

## LAMPIRAN

### Lampiran 1 Data Customer

1	Dejavu Shoes Bojonegoro	Sukorejo, Bojonegoro	87 km
2	ZY Shoes.id	Sukorejo, Bojonegoro	91 km
3	Mall Olympic Garden Malang	Kauman Kec. Klojen, Malang	79 km
4	Istana Sepatu Toko	Sukoharjo, Malang	70 km
5	Toko Makmur Babat	Babat, Lamongan	81km
6	Walter Store	Sambiroto, Mojokerto	18 km
7	Fortune Ramayana	Sidokumpul, Sidoarjo	28 km
8	Sogo Pakuwon Mall	Wiyung, Surabaya	36 km
9	Ramayana Gresik	Karangturi, Gresik	56 km
10	Mall Kota Casablanca	Tebet, Jakarta Selatan	746 km
11	Sports Nation	Panggungrejo, pasuruan	50 km
12	Toko Zidane Jaya	Ngaglik,Lamongan	67 km
13	UD. Zacyndo (Ozero)	Sukolilo, Tuban	120 km
14	Toko Alaska	Sendangharjo, Tuban	120 km
15	Utapes Store	Klojen. Malang	67 km

## Lampiran 2 Data Pengiriman Periode Januari 2021

NO	Custo mer	DataPengirimanJanuari2021																															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
1	Dejav u Shoes Bojon egoro							50					45								60					45				50			
2	ZY Shoes.id		70				40						55								60					45				60			
3	Mall Olympic Garden Malang.					45						50				60											60						
4	Istana Sepatu Toko.					45						60				60						60				50							
5	Toko Makmur Babat				50								40								30	30					30						
6	Walter Store								50										50				30						60				
7	Fortune Ramaya na							65												45									30				
8	Sogo Pakuw on Mall							50						50									60							60			
9	Ramaya na Gresik		68							50				45									60										
10	Mall Kota Casabla nca									100							150								150							150	

11	Sports Nation					45					55				60					40			
12	Toko Zidane Jaya				60					60					50						60		
13	UD. Zacyno (Ozero)			50						45					60					60			
14	Toko Alaska				60					45					30						50		
15	Utapes Store			50					30			30				60				60			

### Lampiran 3 Matrik Jarak Antar Customer (km)

No	Lokasi	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	UD. Saka Grup	0	87	91	79	70	81	18	28	36	56	746	50	67	120	121	67
2	Dejavu shoes bojonegoro	87	0	1	212	214	35	88	142	130	93	678	185	64	51	52	212
3	ZY. Shoes.id	91	1	0	244	246	36	89	173	161	94	677	166	65	51	52	243
4	Mall olympic garden malang	79	198	199	0	1.9	163	97	75	97	113	847	58	136	190	191	4.4
5	Istana sepatu toko	70	201	202	3.1	0	166	100	77	99	116	850	60	139	192	193	5.2
6	Toko makmur babat	81	35	36	165	167	0	73	94	76	58	756	138	29	29	30	165
7	Walter store	18	88	89	99	102	68	0	62	50	66	736	73	52	107	108	99
8	Fortune ramayana	28	130	131	70	78	95	61	0	29	45	779	38	68	121	122	70
9	Sogo pakuwon mall	36	107	108	96	99	72	48	26	0	22	767	70	45	98	99	96
10	Ramayana Gresik	56	93	94	114	116	58	60	44	24	0	783	87	31	84	85	114
11	Mall kota casablanca jakarta	746	678	677	849	851	756	736	778	766	803	0	822	773	719	719	848
12	Sport Nation	50	172	173	57	54	137	71	48	71	87	821	0	110	163	164	57

13	Toko zidane jaya	67	64	65	138	140	29	52	67	49	31	772	111	0	55	55	138
14	UD. Zacyndo Tuban	120	50	50	191	193	28	96	120	96	85	721	164	55	0	1	190
15	Toko Alaska	121	51	51	192	194	29	97	121	138	86	722	165	55	1	0	191
16	Utapes store	67	199	200	2.4	3.5	164	98	75	97	114	848	54	137	190	190	0

#### Lampiran 4 Matrik Waktu Antar Customer (menit)

No	Lokasi	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	UD. Saka Grup	0	87	91	79	70	81	18	28	36	56	746	50	67	120	121	67
2	Dejavu shoes bojonegoro	87	0	1	212	214	35	88	142	130	93	678	185	64	51	52	212
3	ZY. Shoes.id	91	1	0	244	246	36	89	173	161	94	677	166	65	51	52	243
4	Mall olympic garden malang	79	198	199	0	1.9	163	97	75	97	113	847	58	136	190	191	4.4
5	Istana sepatu toko	70	201	202	3.1	0	166	100	77	99	116	850	60	139	192	193	5.2
6	Toko makmur babat	81	35	36	165	167	0	73	94	76	58	756	138	29	29	30	165
7	Walter store	18	88	89	99	102	68	0	62	50	66	736	73	52	107	108	99

8	Fortune ramayana	28	130	131	70	78	95	61	0	29	45	779	38	68	121	122	70
9	Sogo pakuwon mall	36	107	108	96	99	72	48	26	0	22	767	70	45	98	99	96
10	Ramayana Gresik	56	93	94	114	116	58	60	44	24	0	783	87	31	84	85	114
11	Mall kota casablanca jakarta	746	678	677	849	851	756	736	778	766	803	0	822	773	719	719	848
12	Sport Nation	50	172	173	57	54	137	71	48	71	87	821	0	110	163	164	57
13	Toko zidane jaya	67	64	65	138	140	29	52	67	49	31	772	111	0	55	55	138
14	UD. Zacyndo Tuban	120	50	50	191	193	28	96	120	96	85	721	164	55	0	1	190
15	Toko Alaska	121	51	51	192	194	29	97	121	138	86	722	165	55	1	0	191
16	Utapes store	67	199	200	2.4	3.5	164	98	75	97	114	848	54	137	190	190	0

## Lampiran 5 Hasil Pemrograman Lingo

### Cluster 1 tanggal 4 januari 2021

Global optimal solution found.

Objective value:	230.0000
Objective bound:	230.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.55

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 120 km

rute pengiriman dari customer 2 ke customer 3 sebesar 29 km

rute pengiriman dari customer 3 ke customer 1 sebesar 81 km

Model Class:

MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9
 Total constraints:	 19
Nonlinear constraints:	0
 Total nonzeros:	 45
Nonlinear nonzeros:	0

Variable	Value	Reduced
Cost		
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BONGKAR( 3)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	540.0000	0.000000
BUKA( 3)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	900.0000	0.000000
T( 1)	861.0000	0.000000
T( 2)	540.0000	0.000000
T( 3)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	120.0000

X( 1, 3)	0.000000	81.00000
X( 2, 1)	0.000000	120.0000
X( 2, 2)	0.000000	0.000000
X( 2, 3)	1.000000	29.00000
X( 3, 1)	1.000000	81.00000
X( 3, 2)	0.000000	29.00000
X( 3, 3)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	120.0000	0.000000
D( 1, 3)	81.00000	0.000000
D( 2, 1)	120.0000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	29.00000	0.000000
D( 3, 1)	81.00000	0.000000
D( 3, 2)	29.00000	0.000000
D( 3, 3)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	120.0000	0.000000
DURASI( 1, 3)	81.00000	0.000000
DURASI( 2, 1)	120.0000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	29.00000	0.000000
DURASI( 3, 1)	81.00000	0.000000
DURASI( 3, 2)	29.00000	0.000000
DURASI( 3, 3)	0.000000	0.000000

### Cluster 2 Minggu Pertama tanggal 4 Januari 2021

Global optimal solution found.

Objective value:	134.0000
Objective bound:	134.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.94

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km

rute pengiriman dari customer 2 ke customer 1 sebesar 67 km

Model Class: MILP

Total variables: 4

Nonlinear variables: 0



Integer variables: 2  
 Total constraints: 9  
 Nonlinear constraints: 0  
 Total nonzeros: 5  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
T ( 1)	707.0000	0.000000
T ( 2)	600.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	67.00000	0.000000
D ( 2, 1)	67.00000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	67.00000	0.000000
DURASI ( 2, 1)	67.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 3 Minggu Pertama tanggal 5 Januari 2021

Global optimal solution found.

