Lab3
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Q1 WAP to find factorial of an number

```
def fact(num:int):
    if num == 1:
        return 1
    return num*fact(num-1)

if __name__ == '__main__':
    nums = [1, 6, 7, 5, 8, 12, 10]
    for num in nums:
        print(f'{num}! = {fact(num)}')
```

Output:

1! = 1
6! = 720
7! = 5040
5! = 120
8! = 40320
12! = 479001600
10! = 3628800

Q2 Find greater in 3 numbers

```
def greater(a:int, b:int, c:int):
    max = a
    if(a > max):
        max = a
    if(b > max):
        max = b
    if(c > max):
        max = c
    return max


if __name__ == '__main__':
    a = int(input('a: '))
    b = int(input('b: '))
    c = int(input('c: '))
    print(f'Greater({a}, {b}, {c}) = {greater(a, b, c)}')
```

Output:

a: 4
b: 5
c: -1
Greater(4, 5, -1) = 5

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Q3 Print Fibonnaci Sequence

```
def fibonnaci(n):
    if(n == 0):
        return 0
    if(n <= 2):
        return 1
    return fibonnaci(n-1) + fibonnaci(n-2)
if __name__ == '__main__':
    n = int(input('n: '))
    print(f'[{0}', end='')
    for x in range(1, n):
        print(f', {fibonnaci(x)}', end='')
    print(']')
```

Output:

n: 5
[0, 1, 1, 2, 3]

Q4 Design a calculator

```
import math

class Calculator:
    def __init__(self, a, b):
        self.a = a
        self.b = b
    def add(self):
        return self.a + self.b
    def sub(self):
        return self.a - self.b
    def multiply(self):
        return self.a * self.b
    def divide(self):
        return self.a / self.b
    def pow(self):
        return self.a ** self.b
    def log10(self):
        return math.log10(self.a), math.log10(self.b)
    def log_base_b_a(self):
        return math.log10(self.a)/math.log10(self.b)
    def log2(self):
        return math.log2(self.a), math.log2(self.b)
```

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Q4 Contd.

```
if __name__ == '__main__':
    a = float(input('a: '))
    b = float(input('b: '))
    calculator = Calculator(a, b)
    print(f'{a} + {b} = {calculator.add()}')
    print(f'{a} - {b} = {calculator.sub()}')
    print(f'{a} * {b} = {calculator.multiply()}')
    print(f'{a} / {b} = {calculator.divide()}')
    print(f'{a}^{b} = {calculator.pow()}')
    print(f'log10({a}), log10({b}) = {calculator.log10()}')
    print(f'log{b}({a}) =  {calculator.log_base_b_a()}')
    print(f'log2({a}), log2({b}) = {calculator.log2()}')
```

Output:

a: 4
b: 5
4.0 + 5.0 = 9.0
4.0 - 5.0 = -1.0
*4.0 * 5.0 = 20.0*
4.0 / 5.0 = 0.8
4.0^5.0 = 1024.0
log10(4.0), log10(5.0) = (0.6020599913279624, 0.6989700043360189)
log5.0(4.0) = 0.861353116146786
log2(4.0), log2(5.0) = (2.0, 2.321928094887362)

Q5 Sum of N natural numbers

```
def sumofn(n:int):
    return int(n*(n+1)/2)
if __name__ == '__main__':
    n = int(input("n: "))
    print(f'sum of integers upto{n} = {sumofn(n)}')
```

Output:

n: 10
sum of integers upto10 = 55

Q6 Print multiplication table of a given number

```
if __name__ == '__main__':
    num = int(input("num: "))
    for i in range(1, 11):
        print(f'{num} X {i} = {num*i}')
```

Output:

num: 13
13 X 1 = 13
13 X 2 = 26
13 X 3 = 39

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Q6 Output Contd.

13 X 4 = 52
13 X 5 = 65
13 X 6 = 78
13 X 7 = 91
13 X 8 = 104
13 X 9 = 117
13 X 10 = 130

Q7 Is a number palindorme ?

```
from math import log10
def isPalindrome(num:int):
    digits = int(log10(num))
    tmp = num
    newnum = 0
    while (tmp != 0):
        newnum += (tmp%10)*(10**(digits))
        digits-=1
        tmp = tmp//10
    if num == newnum:
        return True
    return False
if __name__ == '__main__':
    num = int(input("num: "))
    print(isPalindrome(num))
```

Output:

num: 35153
True
num: 3141
False

Q8 Check if a number is prime or not

```
from math import sqrt
def isPrime(num:int):
    x = 1
    for i in range(2, int(sqrt(num)+1)):
        if(num%i == 0):
            x += 1
        if(x == 2):
            return False
    return True

if __name__ == '__main__':
    num = int(input('num: '))
    print(isPrime(num))
```

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Q8 Contd.
Output:
num: 451
False
num: 17
True

Q9 WAP to display day name given day number

```
def dayname(n:int):
    if(n == 1):
        return "Monday"
    if(n == 2):
        return "Tuesday"
    if(n == 3):
        return "Wednesday"
    if(n == 4):
        return "Thursday"
        return "Thursday"
    if(n == 5):
        return "Friday"
    if(n == 6):
        return "Saturday"
    if(n == 7):
        return "Sunday"

if __name__ == '__main__':
    n = int(input("day num: "))
    print(dayname(n))
```

Output:
day num: 4
Thursday
day num: 1
Monday
day num: 9
None
day num: 7
Sunday

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Q10 WAP to check if given three points can form a triangle

```
def isTriangle(a, b, c):
    s = (a+b+c)/2
    a2 = s*(s-a)*(s-b)*(s-c)
    if(a2 > 0):
        return True
    elif(a2 <= 0):
        return False

if __name__ == '__main__':
    a = float(input("a: "))
    b = float(input("b: "))
    c = float(input("c: "))
    print(isTriangle(a, b, c))
```

Output:

a: 4
b: 5
c: 6
True

a: 3
b: 4
c: 5
True

a: 9
b: 0
c: 0
False