Examples

Define subsets FLOOR, NWALL, WWALL

```
DEFINE NODE SET FLOOR
             1 TO 5 (i.e. NODES 1,2,3,4,5)
DEFINE NODE SET NWALL
             5 TO 15 BY 5 AND 20 to 22 (i.e. NODES 5,10,15,20,21,22)
DEFINE NODE SET WWALL
             11 TO 20 (i.e. NODES 11,12,13,14,15,16,17,18,19,20)
```

Possible lists can be:

1. NWALL AND WWALL, which would contain nodes

```
5    10   11   12   13   14   15
16   17   18   19   20   21   22
```

2. NWALL INTERSECT WWALL, which would contain node

```
15   20
```

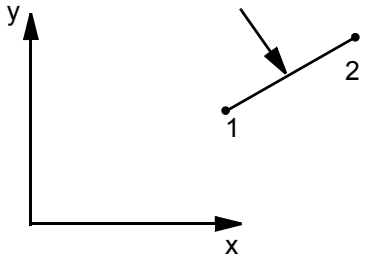
3. NWALL AND WWALL EXCEPT FLOOR, which would contain nodes:

```
10   11   12   13   14   15
16   17   18   19   20   21   22
```

Edges and Faces

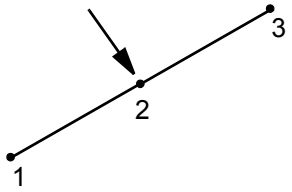
The concept of edge IDs and face IDs that are used with the ATTACH EDGE, ATTACH FACE, and edge and face sets are used to identify the location of boundary conditions. The edge and face IDs follow two different conventions - either Marc or Mentat. The difference is that the Mentat number is equal to the Marc number minus one. The edge and face IDs are dependent upon the element geometry and are shown below.

1-D 2-Node Elements



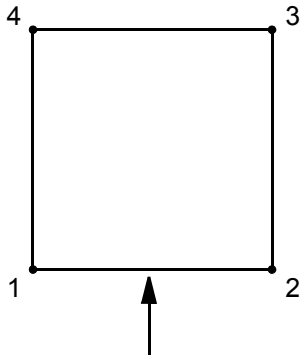
EDGE ID	NODES
1	1 – 2

1-D 3-Node Elements



EDGE ID	NODES
1	1 – 2 – 3

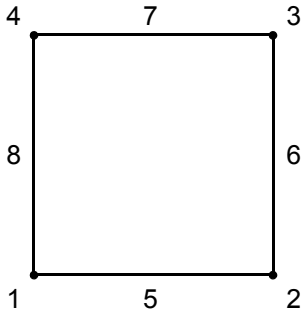
2-D 4-Node Quadrilateral Elements



Load shown on EDGE ID 1

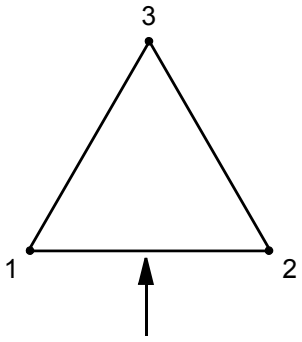
EDGE ID	NODES
1	1 – 2
2	2 – 3
3	3 – 4
4	4 – 1

2-D 8-Node Quadrilateral Elements



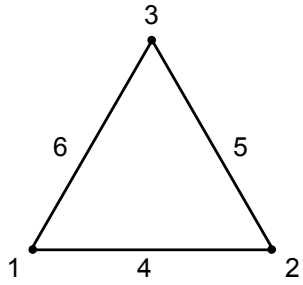
EDGE ID	NODES
1	1 – 5 – 2
2	2 – 6 – 3
3	3 – 7 – 4
4	4 – 8 – 1

2-D 3-Node Triangle



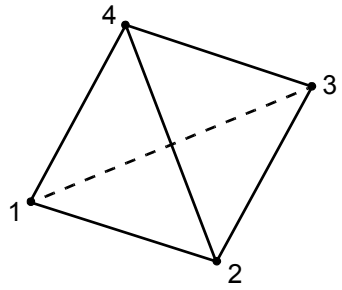
EDGE ID	NODES
1	1 – 2
2	2 – 3
3	3 – 1

2-D 6-Node Triangle



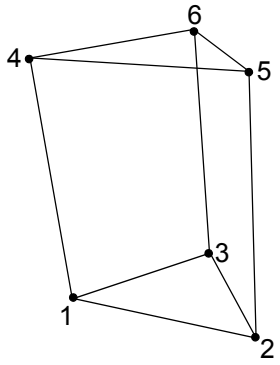
EDGE ID	NODES
1	1 – 4 – 2
2	2 – 5 – 3
3	3 – 6 – 1