Objective value: 141.3000  
 Objective bound: 141.3000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.22

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km  
 rute pengiriman dari customer 2 ke customer 4 sebesar 2.4 km  
 rute pengiriman dari customer 3 ke customer 1 sebesar 70 km  
 rute pengiriman dari customer 4 ke customer 3 sebesar 1.9 km

Model Class:

MILP

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Total variables:                20
Nonlinear variables:           0
Integer variables:             16

Total constraints:             29
Nonlinear constraints:         0

Total nonzeros:                89
Nonlinear nonzeros:           0

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Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BONGKAR ( 4)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
BUKA ( 4)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
TUTUP ( 4)	780.0000	0.000000
T ( 1)	859.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	740.0000	0.000000
T ( 4)	698.1000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	67.00000
X ( 1, 3)	0.000000	70.00000
X ( 1, 4)	0.000000	79.00000
X ( 2, 1)	0.000000	67.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	0.000000	3.500000
X ( 2, 4)	1.000000	2.400000
X ( 3, 1)	1.000000	70.00000
X ( 3, 2)	0.000000	5.200000
X ( 3, 3)	0.000000	0.000000
X ( 3, 4)	0.000000	3.100000
X ( 4, 1)	0.000000	79.00000
X ( 4, 2)	0.000000	4.400000
X ( 4, 3)	1.000000	1.900000
X ( 4, 4)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000

D( 1, 2)	67.00000	0.000000
D( 1, 3)	70.00000	0.000000
D( 1, 4)	79.00000	0.000000
D( 2, 1)	67.00000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	3.500000	0.000000
D( 2, 4)	2.400000	0.000000
D( 3, 1)	70.00000	0.000000
D( 3, 2)	5.200000	0.000000
D( 3, 3)	0.000000	0.000000
D( 3, 4)	3.100000	0.000000
D( 4, 1)	79.00000	0.000000
D( 4, 2)	4.400000	0.000000
D( 4, 3)	1.900000	0.000000
D( 4, 4)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	67.00000	0.000000
DURASI( 1, 3)	70.00000	0.000000
DURASI( 1, 4)	79.00000	0.000000
DURASI( 2, 1)	67.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	3.500000	0.000000
DURASI( 2, 4)	2.400000	0.000000
DURASI( 3, 1)	70.00000	0.000000
DURASI( 3, 2)	5.200000	0.000000
DURASI( 3, 3)	0.000000	0.000000
DURASI( 3, 4)	3.100000	0.000000
DURASI( 4, 1)	79.00000	0.000000
DURASI( 4, 2)	4.400000	0.000000
DURASI( 4, 3)	1.900000	0.000000
DURASI( 4, 4)	0.000000	0.000000

#### Cluster 4 Minggu Pertama tanggal 5 Januari 2021

Global optimal solution found.

Objective value:	182.0000
Objective bound:	182.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 91 km

rute pengiriman dari customer 2 ke customer 1 sebesar 91 km

Model Class: MILP

Total variables: 4  
 Nonlinear variables: 0  
 Integer variables: 2

Total constraints: 9  
 Nonlinear constraints: 0

Total nonzeros: 5  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	780.0000	0.000000
T( 1)	791.0000	0.000000
T( 2)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	91.00000	0.000000
D( 2, 1)	91.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	91.00000	0.000000
DURASI( 2, 1)	91.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 5 Minggu Pertama tanggal 6 Januari 2021

Global optimal solution found.

Objective value: 243.0000  
 Objective bound: 243.0000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.08

Rute yang paling optimal adalah:  
 rute pengiriman dari customer 1 ke customer 2 sebesar 67 km

rute pengiriman dari customer 2 ke customer 3 sebesar 55 km  
 rute pengiriman dari customer 3 ke customer 1 sebesar 121 km  
 Model Class: MILP

Total variables: 12  
 Nonlinear variables: 0  
 Integer variables: 9

Total constraints: 19  
 Nonlinear constraints: 0

Total nonzeros: 45  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
T ( 1)	901.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	695.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	67.00000
X ( 1, 3)	0.000000	121.0000
X ( 2, 1)	0.000000	67.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	55.00000
X ( 3, 1)	1.000000	121.0000
X ( 3, 2)	0.000000	55.00000
X ( 3, 3)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	67.00000	0.000000
D ( 1, 3)	121.0000	0.000000
D ( 2, 1)	67.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	55.00000	0.000000
D ( 3, 1)	121.0000	0.000000
D ( 3, 2)	55.00000	0.000000
D ( 3, 3)	0.000000	0.000000

DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	67.00000	0.000000
DURASI ( 1, 3)	121.0000	0.000000
DURASI ( 2, 1)	67.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	55.00000	0.000000
DURASI ( 3, 1)	121.0000	0.000000
DURASI ( 3, 2)	55.00000	0.000000
DURASI ( 3, 3)	0.000000	0.000000

### Cluster 6 Minggu Pertama tanggal 6 Januari 2021

Global optimal solution found.

Objective value:	72.00000
Objective bound:	72.00000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 36 km

rute pengiriman dari customer 2 ke customer 1 sebesar 36 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2

Total constraints:	9
Nonlinear constraints:	0

Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	736.0000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000

X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	36.00000	0.000000
D( 2, 1)	36.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	36.00000	0.000000
DURASI( 2, 1)	36.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 7 Minggu Pertama tanggal 7 Januari 2021

Global optimal solution found.

Objective value:	126.0000
Objective bound:	126.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 50 km

rute pengiriman dari customer 2 ke customer 3 sebesar 48 km

rute pengiriman dari customer 3 ke customer 1 sebesar 28 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9
Total constraints:	19
Nonlinear constraints:	0
Total nonzeros:	45
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BONGKAR( 3)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	600.0000	0.000000
BUKA( 3)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	840.0000	0.000000

TUTUP ( 3)	780.0000	0.000000
T ( 1)	808.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	688.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	50.00000
X ( 1, 3)	0.000000	28.00000
X ( 2, 1)	0.000000	50.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	48.00000
X ( 3, 1)	1.000000	28.00000
X ( 3, 2)	0.000000	38.00000
X ( 3, 3)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	50.00000	0.000000
D ( 1, 3)	28.00000	0.000000
D ( 2, 1)	50.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	48.00000	0.000000
D ( 3, 1)	28.00000	0.000000
D ( 3, 2)	38.00000	0.000000
D ( 3, 3)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	50.00000	0.000000
DURASI ( 1, 3)	28.00000	0.000000
DURASI ( 2, 1)	50.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	48.00000	0.000000
DURASI ( 3, 1)	28.00000	0.000000
DURASI ( 3, 2)	38.00000	0.000000
DURASI ( 3, 3)	0.000000	0.000000

### Cluster 8 Minggu Pertama tanggal 7 Januari 2021

Global optimal solution found.

Objective value:	114.0000
Objective bound:	114.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.09

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 36 km  
rute pengiriman dari customer 2 ke customer 3 sebesar 22 km  
rute pengiriman dari customer 3 ke customer 1 sebesar 56 km



Model Class: MILP

Total variables: 12  
 Nonlinear variables: 0  
 Integer variables: 9  
 Total constraints: 19  
 Nonlinear constraints: 0  
 Total nonzeros: 45  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
BUKA ( 3)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
T ( 1)	836.0000	0.000000
T ( 2)	660.0000	0.000000
T ( 3)	722.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	36.00000
X ( 1, 3)	0.000000	56.00000
X ( 2, 1)	0.000000	36.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	22.00000
X ( 3, 1)	1.000000	56.00000
X ( 3, 2)	0.000000	24.00000
X ( 3, 3)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	36.00000	0.000000
D ( 1, 3)	56.00000	0.000000
D ( 2, 1)	36.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	22.00000	0.000000
D ( 3, 1)	56.00000	0.000000
D ( 3, 2)	24.00000	0.000000
D ( 3, 3)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	36.00000	0.000000

DURASI ( 1, 3)	56.00000	0.000000
DURASI ( 2, 1)	36.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	22.00000	0.000000
DURASI ( 3, 1)	56.00000	0.000000
DURASI ( 3, 2)	24.00000	0.000000
DURASI ( 3, 3)	0.000000	0.000000

### Cluster 9 Minggu Pertama tanggal 8 Januari 2021

Global optimal solution found.

