Self-Learning Project Report

PROGRAMMING(PYTHON)

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ABSTRACT

This is our self-learning project we selected the topic "Programming(Python)". We are going to show "Rock-Paper-scissor" game in this project by using IDLE(Python).

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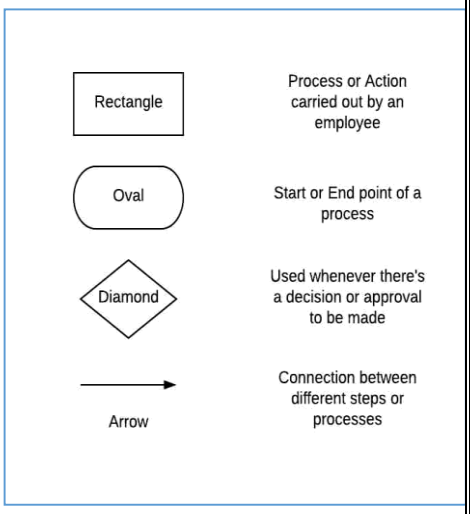
INTRODUCTION:

Algorithm: An algorithm is a step by step method of solving a problem.

It is commonly used for data processing, calculation and other related computer and mathematical operations. An algorithm is also used to manipulate data in various ways, such as inserting a new data item, searching for a particular item or sorting an item.



Flowchart: A flowchart is a formalized graphic representation of a logic sequence, work or manufacturing process, organization chart, or similar formalized structure. The purpose of a flow chart is to provide people with a common language or reference point when dealing with a project or process.

Programming Languages: A programming language is a formal language, which comprises a set of instructions that produce various kinds of output. Programming languages are used in computer programming to implement algorithms.

Features of Programming Languages

Simplicity: A good programming language must be simple and easy to learn and use. It should provide a programmer with a clear, simple and unified set of concepts, which can be easily grasped.

Naturalness: A good language should be natural for the application area, for which it has been designed.

Efficiency: Programs written in a good programming language are efficiently translated into machine code, are efficiently executed, and acquire as little space in the memory as possible.

Compactness: In a good programming language, programmers should be able to express intended operations concisely.

Locality: A good programming language should be such that while writing a programmer concentrate almost solely on the part of the program around the statement currently being worked with.

Procedure

Step 1: Write an Algorithm to Add, Subtract, Multiply, Divide and find Average of two numbers.

Algorithm:

Step1: start.

Step2: Declare variables and constants

Step3: Input player-choice.

Step4: comp_choice ← random (1,3)

Step5: decision, if player_choice= comp_choice

Step6: if yes then output "draw" then stop.

Step7: if no then player_choice=1?

step7.1: if yes comp_choice = 2?

step7.2: if yes winner □ "player" then winner=" player"?

step7.3: if no winner □ "comp"

step8: if player_choice = 2?

step8.1: if yes then comp_choice=3?

step8.2: if yes winner □ "player" then winner="player"?

step8.3: if no winner □ "comp"

step9: if no then player_choice = 1?

step9.1: if yes winner □"player" then winner=" player"?

step9.2: if no winner □ "comp"

step10: if winner =" player"?