3-D 4-Node Tetrahedral



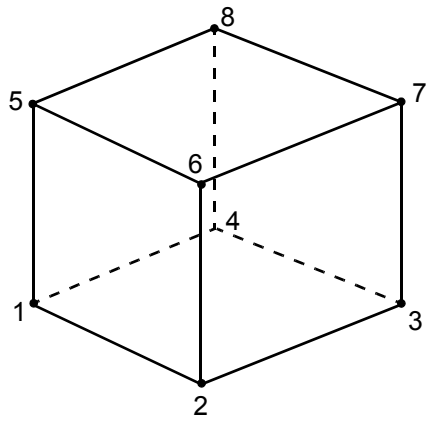
EDGE ID	NODES
1	1 – 2
2	2 – 3
3	3 – 1
4	1 – 4
5	2 – 4
6	3 – 4

3-D 6-Node Pentahedral



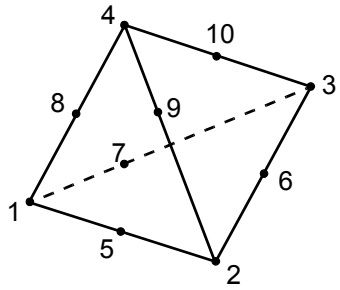
EDGE ID	NODES
1	1 – 2
2	2 – 3
3	3 – 1
4	4 – 5
5	5 – 6
6	6 – 4
7	1 – 4
8	2 – 5
9	3 – 6

3-D 8-Node Brick



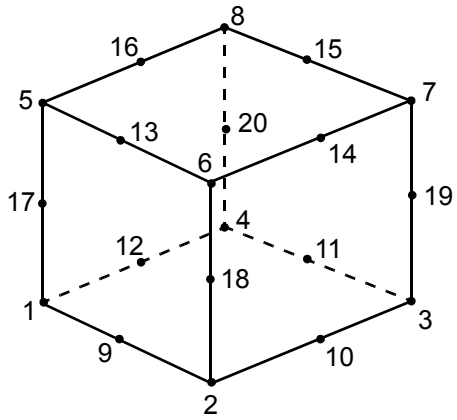
EDGE ID	NODES
1	1 – 2
2	2 – 3
3	3 – 4
4	4 – 1
5	5 – 6
6	6 – 7
7	7 – 8
8	8 – 5
9	1 – 5
10	2 – 6
11	3 – 7
12	4 – 8

3-D 10-Node Tetrahedral



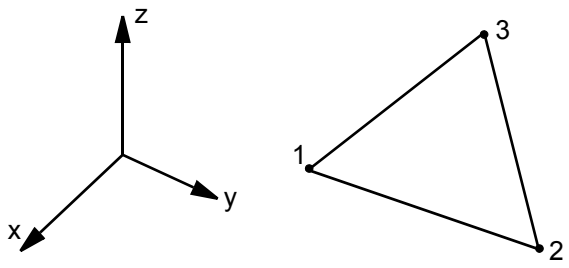
EDGE ID	NODES
1	1 – 2 – 5
2	2 – 3 – 6
3	3 – 1 – 7
4	1 – 4 – 8
5	2 – 4 – 9
6	3 – 4 – 10

3-D 20-Node Brick



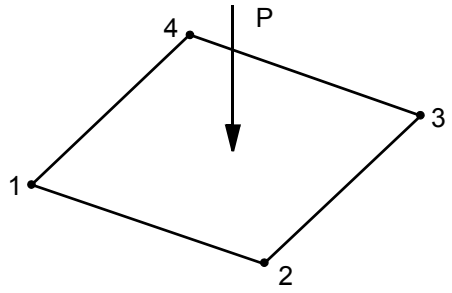
EDGE ID	NODES
1	1 – 2 – 9
2	2 – 3 – 10
3	3 – 4 – 11
4	4 – 1 – 12
5	5 – 6 – 13
6	6 – 7 – 14
7	7 – 8 – 15
8	8 – 5 – 16
9	1 – 5 – 17
10	2 – 6 – 18
11	3 – 7 – 19
12	4 – 8 – 20

