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Subject	Python

Assignment on List, String and Dictionary

Q1. Write a program to print

- 1. First 10 natural numbers**
- 2. First 10 even numbers in reverse order**
- 3. Table of a number accepted from user**
- 4. First 10 prime numbers**
- 5. Sum of digits of numbers from 101 to 130**

Ans :

```
def print_first_10_natural_numbers():  
    print("First 10 natural numbers:")  
    for i in range(1, 11):  
        print(i, end=" ")  
    print()
```

```
def print_first_10_even_numbers_reverse():  
    print("First 10 even numbers in reverse order:")  
    for i in range(20, 0, -2):  
        print(i, end=" ")  
    print()
```

```
def print_table_of_number():  
    num = int(input("Enter a number to print its table: "))  
    print("Table of", num, ":")  
    for i in range(1, 11):  
        print(num, "*", i, "=", num * i)
```

```
def is_prime(num):  
    if num <= 1:  
        return False  
    for i in range(2, int(num**0.5) + 1):  
        if num % i == 0:  
            return False  
    return True
```

```
def print_first_10_prime_numbers():  
    print("First 10 prime numbers:")  
    count = 0  
    num = 2  
    while count < 10:  
        if is_prime(num):
```

```

        print(num, end=" ")
        count += 1
        num += 1
    print()

def sum_of_digits_in_range():
    print("Sum of digits of numbers from 101 to 130:")
    total_sum = 0
    for num in range(101, 131):
        total_sum += sum(int(digit) for digit in str(num))
    print(total_sum)

if __name__ == "__main__":
    print_first_10_natural_numbers()
    print_first_10_even_numbers_reverse()
    print_table_of_number()
    print_first_10_prime_numbers()
    sum_of_digits_in_range()

```

Output –

```

C:\Windows\System32\cmd.e
D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>python Ass_loops.py
First 10 natural numbers:
1 2 3 4 5 6 7 8 9 10
First 10 even numbers in reverse order:
20 18 16 14 12 10 8 6 4 2
Enter a number to print its table: 5
Table of 5 :
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
First 10 prime numbers:
2 3 5 7 11 13 17 19 23 29
Sum of digits of numbers from 101 to 130:
198
D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>

```

Q2. Write a program to print following patterns –

1)

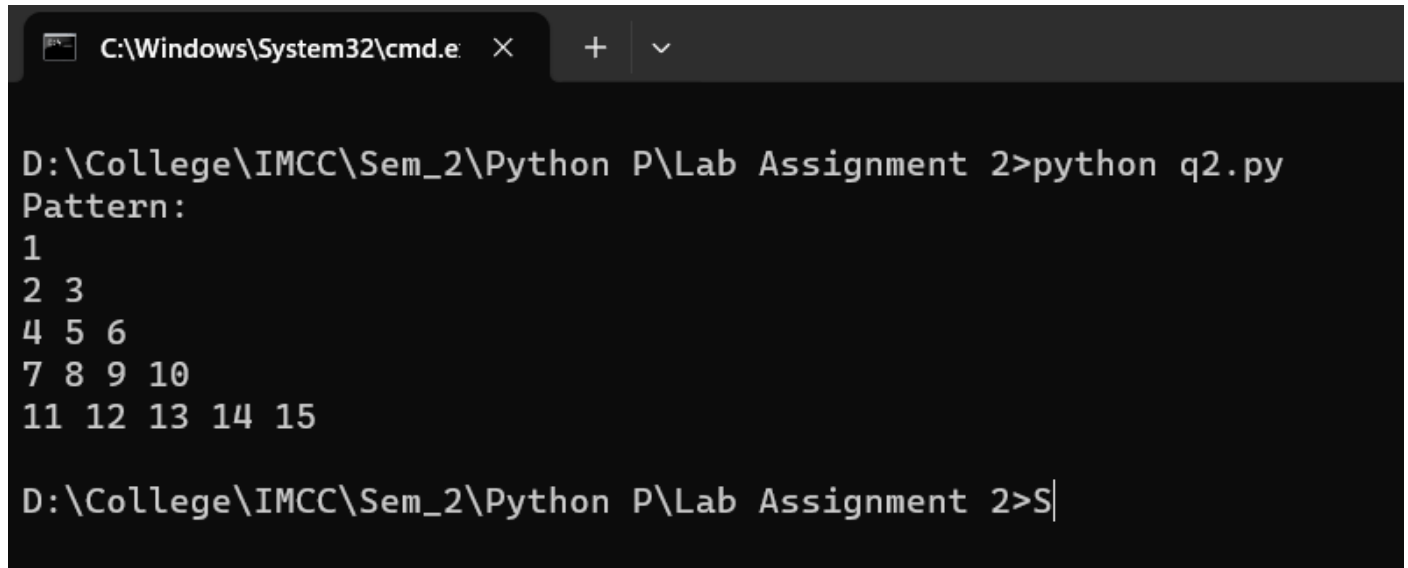
```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

Ans :

