Exercise 7: **Control Statements:** Decision Making [13/09/2019]

Note:

Write each program in separate python file and also prepare a MS Word document with problem, solution and output.

Save your program files in Z:\Python\Ex7\Prg<no>.py

1. Write a program to check whether a no is positive number
2. Program to display a number if it is negative
3. Write a program to check whether a no is positive or negative number
4. Write a program to check whether a no is positive, negative or zero number
5. Write a program to check whether a no is even
6. Write a program to check whether a no is even or odd
7. Write a program to find greater of two nos.
8. Write a program to find greater and lesser.
9. Write a program to find greater, lesser or equal.
10. Write a program to check whether a year is leap year or not.

    Help: If year is exactly divisible by 4 and year is not divisible by 100or year is exactly divisible by 400 then the year is leap year. Else year is normal year

11. Demonstrate the use of pass statement in if.
12. Redo Q1- Q10 with shorthand if/ if..else/if..elif..else.
13. Write a program to check whether a person is eligible for vote or not.
14. Write a program to check whether a person is eligible for vote or not. If s(he) is not eligible, display how many years are left to be eligible.
15. Write a program to check whether a number is divisible by 5 and 11 or not.
16. Write a program to check whether a character is alphabet or not.
    Help: You can use ASCII values to check alphabets. ASCII value of a=97, z=122, A=65 and Z=90. Another way to do the same is top check the following condition:
    (ch >= 'a' and ch <= 'z') or (ch >= 'A' and ch <= 'Z')

17. Write a program to check whether a character is capital or small case.

    Help: Character is uppercase alphabet if(ch >= 'A' and ch <= 'Z'). Character is lowercase alphabet if(ch >= 'a' and ch <= 'z').

18. Write a program to check whether a string is palindrome or not.
19. Write a program to input any alphabet and check whether it is vowel or consonant.
    Help: if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u'), then it is vowel. If character is alphabet but not vowel then it is consonant. Means check ch >= 'a' && ch <= 'z' then, it is consonant. If it is neither vowel nor consonant, then it is not alphabet.
    Other way to do is by checking ASCII values. ASCII value of A=65, E=69 ... a=97, e=102 etc. So, instead of checking condition if(ch=='a' || ch=='e' || ...) you can use if(ch==97 || ch==102 || ...)

20. Write a program to input any character and check whether it is alphabet, digit or special character.

    Help: A character is alphabet if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z')).A character is digit if(ch >= '0' && ch <= '9').Finally, if a character is neither alphabet nor digit, then character is a special character.

21. Write a program to input week number and print week day.
22. Write a program to input month number and print number of days in that month.
23. Write a program to count total number of notes in given amount.
24. Write a program to input angles of a triangle and check whether triangle is valid or not.
    Help:
    If sum of all tree angles of the triangle is 180 then, triangle can be formed otherwise not. In addition, make sure angles are greater than 0 i.e. check condition for angles if(angle1 != 0 and angle2 != 0 and angle3 != 0).

25. Write a program to input all sides of a triangle and check whether triangle is valid or not.

Help: A triangle is valid if sum of its two sides is greater than the third side. Means if a, b, c are three sides of a triangle. Then the triangle is valid if all three conditions are satisfied

a + b > c

a + c > b and

b + c > a

26. Write a program to check whether the triangle is equilateral, isosceles or scalene triangle.

Help:

A triangle is said Equilateral Triangle, if all its sides are equal. If a, b, c are three sides of triangle. Then, the triangle is equilateral only if a == b == c.

A triangle is said Isosceles Triangle, if its two sides are equal. If a, b, c are three sides of triangle. Then, the triangle is isosceles if either a == b or a == c or b == c.

A triangle is said Scalene Triangle, if none of its sides are equal.

27. Write a program to find all roots of a quadratic equation.

28. Write a program to calculate profit or loss.

Help :

Profit = S.P - C.P (Where S.P is Selling Price and C.P is Cost Price)

Loss = C.P - S.P

29. Write a program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:

Percentage >= 90% : Grade A

Percentage >= 80% : Grade B

Percentage >= 70% : Grade C

Percentage >= 60% : Grade D

Percentage >= 40% : Grade E

Percentage < 40% : Grade F

30. Write a program to input basic salary of an employee and calculate its Gross salary according to following:

Basic Salary <= 10000 : HRA = 20%, DA = 80%

Basic Salary <= 20000 : HRA = 25%, DA = 90%

Basic Salary > 20000 : HRA = 30%, DA = 95%

31. Write a program to input electricity unit charges and calculate total electricity bill according to the given condition:

For first 50 units Rs. 0.50/unit

For next 100 units Rs. 0.75/unit

For next 100 units Rs. 1.20/unit

For unit above 250 Rs. 1.50/unit

An additional surcharge of 20% is added to the bill

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