3-D 3-Node Shell



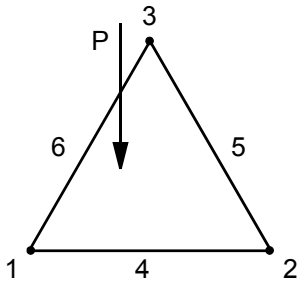
FACE ID	NODES
1	1 – 2 – 3

3-D 4-Node Shell/Membrane



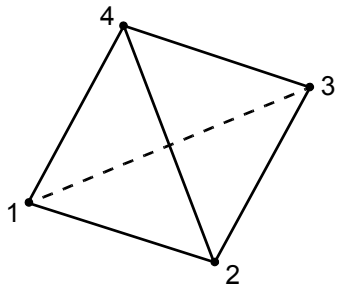
FACE ID	NODES
1	1 – 2 – 3 – 4

3-D 6-Node Shell



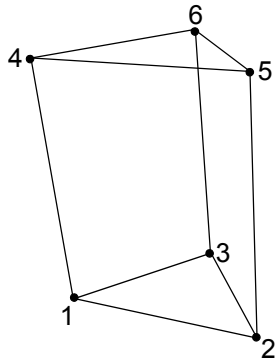
FACE ID	NODES
1	1 – 2 – 3 – 4 – 5 – 6

3-D 4-Node Tetrahedral



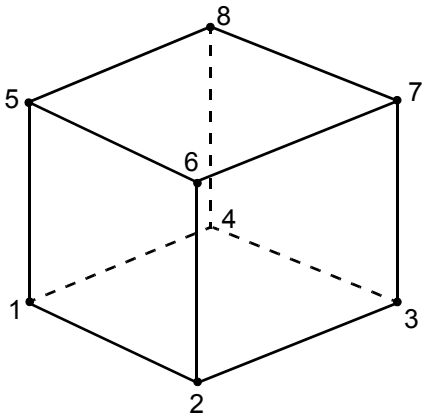
FACE ID	NODES
1	1 – 2 – 4
2	2 – 3 – 4
3	3 – 1 – 4
4	1 – 2 – 3

3-D 6-Node Pentahedral



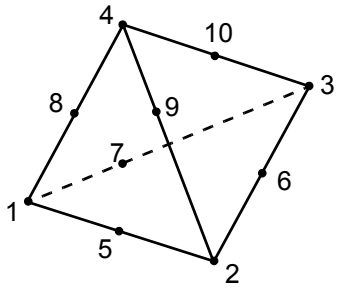
FACE ID	NODES
1	1 – 2 – 5 – 4
2	2 – 3 – 6 – 5
3	3 –1 – 4 – 6
4	1 – 3 – 2
5	4 – 5 – 6

3-D 8-Node Brick



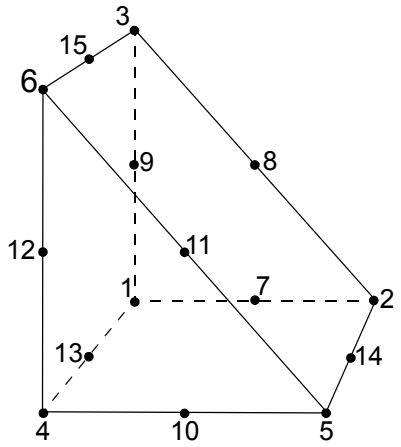
FACE ID	NODES
1	1 – 2 – 6 – 5
2	2 – 3 – 7 – 6
3	3 – 4 – 8 – 7
4	4 – 1 – 5 – 8
5	1 – 2 – 3 – 4
6	6 – 5 – 8 – 7

3-D 10-Node Tetrahedral



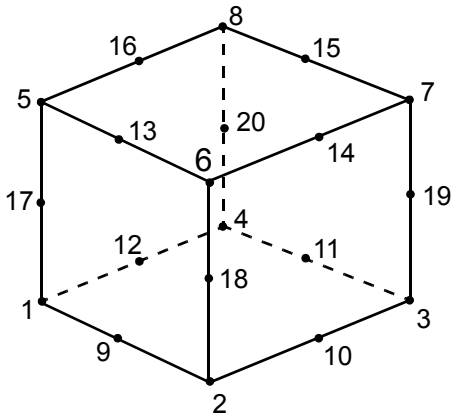
FACE ID	NODES
1	1 – 2 – 4 – 5 – 9 – 8
2	2 – 3 – 4 – 6 – 10 – 9
3	3 – 1 – 4 – 7 – 8 – 10
4	1 – 2 – 3 – 5 – 6 – 7

3-D 15-Node Pentahedral



FACE ID	NODES
1	1 – 2 – 5 – 4 – 7 – 14 – 10 – 13
2	2 – 3 – 6 – 5 – 8 – 15 – 11 – 14
3	3 – 1 – 4 – 6 – 9 – 13 – 12 – 15
4	3 – 2 – 1 – 8 – 7 – 9
5	4 – 5 – 6 – 10 – 11 – 12

3-D 20-Node Brick



FACE ID	NODES
1	1 – 2 – 6 – 5 – 9 – 18 – 13 – 17
2	2 – 3 – 7 – 6 – 10 – 19 – 14 – 18
3	3 – 4 – 8 – 7 – 11 – 20 – 15 – 19
4	4 – 1 – 5 – 8 – 12 – 17 – 16 – 20
5	1 – 2 – 3 – 4 – 9 – 10 – 11 – 12
6	6 – 5 – 8 – 7 – 13 – 16 – 15 – 14

Guide to Organization of Marc Input Data

The input data for Marc is organized into three basic groups. These groups form a natural subdivision of the data. Each group is then subdivided into various optional blocks of input data. The optional blocks of data within each group have been organized to minimize the input of unnecessary data. The main idea is to enable you to specify only the data for the optional blocks needed to define your problem. The various blocks of input are referred to here as optional in the sense that many have built-in default values which can be used and does not imply that they are optional in all cases. The input data is divided into the following three groups:

Parameter Data

This group of data is used to allocate the necessary working space for the problem and to set up initial switches which control the flow of Marc through the desired analysis. This set of input data is terminated with END parameter data.