WEEK – 10

1. Write a Python class to convert an integer to a roman numeral.

Source code:-

```
class irconvert:
    num_map = [(1000, 'M'), (900, 'CM'), (500, 'D'), (400, 'CD'), (100, 'C'), (90, 'XC'),(50, 'L'), (40, 'XL'), (10, 'X'), (9, 'I
X'), (5, 'V'), (4, 'IV'), (1, 'I')]

    def num2roman(self,num):
        roman = ''
        while num > 0:
            for i, r in self.num_map:
                while num >= i:
                    roman += r
                    num -= i
        return roman


num=int(input("Enter any Number :"))
print("Roman Number is : ",irconvert().num2roman(num))
```

Output:-

```
E:\Python>python week18.py
Enter any Number :5
Roman Number is :  V

E:\Python>python week18.py
Enter any Number :12
Roman Number is :  XII
```

Description:-

- From the given number, pick successive digits, using %10 and /10 to gather the digits from right to left.
- The rules for Roman Numerals involve using four pairs of symbols for ones and five, tens and fifties, hundreds and five hundreds. An additional symbol for thousands covers all the relevant bases.
- When a number is followed by the same or smaller number, it means addition. "II" is two 1's = 2. "VI" is 5 + 1 = 6.

- When one number is followed by a larger number, it means subtraction. "IX" is 1 before 10 = 9. "IIX isn't allowed, this would be "VIII". For numbers from 1 to 9, the symbols are "I" and "V", and the coding works like this. "I" , "II", "III", "IV", "V", "VI", "VII", "VIII", "IX".
- The same rules work for numbers from 10 to 90, using "X" and "L". For numbers from 100 to 900, using the symbols "C" and "D". For numbers between 1000 and 4000, using "M".

2. Write a Python class to implement pow(x, n).

Source code:-

```
class py_pow:
   def powr(self, x, n):
        if x==0 or x==1 or n==1:
            return x

        if x==-1:
            if n%2 ==0:
                return 1
            else:
                return -1
        if n==0:
            return 1
        if n<0:
            return 1/self.powr(x,-n)
        val = self.powr(x,n//2)
        if n%2 ==0:
            return val*val
        return val*val*x

x=int(input("Enter x value :"))
n=int(input("Enter n value :"))
print("pow(x,n) value is :",py_pow().powr(x,n));
```

Output:-

```
E:\Python>python week19.py
Enter x value :2
Enter n value :3
pow(x,n) value is : 8
```

Description:-

3. Write a Python class to reverse a string word by word.

Source code:-

```
class py_reverse:
   def revr(self, strs):
        sp=strs.split()
        sp.reverse()
        res=" ".join(sp)
        return res

str1=input("Enter a string with 2 or more words : ")
print("Reverse of string word by word: \n",py_reverse().revr(str1));
```

Output:-

```
E:\Python>python week20.py
Enter a string with 2 or more words : CSE STUDENT
Reverse of string word by word:
 STUDENT CSE
```

Description:-

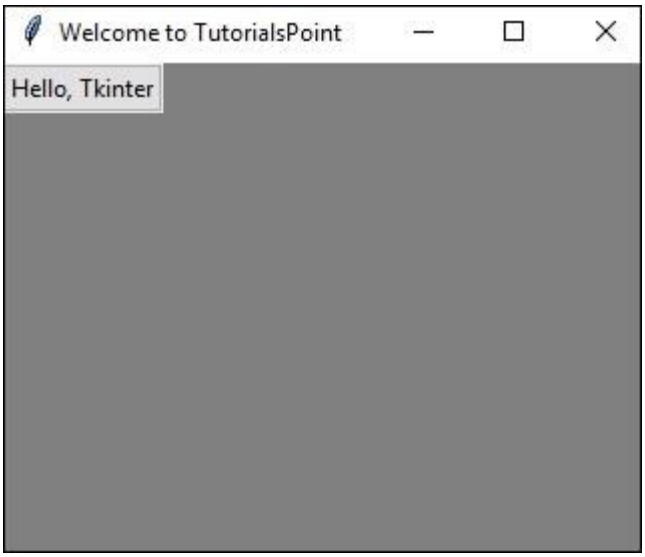
- Separate each word in a given string using split() method of string data type in python.
- Reverse the word separated list.
- Print words of the list, in string form after joining each word with space using ” “.join() method in python.

4. Write a python program to demonstrate GUI form.

Source code:-

```
from tkinter import *
from tkinter import ttk
window = Tk()
window.title("Welcome to TutorialsPoint")
window.geometry('325x250')
window.configure(background = "gray")
ttk.Button(window, text="Hello, Tkinter").grid()
window.mainloop()
```

Output:-



Description:-

- *Firstly we import all the modules we need, we have imported ttk and * (all) from tkinter library.*
- *To create the main window of our application, we use Tk class.*
- *window.title(), give the title to our Window app.*
- *window.geometry(), set the size of the window and window.configure(), set its background color.*
- *ttk.Button() makes a button.*
- *ttk.Button(window, text="Hello, Tkinter").grid() – window means Tk so it shows in the window we created, text- will display the text in the window and grid will make it in a grid.*
- *Window.mainloop(), this function calls the endless loop of the window, so will remain open till the user closes it.*