24.48467	30.6	M
4	X4	0	.9803196	29.61968	30.6	M
5	X5	69923.41	0	0	30.6	31.61277

inimized OBJ = 2139657 Iteration = 2 Elapsed CPU seconds = .0625

Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0841	.0842	.1049	.1269	.1311	-1
A2	M	.0129	.0129	.0146	.0177	.0182	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (8493.6 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0841	.0842	.1049	.1269	.1311	-1
A2	M	.0129	.0129	.0146	.0177	.0182	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.097	-.0971	-.1195	-.1446	-.1493	1

Current OBJ (Min.) = 0 + (8493.6 M) IN: X5 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	-0.00882	-0.00872	-0.00026	-0.00059	7.63E-18	-1
X5	30.6	.7087912	.7087912	.8021978	.9725274	1	0
c(j)-Z(j)		8.910989	8.910989	6.052748	.840661	0	0
* Big M		0.008822	0.008722	0.000268	0.000598	0	1

Current OBJ (Min.) = 269011 + (7181.072 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	-0.00122	-0.00121	-0.00003	-0.00008	0	-.138825
X5	30.6	.641495	.6422579	.8001526	.9679634	1	-7.62776
c(j)-Z(j)		10.97025	10.94691	6.115331	.9803196	0	233.4096
* Big M		0	0	0	0	0	0

(Min.) Optimal OBJ value = 1945142

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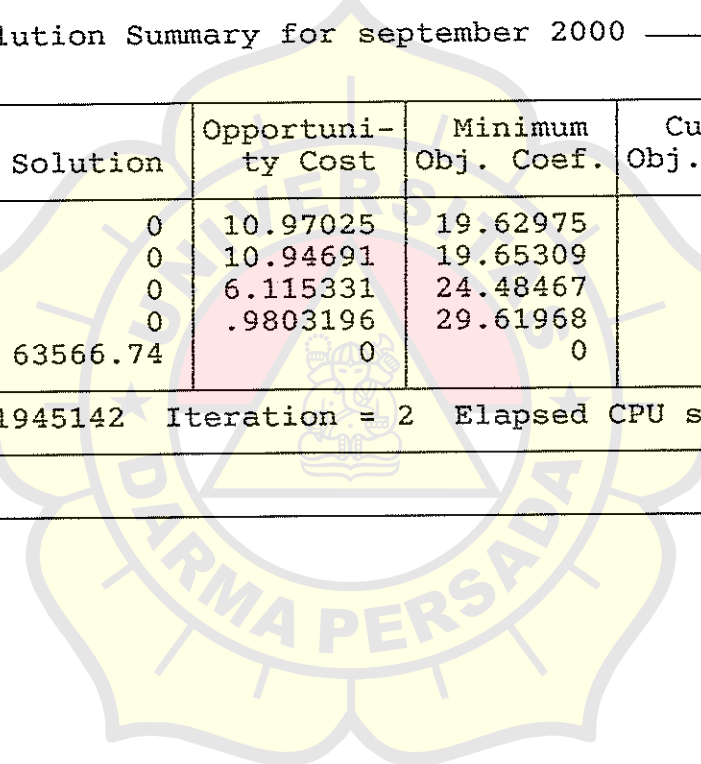
Solution Summary for september 2000

5-2000 20:51:06

Page: 1 of 1

Table Number	Variable Name	Solution	Opportunity Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
1	X1	0	10.97025	19.62975	30.6	M
2	X2	0	10.94691	19.65309	30.6	M
3	X3	0	6.115331	24.48467	30.6	M
4	X4	0	.9803196	29.61968	30.6	M
5	X5	63566.74	0	0	30.6	31.61277

Minimized OBJ = 1945142 Iteration = 2 Elapsed CPU seconds = 0



Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.092	.0926	.1034	.1269	.1306	-1
A2	M	.0141	.0142	.0158	.0195	.02	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (9342.96 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.092	.0926	.1034	.1269	.1306	-1
A2	M	.0141	.0142	.0158	.0195	.02	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.1061	-.1068	-.1192	-.1464	-.1506	1

Current OBJ (Min.) = 0 + (9342.96 M) IN: X5 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	-0.00007	-0.00012	0.000225	-0.00043	-1.4E-17	-1
X5	30.6	.705	.71	.79	.975	1	0
c(j)-Z(j)		9.026999	8.874	6.426001	.7649987	0	0
* Big M		0.000073	0.000126	-0.00022	0.000435	0	1

