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2003 05 09(21) 10-2000-0051066
(22) 2000 08 31(65) 2002-0017602
(43) 2002 03 07

(73)

134

(72)

1 312 가 921 103

2 186-4 104

1 10-32 303

82 108 1604

(74)

:

(54) 3

3

1 ; 1
3 ;
가 7가
가
5 ;
;
9
8 ;
4 2 ;
6 ;
가

5

3D 가 ,

1 3D (rendering)
2a 2b (mesh)
3a 3b
4a 4b
5
6a 6v 3
* *

10 : CPU 20 :
30 : 40 :
41 :

3D 가 , 3D
3D 3D 3
3D (geometry)
3D (floating point number)
100
3D 가 3D (polygon) 가 100
1
3D (graphics pipeline)
가 (preprocessing) 3D 가 3D
3D
3D 가 가
3D 가
3D (triangle mesh) 3D 가 , 3D
3D (topology) 2가 , 가
가 3D (vertex) 1 3 (x, y, z)
3D (compression) 3D (bit stream)
, 3D (decompression) 3D
. 3D - (trade-off) 가 , 3D
3D 3D 1
3D 가 (30) (decompression unit)(40)
3D (41)
가
, 3D
(quantization) (d
elta) (Huffman encoding)

[illegible]

가 가 . 0, 0, 1 . 가 가 ,
 가 가 , 가 0
 가 가
 2) 가 ;
 (가 가)
 3) 가 ; 6)
 3
 4) 가 ; 5)
 가 가 1 가 ,
 가 가 가 가 2)
 5) 가 ;
 3
 가 . 가 가 1 ,
 가 . 2) ;
 6) ; 가
 7) 가 ; 8)
 가 , 0 가 .
 3
 가 가 1 가 ,
 가 가 .
 2) 가 가
 8) ;
 가
 6) 가 , 9)
 9) 가 ; 1) 가
 5
 6a 6v 6a
 6v (8, 7, 15)
 = <8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11, 6, 12, 18, 19, 20, 22, 23, 17, 23, 24>
 = <0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1, 0, 1, 1, 1, 3, 0, 1, 3, 0, 1>
 1

[1]

degree	frequency
0 1 2 3	5 16 4 3

2

[2]

degree	Huffman code	bit size
0 1 2 3	10 0 110 111	2 bit 1 bit 3 bit 3 bit

$$5 \cdot 2 + 16 \cdot 1 + 4 \cdot 3 + 3 \cdot 3 = 47 \text{ bit}$$

(Microsoft) Hoppe

3D

	3 bits/vertex, bits/T.	vertices bits/triangle	polygons bits/vertex	topology bits/vertex	bits/triangle	bits/ 가
V.						
		bits/vertex가	1.7		bits/triangle	1.3
		Park	bits/vertex	6.8	bits/triangle	3.4
		, Taubin	Rossignac	bits/vertex	3.8	
3			1	3	가 90~95%	4
					5~10%	
					가	
	(pocket)	(hole)				
			가			

3
1 ;
3 ;
4 ;
가 5 ;
가
.

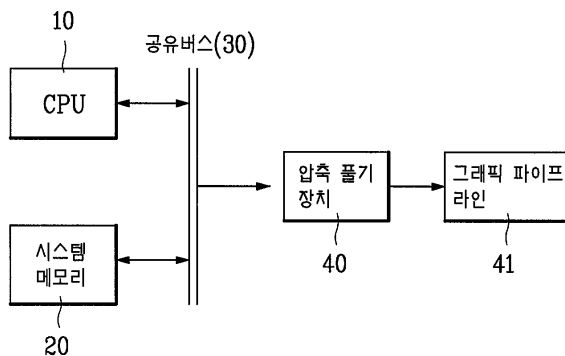
2.
1 , 1
, 3 , ,
.

3.
1 , 2
3 ,
.

