



Computer Science Practical File

Pranav Verma

Class: XI Raman

Session: 2024-2025

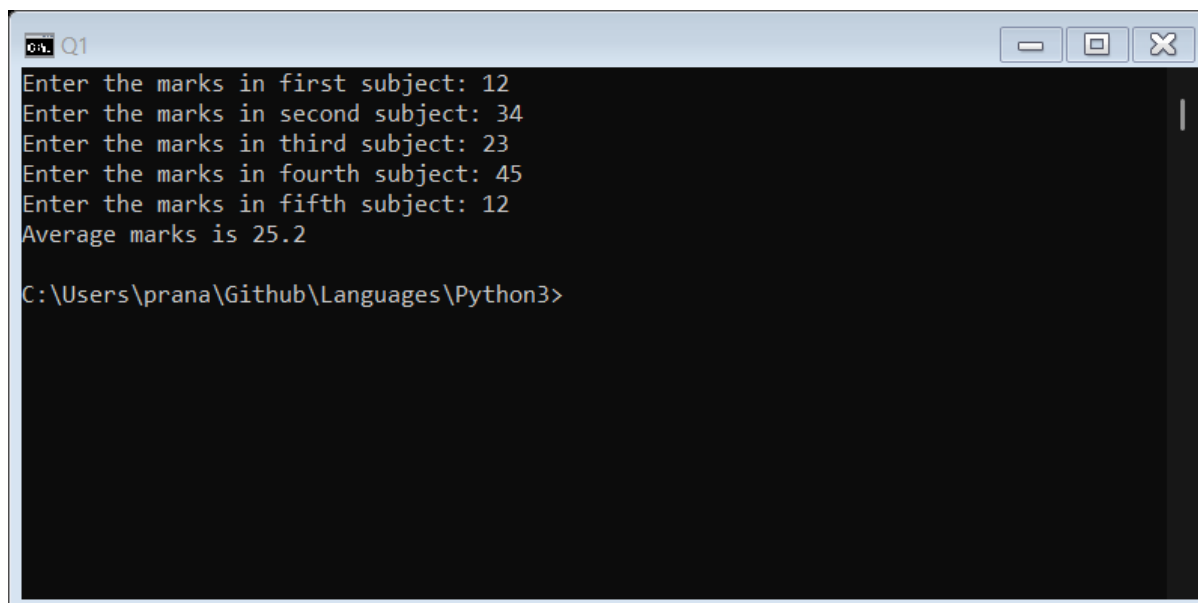
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Chapter 3: Getting Started with Python & Chapter 4: Python Programming Fundamentals

1. Write a Python program to accept marks in 5 subjects and calculate its mean.

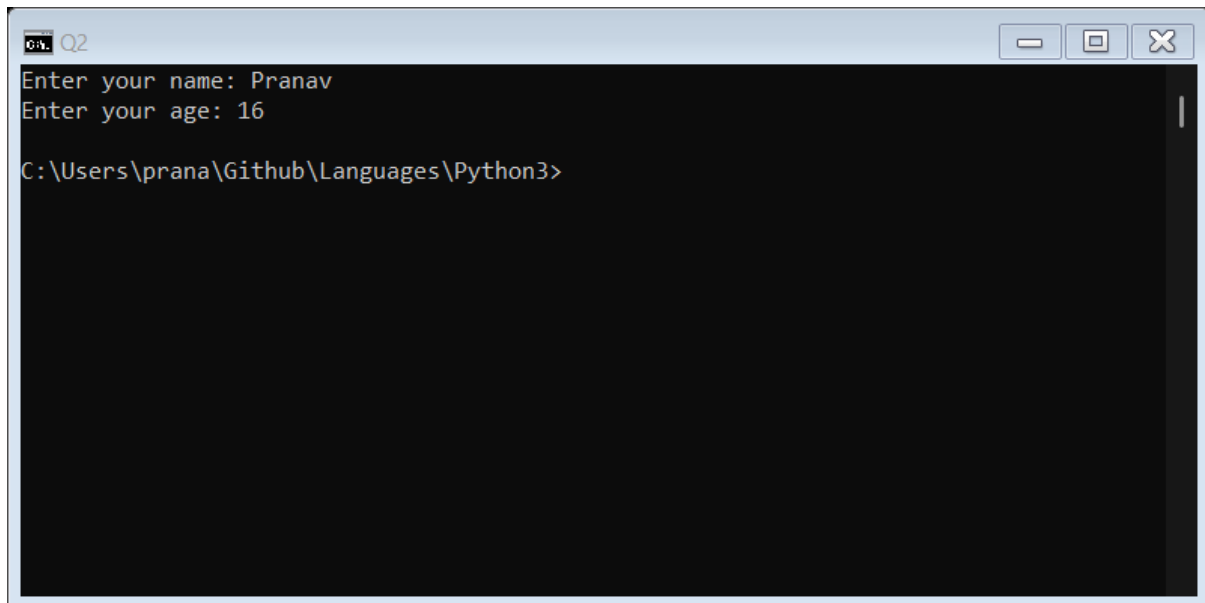
```
a = int(input("Enter the marks in first subject: "))
b = int(input("Enter the marks in second subject: "))
c = int(input("Enter the marks in third subject: "))
d = int(input("Enter the marks in fourth subject: "))
e = int(input("Enter the marks in fifth subject: "))
A = (a + b + c + d + e) / 5
print("Average marks is", A)
```

A screenshot of a Windows command prompt window titled "Q1". The window has standard Windows window controls (minimize, maximize, close) in the top right corner. The command prompt shows the execution of a Python program. The user has entered five marks for five subjects: 12, 34, 23, 45, and 12. The program has calculated the average and printed "Average marks is 25.2". The command prompt shows the current directory as "C:\Users\prana\Github\Languages\Python3>".

```
Q1
Enter the marks in first subject: 12
Enter the marks in second subject: 34
Enter the marks in third subject: 23
Enter the marks in fourth subject: 45
Enter the marks in fifth subject: 12
Average marks is 25.2
C:\Users\prana\Github\Languages\Python3>
```

2. Write a program to enter your name and class.

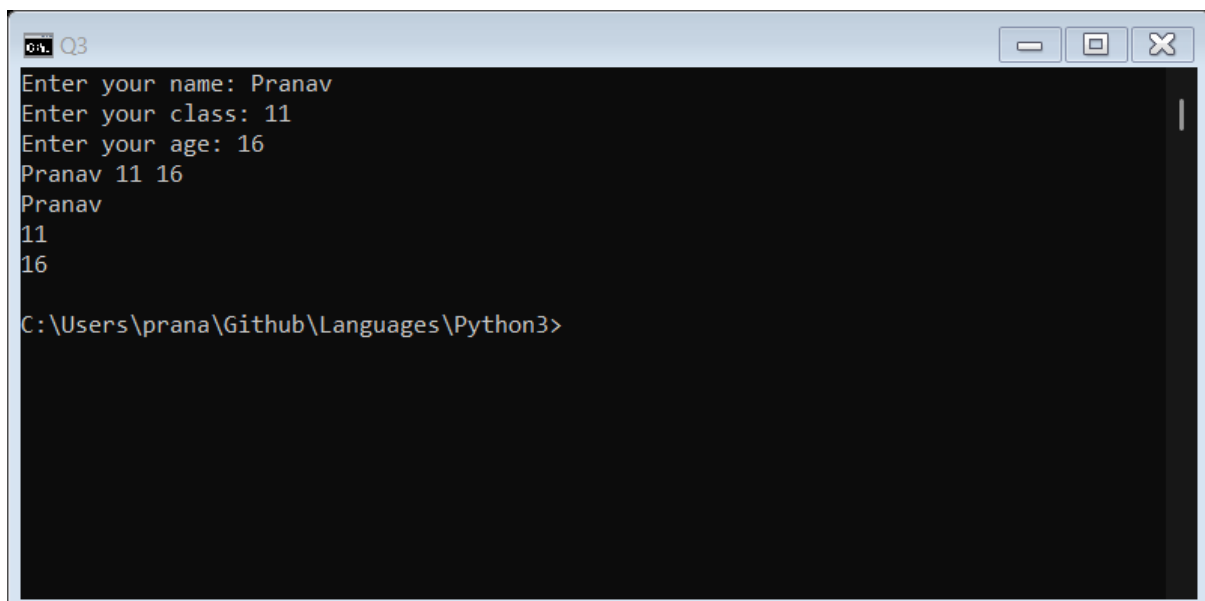
```
n = input("Enter your name: ")  
a = int(input("Enter your age: "))
```



```
Q2  
Enter your name: Pranav  
Enter your age: 16  
  
C:\Users\prana\Github\Languages\Python3>
```

3. Write a program to read details like name, class, and age of a student and then print the details, firstly in the same line and then in separate lines.

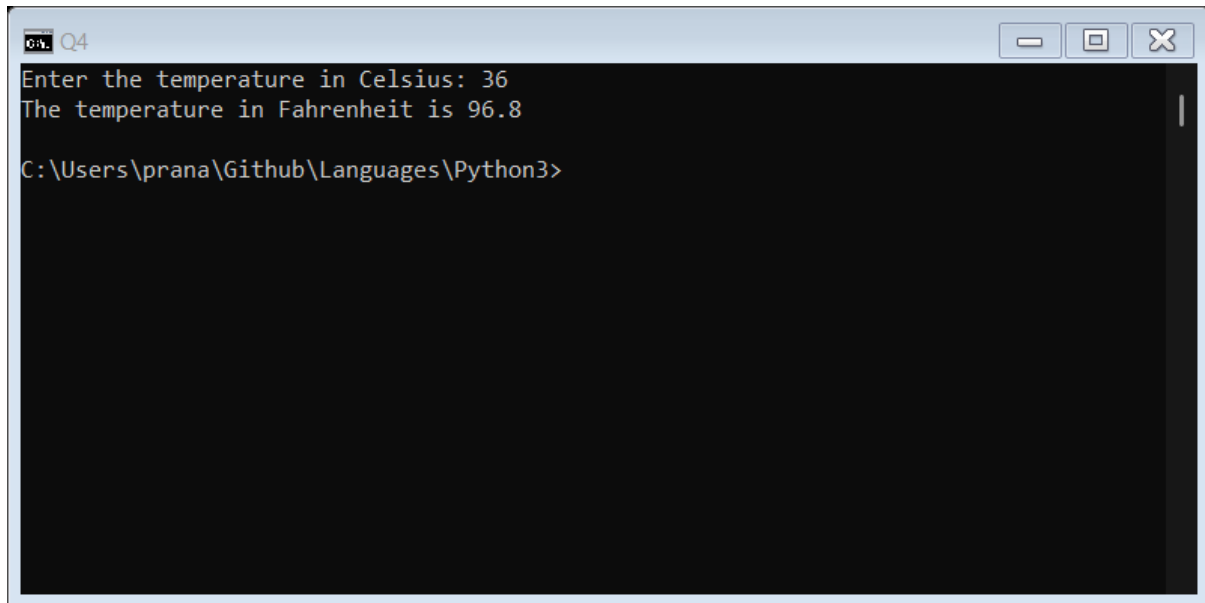
```
n = input("Enter your name: ")  
c = input("Enter your class: ")  
a = input("Enter your age: ")  
print(n, c, a)  
print(n)  
print(c)  
print(a)
```



```
Q3  
Enter your name: Pranav  
Enter your class: 11  
Enter your age: 16  
Pranav 11 16  
Pranav  
11  
16  
  
C:\Users\prana\Github\Languages\Python3>
```

4. Celsius to Fahrenheit conversion.

```
c = float(input("Enter the temperature in Celsius: "))
x = (9 * c) / 5
f = 32 + x
print("The temperature in Fahrenheit is", f)
```