Objective value:	193.0000
Objective bound:	193.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 87 km

rute pengiriman dari customer 2 ke customer 3 sebesar 88 km

rute pengiriman dari customer 3 ke customer 1 sebesar 18 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9
Total constraints:	19
Nonlinear constraints:	0
Total nonzeros:	45
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
BUKA ( 3)	600.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
TUTUP ( 3)	840.0000	0.000000
T ( 1)	858.0000	0.000000
T ( 2)	660.0000	0.000000

T( 3)	788.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	87.000000
X( 1, 3)	0.000000	18.000000
X( 2, 1)	0.000000	87.000000
X( 2, 2)	0.000000	0.000000
X( 2, 3)	1.000000	88.000000
X( 3, 1)	1.000000	18.000000
X( 3, 2)	0.000000	88.000000
X( 3, 3)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	87.000000	0.000000
D( 1, 3)	18.000000	0.000000
D( 2, 1)	87.000000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	88.000000	0.000000
D( 3, 1)	18.000000	0.000000
D( 3, 2)	88.000000	0.000000
D( 3, 3)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	87.000000	0.000000
DURASI( 1, 3)	18.000000	0.000000
DURASI( 2, 1)	87.000000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	88.000000	0.000000
DURASI( 3, 1)	18.000000	0.000000
DURASI( 3, 2)	88.000000	0.000000
DURASI( 3, 3)	0.000000	0.000000

### Cluster 10 Minggu Pertama tanggal 8 Januari 2021

Global optimal solution found.

Objective value:	112.0000
Objective bound:	112.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.06

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 56 km

rute pengiriman dari customer 2 ke customer 1 sebesar 56 km

Model Class: MILP

Total variables: 4

Nonlinear variables: 0

```

Integer variables:                2
Total constraints:                 9
Nonlinear constraints:            0

Total nonzeros:                   5
Nonlinear nonzeros:              0

```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	780.0000	0.000000
T( 1)	756.0000	0.000000
T( 2)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	56.00000	0.000000
D( 2, 1)	56.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	56.00000	0.000000
DURASI( 2, 1)	56.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 11 Minggu Pertama tanggal 9 Januari 2021

Global optimal solution found.

```

Objective value:                   1492.000
Objective bound:                   1492.000
Infeasibilities:                   0.000000
Extended solver steps:             0
Total solver iterations:           0
Elapsed runtime seconds:           0.06

```

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 746 km

rute pengiriman dari customer 2 ke customer 1 sebesar 746 km

Model Class: MILP

```
Total variables:                4
```

```

Nonlinear variables:          0
Integer variables:           2

Total constraints:           9
Nonlinear constraints:       0

Total nonzeros:              5
Nonlinear nonzeros:         0

```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	1446.000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	746.0000	0.000000
D ( 2, 1)	746.0000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	746.0000	0.000000
DURASI ( 2, 1)	746.0000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 12 Minggu Pertama tanggal 9 Januari 2021

Global optimal solution found.

```

Objective value:              134.0000
Objective bound:              134.0000
Infeasibilities:              0.000000
Extended solver steps:        0
Total solver iterations:      0
Elapsed runtime seconds:      0.03

```

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km

rute pengiriman dari customer 2 ke customer 1 sebesar 67 km

Model Class:

MILP

```

Total variables:           4
Nonlinear variables:      0
Integer variables:       2

Total constraints:        9
Nonlinear constraints:    0

Total nonzeros:          5
Nonlinear nonzeros:      0

```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	600.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	840.0000	0.000000
T( 1)	707.0000	0.000000
T( 2)	600.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	67.00000	0.000000
D( 2, 1)	67.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	67.00000	0.000000
DURASI( 2, 1)	67.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 1 Minggu Kedua tanggal 11 Januari 2021

Global optimal solution found.

Objective value:	152.1000
Objective bound:	152.1000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.03

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 70 km

rute pengiriman dari customer 2 ke customer 3 sebesar 3.1 km

rute pengiriman dari customer 3 ke customer 1 sebesar 79 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	19
Nonlinear constraints:	0

Total nonzeros:	45
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.10000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	540.0000	0.000000
BUKA ( 3)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	900.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
T ( 1)	859.0000	0.000000
T ( 2)	540.0000	0.000000
T ( 3)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	70.00000
X ( 1, 3)	0.000000	79.00000
X ( 2, 1)	0.000000	70.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	3.100000
X ( 3, 1)	1.000000	79.00000

X( 3, 2)	0.000000	1.900000
X( 3, 3)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	70.00000	0.000000
D( 1, 3)	79.00000	0.000000
D( 2, 1)	70.00000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	3.100000	0.000000
D( 3, 1)	79.00000	0.000000
D( 3, 2)	1.900000	0.000000
D( 3, 3)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	70.00000	0.000000
DURASI( 1, 3)	79.00000	0.000000
DURASI( 2, 1)	70.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	3.100000	0.000000
DURASI( 3, 1)	79.00000	0.000000
DURASI( 3, 2)	1.900000	0.000000
DURASI( 3, 3)	0.000000	0.000000

### Cluster 2 Minggu Kedua tanggal 11 Januari 2021

Global optimal solution found.

Objective value:	134.0000
Objective bound:	134.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.03

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km

rute pengiriman dari customer 2 ke customer 1 sebesar 67 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2
Total constraints:	9
Nonlinear constraints:	0
Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
----------	-------	--------------



R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
T ( 1)	707.0000	0.000000
T ( 2)	600.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	67.00000	0.000000
D ( 2, 1)	67.00000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	67.00000	0.000000
DURASI ( 2, 1)	67.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 3 Minggu Kedua tanggal 12 Januari 2021

Global optimal solution found.

Objective value:	243.0000
Objective bound:	243.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km  
rute pengiriman dari customer 2 ke customer 4 sebesar 55 km  
rute pengiriman dari customer 3 ke customer 1 sebesar 120 km  
rute pengiriman dari customer 4 ke customer 3 sebesar 1 km

Model Class: MILP

Total variables:	20
Nonlinear variables:	0
Integer variables:	16
Total constraints:	29
Nonlinear constraints:	0
Total nonzeros:	89

Nonlinear nonzeros:

0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BONGKAR( 3)	40.00000	0.000000
BONGKAR( 4)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	600.0000	0.000000
BUKA( 3)	660.0000	0.000000
BUKA( 4)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	840.0000	0.000000
TUTUP( 3)	780.0000	0.000000
TUTUP( 4)	780.0000	0.000000
T( 1)	901.0000	0.000000
T( 2)	600.0000	0.000000
T( 3)	736.0000	0.000000
T( 4)	695.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	67.00000
X( 1, 3)	0.000000	120.0000
X( 1, 4)	0.000000	121.0000
X( 2, 1)	0.000000	67.00000
X( 2, 2)	0.000000	0.000000
X( 2, 3)	0.000000	55.00000
X( 2, 4)	1.000000	55.00000
X( 3, 1)	1.000000	120.0000
X( 3, 2)	0.000000	55.00000
X( 3, 3)	0.000000	0.000000
X( 3, 4)	0.000000	1.000000
X( 4, 1)	0.000000	121.0000
X( 4, 2)	0.000000	55.00000
X( 4, 3)	1.000000	1.000000
X( 4, 4)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	67.00000	0.000000
D( 1, 3)	120.0000	0.000000
D( 1, 4)	121.0000	0.000000
D( 2, 1)	67.00000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	55.00000	0.000000
D( 2, 4)	55.00000	0.000000
D( 3, 1)	120.0000	0.000000

