Lab Assignment 2

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Class : FYMCA **Div** A

Q 1. Write a program to print the following :

1. **First 10 natural numbers**

```
def natural_numbers():
    for i in range(1, 11):
        print(i)
print("(1) First 10 natural numbers:")
natural_numbers()
```

2. **First 10 even numbers in reverse order**

```
def even_reverse():
  count = 0
  num = 20
  while count < 10:
    print(num, end=" ")
    num -= 2
    count += 1
print("(2) First 10 even numbers in reverse order:")
even_reverse()
```

3. **Table of a number accepted from use**

```
def multiplication_table(num):
  print(f"Multiplication table of {num}:")
  for i in range(1, 11):
    print(f"{num} x {i} = {num*i}")
print("(3). Multiplication Table")
n = int(input("Enter a number: "))
multiplication_table(n)
```

4. **First 10 prime numbers**

```
def is_prime(num):
```

```
    if num <= 1:
        return False
    if num <= 3:
        return True
    if num % 2 == 0 or num % 3 == 0:
        return False
    i = 5
    while i * i <= num:
        if num % i == 0 or num % (i + 2) == 0:
            return False
        i += 6
    return True
def print_first_10_primes():
    count = 0
    num = 2
    while count < 10:
        if is_prime(num):
            print(num, end=" ")
            count += 1
        num += 1
print("(4). First 10 Prime Numbers:")
print_first_10_primes()
```

5. Sum of digits of numbers from 101 to 130

```
def sum_of_digits(num):
    total = 0
    while num > 0:
        total += num % 10
        num //= 10
    return total

def sum_of_digits_range(start, end):
    total_sum = 0
    for i in range(start, end + 1):
        total_sum += sum_of_digits(i)
```

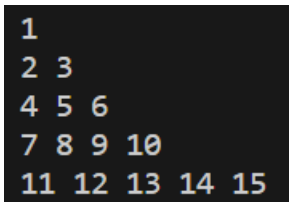
```
        return total_sum


    start_num = 101
    end_num = 130


    result = sum_of_digits_range(start_num, end_num)
    print(f"(5). The sum of digits for numbers from {start_num} to {end_num} is: {result}")
```

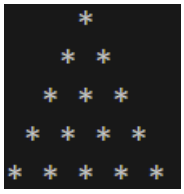
Q 2. Write a program to print following patterns

(1)




```
def contnum(n):
    num = 1
    for i in range(0, n):
        for j in range(0, i+1):
            print(num, end=" ")
            num = num + 1
        print("\r")
 n = 5
contnum(n)
```

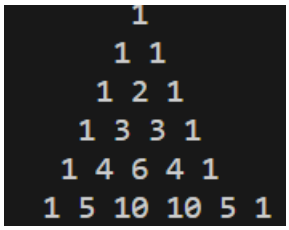
(2)




```
def stars(n):
    k = n - 1
    for i in range(0, n):
        for j in range(0, k):
            print(end=" ")
        k = k - 1
```

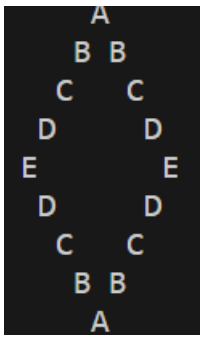
```
        for j in range(0, i+1):
            print("* ", end="")
        print("\r")
n = 5
stars(n)
```

(3)




```
n = 6
for i in range(1, n+1):
    for j in range(0, n-i+1):
        print(' ', end='')
    C = 1
    for j in range(1, i+1):
        print(' ', C, sep='', end='')
        C = C * (i - j) // j
    print()
```

(4)




```
for i in range(65, 70):
    for j in range(69, 64, -1):
        if(i == j):
            a = chr(j)
            print(a, end="")
        else:
```

```
            print("", end=" ")
    for k in range(66, 70):
        if(i == k):
            a = chr(k)
            print(a, end="")
        else:
            print("", end=" ")
    print()
for i in range(68, 64, -1):
    for j in range(69, 64, -1):
        if(i == j):
            a = chr(j)
            print(a, end="")
        else:
            print("", end=" ")
    for k in range(66, 69):
        if(i == k):
            a = chr(k)
            print(a, end="")
        else:
            print("", end=" ")
    print()
```