REPORT FOR

Converter to convert given Roman to integer

PYTHON PROGRAMMING (INT 108)

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DECLARATION

This is to declare that this report has been written by us. No part of the report is copied from other sources. All information included from other sources have been duly acknowledged. We aver that any part of the report is found to be copied, we are shall take full responsibility for it.

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Roll No : 38
Date : 31/12/2022

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PYTHON

1.1 INTRODUCTION:

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics developed by Guido van Rossum. It was originally released in 1991. It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines of code.

Python is a programming language that lets you work quickly and integrate systems more efficiently. It uses English keywords frequently where as other languages use punctuation, and it has fewer syntactical constructions than other languages.

Python is Interpreted − Python is processed at runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.

Python is Interactive − You can actually sit at a Python prompt and interact with the interpreter directly to write your programs

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1.2 LOOPS/FUNCTION/

Def : It is used to define a function, it is placed before a function name that is provided by the user to create a user-defined function. In python, a function is a logical unit of code containing a sequence of statements indented under a name given using the "**def**" keyword.

Dictionary : Dictionaries are used to store data values in key:value pairs.

A dictionary is a collection which is ordered*, changeable and do not allow duplicates.

While loop : It is used to execute a block of statements repeatedly until a given condition is satisfied. And when the condition becomes false, the line immediately after the loop in the program is executed.

If-else condition : The if statement alone tells us that if a condition is true it will execute a block of statements and if the condition is false it won't. But what if we want to do something else if the condition is false. Here comes the *else* statement. We can use the *else* statement with *if* statement to execute a block of code when the condition is false.

return : The Python return statement is used to return a value from a function. The user can only use the return statement in a function. It cannot be used outside of the Python function. A return statement includes the return keyword and the value that will be returned after that.

input : The input function is used in all latest version of the Python. It takes the input from the user and then evaluates the expression. The Python interpreter automatically identifies the whether a user input a string, a number, or a list.

print : The print() function prints the specified message to the screen, or other standard output device. The message can be a string, or any other object, the object will be converted into a string before written to the screen.

Arithmetic operators : There are 7 arithmetic operators in Python : Addition,Subtraction,Multiplication,Division,Modulus,Exponentiation,Floor division.

Logical operators : Logical Operators in Python are used to perform logical operations on the values of variables. The value is either true or false. We can figure out the conditions by the result of the truth values. There are mainly three types of logical operators in python: logical AND, logical OR and logical NOT. Operators are represented by keywords or special characters.

1.3 PROJECT :

(Converter to convert given Roman to integer)

Editorial/Explanation about Roman numbers:

Roman numerals are represented by seven different symbols: I, V, X, L, C, D and M.

Symbol	Value
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

For example, 2 is written as II in Roman numeral, just two ones added together. 12 is written as XII, which is simply X + II. The number 27 is written as XXVII, which is XX + V + II.

Roman numerals are usually written largest to smallest from left to right. However, the numeral for four is not IIII. Instead, the number four is written as IV. Because the one is before the five, we subtract it making four. The same principle applies to the number nine, which is written as IX. There are six instances where subtraction is used:

I can be placed before V (5) and X (10) to make 4 and 9.

X can be placed before L (50) and C (100) to make 40 and 90.

C can be placed before D (500) and M (1000) to make 400 and 900.

Your task is create a converter which converts given roman numeral to an integer.