D( 3, 2)	55.00000	0.000000
D( 3, 3)	0.000000	0.000000
D( 3, 4)	1.000000	0.000000
D( 4, 1)	121.0000	0.000000
D( 4, 2)	55.00000	0.000000
D( 4, 3)	1.000000	0.000000
D( 4, 4)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	67.00000	0.000000
DURASI( 1, 3)	120.0000	0.000000
DURASI( 1, 4)	121.0000	0.000000
DURASI( 2, 1)	67.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	55.00000	0.000000
DURASI( 2, 4)	55.00000	0.000000
DURASI( 3, 1)	120.0000	0.000000
DURASI( 3, 2)	55.00000	0.000000
DURASI( 3, 3)	0.000000	0.000000
DURASI( 3, 4)	1.000000	0.000000
DURASI( 4, 1)	121.0000	0.000000
DURASI( 4, 2)	55.00000	0.000000
DURASI( 4, 3)	1.000000	0.000000
DURASI( 4, 4)	0.000000	0.000000

#### Cluster 4 Minggu Kedua tanggal 12 Januari 2021

Global optimal solution found.

Objective value:	162.0000
Objective bound:	162.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.03

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 81 km

rute pengiriman dari customer 2 ke customer 1 sebesar 81 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2

Total constraints:	9
Nonlinear constraints:	0

Total nonzeros:	5
-----------------	---

Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	780.0000	0.000000
T( 1)	781.0000	0.000000
T( 2)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	81.00000	0.000000
D( 2, 1)	81.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	81.00000	0.000000
DURASI( 2, 1)	81.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 5 Minggu Kedua tanggal 13 Januari 2021

Global optimal solution found.

Objective value: 179.0000  
 Objective bound: 179.0000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 87 km

rute pengiriman dari customer 2 ke customer 3 sebesar 1 km

rute pengiriman dari customer 3 ke customer 1 sebesar 91 km

Model Class: MILP

Total variables: 12  
 Nonlinear variables: 0  
 Integer variables: 9  
 Total constraints: 19  
 Nonlinear constraints: 0

Total nonzeros: 45  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
T ( 1)	871.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	87.00000
X ( 1, 3)	0.000000	91.00000
X ( 2, 1)	0.000000	87.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	1.000000
X ( 3, 1)	1.000000	91.00000
X ( 3, 2)	0.000000	1.000000
X ( 3, 3)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	87.00000	0.000000
D ( 1, 3)	91.00000	0.000000
D ( 2, 1)	87.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	1.000000	0.000000
D ( 3, 1)	91.00000	0.000000
D ( 3, 2)	1.000000	0.000000
D ( 3, 3)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	87.00000	0.000000
DURASI ( 1, 3)	91.00000	0.000000
DURASI ( 2, 1)	87.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	1.000000	0.000000
DURASI ( 3, 1)	91.00000	0.000000
DURASI ( 3, 2)	1.000000	0.000000
DURASI ( 3, 3)	0.000000	0.000000

### Cluster 6 Minggu Kedua tanggal 13 Januari 2021

Global optimal solution found.

Objective value:	100.0000
Objective bound:	100.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.03

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 50 km

rute pengiriman dari customer 2 ke customer 1 sebesar 50 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2
Total constraints:	9
Nonlinear constraints:	0
Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	780.0000	0.000000
T( 1)	750.0000	0.000000
T( 2)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	50.00000	0.000000
D( 2, 1)	50.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000

DURASI ( 1, 2)	50.00000	0.000000
DURASI ( 2, 1)	50.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 7 Minggu Kedua tanggal 14 Januari 2021

Global optimal solution found.

Objective value:	114.0000
Objective bound:	114.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 36 km

rute pengiriman dari customer 2 ke customer 3 sebesar 22 km

rute pengiriman dari customer 3 ke customer 1 sebesar 56 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	19
Nonlinear constraints:	0

Total nonzeros:	45
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
T ( 1)	836.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	662.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	36.00000
X ( 1, 3)	0.000000	56.00000

X( 2, 1)	0.000000	36.00000
X( 2, 2)	0.000000	0.000000
X( 2, 3)	1.000000	22.00000
X( 3, 1)	1.000000	56.00000
X( 3, 2)	0.000000	24.00000
X( 3, 3)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	36.00000	0.000000
D( 1, 3)	56.00000	0.000000
D( 2, 1)	36.00000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	22.00000	0.000000
D( 3, 1)	56.00000	0.000000
D( 3, 2)	24.00000	0.000000
D( 3, 3)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	36.00000	0.000000
DURASI( 1, 3)	56.00000	0.000000
DURASI( 2, 1)	36.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	22.00000	0.000000
DURASI( 3, 1)	56.00000	0.000000
DURASI( 3, 2)	24.00000	0.000000
DURASI( 3, 3)	0.000000	0.000000

### Cluster 8 Minggu Kedua tanggal 14 Januari 2021

Global optimal solution found.

Objective value:	187.0000
Objective bound:	187.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 79 km

rute pengiriman dari customer 2 ke customer 3 sebesar 58 km

rute pengiriman dari customer 3 ke customer 1 sebesar 50 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	19
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Nonlinear constraints: 0  
 Total nonzeros: 45  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
BUKA ( 3)	600.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
TUTUP ( 3)	840.0000	0.000000
T ( 1)	890.0000	0.000000
T ( 2)	660.0000	0.000000
T ( 3)	758.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	79.00000
X ( 1, 3)	0.000000	50.00000
X ( 2, 1)	0.000000	79.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	58.00000
X ( 3, 1)	1.000000	50.00000
X ( 3, 2)	0.000000	57.00000
X ( 3, 3)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	79.00000	0.000000
D ( 1, 3)	50.00000	0.000000
D ( 2, 1)	79.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	58.00000	0.000000
D ( 3, 1)	50.00000	0.000000
D ( 3, 2)	57.00000	0.000000
D ( 3, 3)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	79.00000	0.000000
DURASI ( 1, 3)	50.00000	0.000000
DURASI ( 2, 1)	79.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	58.00000	0.000000
DURASI ( 3, 1)	50.00000	0.000000
DURASI ( 3, 2)	57.00000	0.000000
DURASI ( 3, 3)	0.000000	0.000000

### Cluster 9 Minggu Kedua tanggal 15 Januari 2021

Global optimal solution found.

Objective value:	1492.000
Objective bound:	1492.000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 746 km

rute pengiriman dari customer 2 ke customer 1 sebesar 746 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2

Total constraints:	9
Nonlinear constraints:	0

Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	1446.000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	746.0000	0.000000
D ( 2, 1)	746.0000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	746.0000	0.000000
DURASI ( 2, 1)	746.0000	0.000000

DURASI ( 2, 2)	0.000000	0.000000
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### Cluster 10 Minggu Kedua tanggal 15 Januari 2021

Global optimal solution found.

Objective value:	140.0000
Objective bound:	140.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 70 km

rute pengiriman dari customer 2 ke customer 1 sebesar 70 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2

Total constraints:	9
Nonlinear constraints:	0

Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	770.0000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	70.00000	0.000000
D ( 2, 1)	70.00000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	70.00000	0.000000

DURASI ( 2, 1)	70.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 11 Minggu Kedua tanggal 16 Januari 2021

Global optimal solution found.