Current OBJ (Min.) = 269280 + (8017.68 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	-0.00001	-0.00001	0.000034	-0.00006	0	-.153139
X5	30.6	.704441	.7090352	.7917305	.9716692	1	-7.65696
c(j)-Z(j)		9.044106	8.903522	6.373049	.8669226	0	234.3032
* Big M		0	0	0	0	0	0

(Min.) Optimal OBJ value = 2147848

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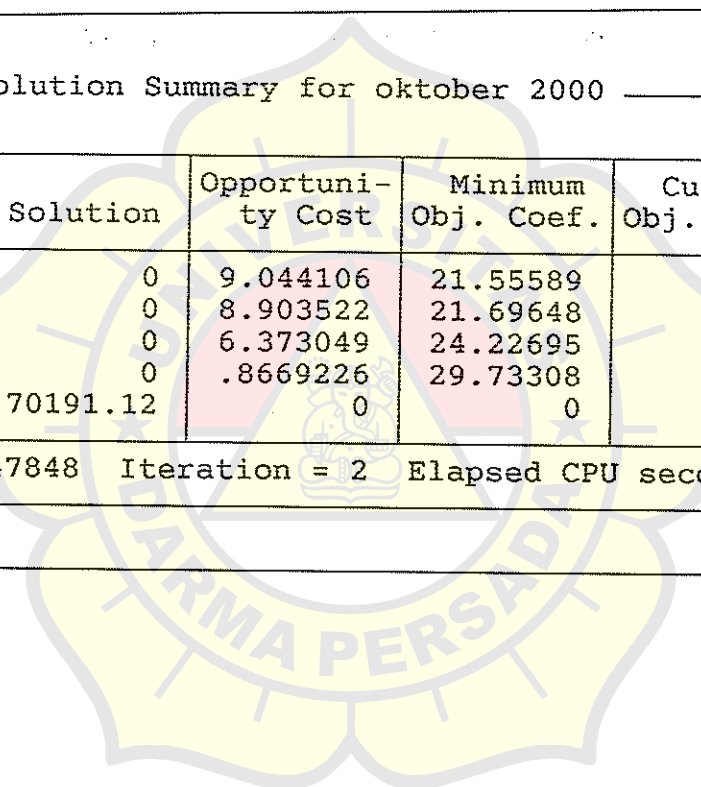
Solution Summary for oktober 2000

05-2000 20:56:28

Page: 1 of 1

Table Number	Variable Name	Solution	Opportunity Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
1	X1	0	9.044106	21.55589	30.6	M
2	X2	0	8.903522	21.69648	30.6	M
3	X3	0	6.373049	24.22695	30.6	M
4	X4	0	.8669226	29.73308	30.6	M
5	X5	70191.12	0	0	30.6	31.4922

Minimized OBJ = 2147848 Iteration = 2 Elapsed CPU seconds = .046875



Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0862	.0843	.0947	.1148	.1181	-1
A2	M	.0132	.0129	.0145	.0176	.0181	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (8493.6 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0862	.0843	.0947	.1148	.1181	-1
A2	M	.0132	.0129	.0145	.0176	.0181	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.0994	-.0972	-.1092	-.1324	-.1362	1

Current OBJ (Min.) = 0 + (8493.6 M) IN: X5 OUT: A2

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	0.000011	0.000019	0.000013	-0.00000	0	-.153259
X5	30.6	.7298899	.7138018	.8018628	.9720575	1	-8.46740
c(j)-Z(j)		8.265369	8.757665	6.062998	.8550391	0	259.1024
* Big M		0	0	0	0	0	0

(Min.) Optimal OBJ value = 2159256

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	0.000071	0.000129	0.000089	-0.00003	-1.7E-18	-1
X5	30.6	.7292817	.7127072	.8011049	.9723756	1	0
c(j)-Z(j)		8.283979	8.791161	6.08619	.8453056	0	0
* Big M		-0.00007	-0.00012	-0.00008	0.000037	0	1

