Programming Fundamentals - Assignment 2

Control Structure I: (If, if else, switch statement)

Problem 1: Using modulus

Write and run a program that reads a six-digit integer and prints the sum of its six digits.

Sample Input: 153426
Sample output: 21

Problem 2 - ascii values

Take a character input from the user and tell whether the number is a capital letter or a small letter.

Sample Input: A
Sample Output: Capital letter

Sample Input: g
Output: small letter
Sample Input:)

Sample Output: Non

Problem 3 - mod, quotient and greaterness

Write and run a program that reads two integers and then uses the conditional expression operator to print either "multiple" or "not" according to whether one of the integers is a multiple of the other.

Sample Input: 12 6
Output: 12 = 6x2

Sample Input: 12 27
Output: 13 = 12x2+3

Problem 4 - Using If and switch separately

- Write and run a program that simulates a simple calculator. It reads two integers and a character. If the character is a '+', the sum is printed; if it is a '-', the difference is printed; if it is a '*', the product is printed; if it is a '/', the quotient is printed; and if it is a '%', the remainder is printed.

  Sample Input: 12%7
  Sample Output: 5

  Sample Input: 19x10
  Sample Output: 190

- Write a program that will take at max: a six-digit number and output each of its digits in words, (Bonus) if the number is less than 6 digits it should not print initial zeros. If the number is greater than 6 digits then it should output the wrong input.

  Sample Input: 651432
  Output: Six Five One Four Three two
  (Bonus)Sample Input: 1432
  Sample Output: One Four Three two.

Problem 5 - Float and Integer truncating

- Write a program that takes as input a floating number and prints its ceiling Integer.

  Sample Input: 5.5
  Output: 6
  Sample Input: -5.5
  Output: -5
  Sample Input: 5
  Output: 5

- Write a program that takes as input a floating number and prints its floor value.

  Sample Input: 5.5
  Output: 5

  Sample Input: -5.5
  Output: -6

  Sample Input: 5
  Output: 5

Problem 6 - Finding Minimum and Maximum

- Write a program which takes 5 numbers as input and finds the min and maximum of the 5.
- Computing Fundamentals has 6 sections. We are required to find out which section's average is higher. Write a program that takes each section's average and Output which section has won w.r.t average.

  Sample Input: B 90
  D 80
  C 60
  A 99
  E 91
  F 80
  Output: A got the highest average of 99
  C got the lowest average of 60

- Write a program which takes marks of 5 courses as input, of 5 students and output the students who got the highest aggregate.

Roll#	C1	C2	C3	C4	C5
Sample Input:					
1391	80	70	60	14	88
1376	70	80	80	88	89
1374	71	82	50	80	79
1372	77	90	90	99	100
1375	73	83	40	81	69

Sample Output: 1372 has the highest Aggregate of 456

- Write a program that takes 5 input integers and tells the 2nd maximum.
  Sample Input: 90 5 60 30 20
  Sample Output: 60

Problem 7 - Geometric Based problems

- Write a program that takes as input 4 points and tell whether these points are the coordinates of Rectangle, Square, or Quadrilateral.
  Sample Input: P1 0 0
  P2 1 0
  P3 1 1
  P4 0 1
  Output: Its a square

- Write a program that takes as input 3 points and tell whether these points are the coordinates of isosceles or equilateral or right-angled or scalene triangle.
  Sample Input: P1 0 0
  P2 1 0
  P3 1 1
  Sample Output: Right Angle Triangle

- Take 4 coordinates of the Rectangle and a point P. Your program should be able to tell whether P lies inside the Rectangle or Not.
  Sample Input: P1 0 0
  P2 2 0
  P3 2 2
  P4 0 2
  P 1 1
  Output: P lies inside Square

The Challenge: Making a series of Rock-Paper Scissor

Write and run a program that plays the game o
f “Rock, paper, scissors.” In this game, two players simultaneously say (or display a hand symbol representing) either “rock,” “paper,” or “scissors.” The winner is the one whose choice dominates the other. The rules are: paper dominates (wraps) rock, rock dominates (breaks) scissors, and scissors dominate (cut) paper.

You can use r=rock,p=paper,s=scissors
Sample Input: r(it should be displayed *) r
Sample Output: Draw

Sample Input: r p
Sample Output: 2nd player wins

- Extending to a series (the program should play and ask at the end of the game if you would like to play another game, if so the game should be played again, and then prompt again if the user wants to play again). At the end of the program, it should display how many games were played and display player 1’s and player 2’s wins count along with who wins the series.

Bonus(Chocolate)

Problem # 1

Write a program that takes marks of 5 different students(1,2,3,4,5) in 5 different courses as input and output the highest marks in each course along with the id of the student(e.g. 1,2,3,4,5) who scored it.

Problem # 2

A program that takes marks of n different students(1,2,3,4,5) in k different courses
as input and prints the highest marks in each course along with the id of the student (e.g. 1,2,3,4,5...n) who scored it.
Note: There is a subtle difference between the two questions:

Happy Coding!
Good luck

In problem 1 the input is student 1(all courses result) then 2nd student all results.... and so on.
In problem 2 the input is Course 1(all the students result) and then course 2(all students result)... and so on.