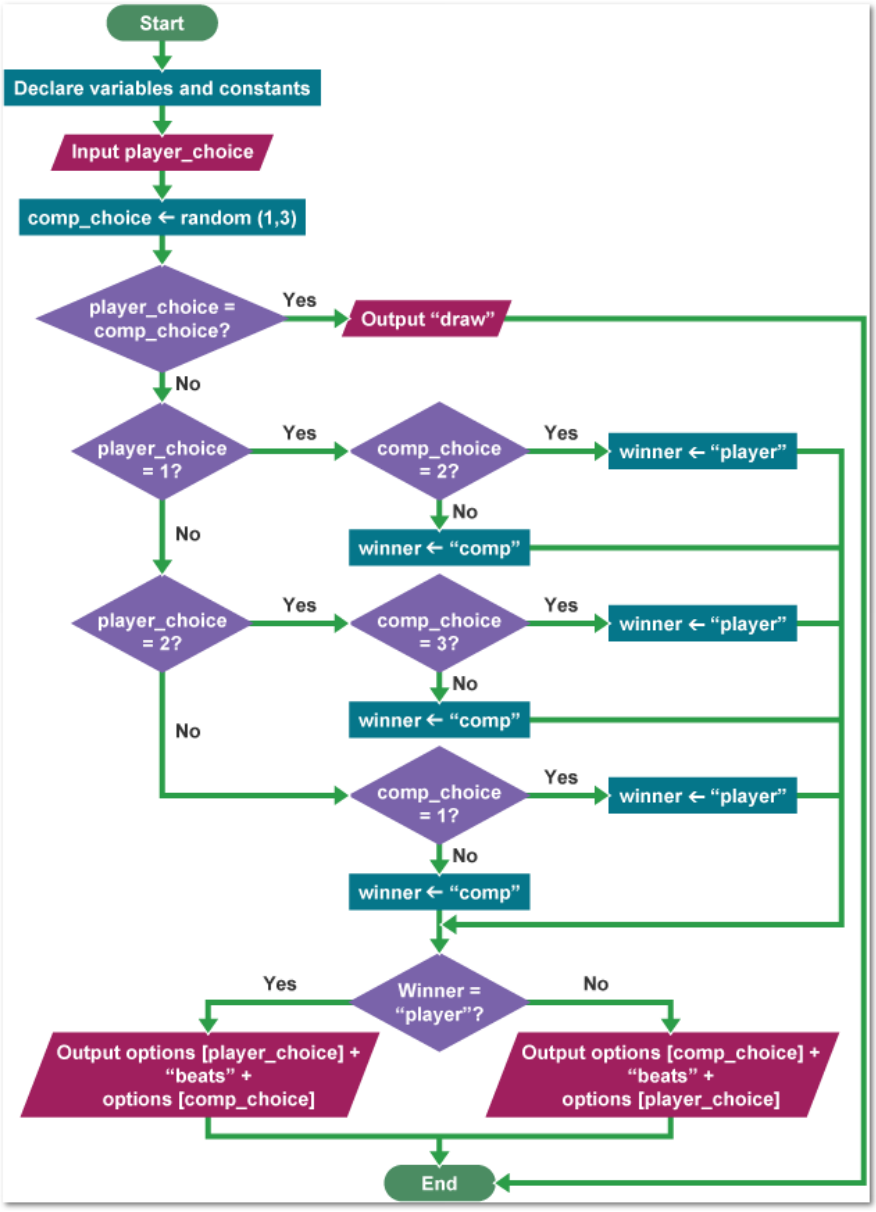
step10.1: if no then output options [comp_choice]+"beats"+options [player_choice] then end.

Step10.2: if if yes then output options [player_choice] +”beats”+options [comp_choice] then end then end.

Step11: stop

Step 2: Draw a flowchart for the selected algorithm.

Flowchart:



Step 3: Write a program to get desired output based on algorithm and flowchart created.

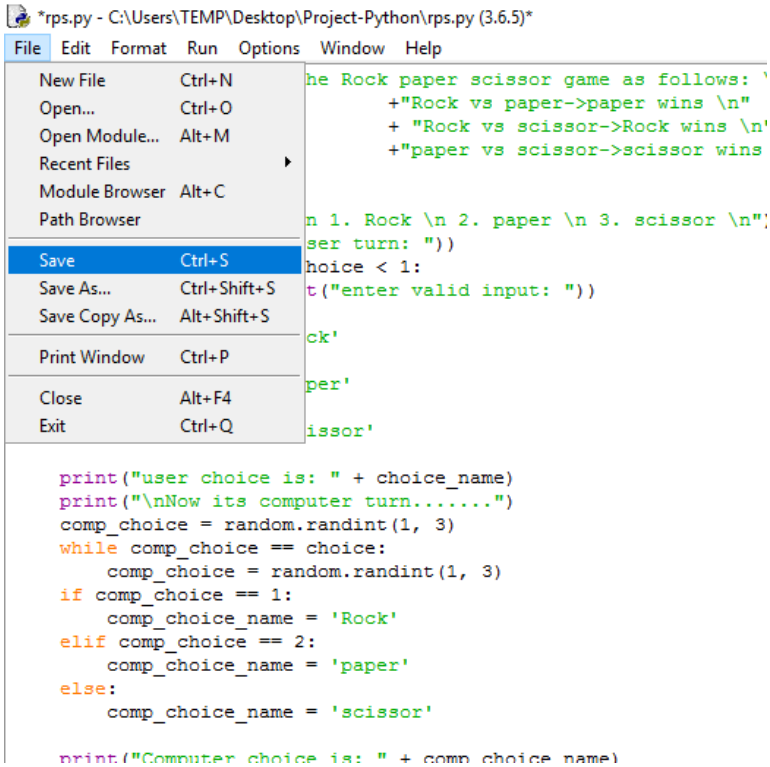
Program in Python:

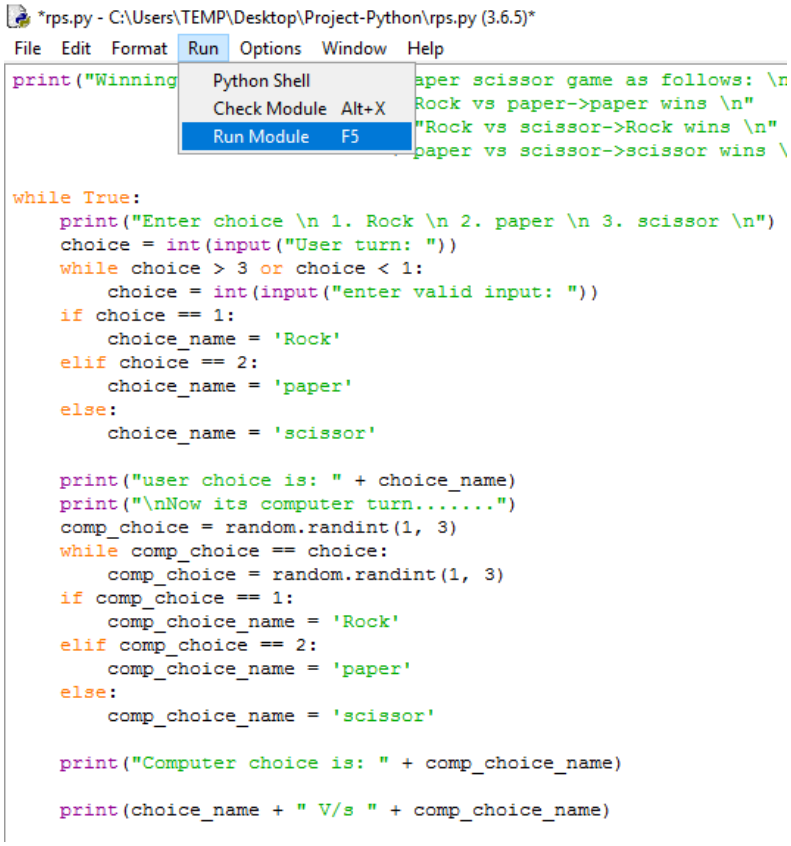
rps.py - C:\Users\TEMP\Desktop\Project-Python\rps.py (3.6.5)

File Edit Format Run Options Window Help

```
import random
print("Winning Rules of the Rock paper scissor game as follows: \n"
                                +"Rock vs paper->paper wins \n"
                                + "Rock vs scissor->Rock wins \n"
                                +"paper vs scissor->scissor wins \n")

while True:
    print("Enter choice \n 1. Rock \n 2. paper \n 3. scissor \n")
    choice = int(input("User turn: "))
    while choice > 3 or choice < 1:
        choice = int(input("enter valid input: "))
    if choice == 1:
        choice_name = 'Rock'
    elif choice == 2:
        choice_name = 'paper'
    else:
        choice_name = 'scissor'

    print("user choice is: " + choice_name)
    print("\nNow its computer turn.......")
    comp_choice = random.randint(1, 3)
    while comp_choice == choice:
        comp_choice = random.randint(1, 3)
    if comp_choice == 1:
        comp_choice_name = 'Rock'
    elif comp_choice == 2:
        comp_choice_name = 'paper'
    else:
        comp_choice_name = 'scissor'

    print("Computer choice is: " + comp_choice_name)

    print(choice_name + " V/s " + comp_choice_name)

    if((choice == 1 and comp_choice == 2) or
      (choice == 2 and comp_choice ==1 )):
        print("paper wins => ", end = "")
        result = "paper"

    elif((choice == 1 and comp_choice == 3) or
        (choice == 3 and comp_choice == 1)):
        print("Rock wins =>", end = "")
        result = "Rock"
    else:
        print("scissor wins =>", end = "")
        result = "scissor"

    if result == choice_name:
        print("<== User wins ==>")
    else:
        print("<== Computer wins ==>")

    print("Do you want to play again? (Y/N)")
    ans = input()

    if ans == 'n' or ans == 'N':
        break
print("\nThanks for playing")
```

