

Follow the same guidelines as in Homework 4 for this assignment.

- 1) (3 pts) Write a script that will ask the user to input the coordinates (x, y) of a point in the x - y plane. If the point is inside (or on the boundary) of the circle centered at the origin with radius 3, the script should display the message 'inside the circle' otherwise it should display the message 'not inside the circle.' Test your script using the points (1,1) and (-5,2).

- 2) (2 pts) An important use of **if-then** statements is *error checking*. The purpose of error checking is to ensure that a calculation will be successful before actually performing the calculation.

Write a script that will ask the user to input two values a and b . If (and only if) it is feasible to do so, the value of $\frac{a}{b}$ should be computed and displayed. If the quotient cannot be computed, an appropriate error message should be displayed. Test your script using two cases of your own choosing (one should be feasible and one infeasible).

- 3) (2 pts) Write a script that asks the user to input an indicator variable **flag** and a temperature T . If the value of **flag** is zero, the temperature is assumed to be in Fahrenheit and should be converted to Celsius and displayed. If the value of **flag** is 1, the temperature is assumed to be in Celsius and should be converted to Fahrenheit and displayed. Test your script using the test cases

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flag = 0, T = 214
flag = 1, T = 22
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- 4) (3 pts) Suppose you took the number line and divided it into the 4 intervals below:

$$\text{Interval } A = (-\infty, -3]$$

$$\text{Interval } B = (-3, 2)$$

$$\text{Interval } C = [2, 7)$$

$$\text{Interval } D = [7, \infty)$$

Write a script that asks the user to input a number and displays which interval the number is in. Test your script using the values 3, 7 and 0.

- 5) (7 pts) Write a script that does the following:
- Asks the user to input three lengths a, b , and c
 - Tests to determine if these lengths are capable of forming a triangle.
 - If a triangle cannot be formed, an error message should be printed out. If (and only if) a triangle can be formed, your program should compute the area of the triangle using *Heron's formula*

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

where s is the semi-perimeter of the triangle

$$s = \frac{a+b+c}{2}.$$

Test your program with the 3 sets of data: $a = 4.1, b = 6.4, c = 10.1$; $a = 7.8, b = 12.0, c = 3.4$ and $a = 1.1, b = 2.2, c = 3.3$.