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TGRAF (F)

Diketahui terdapat 2 Depot A(1,2) dan B(7,4), masing² memiliki kendaraan dgn kapasitas angkut 15. Berdasarkan jarak euclidean, pelanggan akan dilayani oleh depot tersebut. Apabila detail koordinat pelanggan 1,2,3,...,12 dan kuantiti pesanan masing² pada tabel terlampir, tentukan solusi rute pengantaran barang dgn savings Clarke & Wright.

Vertex	X	y	Qty
A	1	2	
B	7	4	
1	2	5	5
2	1	4	6
3	3	1	4
4	8	4	3
5	9	2	3
6	2	7	3
7	5	5	5
8	6	6	6
9	6	1	6
10	9	3	3
11	3	0	4
12	4	1	9

Jarak:

	A	B
1	3,162 ✓	5,099
2	2 ✓	6
3	2,236 ✓	5
4	7,28	1 ✓
5	8	2,828 ✓
6	5,099 ✓	5,831
7	5	2,236 ✓
8	6,403	2,236 ✓
9	5,099	3,162 ✓
10	8,062	2,236 ✓
11	2,828 ✓	5,656
12	3,162 ✓	4,242

Jarak: $\sqrt{(X_1-X_2)^2+(Y_1-Y_2)^2}$

Group => A : 1, 2, 3, 6, 11, 12
B : 4, 5, 7, 8, 9, 10

Group A

-> Jarak :

	A	1	2	3	6	11	12
A		3,162	2	2,236	5,099	2,828	3,162
1	3,162		1,414	4,123	2	5,099	4,472
2	2	1,414		3,605	3,162	4,472	4,242
3	2,236	4,123	3,605		6,082	1	1
6	5,099	2	3,162	6,082		7,071	6,324
11	2,828	5,099	4,472	1	7,071		1,414
12	3,162	4,472	4,242	1	6,324	1,414	

Jarak: $\sqrt{(X_1-X_2)^2+(Y_1-Y_2)^2}$

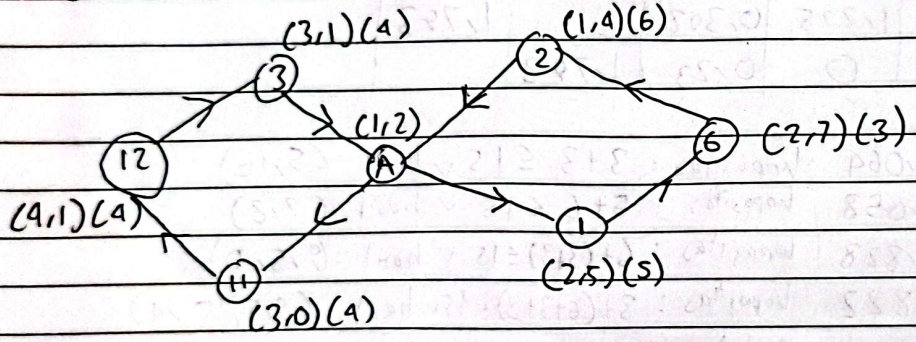
> Savings:

	1	2	3	6	11	12
1		3,748	1,275	6,261	0,891	1,852
2	3,748		0,631	3,937	0,356	0,92
3	1,275	0,631		1,253	4,064	4,398
6	6,261	3,937	1,253		0,856	2,027
11	0,891	0,356	4,064	0,856		4,576
12	1,852	0,92	4,398	2,027	4,576	

$S(i,j) = d(A,i) + d(A,j) - d(i,j)$

Sorting : S(1,6) = 6,261 kapasitas = 5 + 3 ≤ 15 ✓ hasil = (1,6)
S(11,12) = 4,576 kapasitas = 4 + 4 ≤ 15 ✓ hasil = (11,12)
S(3,12) = 4,398 kapasitas = 4 + (4+4) ≤ 15 ✓ hasil = (11,12,3)
S(3,11) = 4,064 sudah digabung (3,11,12)
S(2,6) = 3,937 kapasitas = 6 + (5+3) ≤ 15 ✓ hasil = (1,6,2)
S(1,2) = 3,748 sudah digabung (1,2,6)
S(6,12) = 2,027 over
S(1,12) = 1,852 over
S(1,3) = 1,275 over
S(3,6) = 1,253 over
S(2,12) = 0,92 over
S(1,11) = 0,894 over
S(6,11) = 0,856 over
S(2,3) = 0,631 over
S(3,11) = 0,356 over

Routing : A-1-6-2-A-11-12-3-A



Total Cost : A-1-6-2-A = 3,162 + 2 + 3,162 + 2 = 10,324

A-11-12-3-A = 2,828 + 1,414 + 1 + 2,236 = 7,478 +

17,802 //

Group B

•> Jarak:

#	B	4	5	7	8	9	10
B		1	2,828	2,236	2,236	3,162	2,236
4	1		2,236	3,162	2,828	3,605	1,414
5	2,828	2,236		5	5	3,162	1
7	2,236	3,162	5		1,414	4,123	4,472
8	2,236	2,828	5	1,414		5	4,242
9	3,162	3,605	3,162	4,123	5		3,605
10	2,236	1,414	1	4,472	4,242	3,605	

