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UNIVERSITY
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Python Programming - 2301CS404

Lab - 8

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User Defined Function

01) Write a function to calculate BMI given mass and height. (BMI = mass/h**2)

In [3]:

```python
def calBMI(mass,height):
    return mass/height**2

mass = int(input("Enter the Mass : "))
height = int(input("Enter the Height : "))
print(f"BMI = {calBMI(mass,height)}")
```

```
BMI = 2.0
```

02) Write a function that add first n numbers.

In [3]:

```python
def sumOfFirstN(n):
    sum = 0
    for i in range(0,n+1):
        sum += i
    return sum

n = int(input("Enter the Number : "))
print(f"Sum of first {n} numbers is = {sumOfFirstN(n)}")
```

```
Sum of first 10 numbers is = 55
```

03) Write a function that returns 1 if the given number is Prime or 0 otherwise.

In [7]:

```
def isPrime(n):
    count = 0
    for i in range(1,n+1):
        if(n % i == 0):
            count += 1
        else:
            pass
    if count == 2 :
        return 1
    else:
        return 0

n = int(input("Enter the Number : "))
if isPrime(n):
    print(f"{n} is a Prime Number.")
else:
    print(f"{n} is Not a Prime Number.")
```

```
4 is Not a Prime Number.
```

04) Write a function that returns the list of Prime numbers between given two numbers.

In [9]:

```
def isPrime(n):
    count = 0
    for i in range(1,n+1):
        if(n % i == 0):
            count += 1
        else:
            pass
    if count == 2 :
        return True
    else:
        return False

def findPrimeInRange (start,end):
    l = []
    for i in range(start,end):
        if isPrime(i):
            l.append(i)
        else:
            pass
    return l
start = int(input("Enter the Start : "))
end = int(input("Enter the end : "))
l = findPrimeInRange(start,end)
print(l)
```

```
[2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47]
```

05) Write a function that returns True if the given string is Palindrome or False otherwise.

In [17]:

```
def isPalindrome(s):
    s = s.lower()
    return s == s[::-1]

s = input("Enter the String : ")
```

```
if isPalindrome(s):
    print(f"{s} is a Palindrome string.")
else:
    print(f"{s} is Not a Palindrome string.")
```

```
nayan is a Palindrome string.
```

06) Write a function that returns the sum of all the elements of the list.

In [19]:

```
def sumOfAllElemantsOfList(l):
    ans = 0
    for i in l:
        ans += i
    return ans

l = [1,2,34,56,2,312,32]
print(f"Sum Of all Elemants Of List is : {sumOfAllElemantsOfList(l)}")
```

```
Sum Of all Elemants Of List is : 439
```

07) Write a function to calculate the sum of the first element of each tuples inside the list.

In [8]:

```
def sumOfFirstElemantOfListOfTuples(l):
    ans = 0
    for i in l:
        ans += i[0]
    return ans

l = [(1,2),(12,56),(23,45),(45,34),(5,78)]
print("Sum = ",sumOfFirstElemantOfListOfTuples(l))
```

```
Sum =  86
```

08) Write a recursive function to find nth term of Fibonacci Series.

In [36]:

```
def findNthTermOfFibbonacci(n):
    t1 = 0
    t2 = 1
    if (n == 0):
        return 0
    s = 0
    for i in range(2,n+1):
        t1 = t2
        t2 = s
        s= t1 + t2
    return s

for i in range(1,10):
    print(findNthTermOfFibbonacci(i))
```

```
0
1
1
2
3
5
8
13
21
```

09) Write a function to get the name of the student based on the given rollno.

Example: Given dict1 = {101:'Ajay', 102:'Rahul', 103:'Jay', 104:'Pooja'} find name of student whose rollno = 103

In [37]:

```python
d = {101:'Ajay', 102:'Rahul', 103:'Jay', 104:'Pooja'}

def findNameFromDict(rollNo):
    global d
    return d[rollNo]

print(f"103 : {findNameFromDict(103)}")
```

```
103 : Jay
```

10) Write a function to get the sum of the scores ending with zero.

