

Python Assignment #7: Functions

Key Idea:

- Using functions to input and output information
- Using functions as part of a bigger program.

Videos

[Video 1: Functions](#)

[Video 2: Type Race](#)

Scoring:

You need a minimum of 70 experience points to move on from this packet. How you choose to achieve that task is entirely up to you.

100 Points: A+

90 Points: A

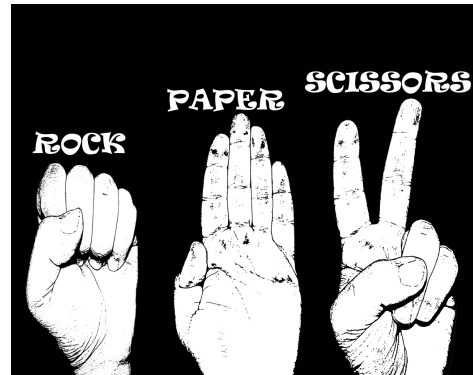
80 Points: B

70 Points: C

Below 70 Points: F

Problem 1 - RPS

Rock, paper, scissors, also known as roshambo, is a simple child's game that is frequently used to settle disputes. In this computerized version the human player competes against the computer which chooses a rock, paper, or scissors randomly.



Rock, Paper, Scissors Requirements:

1. Have the user enter how many points are required for a win.
2. Have the user select rock, paper or scissors each round. The computer should pick randomly.
3. Determine a winner using your [function](#)
4. Ask the user for his or her name and use the name while the game is playing.
5. Have the score updating as you go.
6. Display randomly chosen taunts each time the computer scores a point.
7. Use functions

**+ 50
Experience
Points**

Sample session

```
Welcome to Rock, Paper, Scissors!  
How many points are required for a win? 2  
Choose (R)ock, (P)aper, or (S)cissors? r  
Human: rock    Computer: paper    Computer wins!  
Score: Human 0    Computer 1  
Choose (R)ock, (P)aper, or (S)cissors? r  
Human: rock    Computer: scissors    Human wins!  
Score: Human 1    Computer 1  
Choose (R)ock, (P)aper, or (S)cissors? p  
Human: paper    Computer: paper    A draw  
Score: Human 1    Computer 1  
Choose (R)ock, (P)aper, or (S)cissors? s  
Human: scissors    Computer: paper    Human wins!  
Final Score: Human 2    Computer 1
```



Problem 2 – The Classic Caesar Cipher ([Video](#))

The Caesar Cipher was once the dominant code. Today you may recognize it from the puzzles on the backs of cereal boxes. The gist of the code is you take every letter and shift it a set amount further down the list. So “kill all the egyptians” becomes “nloo doo wkh hjbswldqv” if each letter is shifted three places. Think like a code breaker, what in the above code makes it weak? The video above talked about letter frequency in each language, does this hold true for this line of code? [Here is an example](#)

**+ 50
Experience
Points**

Caesar Cipher Requirements:

Part 1:

Create a cipher that asks the user for a message and how many times they want the code shifted. The actual shifting should be done with a [function](#).

Part 2:

Create the code breaker for the Caesar Cipher. Feed the computer the code and have it print out all 26 possibilities. The actual shifting should be done with a [function](#).

Problem 3: Powerball

To win the powerball you have to pick six numbers correctly. The first five numbers are drawn from a drum containing 53 unique balls and the sixth is drawn from a drum containing 42 unique balls. The chances of doing this are small. Write a program to generate a set of Powerball numbers by utilizing the choice function in Python's random module. [Here is an example](#) if you need help!



**+ 50
Experience
Points**

Powerball Requirements:

- 1) Have the user create a list of powerball numbers of their own choosing.
- 2) Have the computer draw the winning numbers with a [function](#); remember to check for repeats and sort the list.
- 3) Compare to see how many the user got right. Remember to only compare the first 5 numbers with the first five numbers and the powerball number with the powerball number.
- 4) Keep a running total of how many times they got 0,1,2,3,4,5, or all 6 correct.
- 5) Have the program end once they get at least 4 correct (I would start with 2 to test though, it might take too long).