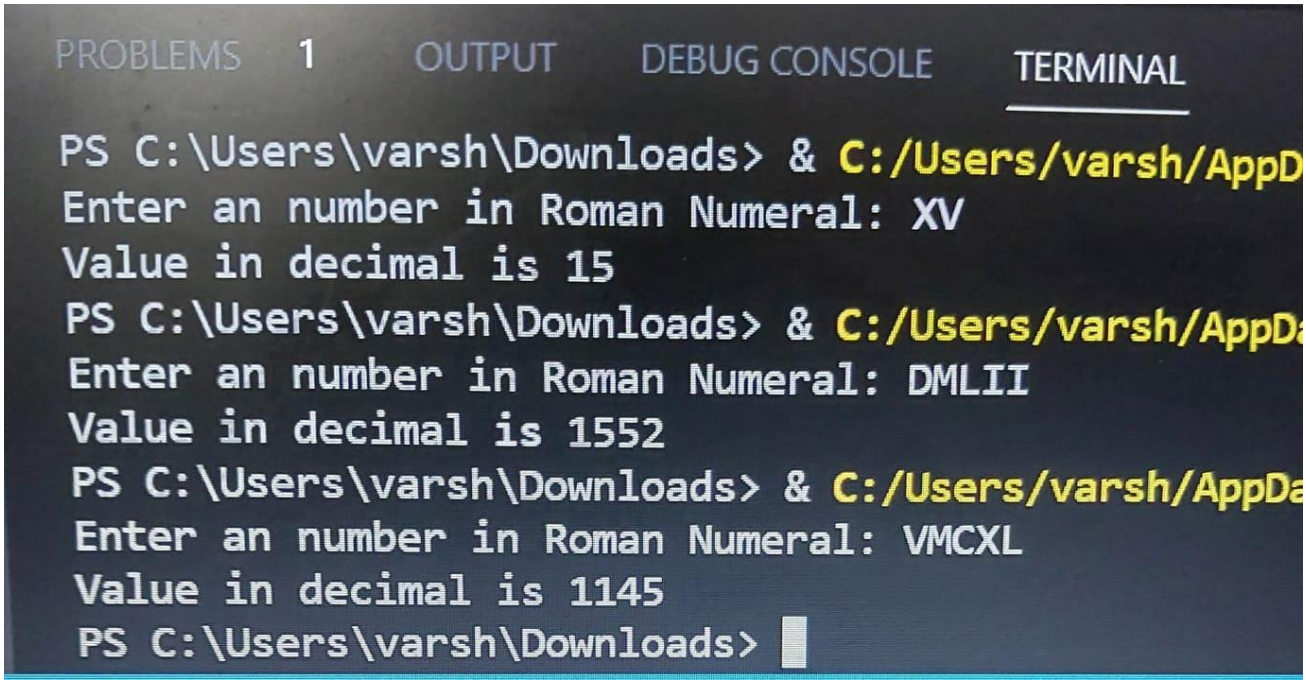
1.4 CODE:

```
def romanToInt(s):
    roman = {'I':1,'V':5,'X':10,'L':50,'C':100,'D':500,'M':1000,'IV':4,
    'IX':9,'XL':40,'XC':90,'CD':400,'CM':900}
    i = 0
    num = 0
    while i < len(s):
        if i+1<len(s) and s[i:i+2] in roman:
            num+=roman[s[i:i+2]]
            i+=2
        else:
            num+=roman[s[i]]
            i+=1
    return num
x=input("Enter an number in Roman Numeral: ")
print("Value in decimal is %d"%romanToInt(x))
```

screenshot of code:

```
def romanToInt(s):
      """:type s: str
         :rtype: int"""
      roman = {'I':1,'V':5,'X':10,'L':50,'C':100,'D':500,'M':1000,'IV':4,
      'IX':9,'XL':40,'XC':90,'CD':400,'CM':900}
      i = 0
      num = 0
      while i < len(s):
         if i+1<len(s) and s[i:i+2] in roman:
            num+=roman[s[i:i+2]]
            i+=2
         else:
            num+=roman[s[i]]
            i+=1
      return num
x=input("Enter an number in Roman Numeral: ")
print("Value in decimal is %d"%romanToInt(x))
```

1.5 RESULTS:


PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PS C:\Users\varsh\Downloads> & C:/Users/varsh/AppD
Enter an number in Roman Numeral: XV
Value in decimal is 15
PS C:\Users\varsh\Downloads> & C:/Users/varsh/AppD
Enter an number in Roman Numeral: DMLII
Value in decimal is 1552
PS C:\Users\varsh\Downloads> & C:/Users/varsh/AppD
Enter an number in Roman Numeral: VMCXL
Value in decimal is 1145
PS C:\Users\varsh\Downloads>