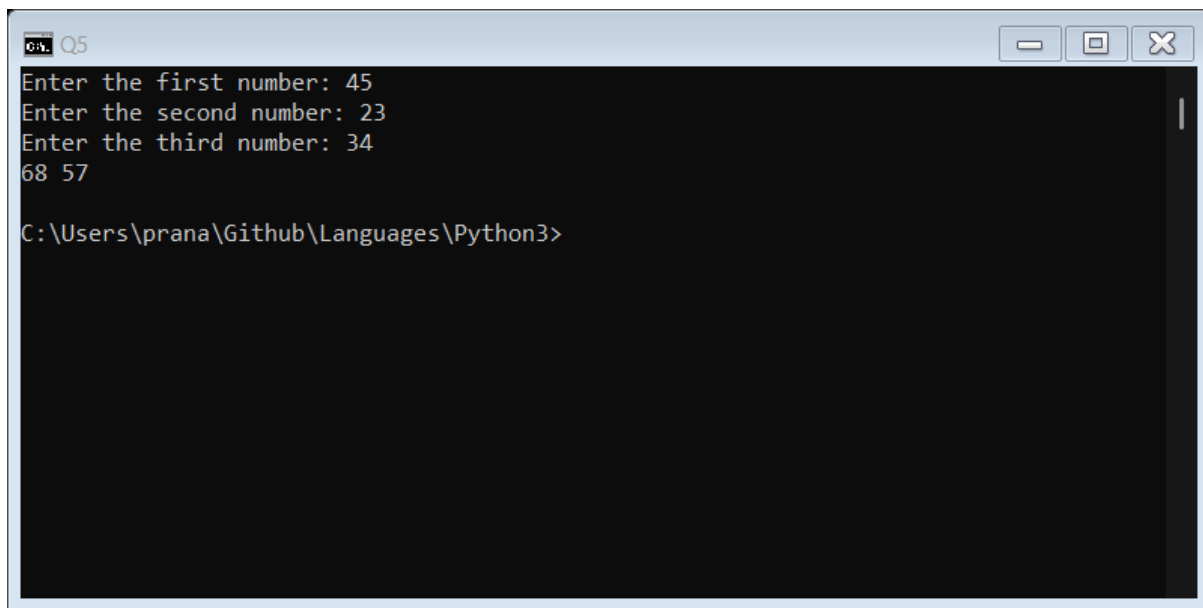
A screenshot of a Python script execution window titled "Q4". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The main area is a black terminal with white text. It shows the prompt "Enter the temperature in Celsius: " followed by the input "36". Below that, it shows the output "The temperature in Fahrenheit is 96.8". At the bottom, the command prompt shows the file path "C:\Users\prana\Github\Languages\Python3>".

```
Q4
Enter the temperature in Celsius: 36
The temperature in Fahrenheit is 96.8

C:\Users\prana\Github\Languages\Python3>
```

5. Write a program to read three numbers in three variables and swap the first two variables with the sums of the first and second, second and third numbers, respectively.

```
a = int(input("Enter the first number: "))
b = int(input("Enter the second number: "))
c = int(input("Enter the third number: "))
a = a + b
b = b + c
print(a, b)
```

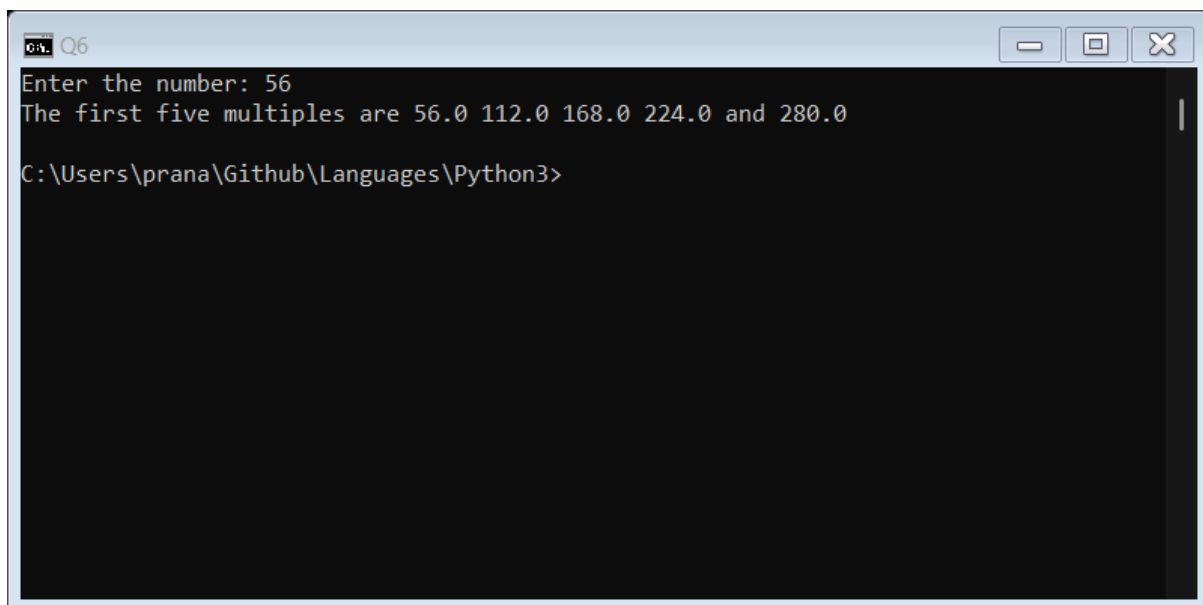


```
Q5
Enter the first number: 45
Enter the second number: 23
Enter the third number: 34
68 57

C:\Users\prana\Github\Languages\Python3>
```

6. Write a program to input a number and print the first 5 multiples.

```
n = float(input("Enter the number: "))
print("The first five multiples are", n * 1, n * 2, n * 3, n * 4, "and", n * 5)
```

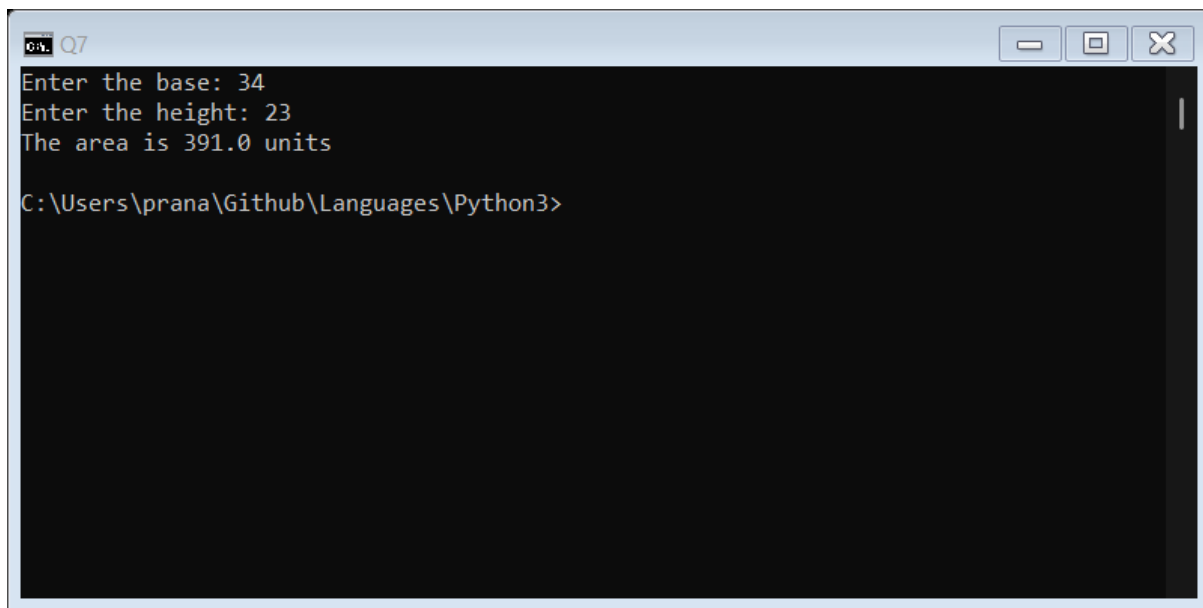


```
Q6
Enter the number: 56
The first five multiples are 56.0 112.0 168.0 224.0 and 280.0

C:\Users\prana\Github\Languages\Python3>
```

7. To calculate the area of a triangle.

```
x = float(input("Enter the base: "))
y = float(input("Enter the height: "))
print("The area is", (x * y) / 2, "units")
```

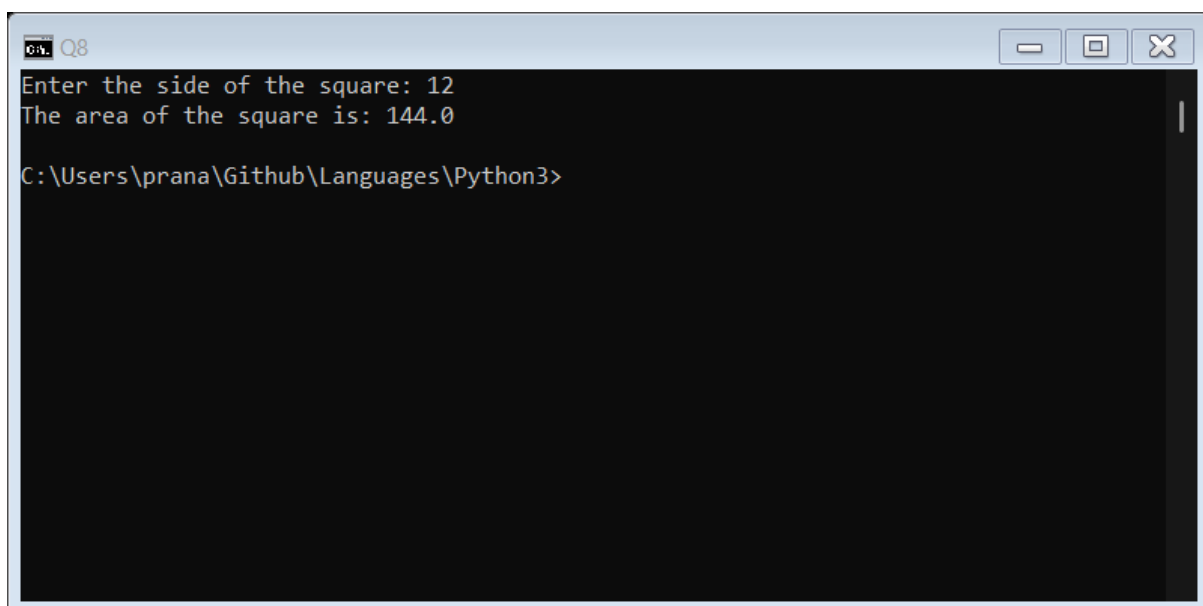


```
Q7
Enter the base: 34
Enter the height: 23
The area is 391.0 units

C:\Users\prana\Github\Languages\Python3>
```

8. To calculate the area of a square.

```
x = float(input("Enter the side of the square: "))
print("The area of the square is:", x ** 2)
```

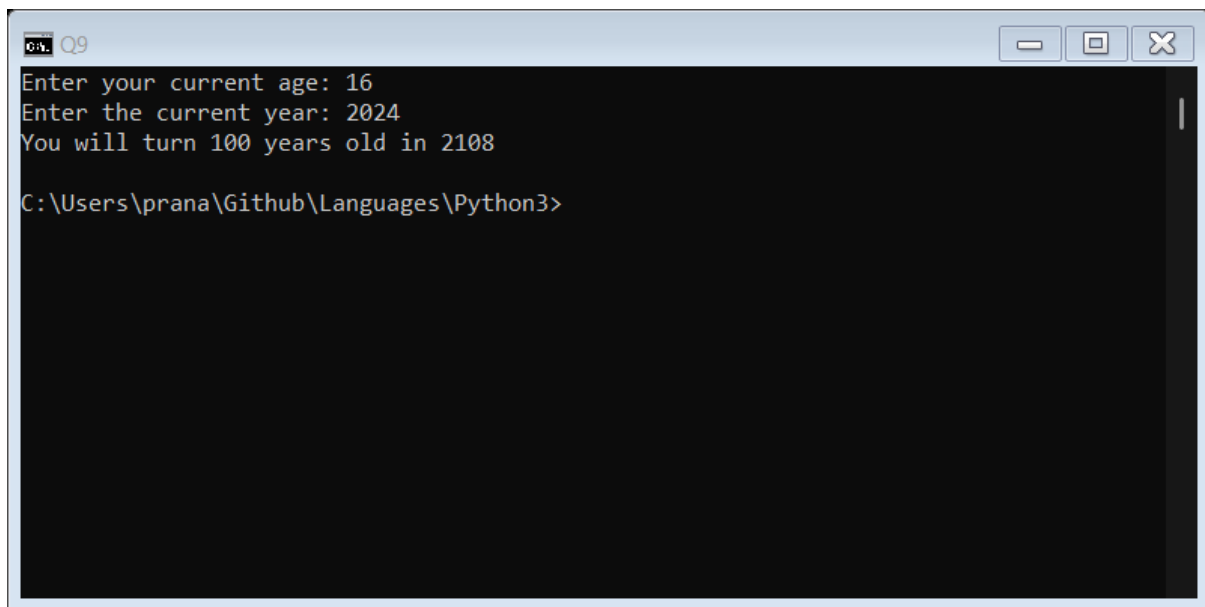


```
Q8
Enter the side of the square: 12
The area of the square is: 144.0

C:\Users\prana\Github\Languages\Python3>
```

