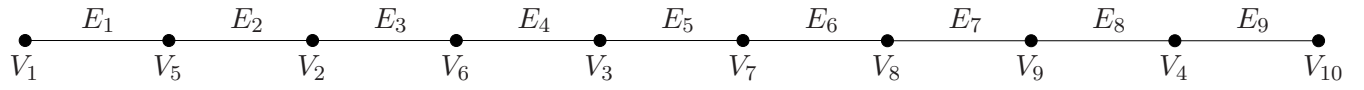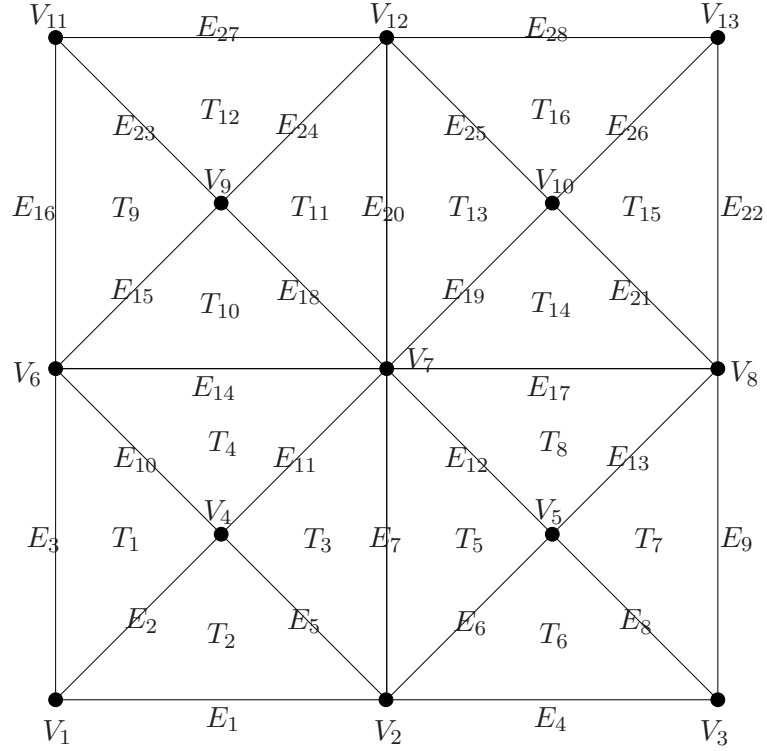# 1 Example Mesh Data Structures

1.1 Example 1-D Interval Mesh (reference data for test code)

Vertex	x	Edge	V_1	V_2	Tail-Vertex	Edge	Head-Vertex	Edge
V_1	0.0	E_1	V_1	V_5	V_1	E_1	V_1	—
V_2	2.0	E_2	V_5	V_2	V_2	E_3	V_2	E_2
V_3	4.0	E_3	V_2	V_6	V_3	E_5	V_3	E_4
V_4	8.0	E_4	V_6	V_3	V_4	E_9	V_4	E_8
V_5	1.0	E_5	V_3	V_7	V_5	E_2	V_5	E_1
V_6	3.0	E_6	V_7	V_8	V_6	E_4	V_6	E_3
V_7	5.0	E_7	V_8	V_9	V_7	E_6	V_7	E_5
V_8	6.0	E_8	V_9	V_4	V_8	E_7	V_8	E_6
V_9	7.0	E_9	V_4	V_{10}	V_9	E_8	V_9	E_7
V_{10}	9.0				V_{10}	—	V_{10}	E_9