Objective value: 141.3000  
 Objective bound: 141.3000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.06

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km  
 rute pengiriman dari customer 2 ke customer 4 sebesar 2.4 km  
 rute pengiriman dari customer 3 ke customer 1 sebesar 70 km  
 rute pengiriman dari customer 4 ke customer 3 sebesar 1.9 km

Model Class: MILP

Total variables: 20  
 Nonlinear variables: 0  
 Integer variables: 16

Total constraints: 29  
 Nonlinear constraints: 0

Total nonzeros: 89  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BONGKAR ( 4)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
BUKA ( 4)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
TUTUP ( 4)	780.0000	0.000000
T ( 1)	859.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	740.0000	0.000000

T( 4)	698.1000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	67.000000
X( 1, 3)	0.000000	70.000000
X( 1, 4)	0.000000	79.000000
X( 2, 1)	0.000000	67.000000
X( 2, 2)	0.000000	0.000000
X( 2, 3)	0.000000	3.500000
X( 2, 4)	1.000000	2.400000
X( 3, 1)	1.000000	70.000000
X( 3, 2)	0.000000	5.200000
X( 3, 3)	0.000000	0.000000
X( 3, 4)	0.000000	3.100000
X( 4, 1)	0.000000	79.000000
X( 4, 2)	0.000000	4.400000
X( 4, 3)	1.000000	1.900000
X( 4, 4)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	67.000000	0.000000
D( 1, 3)	70.000000	0.000000
D( 1, 4)	79.000000	0.000000
D( 2, 1)	67.000000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	3.500000	0.000000
D( 2, 4)	2.400000	0.000000
D( 3, 1)	70.000000	0.000000
D( 3, 2)	5.200000	0.000000
D( 3, 3)	0.000000	0.000000
D( 3, 4)	3.100000	0.000000
D( 4, 1)	79.000000	0.000000
D( 4, 2)	4.400000	0.000000
D( 4, 3)	1.900000	0.000000
D( 4, 4)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	67.000000	0.000000
DURASI( 1, 3)	70.000000	0.000000
DURASI( 1, 4)	79.000000	0.000000
DURASI( 2, 1)	67.000000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	3.500000	0.000000
DURASI( 2, 4)	2.400000	0.000000
DURASI( 3, 1)	70.000000	0.000000
DURASI( 3, 2)	5.200000	0.000000
DURASI( 3, 3)	0.000000	0.000000
DURASI( 3, 4)	3.100000	0.000000

DURASI ( 4, 1)	79.00000	0.000000
DURASI ( 4, 2)	4.400000	0.000000
DURASI ( 4, 3)	1.900000	0.000000
DURASI ( 4, 4)	0.000000	0.000000

### Cluster 1 Minggu Ketiga tanggal 18 Januari 2021

Global optimal solution found.

Objective value: 243.0000  
 Objective bound: 243.0000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.86

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km  
 rute pengiriman dari customer 2 ke customer 4 sebesar 55 km  
 rute pengiriman dari customer 3 ke customer 1 sebesar 120 km  
 rute pengiriman dari customer 4 ke customer 3 sebesar 1 km

Model Class: MILP

Total variables: 20  
 Nonlinear variables: 0  
 Integer variables: 16

Total constraints: 29  
 Nonlinear constraints: 0

Total nonzeros: 89  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BONGKAR ( 4)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
BUKA ( 4)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
TUTUP ( 4)	780.0000	0.000000
T ( 1)	901.0000	0.000000

T ( 2)	600.0000	0.000000
T ( 3)	736.0000	0.000000
T ( 4)	695.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	67.00000
X ( 1, 3)	0.000000	120.0000
X ( 1, 4)	0.000000	121.0000
X ( 2, 1)	0.000000	67.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	0.000000	55.00000
X ( 2, 4)	1.000000	55.00000
X ( 3, 1)	1.000000	120.0000
X ( 3, 2)	0.000000	55.00000
X ( 3, 3)	0.000000	0.000000
X ( 3, 4)	0.000000	1.000000
X ( 4, 1)	0.000000	121.0000
X ( 4, 2)	0.000000	55.00000
X ( 4, 3)	1.000000	1.000000
X ( 4, 4)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	67.00000	0.000000
D ( 1, 3)	120.0000	0.000000
D ( 1, 4)	121.0000	0.000000
D ( 2, 1)	67.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	55.00000	0.000000
D ( 2, 4)	55.00000	0.000000
D ( 3, 1)	120.0000	0.000000
D ( 3, 2)	55.00000	0.000000
D ( 3, 3)	0.000000	0.000000
D ( 3, 4)	1.000000	0.000000
D ( 4, 1)	121.0000	0.000000
D ( 4, 2)	55.00000	0.000000
D ( 4, 3)	1.000000	0.000000
D ( 4, 4)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	67.00000	0.000000
DURASI ( 1, 3)	120.0000	0.000000
DURASI ( 1, 4)	121.0000	0.000000
DURASI ( 2, 1)	67.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	55.00000	0.000000
DURASI ( 2, 4)	55.00000	0.000000
DURASI ( 3, 1)	120.0000	0.000000
DURASI ( 3, 2)	55.00000	0.000000

DURASI ( 3, 3)	0.000000	0.000000
DURASI ( 3, 4)	1.000000	0.000000
DURASI ( 4, 1)	121.0000	0.000000
DURASI ( 4, 2)	55.00000	0.000000
DURASI ( 4, 3)	1.000000	0.000000
DURASI ( 4, 4)	0.000000	0.000000

### Cluster 2 Minggu Ketiga tanggal 18 Januari 2021

Global optimal solution found.

Objective value:	36.000000
Objective bound:	36.000000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.12

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 18 km

rute pengiriman dari customer 2 ke customer 1 sebesar 18 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2
Total constraints:	9
Nonlinear constraints:	0
Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	718.0000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000



D( 1, 2)	18.00000	0.000000
D( 2, 1)	18.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	18.00000	0.000000
DURASI( 2, 1)	18.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 3 Minggu Ketiga tanggal 19 Januari 2021

Global optimal solution found.

Objective value:	116.0000
Objective bound:	116.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 28 km

rute pengiriman dari customer 2 ke customer 3 sebesar 38 km

rute pengiriman dari customer 3 ke customer 1 sebesar 50 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	19
Nonlinear constraints:	0

Total nonzeros:	45
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BONGKAR( 3)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	600.0000	0.000000
BUKA( 3)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	840.0000	0.000000
TUTUP( 3)	780.0000	0.000000
T( 1)	830.0000	0.000000
T( 2)	600.0000	0.000000

T( 3)	678.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	28.00000
X( 1, 3)	0.000000	50.00000
X( 2, 1)	0.000000	28.00000
X( 2, 2)	0.000000	0.000000
X( 2, 3)	1.000000	38.00000
X( 3, 1)	1.000000	50.00000
X( 3, 2)	0.000000	48.00000
X( 3, 3)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	28.00000	0.000000
D( 1, 3)	50.00000	0.000000
D( 2, 1)	28.00000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	38.00000	0.000000
D( 3, 1)	50.00000	0.000000
D( 3, 2)	48.00000	0.000000
D( 3, 3)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	28.00000	0.000000
DURASI( 1, 3)	50.00000	0.000000
DURASI( 2, 1)	28.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	38.00000	0.000000
DURASI( 3, 1)	50.00000	0.000000
DURASI( 3, 2)	48.00000	0.000000
DURASI( 3, 3)	0.000000	0.000000

#### Cluster 4 Minggu Ketiga tanggal 19 Januari 2021

Global optimal solution found.