9. Take the age from the user and show the year in which the user turns 100 years old.

```
x = int(input("Enter your current age: "))
a = int(input("Enter the current year: "))
y = 100 - x
m = a + y
print("You will turn 100 years old in", m)
```

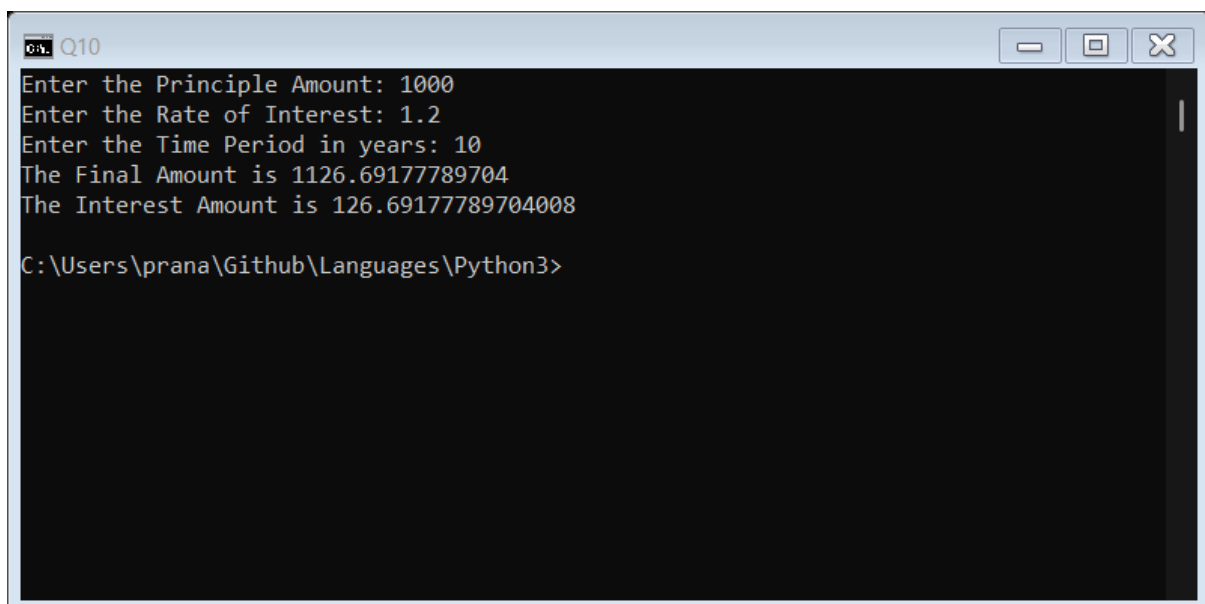


```
Q9
Enter your current age: 16
Enter the current year: 2024
You will turn 100 years old in 2108

C:\Users\prana\Github\Languages\Python3>
```

10. Compound Interest Calculator.

```
P = float(input("Enter the Principle Amount: "))
R = float(input("Enter the Rate of Interest: "))
T = int(input("Enter the Time Period in years: "))
A = P * ((1 + (R / 100)) ** T)
print("The Final Amount is", A)
I = A - P
print("The Interest Amount is", I)
```

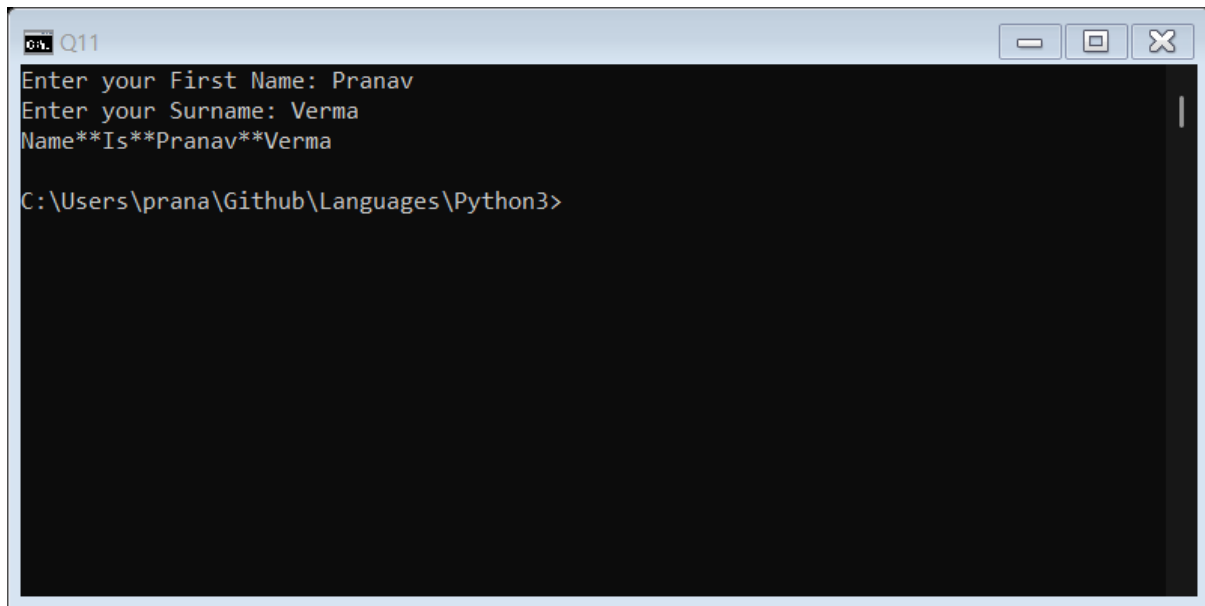


```
Q10
Enter the Principle Amount: 1000
Enter the Rate of Interest: 1.2
Enter the Time Period in years: 10
The Final Amount is 1126.69177789704
The Interest Amount is 126.69177789704008

C:\Users\prana\Github\Languages\Python3>
```

11. Write a program to display a name separated by ** sign.

```
N = input("Enter your First Name: ")
S = input("Enter your Surname: ")
print("Name", "Is", N, S, sep='**')
```

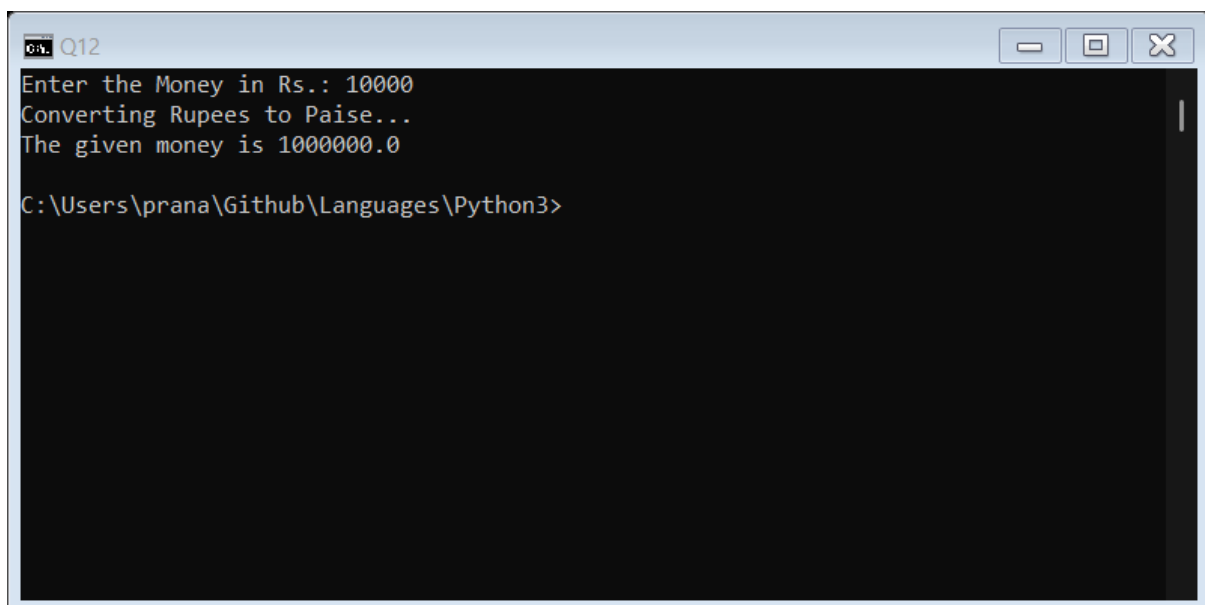


```
Q11
Enter your First Name: Pranav
Enter your Surname: Verma
Name**Is**Pranav**Verma

C:\Users\prana\Github\Languages\Python3>
```

12. Write a program to convert money from rupees to paise.

```
R = float(input("Enter the Money in Rs.: "))
p = R * 100
print("Converting Rupees to Paise...")
print("The given money is", p)
```

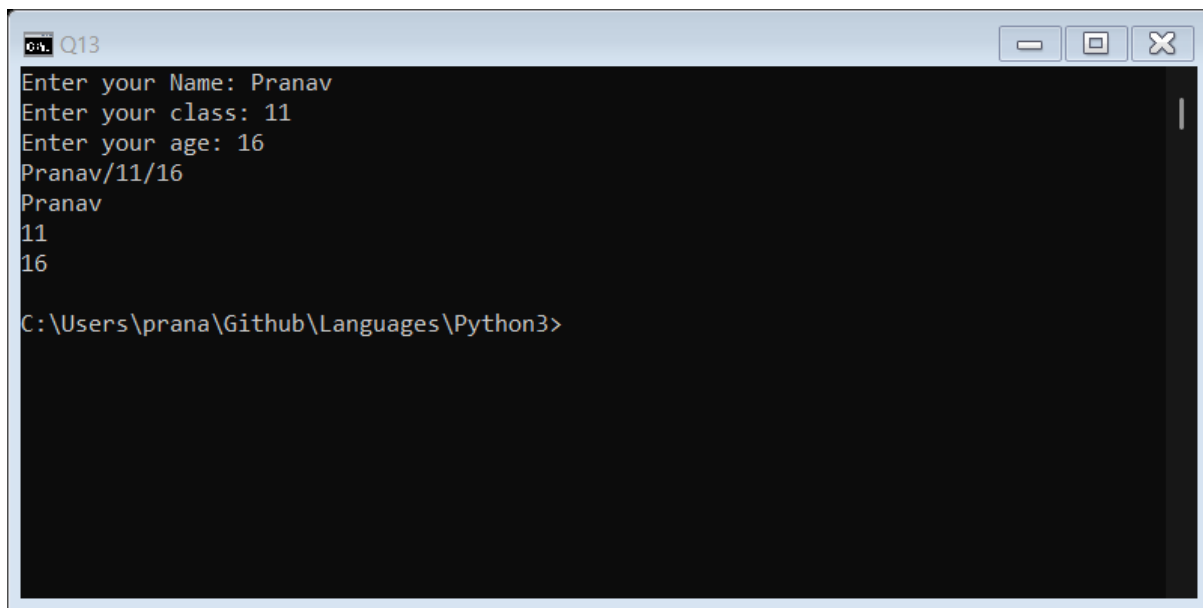


```
Q12
Enter the Money in Rs.: 10000
Converting Rupees to Paise...
The given money is 1000000.0

C:\Users\prana\Github\Languages\Python3>
```

13. Write a program to print your Name, Class, and Age separated by ‘/’.

```
x, y, z = input("Enter your Name: "), input("Enter your class: "), input("Enter your Age: ")
print(x, y, z, sep="/")
print(x)
print(y)
print(z)
```

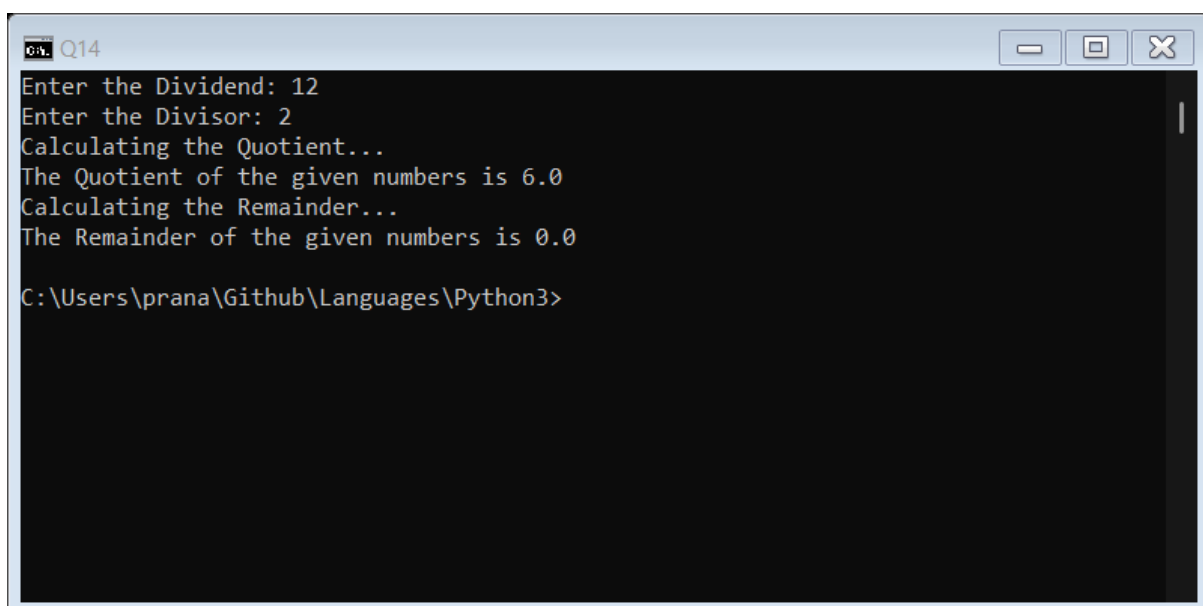



```
Q13
Enter your Name: Pranav
Enter your class: 11
Enter your age: 16
Pranav/11/16
Pranav
11
16

C:\Users\prana\Github\Languages\Python3>
```

