IFs and Functions Assignment

<u>YOU ARE NOT ALLOWED TO USE ANY LOOP until specifically asked to…!</u>

1. Write a Function(DigitsSummation) that takes a six-digit integer and returns the sum of its six digits. Also write **int main** to test this function.

int **DigitsSummation(int Number)**

{

…… it should return the summation of the digits of the values passed in Number

}

int main()

{

  int Num;

  cout<<"Enter the Six Digit Number: ";

  cin>>Num;

  .

  .   // Write the code here…!!!

  .

}

Sample Input: 153426

Sample output: 21

2. Write a Program that plays the game of "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 as symbols entered by the user.

First you should make a function **WhoWins** which takes as argument 2 characters (Player1, Player2) and returns the results 0,1 or 2 (0 means game draw, 1 means Player 1 wins, 2 means Player 2 wins).

After writing the above function, Write the the main program which uses above function to complete the game. **BONUS:** The game should run many times such that until user says -1 it should keep playing again and again.

Bonus: In the end it should tell how many times the game was played and who is the winner.

Sample Input: r r

Sample Output: Draw

Sample Input: r p

Sample Output: 2nd player wins

3. Write a function SecondMaximum, SecondMinimum which takes 6 inputs integers as parameters and returns the 2nd maximum. Also write int main to test it. Similarly design Minimum, Maximum functions also and write a main which should use above functions display the three numbers in order.

        Sample Input: 90 5 60 45 70 75

        Max, 2nd Max, Min, 2ndMin: 90 75 5 45

4. Write a function SymbolType which takes a character as input and tells whether that character is Capital letter or Small letter or Non (it should return 1, 2 or 3 according to the input character). Also Write int main which should use switch to display proper message.

Sample Input: A

        Sample Output: Capital letter

        Sample Input: g

        Output: small letter

        Sample Input:)

Sample Output: Non

5. Write a function MultipleOrNot that takes two integers (A and B) and then uses the conditional expression operator to return that A is a "multiple" of B or not. Then write a main test program which takes input from the user and tell whether the two numbers entered are multiple of each other or not.

Sample Input: 12 6

        Output: 12 is the multiple of 6

        Sample Input: 12 13

        Output: NON

Also write its int main to test this program.

6. **Write a Function Calculate that simulates a simple calculator. It takes two integers and a character as parameter. If the character is a '+', the sum is returned; if it is a '-', the difference is returned; if it is a '*', the product is returned; if it is a '/', the quotient is returned; and if it is a '%', the remainder is returned.** Also write int main to test this function.

        Sample Input: 12%7

        Sample Output: 5

        Sample Input: 19x10

        Sample Output: 190

7. ITC has 6 sections we are required to find out which sections average is higher. Write first a function WinnerSection which takes each section's ITC's averages along with their names and "returns" which section (a letter) has won w.r.t average. Write the second function WinnerSectionAverage which takes each section's ITC's average and returns which average is the highest average. Write int main to test this program. Also make a helper function ShouldUpdateMax which should just take two values PreviousMax and NewValue and return true (if Max should be updated) or false (if Max should not be updated).

        Sample Input:

B	90
D	80
C	60
A	99
E	91
F	80

Output: **A** got the highest average of **99**.

Also write int main to test this program which must call the above two functions to print the section Letter and its average marks..

8. Write a program which takes marks of 5 courses as input of 5 students as parameter and returns the students who got the highest aggregate. First it must make the function Summation, which should take 5 integers as values and return its summation. Secondly You must make two function HighestmarksRollNo and HighestMarks which must return the roll number of the students who got the highest marks and that highest marks respectively. Write proper main which must use the above three functions to properly calculate which student has got the highest marks and how much marks.

	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 highest Aggregate of 456

Also write int main to test this program.

9. Write a program which will take at max: a six digit number and returns each of its digit in words. First it has to make a function Digit2Word and that should take a digit as input and displays its digit into word. (Bonus) if the number is less than 6 digit it should not out print initial zeros. If the number is greater than 6 digit then it should output wrong input.

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

10. Write a function which takes as input 4 points and tell whether these points are the coordinates of Square, Rhombus, Rectangle, Parallelogram or Quadrilateral. NOTE: Make separate functions for each case checking whether its square / rhombus / rectangle / parallelogram. i-e (isSquare, isRhombus, isRectangle, isParallelogram)

Sample Input:	P1	0 0
	P2	1 0
	P3	1 1
	P4	0 1

Output: It's a square
Also Write int main to test this program.

11. Write a function which takes as parameter 3 points and tell whether these points are the coordinates of isosceles or equilateral or right angled or scalene triangle. NOTE "Make separate functions as isEquilateral, isRightAngled and so on... ".

Sample Input:	P1	0 0
	P2	1 0
	P3	1 1

Sample Output: Right Angle Triangle
Also Write int main to test this program.

12. Write a function which takes 4 coordinates of the Rectangle and a point P as parameter. Your function should be able to tell whether P lies inside the Rectangle, On the Rectangle or Outside rectangle.

Sample Input:	P1	0 0
	P2	2 0
	P3	2 2
	P4	0 2
	P	1 1

Output: P lies inside Square
Also Write int main to test this Program.

13. Write a function which takes as parameter a floating number and returns its ceiling Integer. Write main to test it.

Sample Input: 5.5
Output: 6
Sample Input: -5.5
Output: -5
Sample Input: 5
Output: 5
Also write int main to test the program.

14. Write a function which takes as input a floating number and returns its floor value. Test it using main function on different values.

Sample Input: 5.5
Output: 5
Sample Input: -5.5
Output: -6
Sample Input: 5
Output: 5
Also write int main to test this program.

15. Make a menu based program which should combine all the above Programs into ONE PROJECT after running it once it must ask whether you would like to recheck any other function. If the user enters 'n' then program must exit otherwise should run again. (this is due by Saturday Night).

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Bonus(Chocolate)

Problem # 1: Write a function 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 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 student(e.g. 1,2,3,4,5...n) who scored it.