

Python Simple IO and Control Structures

The statements inside your computer programs are generally executed from top to bottom, in the order that they appear. Control flow statements, however, break up the flow of execution by employing decision-making, looping, and branching, enabling your program to conditionally execute particular blocks of code. The assignments below will take advantage of the control flow concepts in programming.

Question #1

(*Geometry: area of a regular polygon*) A regular polygon is an n -sided polygon in which all sides are of the same length and all angles have the same degree (i.e., the polygon is both equilateral and equiangular). The formula for computing the area of a regular polygon is

$$Area = \frac{n \times s^2}{4 \times \tan\left(\frac{\pi}{n}\right)}$$

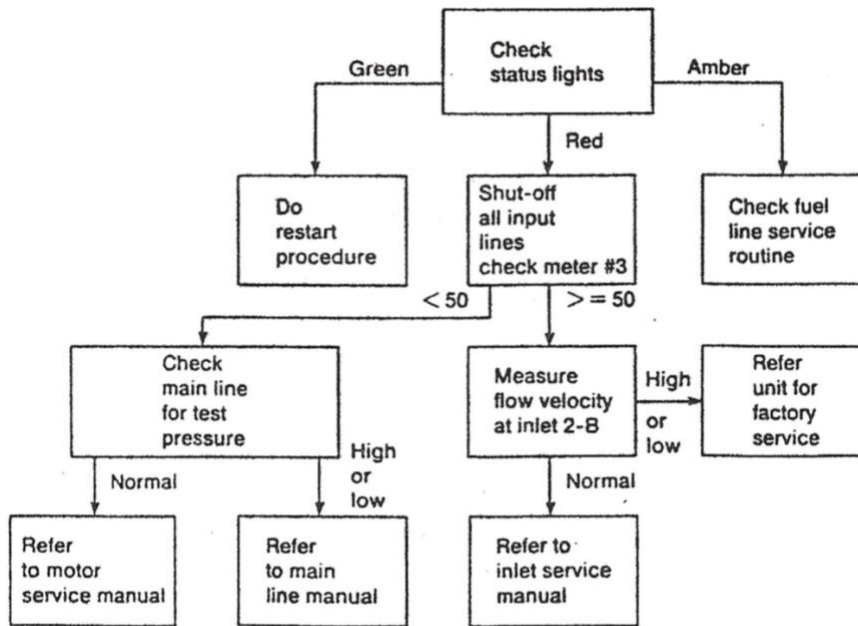
Here, s is the length of a side. Write a program that prompts the user to enter the number of sides and their length of a regular polygon and displays its area. Here is a sample run:

```
Enter the number of sides: 5 Enter
Enter the side: 6.5 Enter
The area of the polygon is 73.69017017488385
```

Import the math library package in your program and modify the output to print the result to four decimal points only i.e. to 73.6902

Question #2

Observe the Troubleshooting Chart for Diesel Engine below. Write a program based on the given chart. Make sure your program validates the input data. For example, the value 50x is invalid, it should be 50. The program should allow the user to run the test again until the user chooses to exit.



Troubleshooting Chart for Diesel Engine

Write a Report Summary

Using Microsoft Word or any text editor, answer the following questions. Please describe your answers and do not simply say yes/no. Please include the questions too when answering them.

1. Did you complete your assignment and did your program run without errors?
2. Did your program produce the correct result?
3. Did you test your program thoroughly?
4. How much time did you spend completing your assignment?
5. Did you write the program yourself? Did you get any help from anyone?
6. How did you resolve the issues when you encountered obstacles to completing your program? Did you use Google or other resources to get help? Describe how Google or other resources was abled or not able to assist you.
7. What did you learn from doing this assignment?
8. Any other information you would like to share with your instructor?

What to submit

1. Submit all your Python program files (.py file) and your program output
2. Submit your learning report summary