Example : scores = [200, 456, 300, 100, 234, 678]

Ans = 200 + 300 + 100 = 600

In [41]:

```python
def getScoreEndWithZero(l):
    sum = 0
    for i in l:
        if i % 10 == 0:
            sum += i
        else:
            pass
    return sum
scores = [200, 456, 300, 100, 234, 678,20]
print(f"Sum = {getScoreEndWithZero(scores)}")
```

```
Sum = 620
```

11) Write a function to invert a given Dictionary.

hint: keys to values & values to keys

Before : {'a': 10, 'b':20, 'c':30, 'd':40}

After : {10:'a', 20:'b', 30:'c', 40:'d'}

In [52]:

```
def invertDictionary(d):
    di = {}
    for i in d.keys():
        di[d[i]] = i
    return di

d = {'a': 10, 'b':20, 'c':30, 'd':40}
print("Before : ",d)
d = invertDictionary(d)
print("After : ",d)
```

```
Before :  {'a': 10, 'b': 20, 'c': 30, 'd': 40}
After :  {10: 'a', 20: 'b', 30: 'c', 40: 'd'}
```

12) Write a function to check whether the given string is Pangram or not.

hint: Pangram is a string containing all the characters a-z atlest once.

"the quick brown fox jumps over the lazy dog" is a Pangram string.

In [62]:

```
def isPanagram(s):
    s=s.replace(" ","")
    s=s.lower()
    s=list(set(s))
    s.sort()
    s="".join(s)
    alphabets = "abcdefghijklmnopqrstuvwxyz"
    return s == alphabets
s = "the quick brown fox jumps over the lazy dog"
print(f"{isPanagram(s)}")
```

```
True
```

13) Write a function that returns the number of uppercase and lowercase letters in the given string.

example : Input : s1 = AbcDEfgh ,Ouptput : no_upper = 3, no_lower = 5

In [67]:

```
def count_lower(s : str):
    countLower = 0
    for i in s:
        if i.islower():
            countLower += 1
    return countLower
def count_upper(s : str):
    countUpper = 0
    for i in s:
        if i.isupper():
            countUpper += 1
    return countUpper

s1 = "AbcDEfgh"
print(f"Count Of Lower : {count_lower(s1)}")
print(f"Count Of Upper : {count_upper(s1)}")
```

```
Count Of Lower : 5
Count Of Upper : 3
```

14) Write a lambda function to get smallest number from the given two numbers.

In [72]:

```
largestOfTwo = lambda a,b : a if (a > b) else b
print(largestOfTwo(12,34))
```

```
34
```

15) For the given list of names of students, extract the names having more that 7 characters. Use filter().

In [74]:

```
name = ["abcdefgh","Vishal Baraiya","Rahim Roda","asdf","qwerty"]
l = filter(lambda i : len(i) > 7, name)
print(list(l))
```

```
['abcdefgh', 'Vishal Baraiya', 'Rahim Roda']
```

16) For the given list of names of students, convert the first letter of all the names into uppercase. use map().

In [77]:

```
name = ["abcdefgh","Vishal Baraiya","Rahim Roda","asdf","qwerty"]
l = map(lambda i : i.capitalize(), name)
print(list(l))
```

```
['Abcdefgh', 'Vishal baraiya', 'Rahim roda', 'Asdf', 'Qwerty']
```

17) Write udfs to call the functions with following types of arguments:

1. Positional Arguments
2. Keyword Arguments
3. Default Arguments
4. Variable Legngth Positional(*args) & variable length Keyword Arguments (**kwargs)
5. Keyword-Only & Positional Only Arguments

In [83]:

```
def printNameAge(name = "Vishal", age = 18):
    print("Hi, I am", name)
    print("My age is ", age)

printNameAge("Prince", 20) # Positional Arguments , Positional Only Arguments
printNameAge(age=20, name="Prince") # Keyword Arguments , Keyword-Only
printNameAge() # Default Arguments

def sum_all(*args):
    result = 0
    for num in args:
        result += num
    return result

print(sum_all(1, 2, 3, 4, 5)) # Variable Legngth Positional(*args)

def mul_all(*args):
    result = 1
    for num in args:
        result *= num
    return result

print(mul_all(1, 2, 3, 4, 5)) # variable length Keyword Arguments (**kwargs)
```

```
Hi, I am Prince
My age is  20
Hi, I am Prince
My age is  20
Hi, I am Vishal
My age is  18
15
120
```

In [84]:

```
from functools import reduce

# Function to add two numbers
def add(x, y):
    return x + y

a = [1, 2, 3, 4, 5]
res = reduce(add, a)

print(res)  # Output: 15
```

```
15
```

In [ ]: