Laboratory Report Cover Sheet

SRM Institute of Science and Technology
College of Engineering and Technology
Department of Electronics and Communication Engineering

18ECO109J Embedded System Design using Raspberry Pi

Fifth Semester, 2023-24 (Odd semester)

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Day Order : 3

Venue : TP1117-VLSI Simulation Lab

Title of the Experiment : Loop Operations

Date of conduction : 03.08.2023

Date of Submission : 10.08.2023

Particulars	Max. Marks	Marks Obtained
Pre-lab / Algorithm	10	
Lab Performance	20	
Post-lab	10	
Total	**40**	

REPORT VERIFICATION

Date : 10.08.2023

Faculty Name : Dr.Kanaparthi V Phani Kumar

Signature :

LAB-2 Loop Operations

Aim:

To explore loop operations using python 3

Task:

1. Write a function that returns the maximum of two numbers. **(Use if loop)**
2. Write a function called divisible that takes a number**. (Use if loop)**

    - If the number is divisible by 3, it should return "Three".
    - If it is divisible by 5, it should return "Five".
    - If it is divisible by both 3 and 5, it should return "Three and Five"

    Otherwise, it should return the same number.
3. Write a function for checking the speed of drivers. This function should have one parameter: speed.
    a) If speed is less than 70, it should print "Ok".
    b) Otherwise, for every 5km above the speed limit (70), it should give the driver one demerit point and print the total number of demerit points. For example, if the speed is 80, it should print: "Points: 2".
    c) If the driver gets more than 12 points, the function should print: "License suspended"
4. Write a function(Use for loop) called showNumbers that takes a parameter called limit. It should print all the numbers between 0 and limit with a label to identify the even and odd numbers. For example, if the limit is 3, it should print:
    a) 0 EVEN
    b) 1 ODD
    c) 2 EVEN
    d) 3 ODD
5. Write a program using while loop to check the number n is less than seven. If it is less than seven, print n is less than 7 and add 1 to n. If it is greater than 7, print n is not less than 7.

Algorithm:

Task 1:

1.Start
2.Define a function to calculate the maximum of two numbers which takes two arguments.
3.Implement the if-else conditional to calculate the maximum of two numbers.
4.Call the function and give two arguments.
5.End

Task 2:

1.Start
2.Define a function to implement if-else conditional loop based upon the given conditions.
3.Define the divisibility conditions inside the if-else conditional loop.
4.Call the function and give the number as an argument.
5.End

Task 3:

1.Start
2.Define the function for checking the speed of drivers taking speed as a parameter.
3.Define the if-else conditional loop considering the given speed limit conditions.
4.Calculate the demerit points taking speed as a parameter.
5.Call the function taking speed as the parameter.
6.End

Task 4:

1.Start
2.Define the function that should identify the even and odd numbers in the given limit.
3.Implement a for-loop and take the limit and define the if-else conditional loop.
4.Print the even numbers and the odd numbers in the given limit.
5.End

Task 5:

1.Start
2.Define the function that should identify whether the given number is less than seven.
3.Implement a while-loop and define the condition of a number i.e. less than seven.
4.Call the desired function passing a number as an argument and print the result.
5.End

Programs:

Task 1:

1. Write a function that returns the maximum of two numbers. (Use if loop)

In [1]:
```
def find_max(num1, num2):
    if num1 > num2:
        return num1
    else:
        return num2
find_max(10,5)
```

Task 2:

2. Write a function called divisible that takes a number. (Use if loop) If the number is divisible by 3, it should return “Three”. If it is divisible by 5, it should return “Five”. If it is divisible by both 3 and 5, it should return “Three and Five” Otherwise, it should return the same number.

In [1]:
```
def divisible(number):
    if (number % 3 == 0 and number % 5 == 0):
        return "Three and Five"
    elif (number % 3 == 0):
        return "Three"
    elif (number % 5 == 0):
        return "Five"
    else:
        return number
divisible(15)
```

Task 3:

3. Write a function for checking the speed of drivers. This function should have one parameter: speed.
   a) If speed is less than 70, it should print “Ok”.
   b) Otherwise, for every 5km above the speed limit (70), it should give the driver one demerit point and print the total number of demerit points. For example, if the speed is 80, it should print: “Points: 2”.
   c) If the driver gets more than 12 points, the function should print: “License suspended”

In [8]:
```
def driver_speed(speed):
    speed_limit = 70
    demerit_points = 0
    if speed < speed_limit:
        print("Ok")
    else:
        demerit_points = (speed - speed_limit) // 5
        if demerit_points > 12:
            print("License suspended")
        else:
            print(f"Points: {demerit_points}")
driver_speed(90)
```

Task 4:

4.Write a function(Use for loop) called showNumbers that takes a parameter called limit. It should print all the numbers between 0 and limit with a label to identify the even and odd numbers. For example, if the limit is 3, it should print:
a) 0 EVEN
b) 1 ODD
c) 2 EVEN
d) 3 ODD

In [11]:
```
def numbers(num):
    for i in range(0,num+1):
        if(i%2==0):
            print(f'{i} EVEN')
        else:
            print(f'{i} ODD')
numbers(5)
```

Task 5:

5. Write a program using while loop to check the number n is less than seven. If it is less than seven, print n is less than 7 and add 1 to n. If it is greater than 7, print n is not less than 7.

In [12]:
```
def num_less_than_seven(n):
    while n < 7:
        print(f"{n} is less than 7")
        n += 1
    else:
        print(f"{n} is not less than 7")
num_less_than_seven(5)
```

Output:

Task 1:

```
Out[1]: 10
```

Task 2:

```
Out[1]: 'Three and Five'
```

Task 3:

```
Points: 4
```

Task 4:

```
0 EVEN
1 ODD
2 EVEN
3 ODD
4 EVEN
5 ODD
```

Task 5:

```
5 is less than 7
6 is less than 7
7 is not less than 7
```

Pre Lab Questions:

1. What is the use of break statement?
2.How do you repeat some program code an exact number of times?
3. List the logical operators used in python.

Post Lab Questions:

1. Write a function that prints all the prime numbers between 0 and limit where limit is a parameter.

1.Write a function that prints all the prime numbers between 0 and limit where limit is a parameter.

In [3]:
```
lower_limit = int(input("Enter the lower limit :"))
upper_limit = int(input("Enter the upper limit :"))
print("Prime numbers between", lower_limit, "and", upper_limit, "are:")
for num in range(lower_limit, upper_limit + 1):
   if num > 1:
       for i in range(2, num):
           if (num % i) == 0:
               break
       else:
           print(num)
```

```
Enter the lower limit :100
Enter the upper limit :200
Prime numbers between 100 and 200 are:
101
103
107
109
113
127
131
137
139
149
151
157
163
167
173
179
181
191
193
197
199
```

2 .Write a Python program to find a Factorial of a Number using Loop.

2 .Write a Python program to find a Factorial of a Number using Loop

In [4]:
```
def factorial_with_loop(number):
    if number == 0 or number == 1:
        return 1
    factorial = 1
    for i in range(2, number + 1):
        factorial *= i
    return factorial

num = int(input("Enter a number: "))
result = factorial_with_loop(num)
print("Factorial of", num, "is", result)
```

```
Enter a number: 5
Factorial of 5 is 120
```

Result:

Thus, the various loop operations were studied and performed in python3.