14. Write a program to print the Quotient and Remainder of given Dividend and Divisor.

```
D = float(input("Enter the Dividend: "))
d = float(input("Enter the Divisor: "))
print("Calculating the Quotient...")
Q = D // d
print("The Quotient of the given numbers is", Q)
print("Calculating the Remainder...")
R = D % d
print("The Remainder of the given numbers is", R)
```



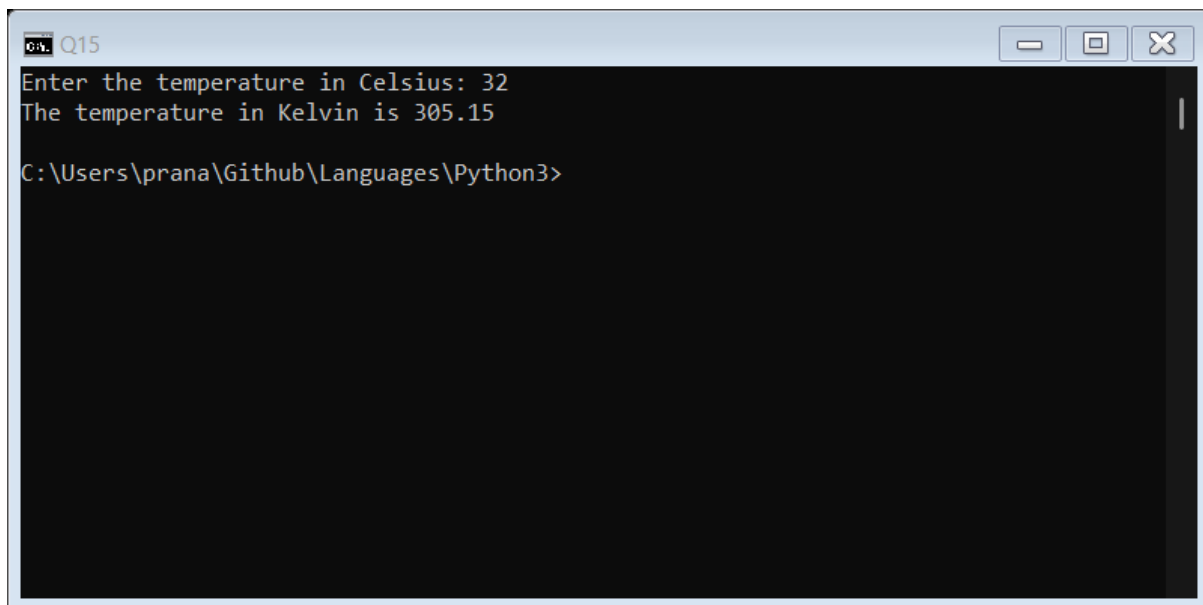
```
Q14
Enter the Dividend: 12
Enter the Divisor: 2
Calculating the Quotient...
The Quotient of the given numbers is 6.0
Calculating the Remainder...
The Remainder of the given numbers is 0.0

C:\Users\prana\Github\Languages\Python3>
```

15. To convert from Celsius to Kelvin.

```
c = float(input("Enter the temperature in Celsius: "))
```

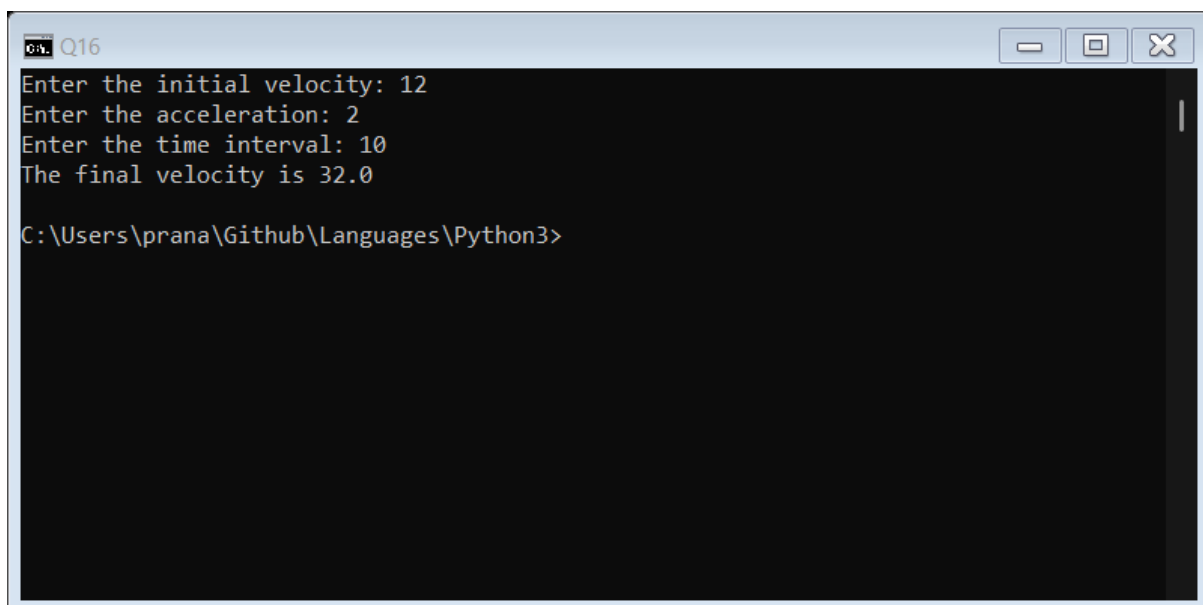
```
k = c + 273.15
print("The temperature in Kelvin is", k)
```



A screenshot of a Python terminal window titled "Q15". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The terminal background is black with white text. It shows the prompt "Enter the temperature in Celsius: 32", followed by the output "The temperature in Kelvin is 305.15". Below this, the command prompt "C:\Users\prana\Github\Languages\Python3>" is visible.

16. To find the final velocity of a body.

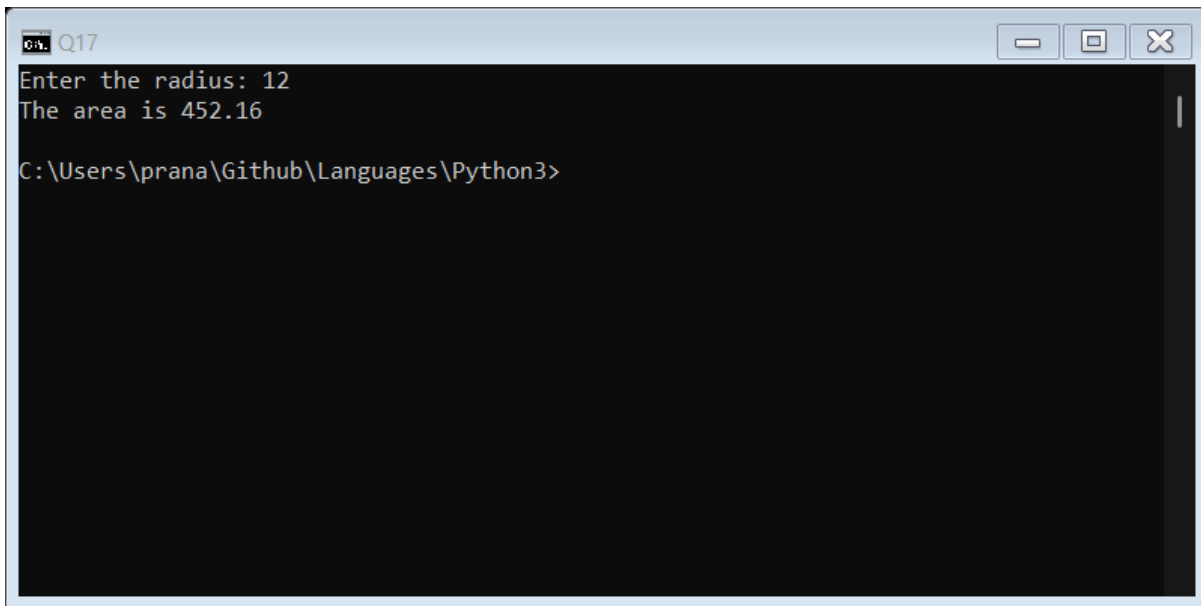
```
u = float(input("Enter the initial velocity: "))
a = float(input("Enter the acceleration: "))
t = float(input("Enter the time interval: "))
v = u + (a * t)
print("The final velocity is", v)
```



A screenshot of a Python terminal window titled "Q16". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The terminal background is black with white text. It shows three input prompts: "Enter the initial velocity: 12", "Enter the acceleration: 2", and "Enter the time interval: 10". The output is "The final velocity is 32.0". Below this, the command prompt "C:\Users\prana\Github\Languages\Python3>" is visible.

17. To calculate the area of the circle.

```
r = float(input("Enter the radius: "))
a = 3.14 * (r ** 2)
print("The area is", a)
```

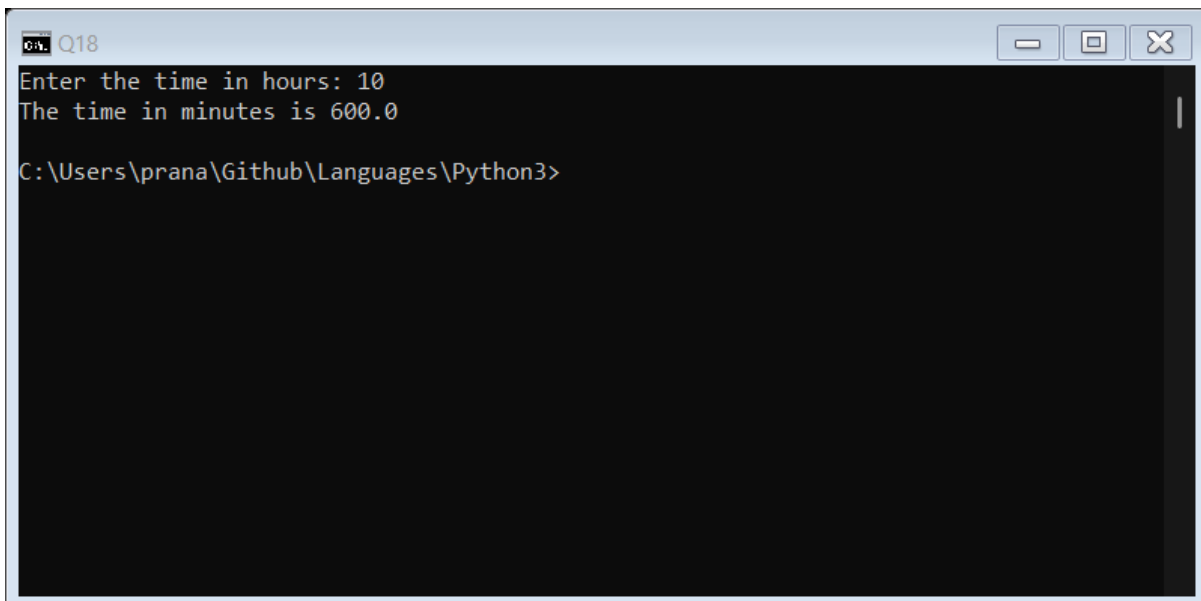


```
Q17
Enter the radius: 12
The area is 452.16

C:\Users\prana\Github\Languages\Python3>
```

18. Hours to minutes converter.

```
h = float(input("Enter the time in hours: "))
m = h * 60
print("The time in minutes is", m)
```