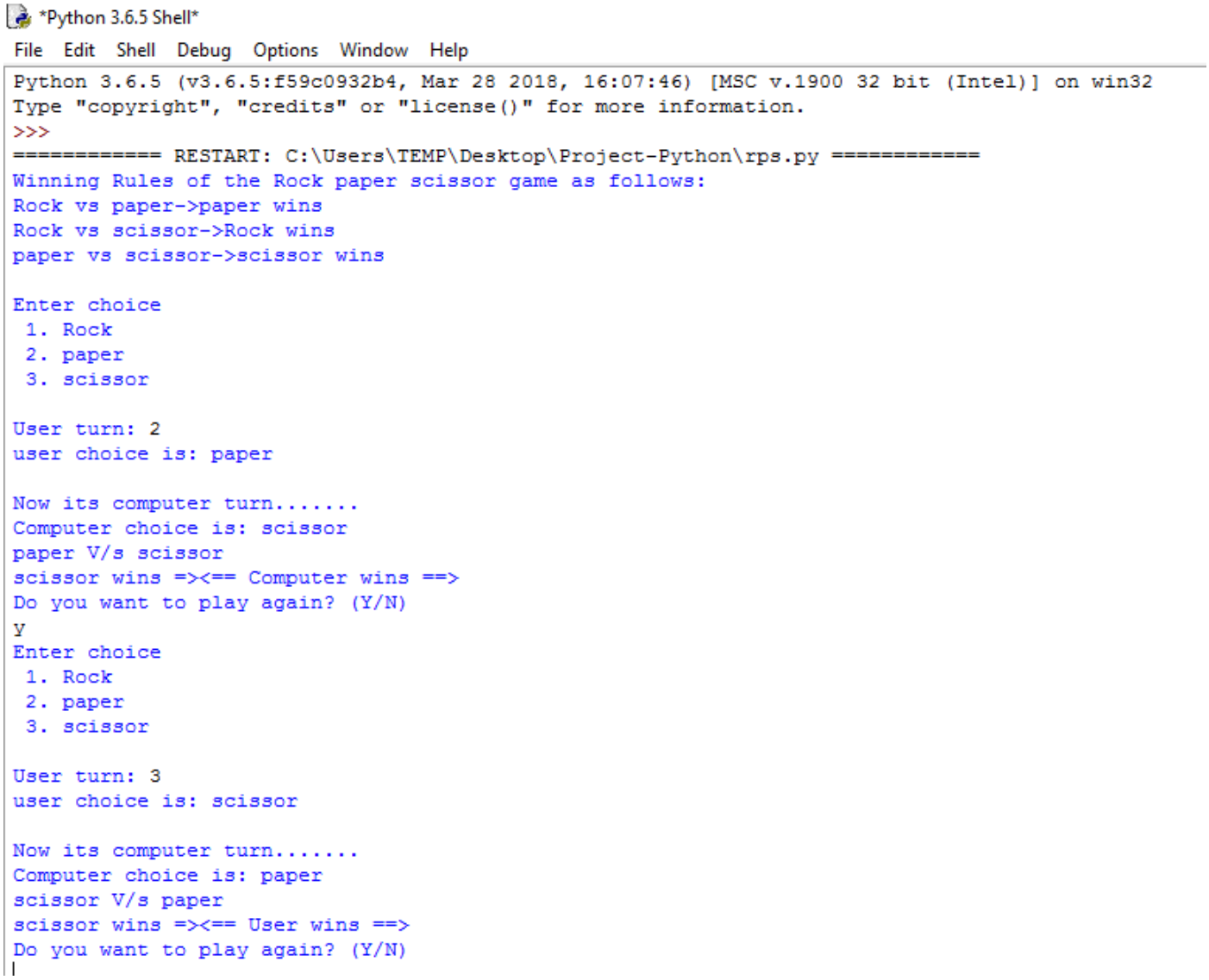
Step 4: Result - Output of the Program.
Save and Run the Program:





Play with computer and choose number:

Select Operation to get the desired output:



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