```
'''6. Write a program that takes an integer input from the user and prints whether it is
prime or not'''

def isPrime(n):
    c=0
    if (n<2):
         print("Not Prime")
    else:

         for i in range(1,n+1):
            if(n%i==0):
                 c=c+1

    if(c==2):
        print("Prime Number.")
    else:
        print("Not a Prime Number.")

n=int(input("Enter a Number: "))
isPrime(n)
```

```
'''7. In line with the previous question, write a program to compute the sum of all prime
numbers below a
 user input number, e.g., Sum of all prime numbers less than 20 is 77.
'''

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

def sum(n):
   sum=0
   for i in range(2,n):
      if isPrime(i):
         sum+=i
      return sum

print(sum(20))
```

```
'''8. Write a program that takes an integer input from the user. Use a while loop to
continuously prompt
 for input until the user enters a positive number. If the final number is even, multiply
it by 2 and if it
 is odd, square it. Display the results at the end.'''

n=int(input("Enter a Number: "))

while(n<0):
    print("Enter a Positive Number: ")
    n=int(input("Enter a Number: "))
```

```
if(n%2==0):
    ans=n*2
    print(ans)
else:
    ans=n**2
    print(ans)
```

```
''' 9. Write a program to find the remainder when a user input number is divided by 5
using
 match case. If the user inputs a non-integer, Python should say ”Invalid input”  and
stop.'''

n=int(input("Enter a Number: "))

match n%5:
        case 0:
            print("Remainder is 0")
        case 1:
            print("Remainder is 1")
        case 2:
            print("Remainder is 2")
        case 3:
            print("Remainder is 3")
        case 4:
            print("Remainder is 4")
        case _:
            print("Invalid")
```

```
'''10. Write a program that takes a string as input and prints out all possible sub
strings of the string using
 loops, e.g., if the input is ”abc”, the output should be ”a”, ”ab”, ”abc”, ”b”, ”bc”,
”c”.'''

s=input("Enter a String: ")

for i in range(len(s)):
    for j in range(i + 1, len(s) + 1):
        print(s[i:j])
```

```
''' 11. Write a program that functions as a simple calculator. It should continuously
accept a pair of numbers
 and an operator (+,-, *, /) from the user and print the result. If the user types ”exit”,
the program
 quits. Otherwise the program continues asking for a pair of input numbers.'''
```

```python
n1=int(input("Enter a Number 1: "))
n2=int(input("Enter a Number 2: "))
op=input("Enter an Operator: ")

while(op!="exit"):
    match op:
        case "+":
            print(n1+n2)
        case "-":
            print(n1-n2)
```

```python
''' 12. Write a program to find out the mean, median, and mode of 1, 2, 3, 2, 3, 4, 4, 4, 5, 4, 5, 6.'''
import statistics

data=[1, 2, 3, 2, 3, 4, 4, 4, 5, 4, 5, 6]
mea=statistics.mean(data)
med=statistics.median(data)
mod=statistics.mode(data)

print(mea , med , mod)
```

```python
'''Write a program to determine whether a given natural number is a perfect number. A natural number
 is said to be a perfect number if it is the sum of its divisors. For Example, 6 is a perfect number
 because 6 = 1+2+3, but 15 is not a perfect number because 15!= 1+3+5'''

n=int(input("Enter a Number: "))
sum=0
for i in range(1,n):
    if(n%i==0):
        sum+=i
if sum==n:
    print("Perfect Number.")
else:
    print("Not a Perfect Number.")
```

```python
def fact(n):
    result = 1
    for i in range(1, n + 1):
        result *= i
    return result

res = 0
x = int(input("Enter x: "))
n = int(input("Enter the number of terms: "))

for i in range(n):
    sum=((-1)** i)*(x**(2*i))/fact(2*i)
```

```
    res +=sum

print("Result:", 1 - res)
```

```
''' 17. Write a python program that displays all the numbers from 100 to 1,000, ten per
line, that are divisible
 by 5 or 6. Numbers are separated by exactly one space'''
c=0
for i in range(100,1001):
    if(i%5==0 or i%6==0):
        print(i,end=" ")
        c+=1
    if c==10:
        print()
        c=0
```

```
'''18. Write a Python program that prints all numbers from 1 to 100, except multiples of
7, using a for loop
 with continue.'''

for i in range(1,101):
    if(i%7==0):
        continue
    print(i)
```

```
''' 19. Write a python program that accepts a positive integer n and reverses the order of
its digits, e.g., 1234
 becomes 4321.'''
rev=0
n=int(input("Enter a +ve Number: "))
while n>0:
    d=n%10
    rev=rev*10+d
    n //= 10
print(rev)
```

```
''' 20.Write a python program that reads an integer and displays all its smallest factors
in increasing order,
 e.g., if the input integer is 120, the output should be as follows: 2, 2, 2, 3, 5.'''

n=120
fact=[]
for i in range(1,n+1):
    if n%i==0:
        fact.append(i)
```

```
''' 21. Write a python program to determine whether or not a number n is a factorial
number.'''

n=int(input("Enter a number: "))
fact=1
for i in range(1,n):
    if(n%i==0):
        fact*=i
if fact==n:
    print("Factorial Number.")
else:
    print("NO")
```

```
''' 22. Write a program that takes a number from the user and continuously sums its digits
until the sum
 becomes a single-digit number.'''

n = int(input("Enter a number: "))

while n >= 10:
    n = sum(int(digit) for digit in str(n))

print("Single-digit result:", n)
```

```
'''
*
**
***
****
*****  '''
for i in range(1, 6):
    for j in range(1, i + 1):
        print("*", end="")
    print()
''*
  **
 ***
****'''
n = 4
for i in range(1, n+1):
    print(' ' * (n - i) + '*' * i)
'''
****
 ***
  **
   *'''
n = 4
for i in range(n, 0, -1):
    print(' ' * (n - i) + '*' * i)
```

```
'''
****
***
**
*'''
n = 4
for i in range(n, 0, -1):
    print('*' * i)
```

```
'''*
  ***
 *****
*******
 *****
  ***
   *'''
n = 4
for i in range(1, n+1):
    print(' ' * (n - i) + '*' * (2*i - 1))
for i in range(n-1, 0, -1):
    print(' ' * (n - i) + '*' * (2*i - 1))
```

```
''' *
   * *
  *   *
 *     *
*********'''
n = 5
for i in range(1, n):
    print(' ' * (n - i) + '*' + ' ' * (2 * (i - 1) - 1) + ('*' if i > 1 else ''))
print('*' * (2 * n - 1))
```

```
'''
   *
  * *
 *   *
*     *
 *   *
  * *
   *
'''
n = 4
for i in range(1, n+1):
    print(' ' * (n - i) + '*' + ' ' * (2 * (i - 1) - 1) + ('*' if i > 1 else ''))
for i in range(n-1, 0, -1):
    print(' ' * (n - i) + '*' + ' ' * (2 * (i - 1) - 1) + ('*' if i > 1 else ''))
```

```

```

```
'''
        1
      2 1 2
    3 2 1 2 3
  4 3 2 1 2 3 4
5 4 3 2 1 2 3 4 5
'''
n = 5
for i in range(1, n+1):
    print(' ' * (n - i) * 2, end="")
    for j in range(i, 0, -1):
        print(j, end=" ")
    for j in range(2, i+1):
        print(j, end=" ")
    print()
```

```
'''
A
B C
D E F
G H I J
K L M N O
P Q R S T U
V W X Y Z [ \
'''
a = 65
for i in range (1,8):
    for j in range(i):
        print(chr(a), end=" ")
        a += 1
    print()
```

```
'''
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25'''

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