

TD1 Synthèse Image

Exercice 1:

l)

Halfedge :

	Origine	Twin	Incident	Next	Previous
e_0	v_0		f_0		

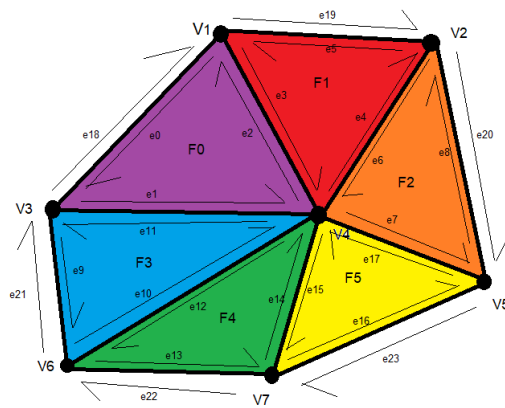
Vertex :

	Position	Incident
v_0	x,y,z	e_0

Face :

	e (un halfedge de la face)
f_0	e_0

II)



III)

Vertex :

	Position	Incident
v_1	(1,4,0)	e_0
v_2	(3,4,0)	e_5
v_3	(0,2,0)	e_1
v_4	(2,2,0)	e_2
v_5	(4,2,0)	e_8
v_6	(1,0,0)	e_{10}
v_7	(3,0,0)	e_{14}

Face :

	e
f_0	e_0
f_1	e_3
f_2	e_6

f_3	e_9
f_4	e_{12}
f_5	

Halfedge :

I	Origine	Twin	Incident	Next	Previous
e_0	v_1	e_{18}	f_0	e_1	e_2
e_1	v_3	e_{11}	f_0	e_2	e_0
e_2	v_4	e_3	f_0	e_0	e_1
e_3	v_1	e_2	f_1	e_4	e_5
e_4	v_4	e_6	f_1	e_5	e_3
e_5	v_2	e_{19}	f_1	e_3	e_4
e_6	v_2	e_4	f_2	e_7	e_8
e_7	v_4	e_{17}	f_2	e_8	e_6
e_8	v_5	e_{20}	f_2	e_6	e_7
e_9	v_3	e_{21}	f_3	e_{10}	e_{11}
e_{10}	v_6	e_{12}	f_3	e_{11}	e_9
e_{11}	v_4	e_1	f_3	e_9	e_{10}
e_{12}	v_4	e_{10}	f_4	e_{13}	e_{14}
e_{13}	v_6	e_{22}	f_4	e_{14}	e_{12}
e_{14}	v_7	e_{15}	f_4	e_{12}	e_{13}
e_{15}	v_4	e_{14}	f_5	e_{16}	e_{17}
e_{16}	v_7	e_{23}	f_5	e_{17}	e_{15}
e_{17}	v_5	e_7	f_5	e_{15}	e_{16}
e_{18}	v_3	e_0	✗	e_{19}	e_{21}
e_{19}	v_1	e_5	✗	e_{20}	e_{18}
e_{20}	v_2	e_8	✗	e_{23}	e_{19}

e ₂₁	v ₆	e ₉	×	e ₁₈	e ₂₂
e ₂₂	v ₇	e ₁₃	×	e ₂₁	e ₂₃
e ₂₃	v ₅	e ₁₆	×	e ₂₂	e ₂₀

Exercice 2 :

1. Sommet de f ?

```

start.he = f . e
he = start.he
do{
    he = he.next
    stocker(he.orig)
}while (he ≠ start.he)

```

2. Valence d'un sommet v ?

```

start_he = v.e
valence = 0
he = start.he
do{
    he = he.twin.next
    valence++
}while(he ≠ start_he)

```

3. Dist moyenne d'un sommet à ses 1-voisins

```

start_he = v.e
distance = 0
he = start_he
valence = 0
do{
    he_twin = he.twin
    v = he_twin.orig
    distance += dist(V,v)
    valence++
    he = he_twin.next
}while(he ≠ he_start)
distanceMoy = distance/valence

```

4. Liste des 1-voisins d'un sommet

```

start_he = v.e
listeVoisins = null

```

```

he = start_he
do{
    he_twin = he.twin
    listeVoisins.add(he_twin.orig)
    he = he_twin.next
}while(he ≠ he_start)

```

8. HE -> sommets/face ?

tabSommets = 1er_colonne “vertex” de HE
 tabFace ? reconstruction tab faces de l’OBJ

```

pour chaque face fi de “Faces” de HE
    he = fi.incident
    listSomet = null

    do{
        he = he.next
        listeSomet add (he.origine)
    }while(he ≠ he_start && he.face = fi)
    ecrire listeSommets

```