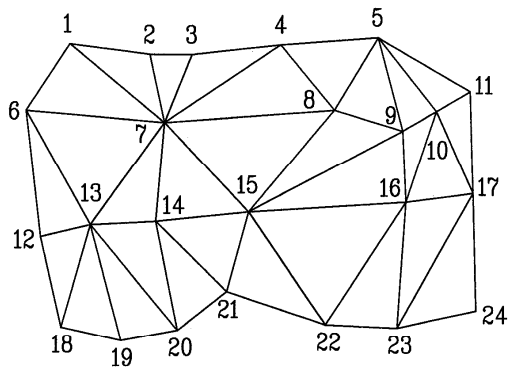
4.
1 , 3
3

5. 1 , 4 가 가 1 가
3
6. 1 , 5 가 3 3
7. 1 , 6 3
8. 1 , 7 가 , 0
가
9. 1 , 8 가
3
10. 3 (vertex index)
3
- (a) ;
(b) ;
(c) ;
(d) 3

1



2a

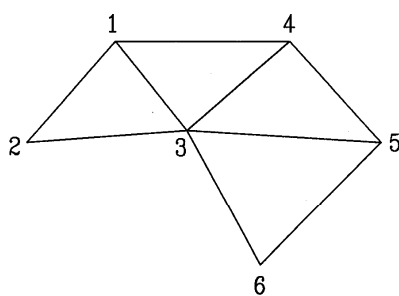


2b

vertex chain	vertex list
C0	<1, 2, 3, 4, 5>
C1	<6, 7, 8, 9, 10, 11>
C2	<12, 13, 14, 15, 16, 17>
C3	<18, 19, 20, 21, 22, 23, 24>

vertex chain	degree list
C0	<0, 0, 0, 0, 0>
C1	<1, 4, 2, 1, 1, 1>
C2	<1, 2, 1, 3, 2, 2>
C3	<2, 1, 2, 2, 2, 2, 1>