Objective value:	162.0000
Objective bound:	162.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 81 km

rute pengiriman dari customer 2 ke customer 1 sebesar 81 km

Model Class: MILP

Total variables: 4

Nonlinear variables: 0

```

Integer variables:                2
Total constraints:                9
Nonlinear constraints:           0

Total nonzeros:                  5
Nonlinear nonzeros:              0

```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	781.0000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	81.00000	0.000000
D ( 2, 1)	81.00000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	81.00000	0.000000
DURASI ( 2, 1)	81.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 5 Minggu Ketiga tanggal 20 Januari 2021

Global optimal solution found.

```

Objective value:                  179.0000
Objective bound:                  179.0000
Infeasibilities:                  0.000000
Extended solver steps:            0
Total solver iterations:          0
Elapsed runtime seconds:          0.05

```

Rute yang paling optimal adalah:

```

rute pengiriman dari customer 1 ke customer 2 sebesar 87 km
rute pengiriman dari customer 2 ke customer 3 sebesar 1 km
rute pengiriman dari customer 3 ke customer 1 sebesar 91 km

```

Model Class: MILP

Total variables: 12  
 Nonlinear variables: 0  
 Integer variables: 9

Total constraints: 19  
 Nonlinear constraints: 0

Total nonzeros: 45  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
T ( 1)	871.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	87.00000
X ( 1, 3)	0.000000	91.00000
X ( 2, 1)	0.000000	87.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	1.000000
X ( 3, 1)	1.000000	91.00000
X ( 3, 2)	0.000000	1.000000
X ( 3, 3)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	87.00000	0.000000
D ( 1, 3)	91.00000	0.000000
D ( 2, 1)	87.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	1.000000	0.000000
D ( 3, 1)	91.00000	0.000000
D ( 3, 2)	1.000000	0.000000
D ( 3, 3)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	87.00000	0.000000

DURASI ( 1, 3)	91.00000	0.000000
DURASI ( 2, 1)	87.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	1.000000	0.000000
DURASI ( 3, 1)	91.00000	0.000000
DURASI ( 3, 2)	1.000000	0.000000
DURASI ( 3, 3)	0.000000	0.000000

### Cluster 6 Minggu Ketiga tanggal 20 Januari 2021

Global optimal solution found.

Objective value:	162.0000
Objective bound:	162.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.06

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 81 km

rute pengiriman dari customer 2 ke customer 1 sebesar 81 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2

Total constraints:	9
Nonlinear constraints:	0

Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	781.0000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000

D( 1, 1)	0.000000	0.000000
D( 1, 2)	81.00000	0.000000
D( 2, 1)	81.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	81.00000	0.000000
DURASI( 2, 1)	81.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 7 Minggu Ketiga tanggal 21 Januari 2021

Global optimal solution found.

Objective value:	140.5000
Objective bound:	140.5000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km

rute pengiriman dari customer 2 ke customer 3 sebesar 3.5 km

rute pengiriman dari customer 3 ke customer 1 sebesar 70 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9
Total constraints:	19
Nonlinear constraints:	0
Total nonzeros:	45
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BONGKAR( 3)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	600.0000	0.000000
BUKA( 3)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	840.0000	0.000000
TUTUP( 3)	780.0000	0.000000
T( 1)	850.0000	0.000000

T( 2)	600.0000	0.000000
T( 3)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	67.000000
X( 1, 3)	0.000000	70.000000
X( 2, 1)	0.000000	67.000000
X( 2, 2)	0.000000	0.000000
X( 2, 3)	1.000000	3.500000
X( 3, 1)	1.000000	70.000000
X( 3, 2)	0.000000	5.200000
X( 3, 3)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	67.000000	0.000000
D( 1, 3)	70.000000	0.000000
D( 2, 1)	67.000000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	3.500000	0.000000
D( 3, 1)	70.000000	0.000000
D( 3, 2)	5.200000	0.000000
D( 3, 3)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	67.000000	0.000000
DURASI( 1, 3)	70.000000	0.000000
DURASI( 2, 1)	67.000000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	3.500000	0.000000
DURASI( 3, 1)	70.000000	0.000000
DURASI( 3, 2)	5.200000	0.000000
DURASI( 3, 3)	0.000000	0.000000

### Cluster 8 Minggu Ketiga tanggal 21 Januari 2021

Global optimal solution found.

Objective value:	36.000000
Objective bound:	36.000000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.08

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 18 km

rute pengiriman dari customer 2 ke customer 1 sebesar 18 km

Model Class: MILP

Total variables: 4

```

Nonlinear variables:           0
Integer variables:            2

Total constraints:            9
Nonlinear constraints:        0

Total nonzeros:              5
Nonlinear nonzeros:          0

```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	780.0000	0.000000
T( 1)	718.0000	0.000000
T( 2)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	18.00000	0.000000
D( 2, 1)	18.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	18.00000	0.000000
DURASI( 2, 1)	18.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 9 Minggu Ketiga tanggal 22 Januari 2021

Global optimal solution found.

```

Objective value:                114.0000
Objective bound:                114.0000
Infeasibilities:                0.000000
Extended solver steps:         0
Total solver iterations:        0
Elapsed runtime seconds:       0.08

```

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 36 km

rute pengiriman dari customer 2 ke customer 3 sebesar 22 km

rute pengiriman dari customer 3 ke customer 1 sebesar 56 km

Model Class: MILP



Total variables: 12  
 Nonlinear variables: 0  
 Integer variables: 9  
  
 Total constraints: 19  
 Nonlinear constraints: 0  
  
 Total nonzeros: 45  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
BUKA ( 3)	600.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
TUTUP ( 3)	840.0000	0.000000
T ( 1)	896.0000	0.000000
T ( 2)	660.0000	0.000000
T ( 3)	722.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	36.00000
X ( 1, 3)	0.000000	56.00000
X ( 2, 1)	0.000000	36.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	22.00000
X ( 3, 1)	1.000000	56.00000
X ( 3, 2)	0.000000	24.00000
X ( 3, 3)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	36.00000	0.000000
D ( 1, 3)	56.00000	0.000000
D ( 2, 1)	36.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	22.00000	0.000000
D ( 3, 1)	56.00000	0.000000
D ( 3, 2)	24.00000	0.000000
D ( 3, 3)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	36.00000	0.000000
DURASI ( 1, 3)	56.00000	0.000000

DURASI ( 2, 1)	36.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	22.00000	0.000000
DURASI ( 3, 1)	56.00000	0.000000
DURASI ( 3, 2)	24.00000	0.000000
DURASI ( 3, 3)	0.000000	0.000000

### Cluster 10 Minggu Ketiga tanggal 22 Januari 2021

Global optimal solution found.

Objective value: 1492.000  
 Objective bound: 1492.000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 746 km

rute pengiriman dari customer 2 ke customer 1 sebesar 746 km

Model Class: MILP

Total variables: 4  
 Nonlinear variables: 0  
 Integer variables: 2  
 Total constraints: 9  
 Nonlinear constraints: 0  
 Total nonzeros: 5  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	1446.000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000

D( 1, 2)	746.0000	0.000000
D( 2, 1)	746.0000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	746.0000	0.000000
DURASI( 2, 1)	746.0000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 11 Minggu Ketiga tanggal 23 Januari 2021

Global optimal solution found.

Objective value:	140.0000
Objective bound:	140.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 70 km

rute pengiriman dari customer 2 ke customer 1 sebesar 70 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2

Total constraints:	9
Nonlinear constraints:	0

Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	600.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	840.0000	0.000000
T( 1)	710.0000	0.000000
T( 2)	600.0000	0.000000
X( 1, 1)	0.000000	0.000000

X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	70.00000	0.000000
D( 2, 1)	70.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	70.00000	0.000000
DURASI( 2, 1)	70.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 1 Minggu Keempat tanggal 25 Januari 2021

Global optimal solution found.

```
Objective value:                205.0000
Objective bound:                205.0000
Infeasibilities:               0.000000
Extended solver steps:         0
Total solver iterations:       0
Elapsed runtime seconds:      0.05
```

Rute yang paling optimal adalah:

```
rute pengiriman dari customer 1 ke customer 2 sebesar 81 km
rute pengiriman dari customer 2 ke customer 4 sebesar 36 km
rute pengiriman dari customer 3 ke customer 1 sebesar 87 km
rute pengiriman dari customer 4 ke customer 3 sebesar 1 km
```

Model Class: MILP

```
Total variables:                20
Nonlinear variables:             0
Integer variables:              16
```

```
Total constraints:              29
Nonlinear constraints:           0
```

```
Total nonzeros:                 89
Nonlinear nonzeros:              0
```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BONGKAR( 3)	40.00000	0.000000
BONGKAR( 4)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	600.0000	0.000000

