NAME :D.HARIHARASUDHAN
DEP.NO :12
COURSE :PYTHON
ASSIGNMENT : LAB-5 PART-2

Question-3. Create a function factorial() that takes an integer and return its factorial value.

Source code:

```
def factorial(n):
    result = 1;
    if(n < 0):
        print("The factorial does not exist for negative numbers")
    elif(n==0):
        print("The factorial of 0 is 1")
    elif(n==1):
        return 1
    else:
        for i in range(2, n + 1):
            result = result * i;
        return result;
```

Output:

```
import factorial_definition

factorial_definition.factorial(5)
Out[8]: 120
```

Question1.Develop a function count_letter(string,search) that returns the number of times search character appears in a string

Source code:

```
def count_letter(word, search):
    return count
word = input("Enter the words to search : ")
search = input("Enter the character to search : ")
count = 0
for char in word:
    if char == search.upper and char == search.lower
        count += 1
print(count_letter(word, search))
```

Output:

```
Enter the words to search : nomination
Enter the character to search : n
3
```

Question2.write a program that counts the number of spaces,digits,vowels and consonants in a string that the user inputs. Print the string, no of spaces, no of digits,no of vowels and no of consonants.

Source code:

```
def character_count(string):
    vowels = 0
    consonants = 0
    digits = 0
```

```
    spaces = 0
for i in range(0, len(string)):
    ch = string[i]
if((ch >= 'a' and ch <= 'z') or (ch >= 'A' and ch <= 'Z')):
    ch = ch.lower()
if(ch == 'a' or ch == 'e' or ch == 'i' or ch == 'o' or ch == 'u'):
    vowels += 1
else:
    consonants += 1
if(ch >= '0' or ch <= '9'):
    digits += 1
else:
    spaces += 1
print("vowels -",vowels, "consonants -",consonants, "digits -",digits, "spaces",spaces)
```

Output:

```
String: Welcome to My coding section
vowels=9  consonants=2  digits=0  spaces=4
```

Question3.Develop a function remove_punctuation (str) that returns the string after the following punctuations:

Source code:

```
def remove_punctuation(string):
    punctuations = !@#$%^&*()_:{}” ” -/<>’ ’
    for x in string.lower():
        If x in punctuations:
            string = string.replace(x,” ” ) |
    print(string)
```

Output:

```
string=” welcome to my machine learning course!”
remove_punctuation(string)
welcome to my machine learning course
```

Question3. Create a function **factorial()** that takes an integer and returns its factorial value.

- You can create as a non-recursive version of factorial.
- Also, check factorial of negative number does not exist.
- Factorial of 0 is 1.
- Save this Python file as **factorial_definition.py**.

Now, open another file and you can import factorial_definition.py as follows:

- **import factorial_definition**
- You can call factorial function as **factorial_definition.factorial()**.

Now, print the following factorial values:

1. factorial_definition.factorial(3)
2. factorial_definition.factorial(5)
3. factorial_definition.factorial(10)

```
def factorial(n):
    result = 1;
    if (n<0):
        Print ("The Factorial does not exist for negative numbers")
    elif (n==0):
        Print ("The Factorial of 0 is 1")
    elif (n==1):
        return 1
    else:
        for i in range (2, n+1):
            result = result * i;
        return result;
```

```
In[ ]: fact  In[ ]: import factorial_definition
             In[ ]: factorial_definition.factorial(5)
```

Problem Solving Using Python and R Lab

Lab4. Python String Processing

Question1. Develop a function **count_letter(string, search)** that returns the number of times search character appears in a string

Test cases

1. Str = "hello world" Search = 'o' Calling ***count_letter(str, search)*** should return output 2
2. Str = "HeLlo wOrld" Search = 'o' Then, **calling count_letter(str, search)** will return output 1

Modify **count_letter()** so that it ignores case sensitivity, so that **o** and **O** are same.

3. Str = **"HeLlo wOrld"**. Search = 'o'. Calling **count_letter(str, search)** will return output 2

```
def Count_letter(word, Search):
    return_Count
Word = input("Enter the Words to Search:") // uses-defined method
Search = input("Enter the Characters to Search:")
Count = 0
for char in word:  // loop Condition
    if char == Search and char == Search.lower():
        Count += 1
    Print(count_letter(word, Search))
```

Hand Calculation:

Enter the Words to Search: nomination
Enter the Characters to Search: n
3

Question2. Write a program that counts the number of spaces, digits, vowels and consonants in a string that the user inputs. Print the string, no of spaces, no of digits, no of vowels and no of consonants.

Test case: Enter a string: **Bishop Heber College 17**. Then output should be:

Given string: Bishop Heber College 17
No. of spaces: 3
No. of digits: 2
No. of vowels: 7
No. of consonants: 12

```
def characters_count(string):
    Vowels = 0
    Consonants = 0
    digits = 0
    Spaces = 0
    for i in range(0, len(String)):
        ch = String[i]
        if((ch >='a' and ch <='z') or (ch >='A' and ch <='z')):
            ch = ch.lower()
            if (ch =='a' or ch =='e' or ch =='i' or
                ch =='o' or ch =='u'):
                Vowels +=1
            else:
                Consonants +=1
        elif (ch >='0' or ch <='9'):
            digits +=1
        else: Spaces +=1
    Print("vowels-", vowels, "consonants-", Consonants
          "digits-", digits, "Spaces", Spaces)
```

Question3. Develop a function **remove_punctuation(str)** that returns the string after removing the following punctuations.

Punctuation List = "!\"#$%&'()*+,-./:;<=>?@[\]^`{|}~"

Test cases:
1. Str = "Bishop's College !....". Calling **remove_punctuation(str)** should return output as "Bishops College"
2. Str = "#bhc trending @cs $placements::>." Calling **remove_punctuation(str)** should return output as "bhc trending cs placements"

```
def remove_punctuation(String):
    Punctuations = ''''!()-[]{};:'"\,<>,./?@a$%.&"_"
    for x in string.lower():
        if x in punctuations:
            String = String.replace(x, "")
    Print(String)
```