Variables

Young's Modulus - E= stress/strain
X - User input of strain
X1,y1 - These variables will correspond with Ax and Ay
X2,y2 - These variables will correspond with Cx and Cy
X3,y3 - These variables will correspond with Dx and Dy
X4,y4 - These variables will correspond with Ex and Ey
Y - Calculated stress

Steps

1. Check if strain is undefined such as x<0 or x>0.27
2. If so, print strain is undefined and end program
3. Check if strain is in between O and A
4. If so, input values into linear interpolation with A values as Y2,X2 and O values as Y1,X1 and set y equal to it
5. Check if strain is in between A and C
6. If so, input values into linear interpolation with C values as Y2,X2 and A values as Y1,X1 and set y equal to it
7. Check if strain is in between C and D
8. If so, input values into linear interpolation with D values as Y2,X2 and C values as Y1,X1 and set y equal to it
9. Check if strain is in between D and E
10. If so, input values into linear interpolation with E values as Y2,X2 and D values as Y1,X1 and set y equal to it
11. Print y

Test Cases

1. Input: -1 Output: Strain is undefined in that region Type: Edge
2. Input: 3 Output: Strain is undefined in that region Type: Edge
3. Input: 0.15 Output: 55.9 Type: Typical
4. Input: 0.222 Output: 55.8 Type: Typical
5. Input: 0.05 Output: 43.4 Type: Typical
6. Input: 0.0001 Output: 0.4 Type: Typical
7. Input: 500 Output: Strain is undefined in that region Type: Edge
8. Input: -500 Output: Strain is undefined in that region Type: Edge