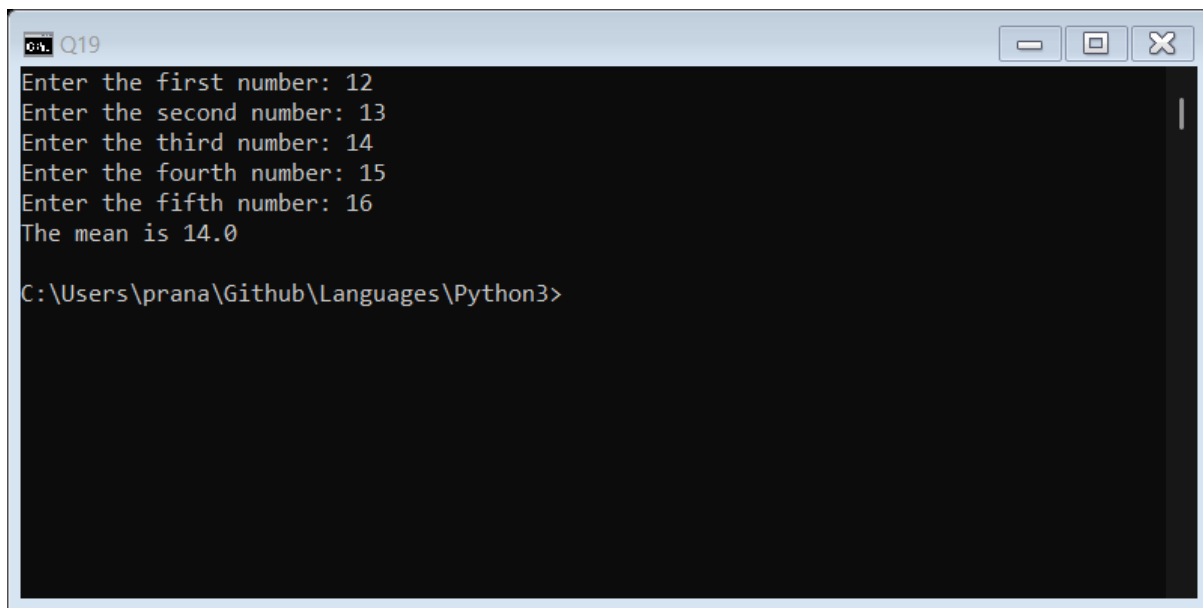


```
Q18
Enter the time in hours: 10
The time in minutes is 600.0

C:\Users\prana\Github\Languages\Python3>
```

19. To calculate the mean of 5 numbers given by the user.

```
a = float(input("Enter the first number: "))
b = float(input("Enter the second number: "))
c = float(input("Enter the third number: "))
d = float(input("Enter the fourth number: "))
e = float(input("Enter the fifth number: "))
m = (a + b + c + d + e) / 5
print("The mean is", m)
```

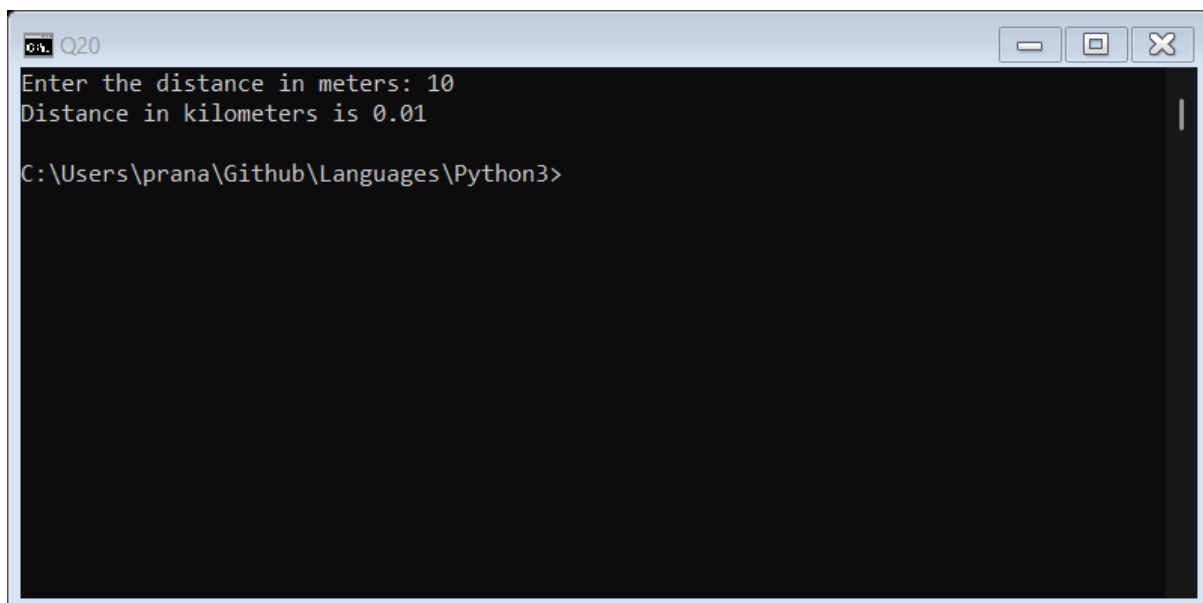


```
Q19
Enter the first number: 12
Enter the second number: 13
Enter the third number: 14
Enter the fourth number: 15
Enter the fifth number: 16
The mean is 14.0

C:\Users\prana\Github\Languages\Python3>
```

20. Meter to kilometer converter.

```
m = float(input("Enter the distance in meters: "))
k = m / 1000
print("Distance in kilometers is", k)
```

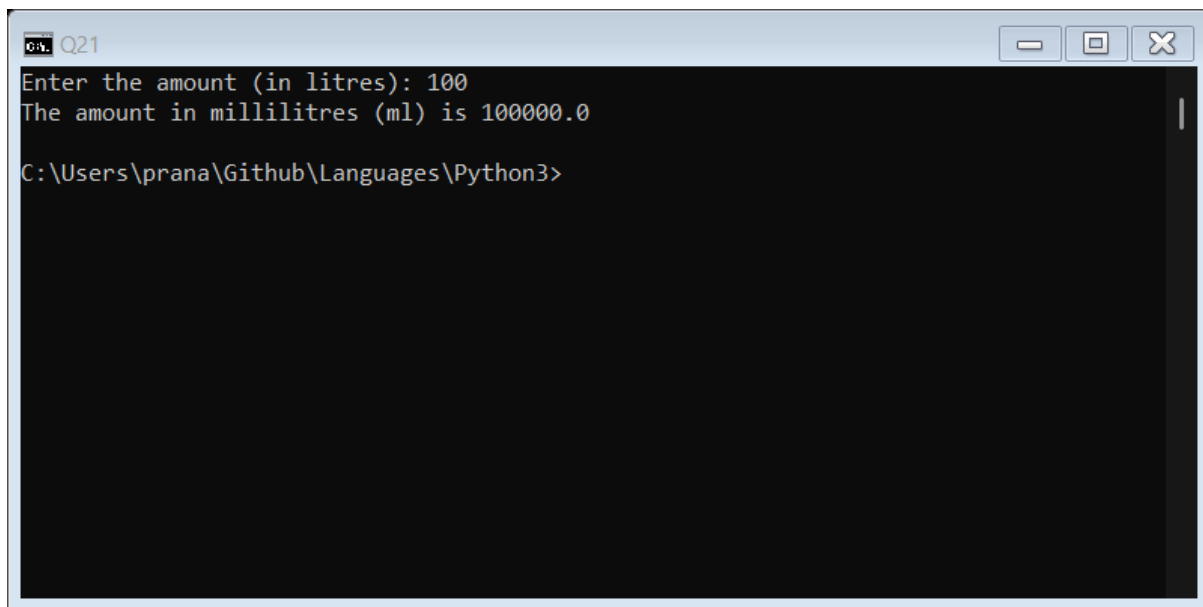


```
Q20
Enter the distance in meters: 10
Distance in kilometers is 0.01

C:\Users\prana\Github\Languages\Python3>
```

21. Litre to millilitre conversion.

```
x = float(input("Enter the amount (in litres): "))
print("The amount in millilitres (ml) is", x * 1000)
```

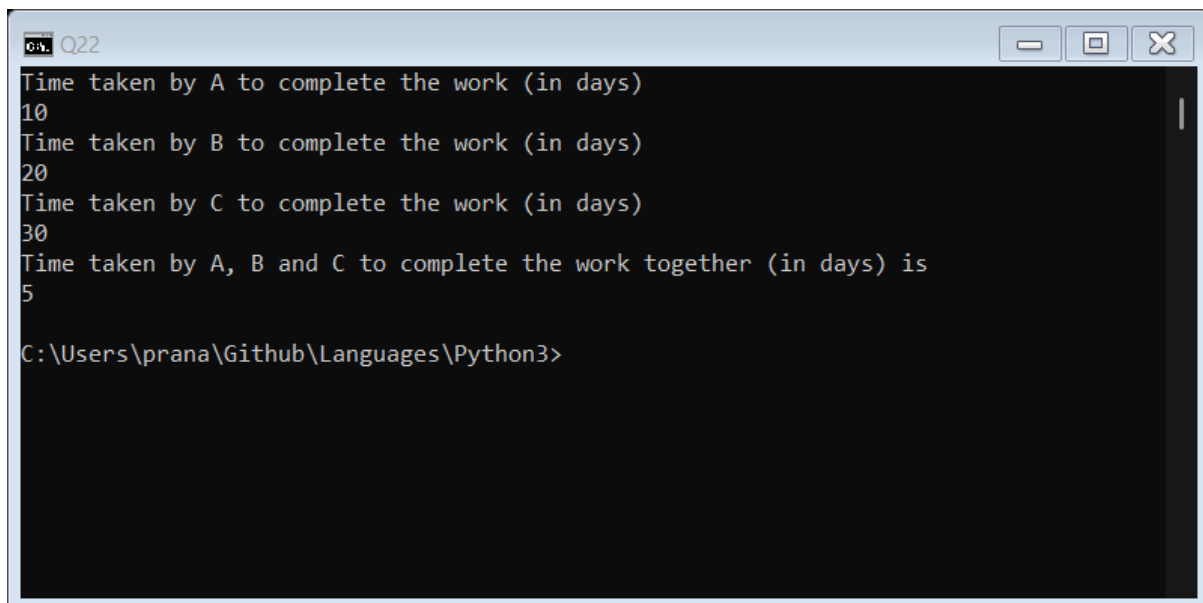


```
Q21
Enter the amount (in litres): 100
The amount in millilitres (ml) is 100000.0

C:\Users\prana\Github\Languages\Python3>
```

22. Time taken by 3 people to do a work.

```
print("Time taken by A to complete the work (in days)")
x = eval(input())
print("Time taken by B to complete the work (in days)")
y = eval(input())
print("Time taken by C to complete the work (in days)")
z = eval(input())
print("Time taken by A, B and C to complete the work together (in days) is")
print((x * y * z) // ((x * y) + (y * z) + (z * x)))
```



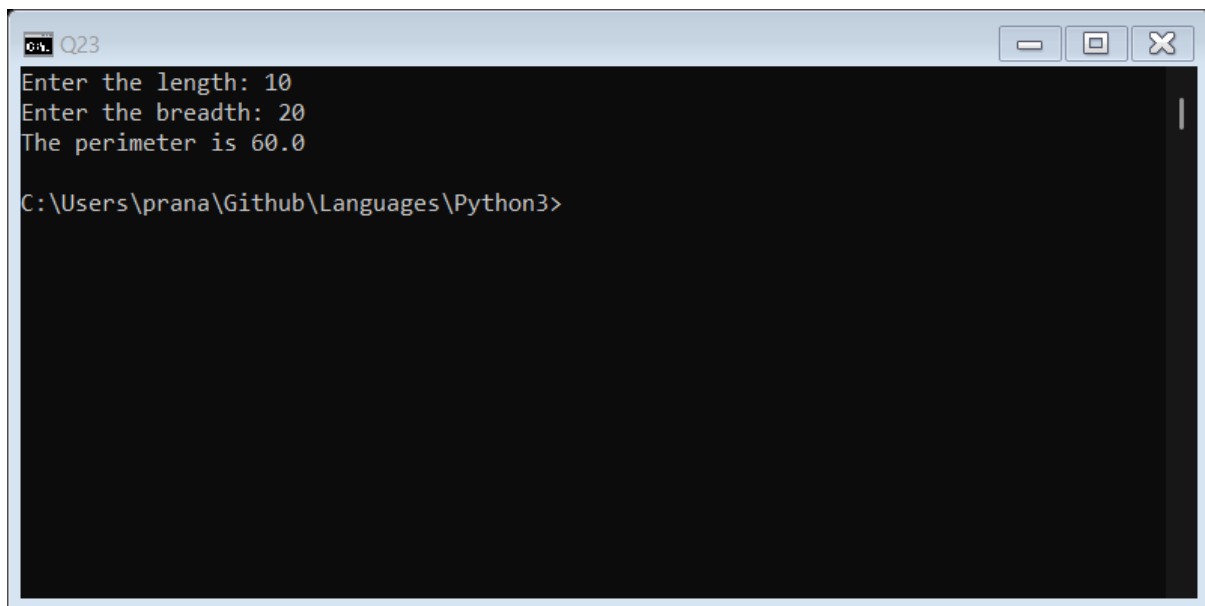
```
Q22
Time taken by A to complete the work (in days)
10
Time taken by B to complete the work (in days)
20
Time taken by C to complete the work (in days)
30
Time taken by A, B and C to complete the work together (in days) is
5

C:\Users\prana\Github\Languages\Python3>
```