BUKA ( 3)	660.0000	0.000000
BUKA ( 4)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
TUTUP ( 4)	780.0000	0.000000
T ( 1)	871.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	717.0000	0.000000
T ( 4)	676.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	81.000000
X ( 1, 3)	0.000000	87.000000
X ( 1, 4)	0.000000	91.000000
X ( 2, 1)	0.000000	81.000000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	0.000000	35.000000
X ( 2, 4)	1.000000	36.000000
X ( 3, 1)	1.000000	87.000000
X ( 3, 2)	0.000000	35.000000
X ( 3, 3)	0.000000	0.000000
X ( 3, 4)	0.000000	1.000000
X ( 4, 1)	0.000000	91.000000
X ( 4, 2)	0.000000	36.000000
X ( 4, 3)	1.000000	1.000000
X ( 4, 4)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	81.000000	0.000000
D ( 1, 3)	87.000000	0.000000
D ( 1, 4)	91.000000	0.000000
D ( 2, 1)	81.000000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	35.000000	0.000000
D ( 2, 4)	36.000000	0.000000
D ( 3, 1)	87.000000	0.000000
D ( 3, 2)	35.000000	0.000000
D ( 3, 3)	0.000000	0.000000
D ( 3, 4)	1.000000	0.000000
D ( 4, 1)	91.000000	0.000000
D ( 4, 2)	36.000000	0.000000
D ( 4, 3)	1.000000	0.000000
D ( 4, 4)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	81.000000	0.000000
DURASI ( 1, 3)	87.000000	0.000000

DURASI ( 1, 4)	91.00000	0.000000
DURASI ( 2, 1)	81.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	35.00000	0.000000
DURASI ( 2, 4)	36.00000	0.000000
DURASI ( 3, 1)	87.00000	0.000000
DURASI ( 3, 2)	35.00000	0.000000
DURASI ( 3, 3)	0.000000	0.000000
DURASI ( 3, 4)	1.000000	0.000000
DURASI ( 4, 1)	91.00000	0.000000
DURASI ( 4, 2)	36.00000	0.000000
DURASI ( 4, 3)	1.000000	0.000000
DURASI ( 4, 4)	0.000000	0.000000

### Cluster 2 Minggu Keempat tanggal 25 Januari 2021

Global optimal solution found.

Objective value:	100.0000
Objective bound:	100.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.03

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 50 km

rute pengiriman dari customer 2 ke customer 1 sebesar 50 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2

Total constraints:	9
Nonlinear constraints:	0

Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000

T( 1)	750.0000	0.000000
T( 2)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	50.00000	0.000000
D( 2, 1)	50.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	50.00000	0.000000
DURASI( 2, 1)	50.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 3 Minggu Keempat tanggal 26 Januari 2021

Global optimal solution found.

Objective value: 141.3000  
 Objective bound: 141.3000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.06

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 67 km  
 rute pengiriman dari customer 2 ke customer 4 sebesar 2.4 km  
 rute pengiriman dari customer 3 ke customer 1 sebesar 70 km  
 rute pengiriman dari customer 4 ke customer 3 sebesar 1.9 km

Model Class: MILP

Total variables: 20  
 Nonlinear variables: 0  
 Integer variables: 16  
 Total constraints: 29  
 Nonlinear constraints: 0  
 Total nonzeros: 89  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000

BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BONGKAR ( 4)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
BUKA ( 4)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
TUTUP ( 4)	780.0000	0.000000
T ( 1)	859.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	740.0000	0.000000
T ( 4)	698.1000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	67.00000
X ( 1, 3)	0.000000	70.00000
X ( 1, 4)	0.000000	79.00000
X ( 2, 1)	0.000000	67.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	0.000000	3.500000
X ( 2, 4)	1.000000	2.400000
X ( 3, 1)	1.000000	70.00000
X ( 3, 2)	0.000000	5.200000
X ( 3, 3)	0.000000	0.000000
X ( 3, 4)	0.000000	3.100000
X ( 4, 1)	0.000000	79.00000
X ( 4, 2)	0.000000	4.400000
X ( 4, 3)	1.000000	1.900000
X ( 4, 4)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	67.00000	0.000000
D ( 1, 3)	70.00000	0.000000
D ( 1, 4)	79.00000	0.000000
D ( 2, 1)	67.00000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	3.500000	0.000000
D ( 2, 4)	2.400000	0.000000
D ( 3, 1)	70.00000	0.000000
D ( 3, 2)	5.200000	0.000000
D ( 3, 3)	0.000000	0.000000
D ( 3, 4)	3.100000	0.000000
D ( 4, 1)	79.00000	0.000000
D ( 4, 2)	4.400000	0.000000



D( 4, 3)	1.900000	0.000000
D( 4, 4)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	67.000000	0.000000
DURASI( 1, 3)	70.000000	0.000000
DURASI( 1, 4)	79.000000	0.000000
DURASI( 2, 1)	67.000000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	3.500000	0.000000
DURASI( 2, 4)	2.400000	0.000000
DURASI( 3, 1)	70.000000	0.000000
DURASI( 3, 2)	5.200000	0.000000
DURASI( 3, 3)	0.000000	0.000000
DURASI( 3, 4)	3.100000	0.000000
DURASI( 4, 1)	79.000000	0.000000
DURASI( 4, 2)	4.400000	0.000000
DURASI( 4, 3)	1.900000	0.000000
DURASI( 4, 4)	0.000000	0.000000

#### Cluster 4 Minggu Keempat tanggal 26 Januari 2021

Global optimal solution found.

Objective value: 36.000000  
Objective bound: 36.000000  
Infeasibilities: 0.000000  
Extended solver steps: 0  
Total solver iterations: 0  
Elapsed runtime seconds: 0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 18 km

rute pengiriman dari customer 2 ke customer 1 sebesar 18 km

Model Class: MILP

Total variables: 4  
Nonlinear variables: 0  
Integer variables: 2

Total constraints: 9  
Nonlinear constraints: 0

Total nonzeros: 5  
Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000

BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	718.0000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	18.00000	0.000000
D ( 2, 1)	18.00000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	18.00000	0.000000
DURASI ( 2, 1)	18.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 5 Minggu Keempat tanggal 27 Januari 2021

Global optimal solution found.

Objective value:	242.0000
Objective bound:	242.0000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.03

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 120 km

rute pengiriman dari customer 2 ke customer 3 sebesar 1 km

rute pengiriman dari customer 3 ke customer 1 sebesar 121 km

Model Class: MILP

Total variables:	12
Nonlinear variables:	0
Integer variables:	9

Total constraints:	19
Nonlinear constraints:	0

Total nonzeros:	45
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
----------	-------	--------------

R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
BUKA ( 3)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
TUTUP ( 3)	780.0000	0.000000
T ( 1)	901.0000	0.000000
T ( 2)	600.0000	0.000000
T ( 3)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	120.0000
X ( 1, 3)	0.000000	121.0000
X ( 2, 1)	0.000000	120.0000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	1.000000
X ( 3, 1)	1.000000	121.0000
X ( 3, 2)	0.000000	1.000000
X ( 3, 3)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	120.0000	0.000000
D ( 1, 3)	121.0000	0.000000
D ( 2, 1)	120.0000	0.000000
D ( 2, 2)	0.000000	0.000000
D ( 2, 3)	1.000000	0.000000
D ( 3, 1)	121.0000	0.000000
D ( 3, 2)	1.000000	0.000000
D ( 3, 3)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	120.0000	0.000000
DURASI ( 1, 3)	121.0000	0.000000
DURASI ( 2, 1)	120.0000	0.000000
DURASI ( 2, 2)	0.000000	0.000000
DURASI ( 2, 3)	1.000000	0.000000
DURASI ( 3, 1)	121.0000	0.000000
DURASI ( 3, 2)	1.000000	0.000000
DURASI ( 3, 3)	0.000000	0.000000

### Cluster 6 Minggu Keempat tanggal 27 Januari 2021

Global optimal solution found.

