Local Maximum from Mesh Data

OBJECTIVE

Objective

To create a code to find the local maxima mesh from the given mesh data based on the Element value of each mesh.

Fig.1 shows a sample mesh data in 3D, with material Yield Strength as element value.

This code can be used as a generic function to find the local media of any mesh data like Yield Strength, temperature, Endurance Data etc.

Input Data

Input contains three files

File number one contains Element ID with the values of each Elements

Second File contains element ID with its nodes(By Node ID) where it got created

Third File contain the coordinates of each Node.

Fig:1

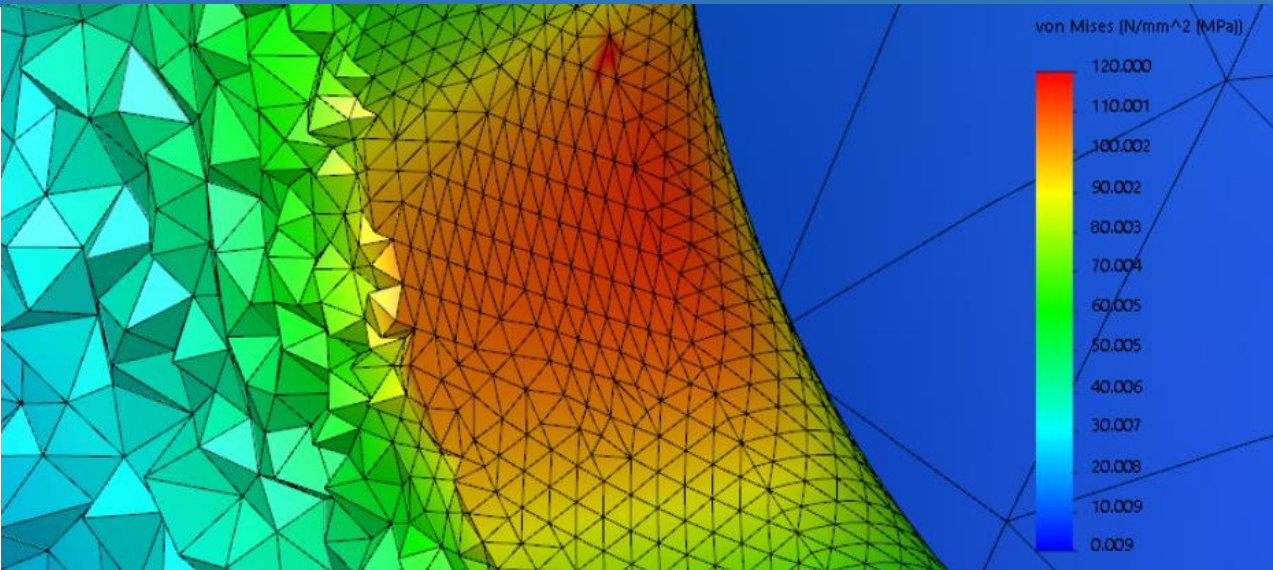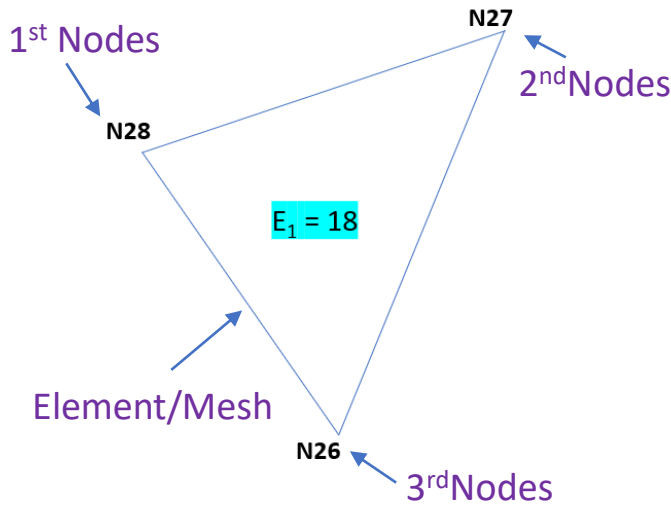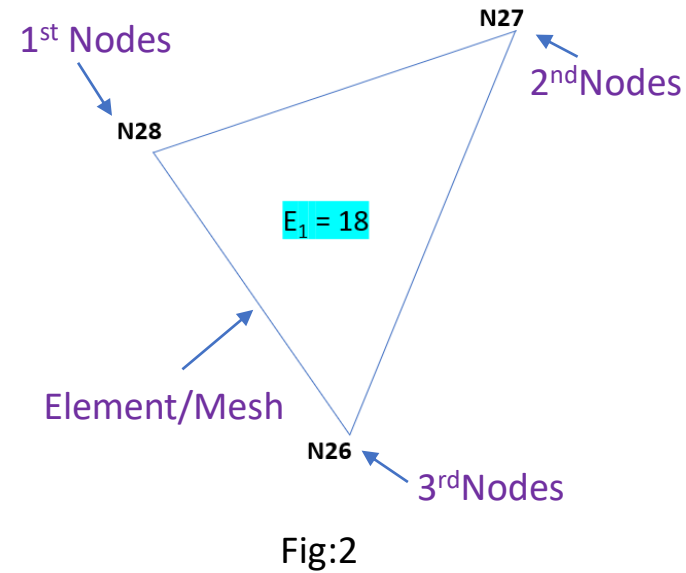| Element ID	Element Value	Nodes
E_1	18	N26, N27, N28
E_2	14	N1, N26, N27
E_3	20	N1, N2, N26
E_4	10	N1, N19, N27
E_5	13	N26, N28, N29
E_6	11	N2, N25, N26
E_7	10	N24, N26, N30
E_8	9	N26, N29, N30

Fig:2

Representative Mesh Data

This slide uses a dummy mesh data with imaginative values for better understanding.

Fig:2

Fig:3

Above is the sample of an element/mesh and its nodes from the dummy mesh data(*Fig.3*).

Element = E_1
Element Value = 18
Nodes for E_1 = N26 ,N27 ,N28

Local Maxima/Hot_Spot
An element whose value is higher than the neighbouring elements value.
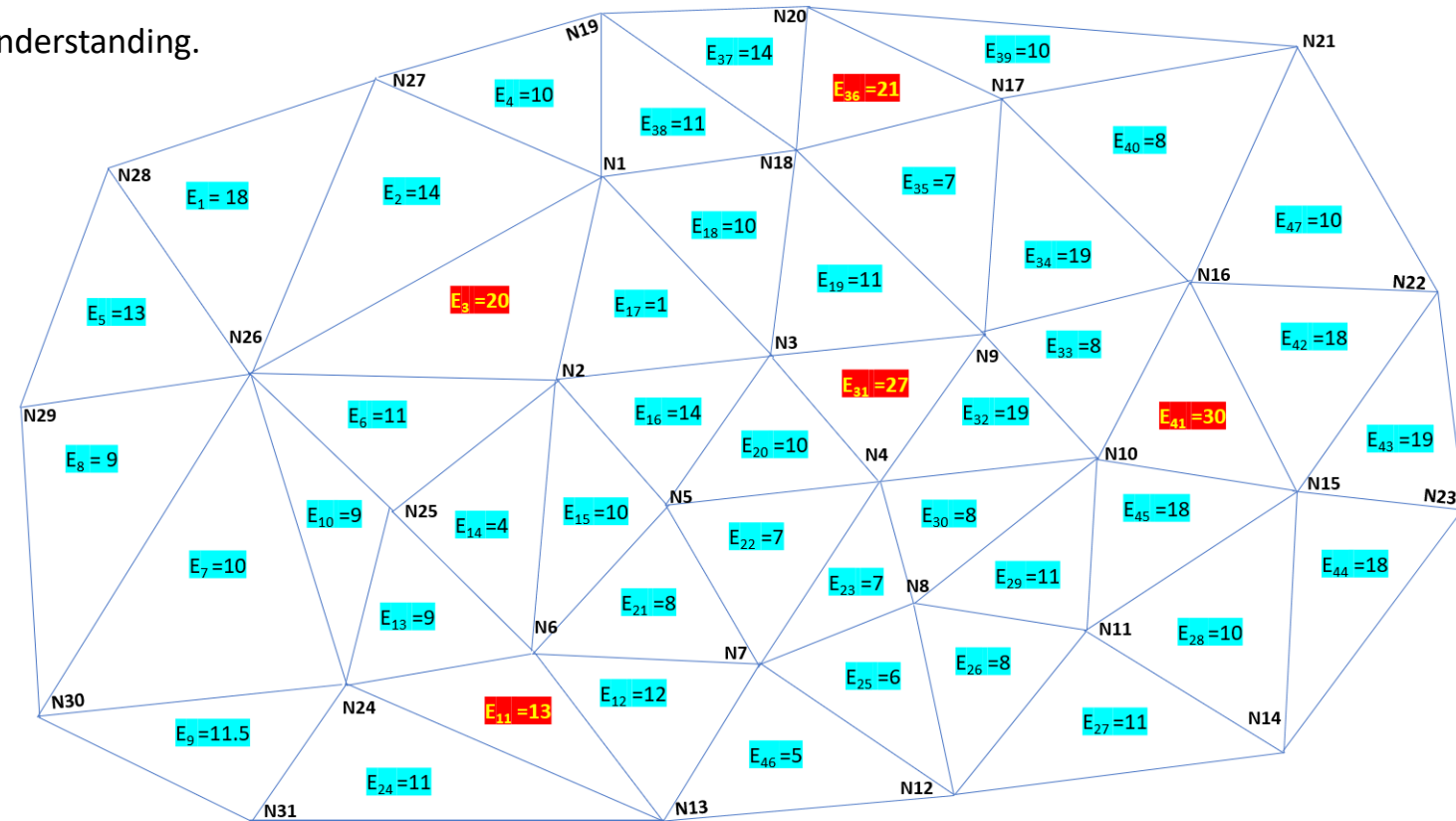In *Fig.1* , the Elements/Mesh $E_3,E_{13},E_{21},E_{27},E_{30}$ are the Local maxima or Hot_spots in the sample data.