23. Calculate the perimeter of a rectangle.

```
l = float(input("Enter the length: "))
b = float(input("Enter the breadth: "))
```

```
print("The perimeter is", 2 * (l + b))
```

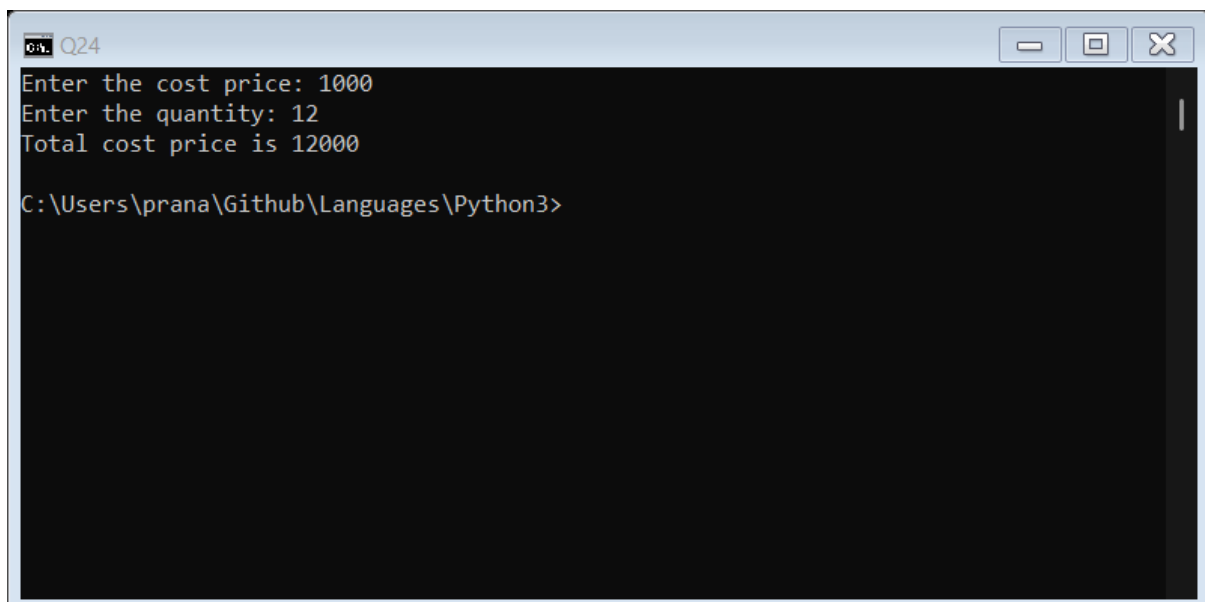


```
Q23
Enter the length: 10
Enter the breadth: 20
The perimeter is 60.0

C:\Users\prana\Github\Languages\Python3>
```

24. Write a Python program that accepts cost price and quantity of pencil from the user. Calculate and display total price.

```
c = int(input("Enter the cost price: "))
q = int(input("Enter the quantity: "))
t = c * q
print("Total cost price is", t)
```



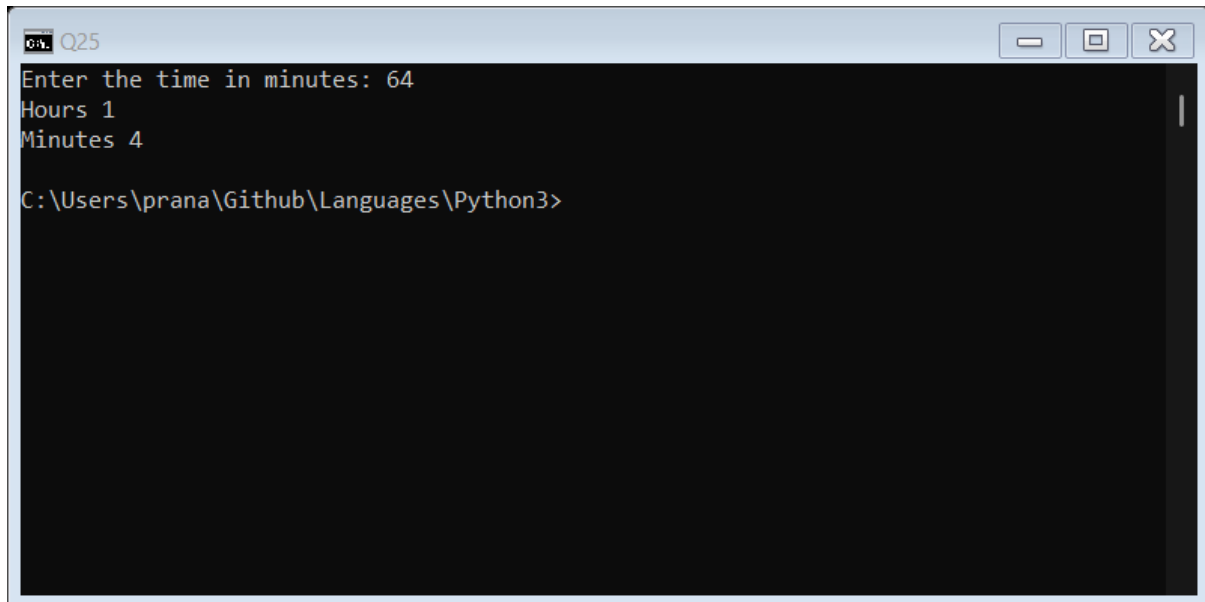
```
Q24
Enter the cost price: 1000
Enter the quantity: 12
Total cost price is 12000

C:\Users\prana\Github\Languages\Python3>
```

25. Write a program to accept time in minutes and convert it into hours and minutes.

```
m = int(input("Enter the time in minutes: "))
```

```
h = m // 60
r = m % 60
print("Hours", h)
print("Minutes", r)
```

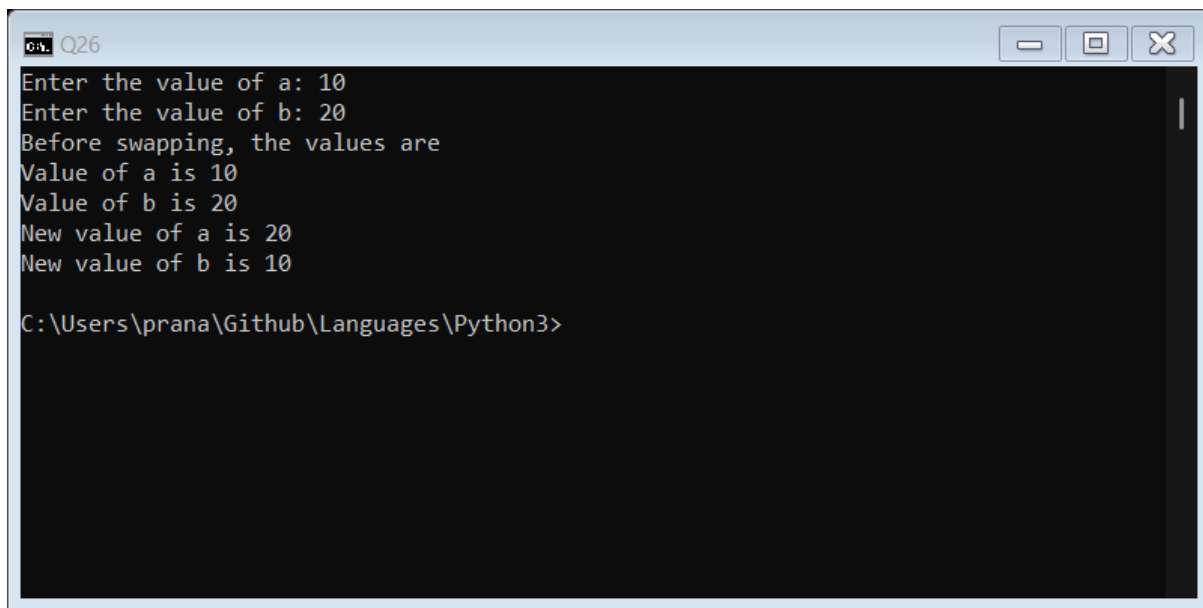


```
Q25
Enter the time in minutes: 64
Hours 1
Minutes 4

C:\Users\prana\Github\Languages\Python3>
```

26. Write a Python program to swap two numbers using a third variable.

```
a = int(input("Enter the value of a: "))
b = int(input("Enter the value of b: "))
print("Before swapping, the values are")
print("Value of a is", a)
print("Value of b is", b)
c = a
a = b
b = c
print("New value of a is", a)
print("New value of b is", b)
```

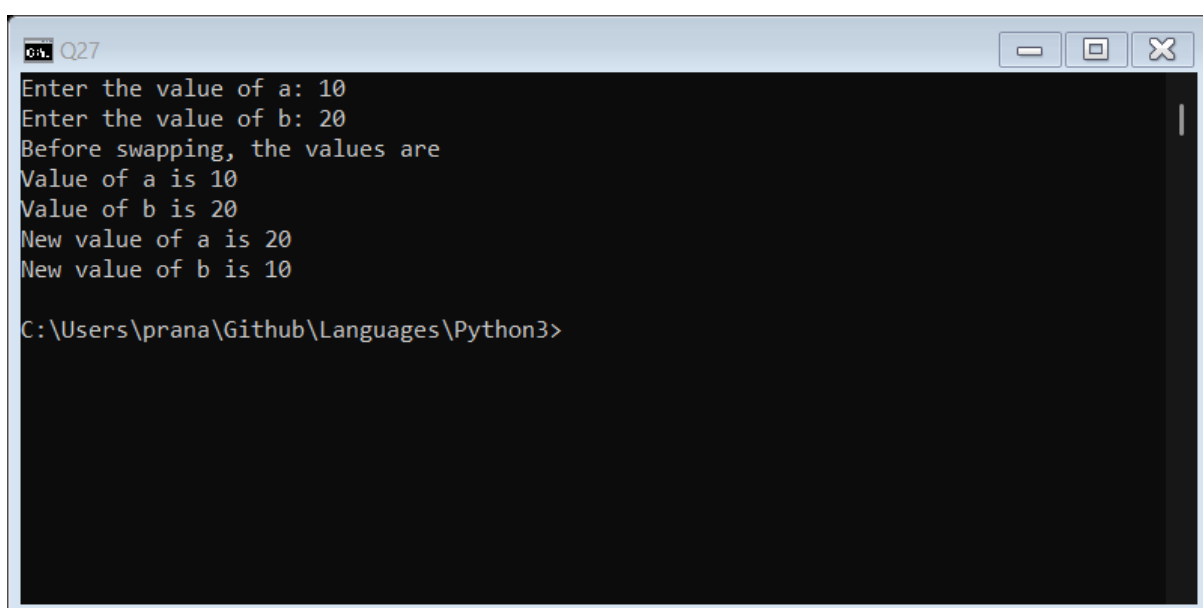


```
Q26
Enter the value of a: 10
Enter the value of b: 20
Before swapping, the values are
Value of a is 10
Value of b is 20
New value of a is 20
New value of b is 10

C:\Users\prana\Github\Languages\Python3>
```

27. Write a program to swap two numbers without using a third variable.

```
a = int(input("Enter the value of a: "))
b = int(input("Enter the value of b: "))
print("Before swapping, the values are")
print("Value of a is", a)
print("Value of b is", b)
a = a + b
b = a - b
a = a - b
print("New value of a is", a)
print("New value of b is", b)
```