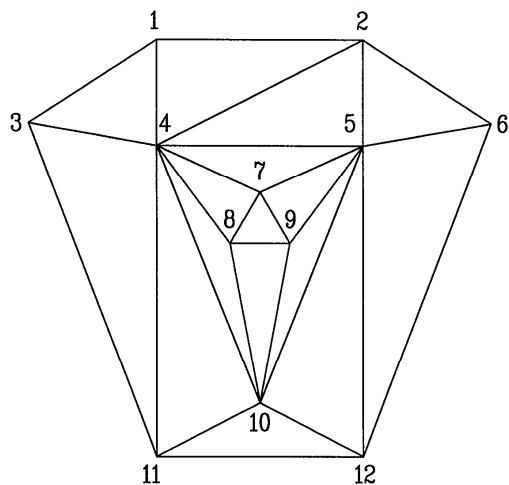
3a



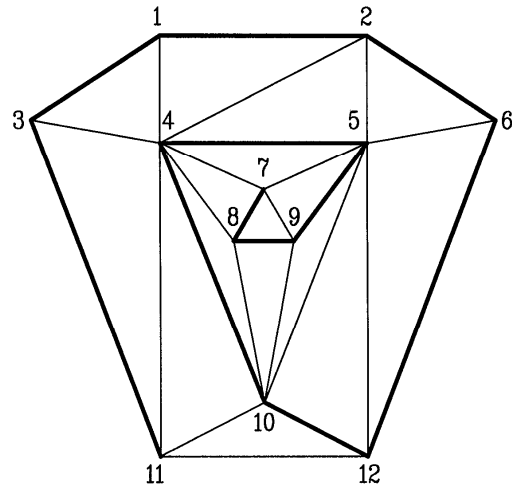
3b

triangle	vertex index
T1	1, 2, 3
T2	1, 3, 4
T3	3, 4, 5
T4	3, 5, 6

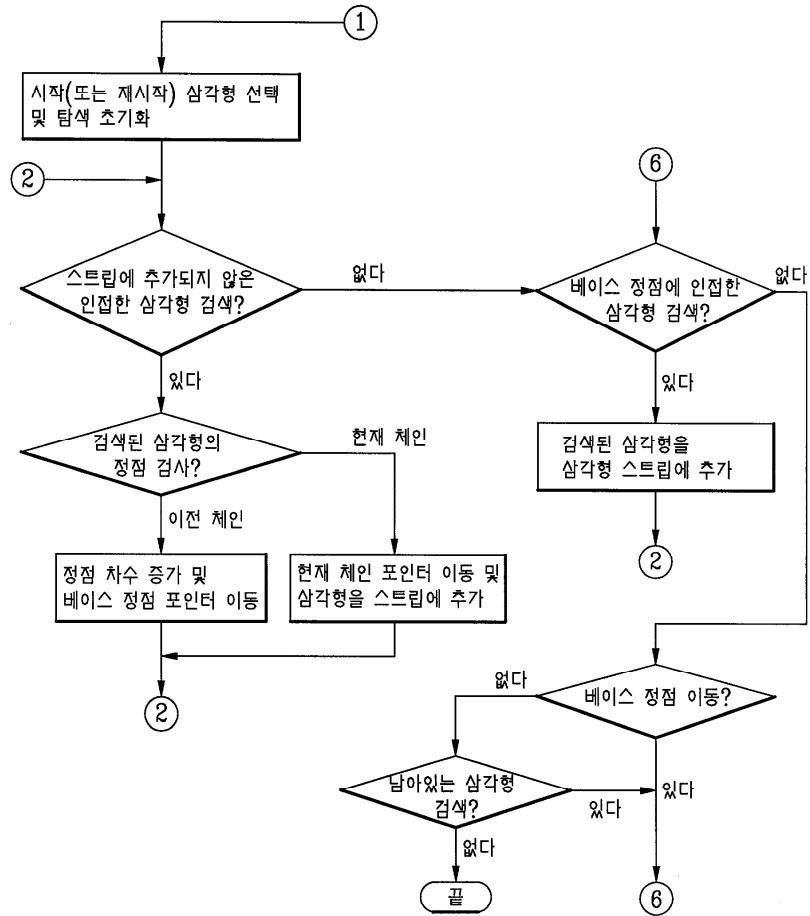
4a



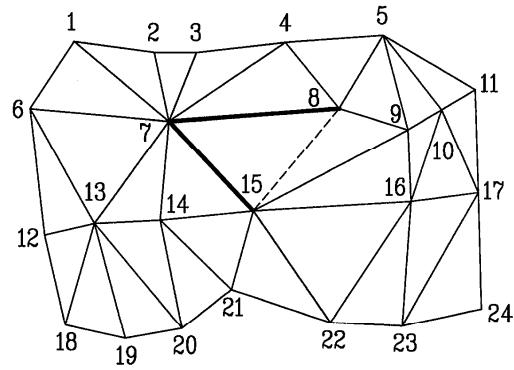
4b



5



6a

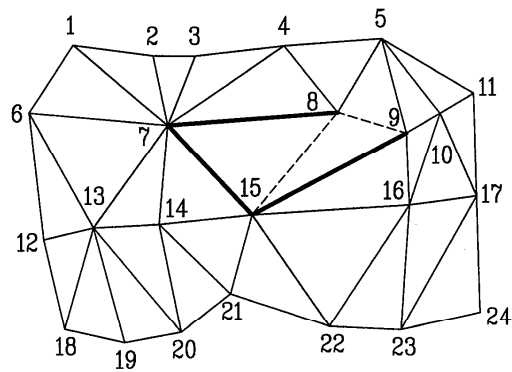


PVC(이전 정점 체인)=<8>

CVC(현재 정점 체인)=<8, 7, 15>

VDL(정점 차수 리스트)=<0, 0, 1>

6b

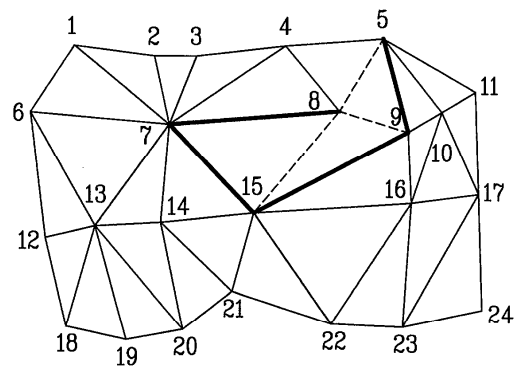


PVC=<8>

CVC=<8, 7, 15, 9>

VDL=<0, 0, 1, 1>

6c

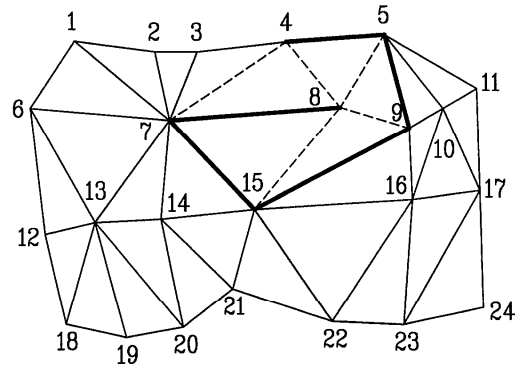


PVC=<8>

CVC=<8, 7, 15, 9, 5>

VDL=<0, 0, 1, 1, 1>

6d

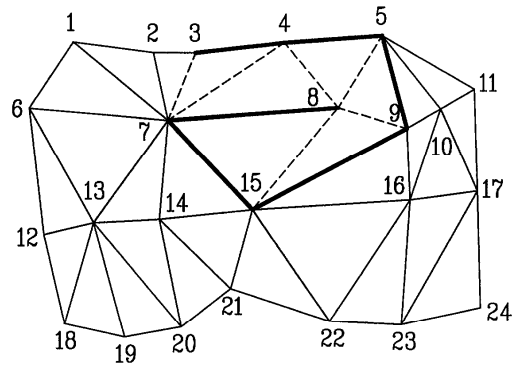


PVC=<8>

CVC=<8, 7, 15, 9, 5, 4>

VDL=<0, 0, 1, 1, 1, 2>

