



COP 1000, Principles of Computer Programming

Assignment 3: (22 + 15 + 15)

There are three parts to this assignment. Part 1, Part 2 (Age Classifier) and Part 3 (Roman Numerals)

Part 1. (22 points): The Hit the Target Game

In this section, we're going to look at a Python program that uses turtle graphics to play a simple game. When the program runs, it displays the graphics screen shown in **Figure 3-16**. The small square that is drawn in the upper-right area of the window is the target. The object of the game is to launch the turtle like a projectile so it hits the target. You do this by entering an angle, and a force value in the Shell window. The program then sets the turtle's heading to the specified angle, and it uses the specified force value in a simple formula to calculate the distance that the turtle will travel. The greater the force value, the further the turtle will move. If the turtle stops inside the square, it has hit the target.

Complete the program in 3-19 and answer the following questions

1. **3.22** How do you get the turtle's *X* and *Y* coordinates?
2. **3.23** How would you determine whether the turtle's pen is up?
3. **3.24** How do you get the turtle's current heading?
4. **3.25** How do you determine whether the turtle is visible?
5. **3.26** How do you determine the turtle's pen color? How do you determine the current fill color? How do you determine the current background color of the turtle's graphics window?
6. **3.27** How do you determine the current pen size?
7. **3.28** How do you determine the turtle's current animation speed?

Deliverables	Points
Screen shot/s of the ran program	3
.py program files	10
Reflections & Challenges	2
Answer the questions (7 questions)	7
Total	22

Part 2 & 3: (15 points)

3. Age Classifier

Write a program that asks the user to enter a person's age. The program should display a message indicating whether the person is an infant, a child, a teenager, or an adult. Following are the guidelines:

- If the person is 1 year old or less, he or she is an infant.
- If the person is older than 1 year, but younger than 13 years, he or she is a child.
- If the person is at least 13 years old, but less than 20 years old, he or she is a teenager.
- If the person is at least 20 years old, he or she is an adult.

4. Roman Numerals

Write a program that prompts the user to enter a number within the range of 1 through 10. The program should display the Roman numeral version of that number. If the number is outside the range of 1 through 10, the program should display an error message. The following table shows the Roman numerals for the numbers 1 through 10:

Number	Roman Numeral
1	I
2	II
3	III
4	IV
5	V
6	VI
7	VII
8	VIII
9	IX
10	X

Deliverables:

- Take a screen shot of your ran program in paste it in a word file
- Submit your .py file/s
- Write a few sentences about what you learnt from writing the program and if you had faced any challenges. If you have faced challenges, I would like to know how you addressed those challenges.

Purpose: The assignment would assess the comprehension of input, output and basic logic of the python programming language.

Program Rubric showing the breakdown of points: Part 2 & Part 3

Deliverables	Points
Screen shot/s of the ran program	3
.py program files	10
Reflections & Challenges	2
Total	15

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