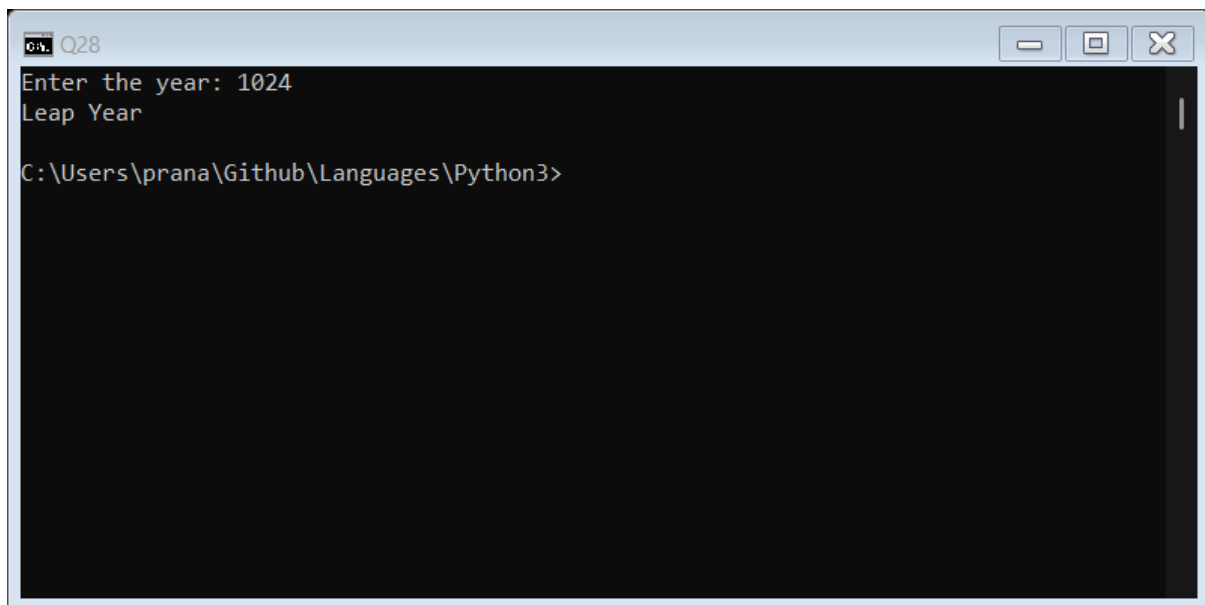
```
Q27
Enter the value of a: 10
Enter the value of b: 20
Before swapping, the values are
Value of a is 10
Value of b is 20
New value of a is 20
New value of b is 10

C:\Users\prana\Github\Languages\Python3>
```


Chapter 5: Conditional and Looping Constructs

28. A year is a leap year if it is divisible by 4, except that years divisible by 100 are not leap years unless they are also 400. Write a program that asks the user for a year and print whether it is a leap year.

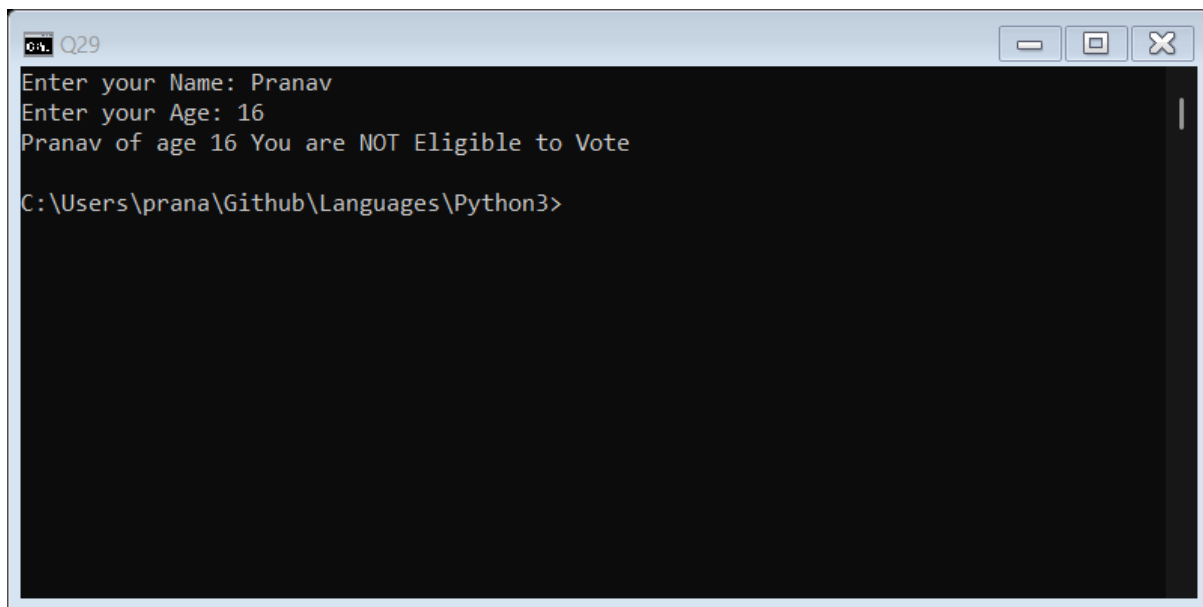
```
y = int(input("Enter the year: "))
if y % 400 == 0 or y % 4 == 0 and y % 100 != 0:
    print("Leap Year")
else:
    print("Not a leap year")
```



```
Q28
Enter the year: 1024
Leap Year
C:\Users\prana\Github\Languages\Python3>
```

29. Write a program to check whether a person is eligible to vote.

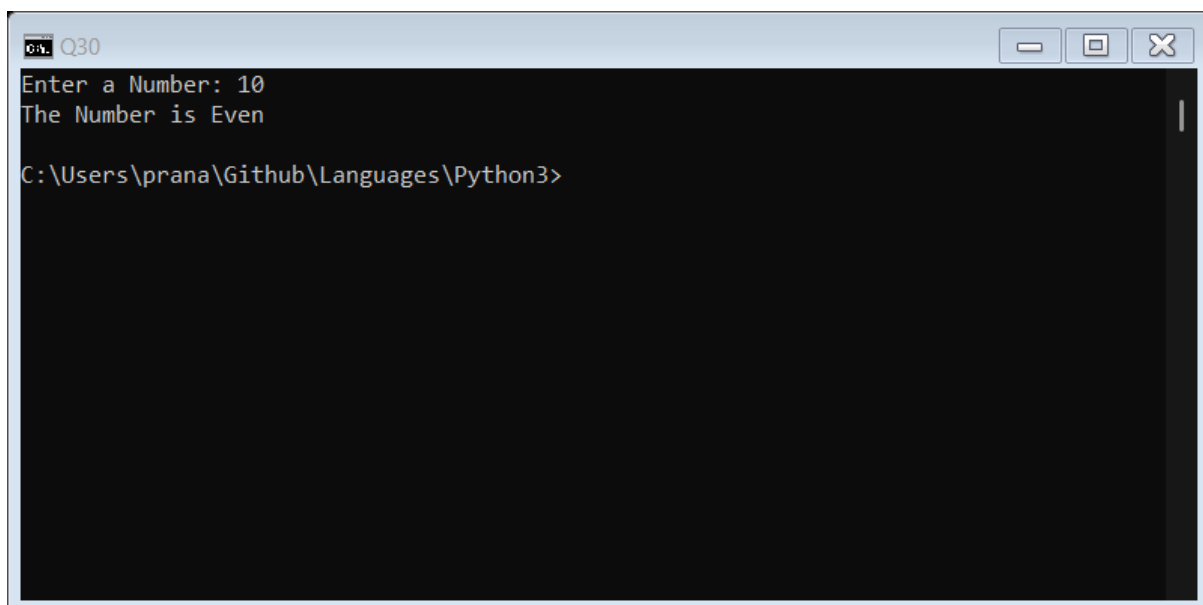
```
n = input("Enter your Name: ")
a = int(input("Enter your Age: "))
if a >= 18:
    print(n, "of age", a, "You are Eligible to Vote!!")
else:
    print(n, "of age", a, "You are NOT Eligible to Vote")
```



```
Q29
Enter your Name: Pranav
Enter your Age: 16
Pranav of age 16 You are NOT Eligible to Vote
C:\Users\prana\Github\Languages\Python3>
```

30. Check whether a number is odd or even.

```
a = float(input("Enter a Number: "))
x = a % 2
if x == 0:
    print("The Number is Even")
else:
    print("The Number is Odd")
```

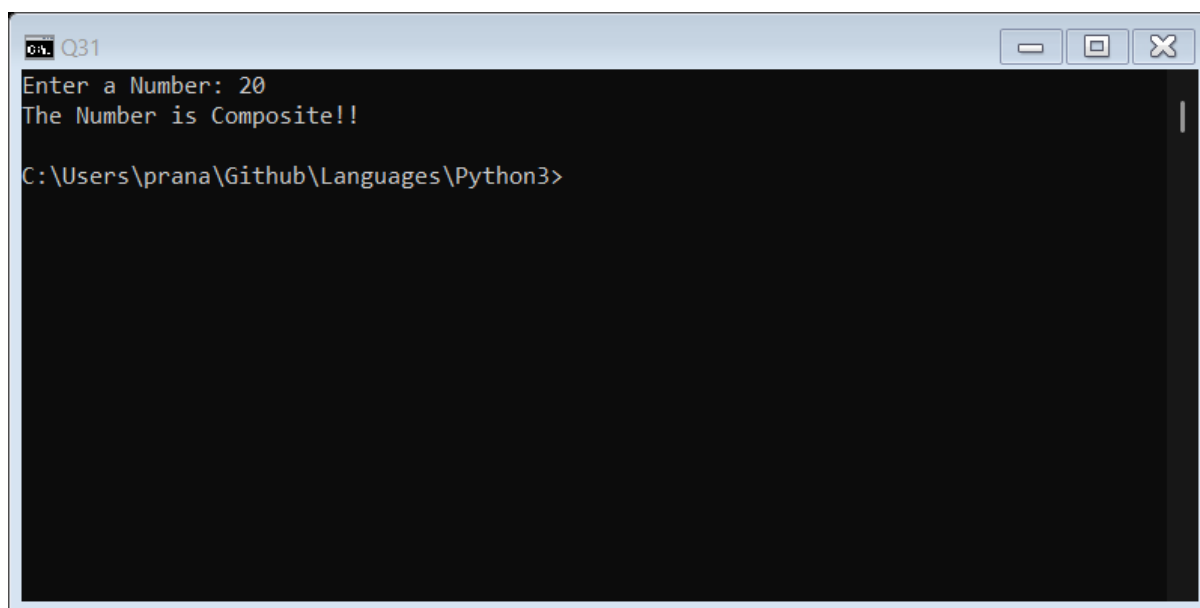


```
Q30
Enter a Number: 10
The Number is Even
C:\Users\prana\Github\Languages\Python3>
```

31. Write a program to check whether a number between 2 and 30 is Prime or Composite.

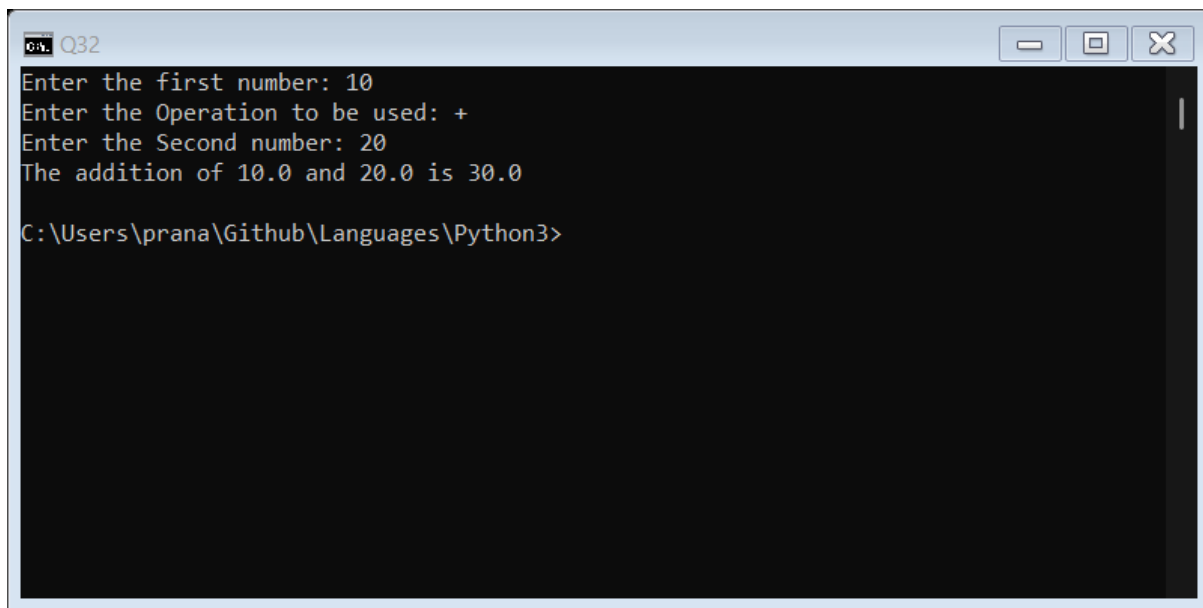
```
x = int(input("Enter a Number: "))
y = 0
if 2 <= x <= 30:
```

```
for i in range(2, x):
    if x % i == 0:
        y = 1
        continue
if y == 0:
    print("The Number is Prime!!")
else:
    print("The Number is Composite!!")
else:
    print("Enter a Number in range 2 to 30")
```