```
def print_pattern(rows):
    num = 1
    for i in range(1, rows + 1):
        for j in range(1, i + 1):
            print(num, end=" ")
            num += 1
        print()
```

```
if __name__ == "__main__":
    rows = 5
    print("Pattern:")
    print_pattern(rows)
```

Output –



```
C:\Windows\System32\cmd.e  X  +  v

D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>python q2.py
Pattern:
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>S|
```

2)

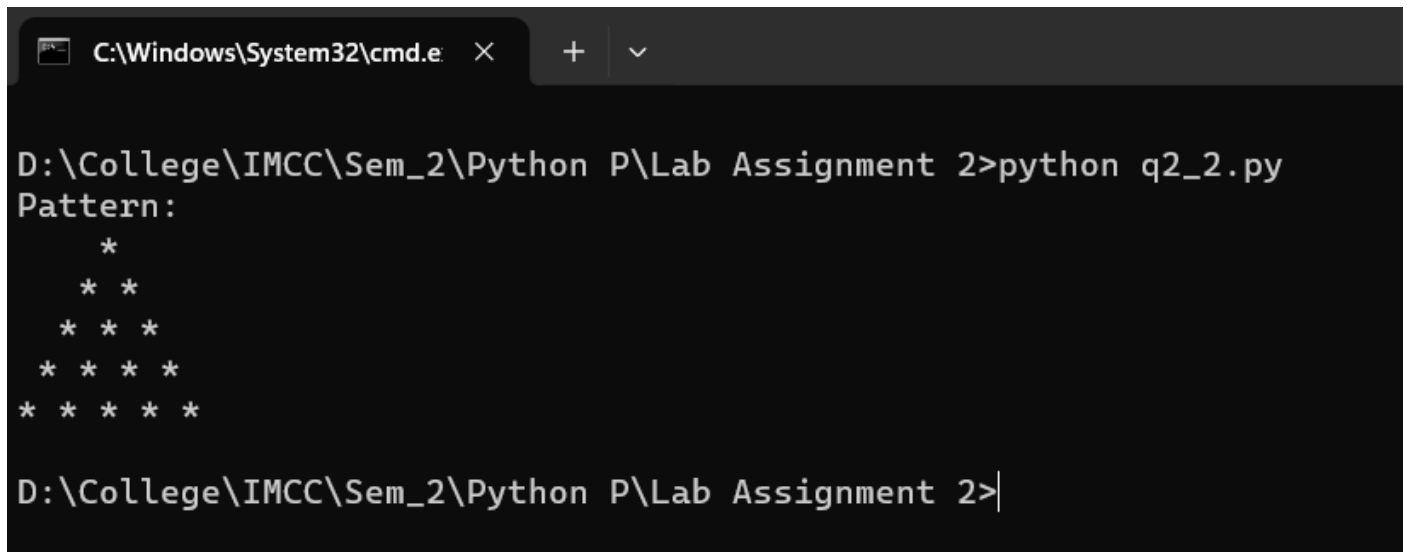
```
*
* *
* * *
* * * *
* * * * *
```

Ans :

```
def print_pattern(rows):
    for i in range(1, rows + 1):
        print(" " * (rows - i) + "*" * i)

if __name__ == "__main__":
    rows = 5 # Number of rows in the pattern
    print("Pattern:")
    print_pattern(rows)
```

Output –