6e

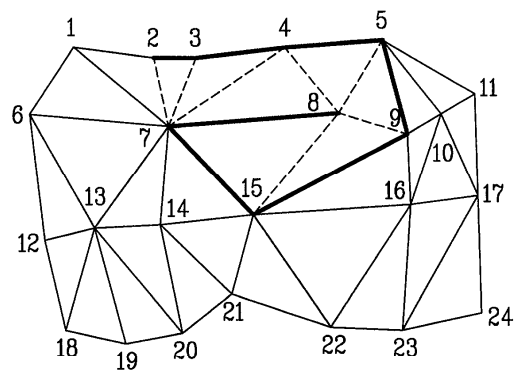


PVC=<8, 7>

CVC=<8, 7, 15, 9, 5, 4, 3>

VDL=<0, 0, 1, 1, 1, 2, 1>

6f

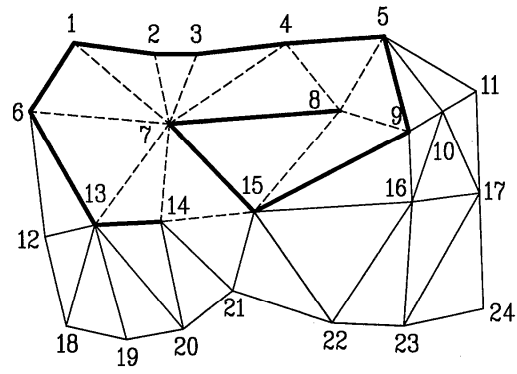


PVC=<8, 7>

CVC=<8, 7, 15, 9, 5, 4, 3, 2>

VDL=<0, 0, 1, 1, 1, 2, 1, 1>

6j

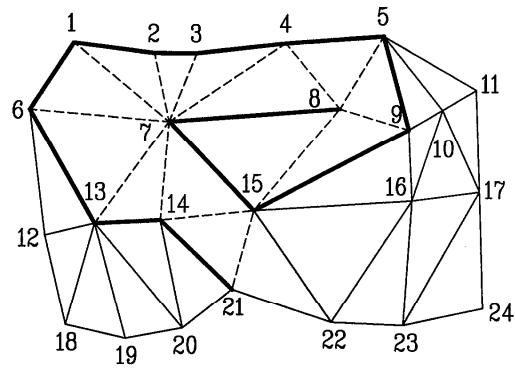


PVC=<8, 7, 15>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14>

VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2>

6k

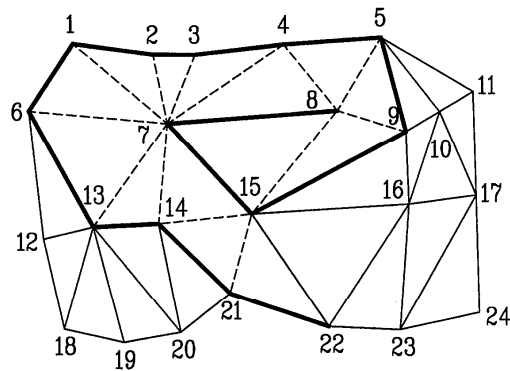


PVC=<8, 7, 15>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21>

VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1>

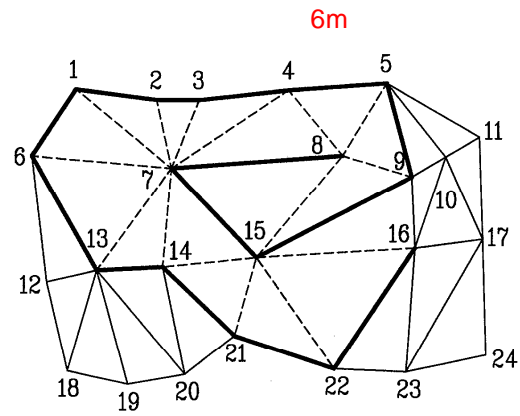
6l



