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"Aggies do not lie, cheat, or steal, or tolerate those who do."
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Assignment: Lab 6b Program 1 pdf
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Slope Values of each line segment:

- Slope of Young's Modulus (OA): $44/0.01$
- (AC): 0, constant
- (CD): $16/0.12$
- (DE): $-10/0.08$

Line Equations for each line segment:

- Young's Modulus (OA): $\text{stress} = (44/0.01) * \text{strain}$
- (AC): $\text{stress} = 44$
- (CD): $\text{stress} = (16/0.12) * (\text{strain} - 0.06) + 44$
- (DE): $\text{stress} = (-10/0.08) * (\text{strain} - 0.18) + 60$

Endpoints for each line segment:

- Young's Modulus (OA): $[(0,0), (0.01,44)]$
- (AC): $[(0.01,44), (0.06,44)]$
- (CD): $[(0.06,44), (0.18,60)]$
- (DE): $[(0.18,60), (0.26,50)]$

Set of Variables:

- **strain:** inputted strain
- **stress:** outputted stress

Sequence of Steps:

- Print what the program does.
- Set up the input and float value of strain
- Set stress to 0
- If the inputted strain falls between 0 and 0.01 (inclusive):
 - Multiply the strain by $(44/0.01)$
 - Set the stress to the outputted value
- Else if the inputted strain falls between 0.01 and 0.06 (inclusive):
 - Set the stress to 44
- Else if the inputted strain falls between 0.06 and 0.18 (inclusive):
 - Subtract 0.06 from the strain
 - Multiply the difference by $(16/0.12)$
 - Add 44 to the product
 - Set stress to the final sum
- Else if the inputted strain falls between 0.18 and 0.26 (inclusive):

- Subtract 0.18 from the strain
- Multiply the difference by (-10/0.08)
- Add 60 to the product
- Set stress to the final sum
- If the inputted strain is outside 0 and 0.26:
 - Output an error message stating the inputted stress is out of the domain of the program
- Print final stress in units of ksi

Algorithm:

- print('This program gives the corresponding stress from an inputted strain between 0 and 0.26')
- Strain = float(input('Please enter the strain here: '))
- Stress = 0
- If $0 \leq \text{Strain} \leq 0.01$
 - $\text{Stress} = (44/0.01) * \text{Strain}$
- Elif $0.01 \leq \text{Strain} \leq 0.06$
 - Stress = 44
- Elif $0.06 \leq \text{Strain} \leq 0.18$
 - $\text{Stress} = ((16/0.12) * (\text{Strain} - 0.06)) + 44$
- Elif $0.18 \leq \text{Strain} \leq 0.26$
 - $\text{Stress} = ((-10/0.08) * (\text{Strain} - 0.18)) + 60$
- Else:
 - print('Error: input for strain falls out of range of program')
- print('The given amount of stress from the given strain is: ', Stress)

Tests:

Inputted Strain	0.005	0.031	0.1425	0.18	0.01
Outputted Stress	22	44	55	60	44
Type of Test	Typical	Typical	Typical	Edge	Edge