```
C:\Windows\System32\cmd.e  X + v
D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>python q2_2.py
Pattern:
    *
   * *
  * * *
 * * * *
* * * * *

D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>
```

3)

```
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
```

Ans :

```
def print_pattern(rows):
    for i in range(rows):
        print(" " * (rows - i - 1), end="")
        for j in range(i + 1):
            if j == 0 or j == i:
                print("1", end=" ")
            else:
                print(combination(i, j), end=" ")
        print()
```

```

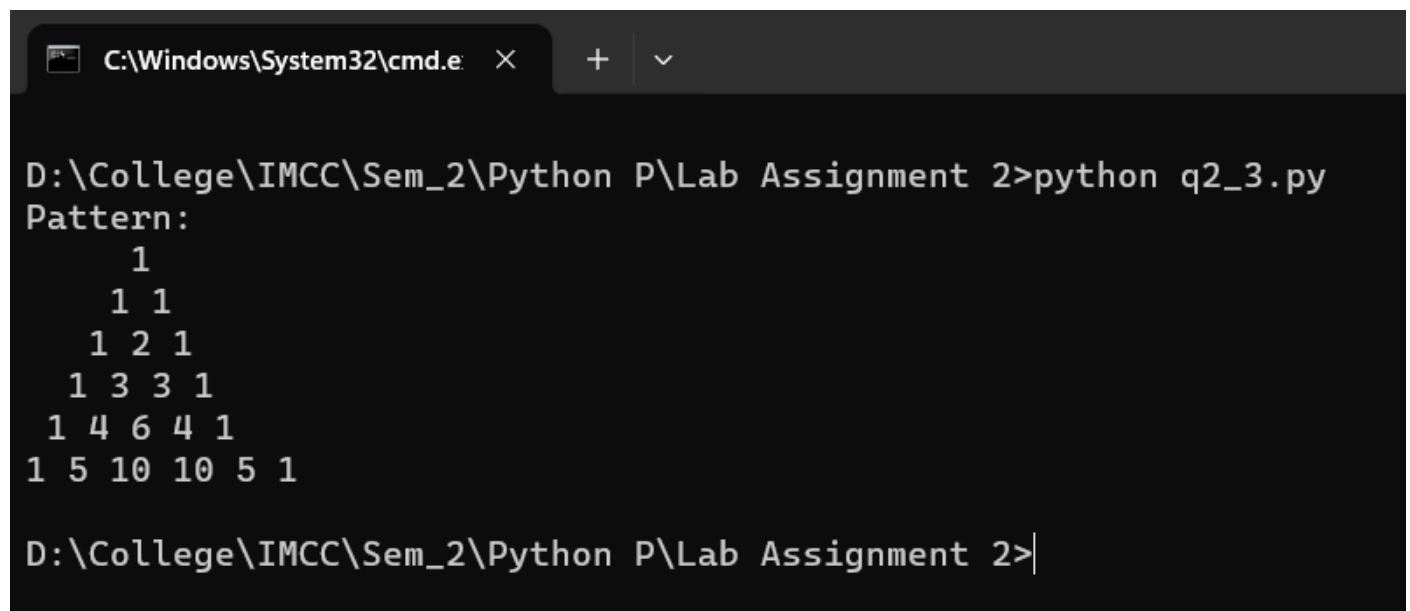
def combination(n, r):
    return factorial(n) // (factorial(r) * factorial(n - r))

def factorial(n):
    if n == 0 or n == 1:
        return 1
    else:
        return n * factorial(n - 1)

if __name__ == "__main__":
    rows = 6
    print("Pattern:")
    print_pattern(rows)

```

Output –



```

C:\Windows\System32\cmd.e
D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>python q2_3.py
Pattern:
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
 1 5 10 10 5 1

D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>|

```

4)

```

      A
     B B
    C  C
   D  D
  E  E
 D  D
C  C
 B B
  A

```

Ans :

```

def print_pattern(rows):
    for i in range(rows):
        print(" " * (rows - i - 1), end="")
        print(chr(65 + i), end="")

```