Current OBJ (Min.) = 270497.2 + (7289.622 M) IN: S2 OUT: A1

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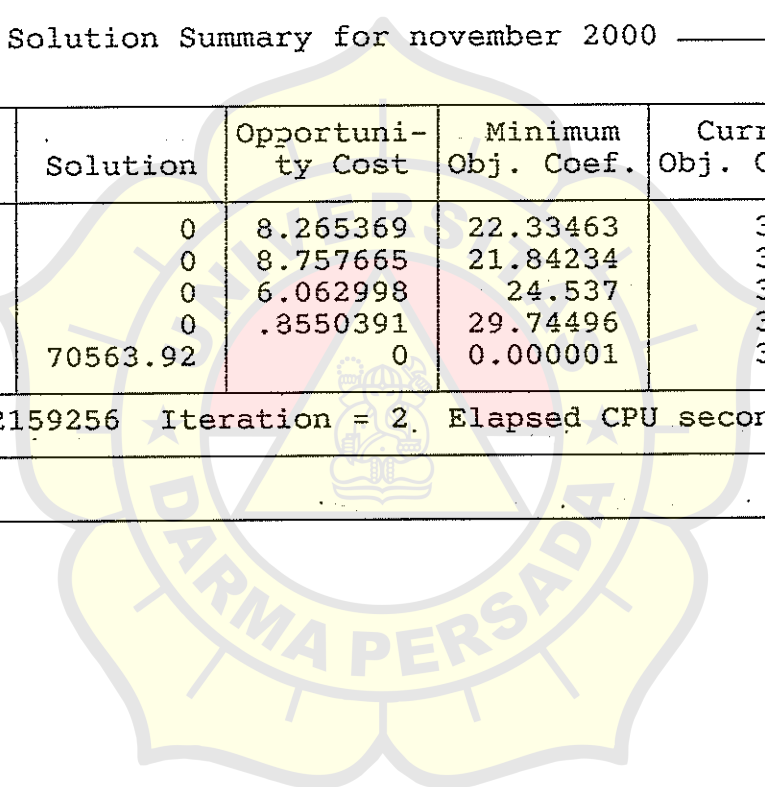
Solution Summary for november 2000

5-2000 21:01:33

Page: 1 of 1

able ber	Variable Name	Solution	Opportuni- ty Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
1	X1	0	8.265369	22.33463	30.6	M
2	X2	0	8.757665	21.84234	30.6	M
3	X3	0	6.062998	24.537	30.6	M
4	X4	0	.3550391	29.74496	30.6	M
5	X5	70563.92	0	0.000001	30.6	31.47962

inimized OBJ = 2159256 Iteration = 2 Elapsed CPU seconds = .046875



Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.084	.0856	.0951	.1157	.1186	-1
A2	M	.0129	.0131	.0146	.0177	.0182	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (8493.6 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.084	.0856	.0951	.1157	.1186	-1
A2	M	.0129	.0131	.0146	.0177	.0182	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.0969	-.0987	-.1097	-.1334	-.1368	1

Current OBJ (Min.) = 0 + (8493.6 M) IN: X5 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	-0.00006	0.000234	-0.00004	0.000358	6.43E-19	-1
X5	30.6	.7087912	.7197802	.8021978	.9725274	1	0
c(j)-Z(j)		8.910989	8.574726	6.052748	.840661	0	0
* Big M		0.000062	-0.00023	0.000040	-0.00035	0	1

Current OBJ (Min.) = 269011 + (7290.962 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	-0.00000	0.000035	-0.00000	0.000054	0	-.153457
X5	30.6	.708263	.7217538	.801855	.975548	1	-8.43170
c(j)-Z(j)		8.927151	8.514334	6.063239	.7482305	0	258.0101
* Big M		0	0	0	0	0	0

(Min.) Optimal OBJ value = 2150153

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Solution Summary for desember 2000

5-2000 21:06:46

Page: 1 of 1

able er	Variable Name	Solution	Opportuni- ty Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
1	X1	0	8.927151	21.67285	30.6	M
2	X2	0	8.514334	22.08567	30.6	M
3	X3	0	6.063239	24.53676	30.6	M
4	X4	0	.7482305	29.85177	30.6	M
5	X5	70266.44	0	0	30.6	31.36699

Minimized OBJ = 2150153 Iteration = 2 Elapsed CPU seconds = 0

Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0949	.0986	.1074	.1342	.1344	-1
A2	M	.0145	.0151	.0165	.0206	.0206	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (10037.64 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0949	.0986	.1074	.1342	.1344	-1
A2	M	.0145	.0151	.0165	.0206	.0206	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.1094	-.1137	-.1239	-.1548	-.155	1

Current OBJ (Min.) = 0 + (10037.64 M) IN: X5 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	0.000298	0.000083	-0.00025	-0.00019	4.22E-18	-1
X5	30.6	.7038835	.7330097	.8009709	1	1	0
c(j)-Z(j)		9.061166	8.169903	6.090292	0	0	0
* Big M		-0.00029	-0.00008	0.000250	0.000199	0	1

Current OBJ (Min.) = 273320.4 + (8653.174 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	0.000045	0.000012	-0.000003	-0.000003	0	-.153273
X5	30.6	.7061012	.733631	.7991072	.998512	1	-7.44047
c(j)-Z(j)		8.993303	8.150892	6.147321	0.045533	0	227.6786
* Big M		0	0	0	0	0	0

