Holiday Homework(Summer Vacation 2020-21)

Class – XII

Subject – Computer Science

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1. Explain the script mode and interactive mode of python programming.
2. Explain variables and data types with example.
3. Explain the difference between mutable and immutable data types.
4. Explain conditional statements or selection statements with example.
5. What are loops? Explain with example.
6. What is the difference between for loop and while loop? Explain with example.
7. Explain the use of range() function in for loop.
8. What is the difference between break and continue statements?
9. What is list? How the elements of a list are accessed in program? Explain with example.
10. What are the similarities and differences between list and tuple? Explain.
11. What are strings? Explain the operations on strings with example.
12. Write a program to print the sum of following series:

    $1 - x + 2x^2 - 3x^3 + 4x^4$ .... n terms

13. Write a program to print the sum of following series:

    $1 + x/1! + x^2/2! + x^3/3! + x^4/4! +$ .... n terms

14. Write the output of following program
    ```
    num = 56789
    x = y = 0
    while num > 0 :
        i = num % 10
        num /= 10
        if i % 2 == 0 :
            x += 2 * i
        else :
            y += 3 * i
    print("x = ", x)
    print("y= ", y)
    ```

15. Write a program to reverse a string.
16. Write a program to print the following pattern

```
1
2 3
4 5 6
7 8 9 10
.
.
.
n lines
```

17. Write a program to check whether a given number is prime or not.
18. Write the output of following program:

```
l1 = [ 1, 3, 5, 7 ]

l2 = [ 2, 4, 6, 8 ]

l3 = [ 0, 0, 0, 0 ]

for i in range( 4 ):

        l3[i] = l1[-i] + l2[i]

print( l1 )

print( l2 )

print( l3 )
```

19. Write a program to create list of integers and calculate average of integers.
20. Write the output of following program:

```
l1= [ 'a', 'b', 'c', 'd' ]

for i in range(4)

        l1 [ i ]  +=  str ( i )

l2 = list( 'xyz' )

l1 += l2

print( l1 )
```

21. Explain the difference between append( ) and insert( ) methods of list.
22. Explain the difference between pop( ) and remove( ) methods of list.
23. What is sorting? Write a program to sort a list of integers in ascending order by using insertion sort.
24. Write the output of following program:

```
t1 = ( 2, 3, 5, 8 )
t2 = ( 4, 5, 8, 9 )
t4 = t1[1:3] + t2[ : : 2]
print( t4 )
```

25. Write the output of following program:

```
a = 1234
s = str(a)
L = list(str)
for i in len(L):
    L[i] = L[i] * 2
print(L)
```

26. Write the output of following program:

```
L1 = [ '12', '34','56', '78' ]
L2 = [ ]
for i in range(4):
    L2.append( tuple( L1[ i ] ) )
print(L1)
print(L2)
```

27. Write the output of following program:

```
s1 = 'Hello'
s2 = 'World'
s3 = s1[ : : 2] + s2[ : : 2]
s4 = 'F' + s1[1: ] + s2[1]
print( s3 )
```

```
print( s4 )
```

28. Write a program to check whether a given string is palindrome or not.
29. Write the output of following program:

```
s = "welcome"

t1 = ('we', 'me')

t2 = s.startswith(t1), s.endswith(t1)

print(t2)

t3 = s.partition('c')

L = s.split('c')

print(t3)

print(L)
```

30. Explain the difference between strip( ) and split( ) methods of string.
31. Write the output of following program:

```
t = ( 'a', 'b', 'c', 'd' )

s = 'v'.join(t)

print(s)

L = s.split( 'vb' )

s2 = 'pq'.join(L)

print(s2)
```

32. What is dictionary? Explain with example.
33. Write a program to add the values of common keys of two dictionaries and store in third dictionary.
34. Write a program to add the values of common keys of two dictionaries and store in third dictionary.
35. Write a program to count the frequency of elements of a sequence using dictionary.
36. What are functions? Explain the use of function with example.
37. Explain the terms – function definition, function calling.
38. Write the advantages of functions.
39. Explain the terms – arguments, parameters.

40. Explain global and local scope of variables.
41. How a global variable is modified inside a function? Explain.
42. Write the output of following program:

```python
def add( x, y=5 ):

        return x+y

def sub( x, y=5 ):

        return x-y

def cal( x=15, y=10)

        a = add(x)

        b = sub(y)

        print(a, b)

cal(5)
```

43. Explain positional and keyword arguments with example.
44. Write the output of following program:

```python
def change(a, i=0, val=0):

        a[i] = val

b = [1, 2, 3, 4, 5]

print(b)

change(b, 2, 5)

print(b)

change(b, 1)

print(b)

change(b)

print(b)
```

45. Write a program to calculate the average of the elements of a list or tuple (containing numeric elements) using function.