PVC=<8, 7, 15>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22>

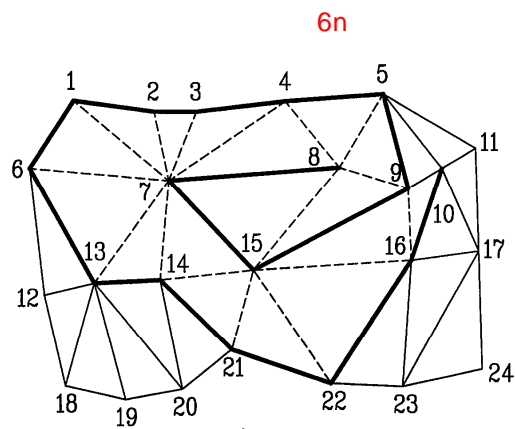
VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1>



PVC=<8, 7, 15, 9>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16>

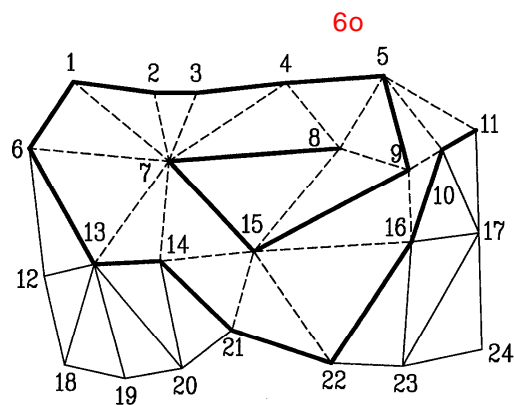
VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2>



PVC=<8, 7, 15, 9, 5>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10>

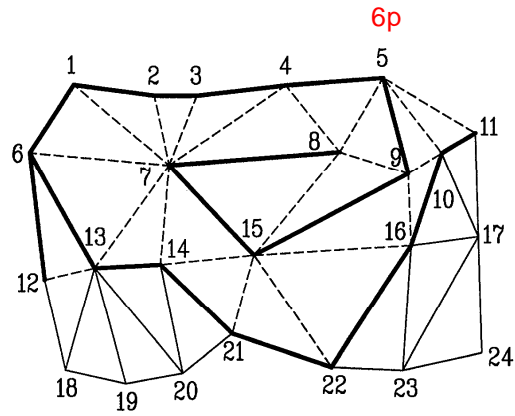
VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2>



PVC=<8, 7, 15, 9, 5>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11>

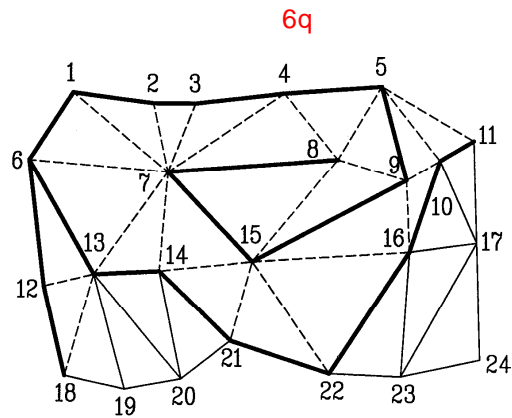
VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1>



PVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11, 6, 12>

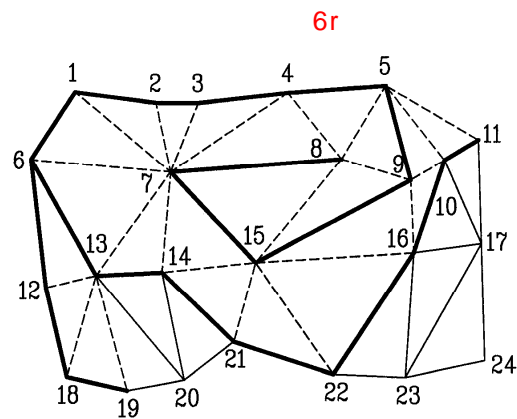
VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1, 0, 1>



PVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11, 6, 12, 18>

VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1, 0, 1, 0, 1, 1>

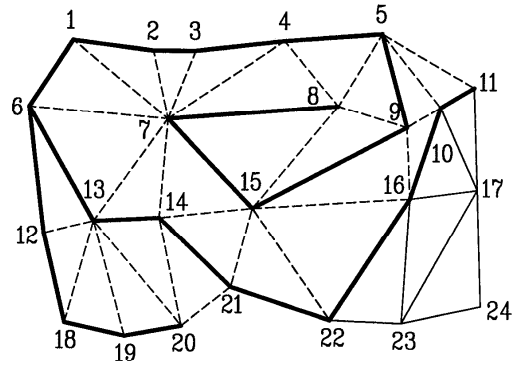


PVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11, 6, 12, 18, 19>

VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1, 0, 1, 0, 1, 1, 1>

6s

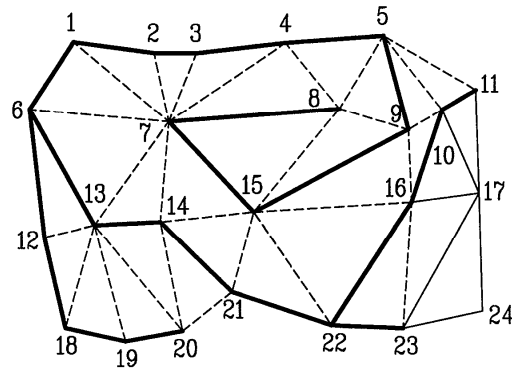


PVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11, 6, 12, 18, 19, 20>

VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1, 0, 1, 0, 1, 1, 1, 3>

6t

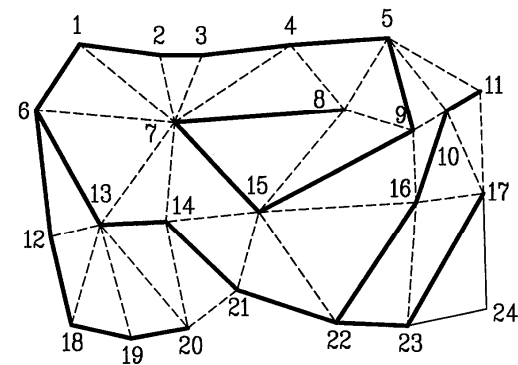


PVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11, 6, 12, 18, 19, 20, 22, 23>

VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1, 0, 1, 0, 1, 1, 1, 3, 0, 1>

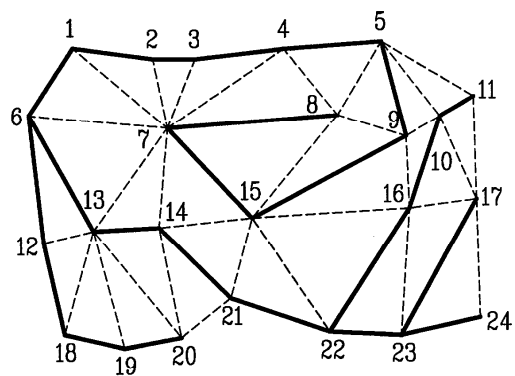
6u



PVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11>

CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11, 6, 12, 18, 19, 20, 22, 23, 17>

VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1, 0, 1, 0, 1, 1, 1, 3, 0, 1, 3>



CVC=<8, 7, 15, 9, 5, 4, 3, 2, 1, 6, 13, 14, 21, 22, 16, 10, 11, 6, 12, 18, 19, 20, 22, 23, 17, 23, 24>

VDL=<0, 0, 1, 1, 1, 2, 1, 1, 1, 1, 1, 2, 1, 1, 2, 2, 1, 0, 1, 0, 1, 1, 1, 3, 0, 1, 3, 0, 1>