1.2 Example 2-D Triangle Mesh (reference data for test code)

Vertex	x	y	Edge	V_1	V_2	Triangle	V_1	V_2	V_3	E_1	E_2	E_3	$\pm$	$\pm$	$\pm$
V_1	0.0	0.0	E_1	V_1	V_2	T_1	V_1	V_4	V_6	E_{10}	E_3	E_2	$+$	$-$	$+$
V_2	1.0	0.0	E_2	V_1	V_4	T_2	V_1	V_2	V_4	E_5	E_2	E_1	$+$	$-$	$+$
V_3	2.0	0.0	E_3	V_1	V_6	T_3	V_2	V_7	V_4	E_{11}	E_5	E_7	$-$	$-$	$+$
V_4	0.5	0.5	E_4	V_2	V_3	T_4	V_7	V_6	V_4	E_{10}	E_{11}	E_{14}	$-$	$+$	$-$
V_5	1.5	0.5	E_5	V_2	V_4	T_5	V_2	V_5	V_7	E_{12}	E_7	E_6	$+$	$-$	$+$
V_6	0.0	1.0	E_6	V_2	V_5	T_6	V_2	V_3	V_5	E_8	E_6	E_4	$+$	$-$	$+$
V_7	1.0	1.0	E_7	V_2	V_7	T_7	V_3	V_8	V_5	E_{13}	E_8	E_9	$-$	$-$	$+$
V_8	2.0	1.0	E_8	V_3	V_5	T_8	V_5	V_8	V_7	E_{17}	E_{12}	E_{13}	$-$	$-$	$+$
V_9	0.5	1.5	E_9	V_3	V_8	T_9	V_6	V_9	V_{11}	E_{23}	E_{16}	E_{15}	$+$	$-$	$+$
V_{10}	1.5	1.5	E_{10}	V_4	V_6	T_{10}	V_6	V_7	V_9	E_{18}	E_{15}	E_{14}	$+$	$-$	$+$
V_{11}	0.0	2.0	E_{11}	V_4	V_7	T_{11}	V_7	V_{12}	V_9	E_{24}	E_{18}	E_{20}	$-$	$-$	$+$
V_{12}	1.0	2.0	E_{12}	V_5	V_7	T_{12}	V_{12}	V_{11}	V_9	E_{23}	E_{24}	E_{27}	$-$	$+$	$-$
V_{13}	2.0	2.0	E_{13}	V_5	V_8	T_{13}	V_7	V_{10}	V_{12}	E_{25}	E_{20}	E_{19}	$+$	$-$	$+$
			E_{14}	V_6	V_7	T_{14}	V_7	V_8	V_{10}	E_{21}	E_{19}	E_{17}	$+$	$-$	$+$
			E_{15}	V_6	V_9	T_{15}	V_8	V_{13}	V_{10}	E_{26}	E_{21}	E_{22}	$-$	$-$	$+$
			E_{16}	V_6	V_{11}	T_{16}	V_{10}	V_{13}	V_{12}	E_{28}	E_{25}	E_{26}	$-$	$-$	$+$
			E_{17}	V_7	V_8										
			E_{18}	V_7	V_9										
			E_{19}	V_7	V_{10}										
			E_{20}	V_7	V_{12}										
			E_{21}	V_8	V_{10}										
			E_{22}	V_8	V_{13}										
			E_{23}	V_9	V_{11}										
			E_{24}	V_9	V_{12}										
			E_{25}	V_{10}	V_{12}										
			E_{26}	V_{10}	V_{13}										
			E_{27}	V_{11}	V_{12}										
			E_{28}	V_{12}	V_{13}										

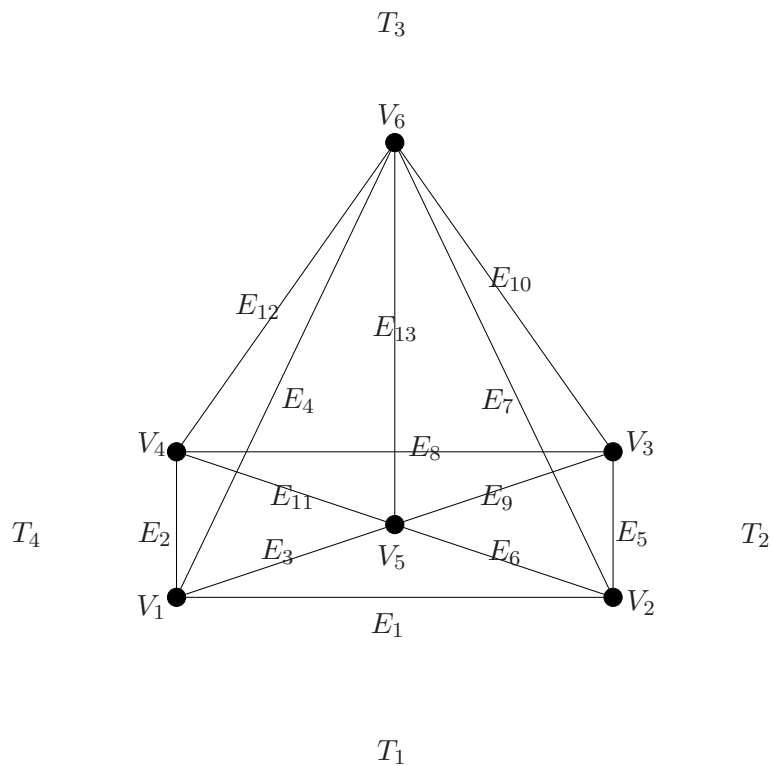## 1.3   Example 3-D Tetrahedron Mesh (reference data for test code)

Figure 1: The four tetrahedra are labeled T_1, T_2, T_3, T_4 (counter-clockwise).

Vertex	x	y	z	Edge	V_1	V_2	Tetrahedron	V_1	V_2	V_3	V_4
V_1	0.0	0.0	0.0	E_1	V_1	V_2	T_1	V_1	V_2	V_5	V_6
V_2	1.0	0.0	0.0	E_2	V_1	V_4	T_2	V_2	V_3	V_5	V_6
V_3	1.0	1.0	0.0	E_3	V_1	V_5	T_3	V_3	V_4	V_5	V_6
V_4	0.0	1.0	0.0	E_4	V_1	V_6	T_4	V_4	V_1	V_5	V_6
V_5	0.5	0.5	0.0	E_5	V_2	V_3					
V_6	0.5	0.5	1.0	E_6	V_2	V_5					
				E_7	V_2	V_6					
				E_8	V_3	V_4					
				E_9	V_3	V_5					
				E_{10}	V_3	V_6					
				E_{11}	V_4	V_5					
				E_{12}	V_4	V_6					
				E_{13}	V_5	V_6					