```

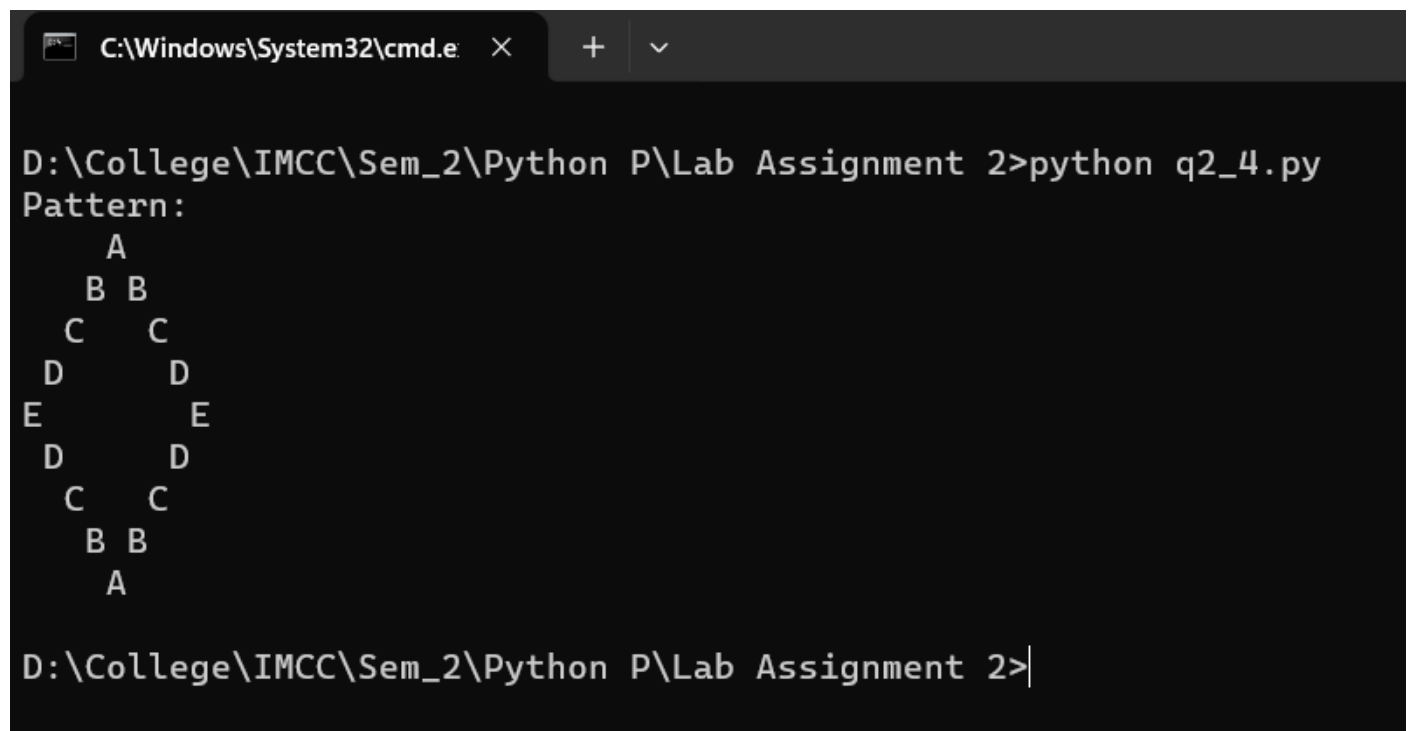
if i > 0:
    print(" " * (2 * i - 1), end="")
    print(chr(65 + i), end="")
    print()

for i in range(rows - 2, -1, -1):
    print(" " * (rows - i - 1), end="")
    print(chr(65 + i), end="")
    if i > 0:
        print(" " * (2 * i - 1), end="")
        print(chr(65 + i), end="")
    print()

if __name__ == "__main__":
    rows = 5
    print("Pattern:")
    print_pattern(rows)

```

Output –



```

C:\Windows\System32\cmd.e
D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>python q2_4.py
Pattern:
  A
 B B
C   C
D   D
E   E
D   D
C   C
 B B
  A
D:\College\IMCC\Sem_2\Python P\Lab Assignment 2>

```