Objective value: 56.00000

Objective bound: 56.00000

```

Infeasibilities:                0.000000
Extended solver steps:          0
Total solver iterations:        0
Elapsed runtime seconds:        0.05

```

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 28 km

rute pengiriman dari customer 2 ke customer 1 sebesar 28 km

Model Class: MILP

```

Total variables:                4
Nonlinear variables:            0
Integer variables:              2

Total constraints:              9
Nonlinear constraints:          0

Total nonzeros:                 5
Nonlinear nonzeros:             0

```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	780.0000	0.000000
T( 1)	728.0000	0.000000
T( 2)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	28.00000	0.000000
D( 2, 1)	28.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	28.00000	0.000000
DURASI( 2, 1)	28.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 7 Minggu Keempat tanggal 28 Januari 2021

Global optimal solution found.

Objective value: 134.0000

Objective bound: 134.0000  
 Infeasibilities: 0.000000  
 Extended solver steps: 0  
 Total solver iterations: 0  
 Elapsed runtime seconds: 0.05

Rute yang paling optimal adalah:  
 rute pengiriman dari customer 1 ke customer 2 sebesar 67 km  
 rute pengiriman dari customer 2 ke customer 1 sebesar 67 km  
 Model Class: MILP

Total variables: 4  
 Nonlinear variables: 0  
 Integer variables: 2

Total constraints: 9  
 Nonlinear constraints: 0

Total nonzeros: 5  
 Nonlinear nonzeros: 0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	600.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	840.0000	0.000000
T ( 1)	707.0000	0.000000
T ( 2)	600.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	67.00000	0.000000
D ( 2, 1)	67.00000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	67.00000	0.000000
DURASI ( 2, 1)	67.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 8 Minggu Keempat tanggal 28 Januari 2021

Global optimal solution found.

```

Objective value:                72.00000
Objective bound:                72.00000
Infeasibilities:               0.0000000
Extended solver steps:         0
Total solver iterations:       0
Elapsed runtime seconds:       0.05

```

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 36 km

rute pengiriman dari customer 2 ke customer 1 sebesar 36 km

Model Class: MILP

```

Total variables:                4
Nonlinear variables:           0
Integer variables:             2

Total constraints:              9
Nonlinear constraints:         0

Total nonzeros:                5
Nonlinear nonzeros:           0

```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR( 1)	40.00000	0.000000
BONGKAR( 2)	40.00000	0.000000
BUKA( 1)	480.0000	0.000000
BUKA( 2)	660.0000	0.000000
TUTUP( 1)	960.0000	0.000000
TUTUP( 2)	780.0000	0.000000
T( 1)	736.0000	0.000000
T( 2)	660.0000	0.000000
X( 1, 1)	0.000000	0.000000
X( 1, 2)	1.000000	0.000000
X( 2, 1)	1.000000	0.000000
X( 2, 2)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	36.00000	0.000000
D( 2, 1)	36.00000	0.000000
D( 2, 2)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	36.00000	0.000000
DURASI( 2, 1)	36.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000

### Cluster 9 Minggu Keempat tanggal 29 Januari 2021

Global optimal solution found.

```

Objective value:                179.0000
Objective bound:                179.0000
Infeasibilities:                0.000000
Extended solver steps:         0
Total solver iterations:        0
Elapsed runtime seconds:       0.05

```

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 87 km

rute pengiriman dari customer 2 ke customer 3 sebesar 1 km

rute pengiriman dari customer 3 ke customer 1 sebesar 91 km

Model Class: MILP

```

Total variables:                12
Nonlinear variables:            0
Integer variables:              9

```

```

Total constraints:              19
Nonlinear constraints:          0

```

```

Total nonzeros:                 45
Nonlinear nonzeros:             0

```

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BONGKAR ( 3)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
BUKA ( 3)	600.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
TUTUP ( 3)	840.0000	0.000000
T ( 1)	931.0000	0.000000
T ( 2)	660.0000	0.000000
T ( 3)	701.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	87.00000
X ( 1, 3)	0.000000	91.00000
X ( 2, 1)	0.000000	87.00000
X ( 2, 2)	0.000000	0.000000
X ( 2, 3)	1.000000	1.000000

X( 3, 1)	1.000000	91.00000
X( 3, 2)	0.000000	1.000000
X( 3, 3)	0.000000	0.000000
D( 1, 1)	0.000000	0.000000
D( 1, 2)	87.00000	0.000000
D( 1, 3)	91.00000	0.000000
D( 2, 1)	87.00000	0.000000
D( 2, 2)	0.000000	0.000000
D( 2, 3)	1.000000	0.000000
D( 3, 1)	91.00000	0.000000
D( 3, 2)	1.000000	0.000000
D( 3, 3)	0.000000	0.000000
DURASI( 1, 1)	0.000000	0.000000
DURASI( 1, 2)	87.00000	0.000000
DURASI( 1, 3)	91.00000	0.000000
DURASI( 2, 1)	87.00000	0.000000
DURASI( 2, 2)	0.000000	0.000000
DURASI( 2, 3)	1.000000	0.000000
DURASI( 3, 1)	91.00000	0.000000
DURASI( 3, 2)	1.000000	0.000000
DURASI( 3, 3)	0.000000	0.000000

### Cluster 10 Minggu Keempat tanggal 29 Januari 2021

Global optimal solution found.

Objective value:	72.000000
Objective bound:	72.000000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 36 km

rute pengiriman dari customer 2 ke customer 1 sebesar 36 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2
Total constraints:	9
Nonlinear constraints:	0
Total nonzeros:	5
Nonlinear nonzeros:	0



Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	736.0000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	36.00000	0.000000
D ( 2, 1)	36.00000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	36.00000	0.000000
DURASI ( 2, 1)	36.00000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

### Cluster 11 Minggu Keempat tanggal 30 Januari 2021

Global optimal solution found.

Objective value:	1492.000
Objective bound:	1492.000
Infeasibilities:	0.000000
Extended solver steps:	0
Total solver iterations:	0
Elapsed runtime seconds:	0.05

Rute yang paling optimal adalah:

rute pengiriman dari customer 1 ke customer 2 sebesar 746 km

rute pengiriman dari customer 2 ke customer 1 sebesar 746 km

Model Class: MILP

Total variables:	4
Nonlinear variables:	0
Integer variables:	2

Total constraints:	9
Nonlinear constraints:	0

Total nonzeros:	5
Nonlinear nonzeros:	0

Variable	Value	Reduced Cost
R	0.1000000E+08	0.000000
BONGKAR ( 1)	40.00000	0.000000
BONGKAR ( 2)	40.00000	0.000000
BUKA ( 1)	480.0000	0.000000
BUKA ( 2)	660.0000	0.000000
TUTUP ( 1)	960.0000	0.000000
TUTUP ( 2)	780.0000	0.000000
T ( 1)	1446.000	0.000000
T ( 2)	660.0000	0.000000
X ( 1, 1)	0.000000	0.000000
X ( 1, 2)	1.000000	0.000000
X ( 2, 1)	1.000000	0.000000
X ( 2, 2)	0.000000	0.000000
D ( 1, 1)	0.000000	0.000000
D ( 1, 2)	746.0000	0.000000
D ( 2, 1)	746.0000	0.000000
D ( 2, 2)	0.000000	0.000000
DURASI ( 1, 1)	0.000000	0.000000
DURASI ( 1, 2)	746.0000	0.000000
DURASI ( 2, 1)	746.0000	0.000000
DURASI ( 2, 2)	0.000000	0.000000

## BIOGRAFI



AHMAD WAFIQL FAHMI SHALAHUDIN lahir di Tuban, 15 juli 1998. Anak kedua dari 3 bersaudaradari pasangan Katrup dan Gemi Astutik. Penulis menyelesaikan pendidikan Sekolah Dasar di SDN 04 Widang lulus tahun 2011, lalu melanjutkan ke Sekolah Menengah Pertama di SMP Negeri 1 Babat lulus tahun 2014, dan kemudian lanjutlah ke SekolahMenengah Atas di SMA Negeri 1 Babat lulus tahun 2017. disaat SMA penulis aktif mengikuti kegiatan Ekstrakurikuler yaitu Bola Voli. Pada tahun 2017 penulis melanjutkan pendidikan di perguruan tinggi

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