Jarak = $\sqrt{(X_1-X_2)^2+(Y_1-Y_2}$

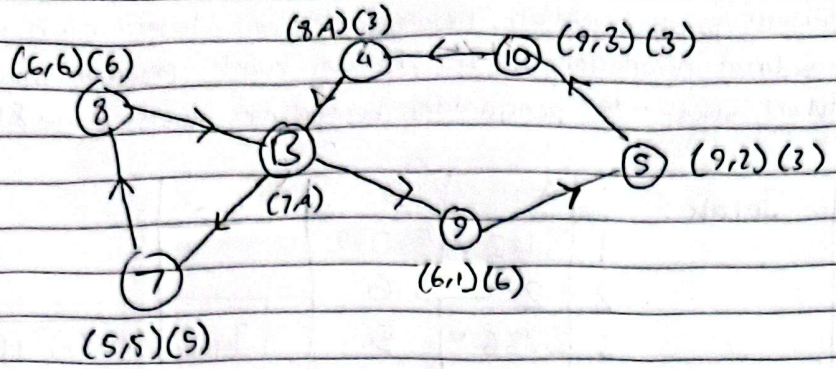
•> Savings :

#	4	5	7	8	9	10
4		1,592	0,074	0,408	0,557	1,822
5	1,592		0,064	0,064	2,828	4,064
7	0,074	0,064		3,058	1,275	0
8	0,408	0,064	3,058		0,398	0,23
9	0,557	2,828	1,275	0,398		1,793
10	1,822	4,064	0	0,23	1,793	

S(i,j) = d(B,i) + d(B,j) - d(i,j)

Sorting: s(5,10) = 4,064 ; kapasitas : 3+3 ≤ 15 ✓ hasil : (5,10)
s(7,8) = 3,058 ; kapasitas : 5+6 ≤ 15 ✓ hasil (7,8)
s(5,9) = 2,828 ; kapasitas : 6+(3+3) ≤ 15 ✓ hasil : (9,5,10)
s(4,10) = 1,822 ; kapasitas : 3+(6+3+3) ≤ 15 ✓ hasil : (9,5,10,4)
s(9,10) = 1,793 sudah
s(4,5) = 1,592 sudah
s(7,9) = 1,275 sudah
s(4,9) = 0,557 sudah
s(4,8) = 0,408 sudah
s(9,8) = 0,398 sudah
s(8,10) = 0,23 sudah
s(4,7) = 0,074 sudah
s(5,7) = 0,064 sudah
s(5,8) = 0,064 sudah
s(7,10) = 0 sudah

Routing : B-9-5-10-4-B-7-8-B

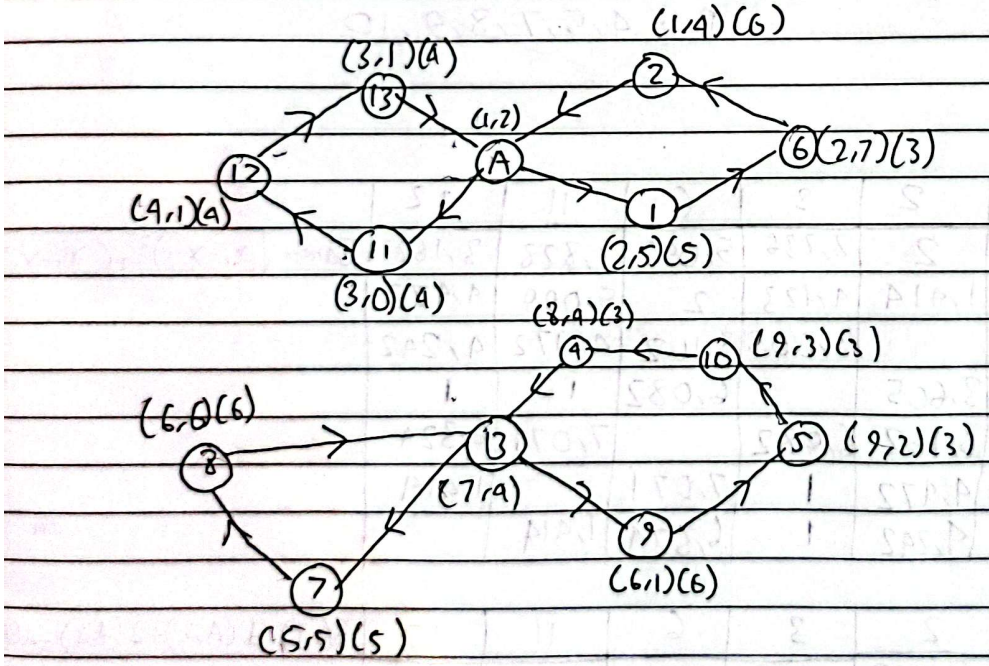


Total Cost : B-9-5-10-4-B = 3,162 + 3,162 + 1 + 1,414 + 1 = 9,738

B-7-8-B = 2,236 + 1,414 + 2,236 = 5,886 +

15,624

Semua Routing (A dan B)



Total Semua Cost : 17,802 + 15,624 = 33,426