(Min.) Optimal OBJ value = 2243463

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Solution Summary for januari 2000

-2000 21:11:34

Page: 1 of 1

Variable	Variable Name	Solution	Opportunity Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
	X1	0	8.993303	21.6067	30.6	M
	X2	0	8.150892	22.44911	30.6	M
	X3	0	6.147321	24.45268	30.6	M
	X4	0	0.045533	30.55447	30.6	M
	X5	73315.77	0	-0.00000	30.6	30.6456

Optimized OBJ = 2243463 Iteration = 2 Elapsed CPU seconds = .0546875

Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0762	.0809	.0869	.1102	.1091	-1
A2	M	.0121	.0124	.0133	.0169	.0162	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (8068.92 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0762	.0809	.0869	.1102	.1091	-1
A2	M	.0121	.0124	.0133	.0169	.0162	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.0883	-.0933	-.1002	-.1271	-.1253	1

Current OBJ (Min.) = 0 + (8068.92 M) IN: X4 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	-0.00270	0.000043	0.000174	-5.6E-18	0.003464	-1
X4	30.6	.7159764	.7337279	.7869823	1	.95858	0
c(j)-Z(j)		8.691124	8.147927	6.518342	0	1.267454	0
* Big M		0.002700	-0.00004	-0.00017	0	-0.00346	1

Current OBJ (Min.) = 275218.9 + (6925.772 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	-0.00041	0.000006	0.000026	0	0.000531	-.153357
X4	30.6	.69147	.7341198	.7885662	1	.9900181	-9.07440
c(j)-z(j)		9.441017	8.135936	6.469873	0	.3054457	277.6769
* Big M		0	0	0	0	0	0

(Min.) Optimal OBJ value = 2198346

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Solution Summary for februari 2000

5-2000 21:17:24

Page: 1 of 1

able ber	Variable Name	Solution	Opportuni- ty Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
1	X1	0	9.441017	21.15898	30.6	M
2	X2	0	8.135936	22.46407	30.6	M
3	X3	0	6.469873	24.13013	30.6	M
4	X4	71841.38	0	0	30.6	30.90853
5	X5	0	.3054457	30.29455	30.6	M

Minimized OBJ = 2198346 Iteration = 2 Elapsed CPU seconds = 0

Initial Tableau

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0793	.0806	.0878	.1105	.1055	-1
A2	M	.0121	.0123	.0134	.0169	.0162	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		0	0	0	0	0	0

Current OBJ (Min.) = 0 + (8068.92 M)

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Iteration 1

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	.0793	.0806	.0878	.1105	.1055	-1
A2	M	.0121	.0123	.0134	.0169	.0162	0
c(j)-Z(j)		30.6	30.6	30.6	30.6	30.6	0
* Big M		-.0914	-.0929	-.1012	-.1274	-.1217	1

Current OBJ (Min.) = 0 + (8068.92 M) IN: X4 OUT: A2

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Iteration 2

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
A1	M	0.000184	0.000176	0.000184	-1.5E-18	-0.00042	-1
X4	30.6	.7159764	.7278107	.7928994	1	.95858	0
c(j)-Z(j)		8.691124	8.328994	6.337278	0	1.267454	0
* Big M		-0.00018	-0.00017	-0.00018	0	0.000423	1

Current OBJ (Min.) = 275218.9 + (6923.074 M) IN: S2 OUT: A1

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Final Tableau (Total Iterations = 2)

		X1	X2	X3	X4	X5	S1
Basis	c(j)	30.6	30.6	30.6	30.6	30.6	0
S2	0	0.000028	0.000027	0.000028	0	-0.00006	-.152941
X4	30.6	.7176471	.7294118	.7945701	1	.9547511	-9.04977
c(j)-Z(j)		8.639999	8.28	6.286153	0	1.384616	276.9231
* Big M		0	0	0	0	0	0

(Min.) Optimal OBJ value = 2192378

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Solution Summary for maret 2000

6-2000 21:23:15

Page: 1 of 1

Variable Number	Variable Name	Solution	Opportuni- ty Cost	Minimum Obj. Coef.	Current Obj. Coef.	Maximum Obj. Coef.
	X1	0	8.639999	21.96	30.6	M
	X2	0	8.28	22.32	30.6	M
	X3	0	6.286153	24.31385	30.6	M
	X4	71646.34	0	0.000003	30.6	32.05024
	X5	0	1.384616	29.21538	30.6	M

Optimized OBJ = 2192378 Iteration = 2 Elapsed CPU seconds = .1171875