32. Write a program to take input from the user and calculate the result of simple problems.

```
a = float(input("Enter the first number: "))
s = input("Enter the Operation to be used: ")
b = float(input("Enter the Second number: "))
if s == '+':
    c = a + b
    print("The addition of", a, "and", b, "is", c)
elif s == '-':
    c = a - b
    print("The difference of", a, "and", b, "is", c)
elif s == '*' or s == "x" or s == "X":
    c = a * b
    print("The product of", a, "and", b, "is", c)
elif s == '/' or s == '÷':
    c = a / b
    print("The division of", a, "and", b, "gives quotient", c)
else:
    print("The given Operator is currently not in the directory")
```

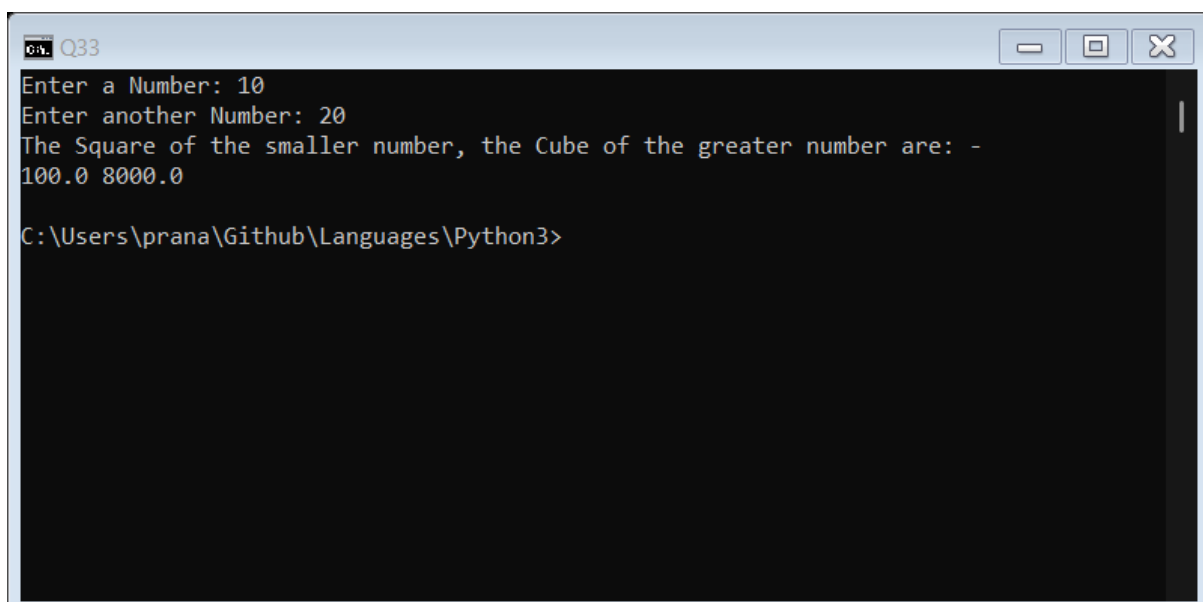


```
Q32
Enter the first number: 10
Enter the Operation to be used: +
Enter the Second number: 20
The addition of 10.0 and 20.0 is 30.0

C:\Users\prana\Github\Languages\Python3>
```

33. Write a program to take input of two numbers and find the square of the smaller number and the cube of the greater number.

```
x = float(input("Enter a Number: "))
y = float(input("Enter another Number: "))
if y > x:
    print("The Square of the smaller number, the Cube of the greater number are: -")
    print(x ** 2, y ** 3)
elif x > y:
    print("The Square of the smaller number, the Cube of the greater number are: -")
    print(y ** 2, x ** 3)
elif x == y:
    print("Both Numbers are Equal")
```

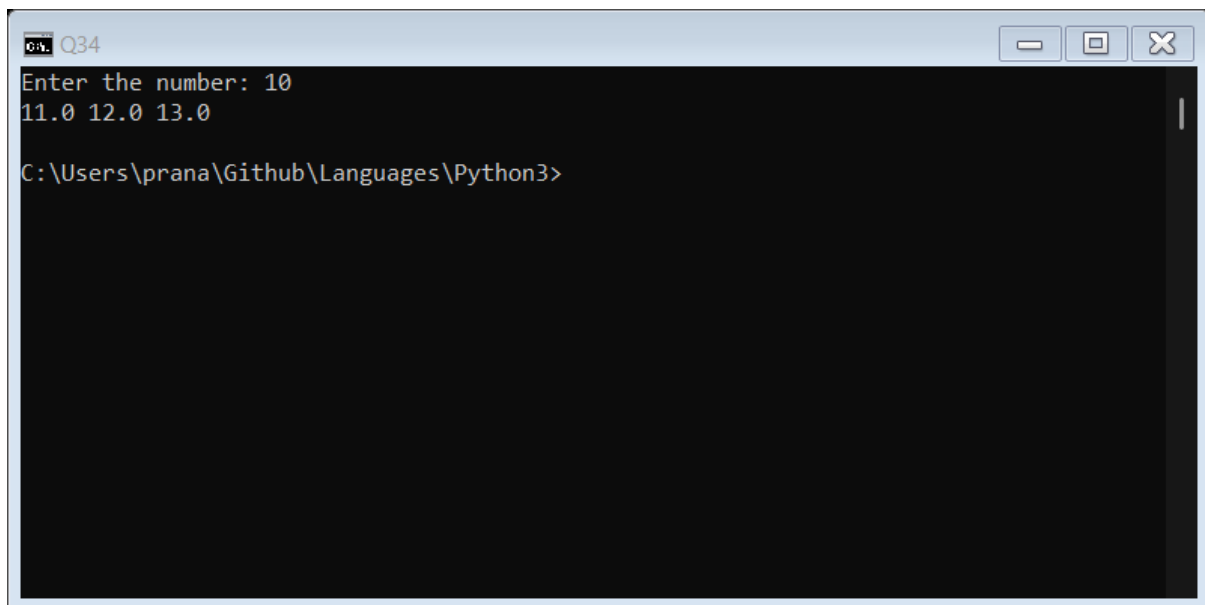


```
Q33
Enter a Number: 10
Enter another Number: 20
The Square of the smaller number, the Cube of the greater number are: -
100.0 8000.0

C:\Users\prana\Github\Languages\Python3>
```

34. If the number given by the user is a positive even number, display the 3 successive numbers and if the number is negative and odd, display the 3 preceding numbers.

```
x = float(input("Enter the number: "))
if x > 0:
    if x % 2 == 0:
        print(x + 1, x + 2, x + 3)
    else:
        print("Not a positive even number.")
elif x < 0:
    if x % 2 != 0:
        print(x - 1, x - 2, x - 3)
    else:
        print("Not an odd negative number.")
```

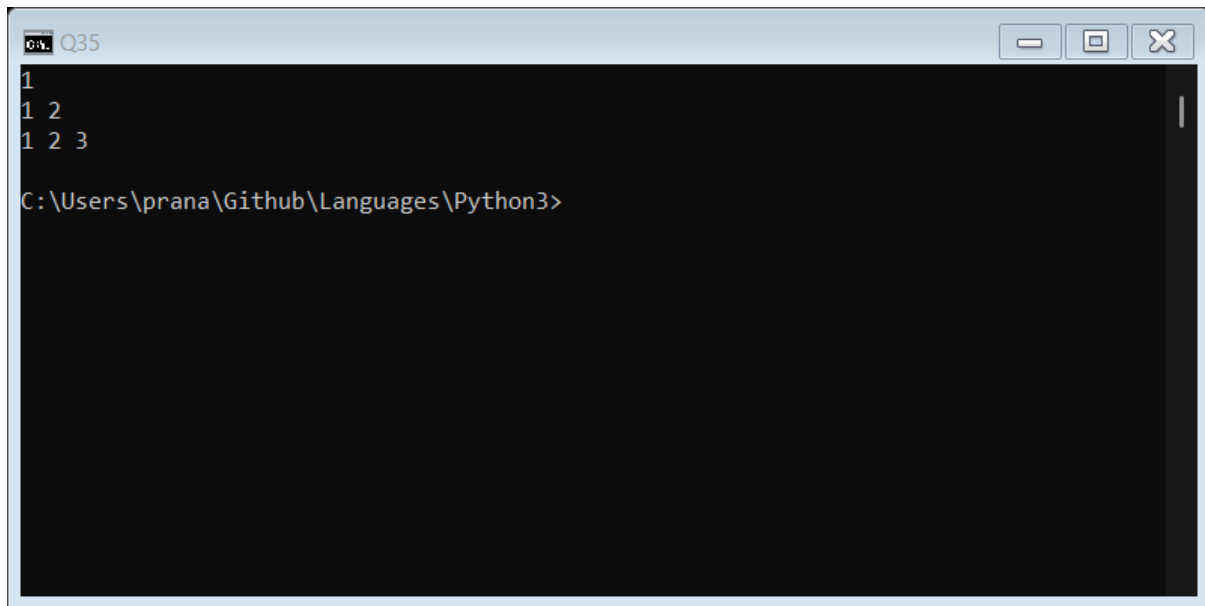


```
Q34
Enter the number: 10
11.0 12.0 13.0

C:\Users\prana\Github\Languages\Python3>
```

35. Write a program to display the following pattern:

```
for i in range(1, 4):
    for j in range(1, i + 1):
        print(j, end=' ')
    print()
```

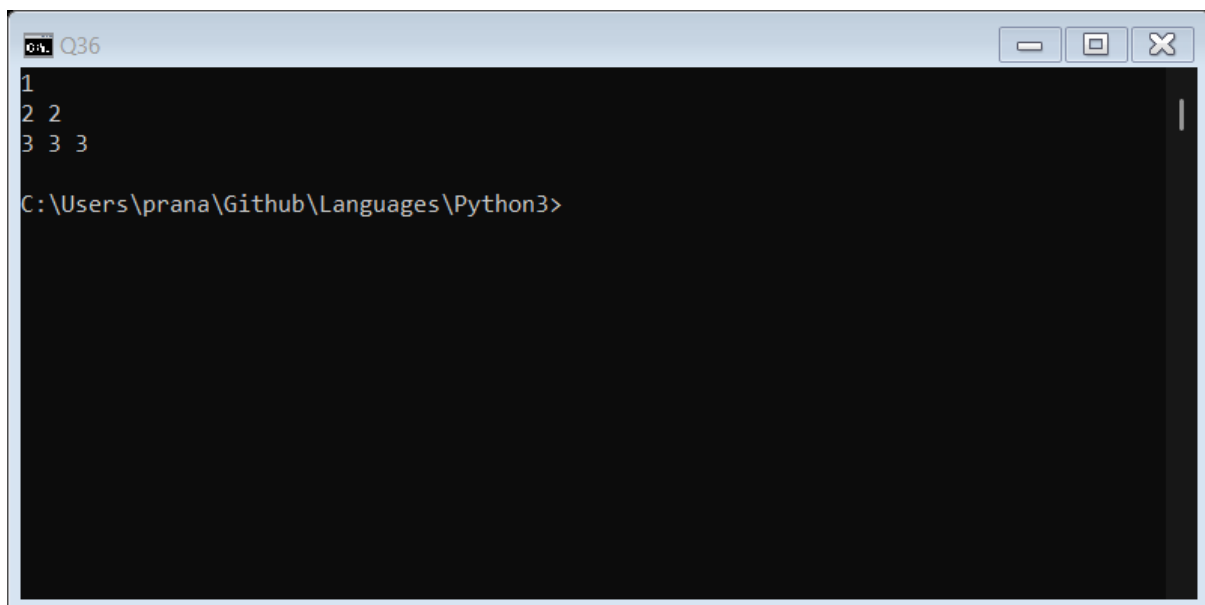


```
Q35
1
1 2
1 2 3

C:\Users\prana\Github\Languages\Python3>
```

36. Write a program to display the following pattern:

```
for i in range(1, 4):
    for j in range(1, i + 1):
        print(i, end=' ')
    print()
```

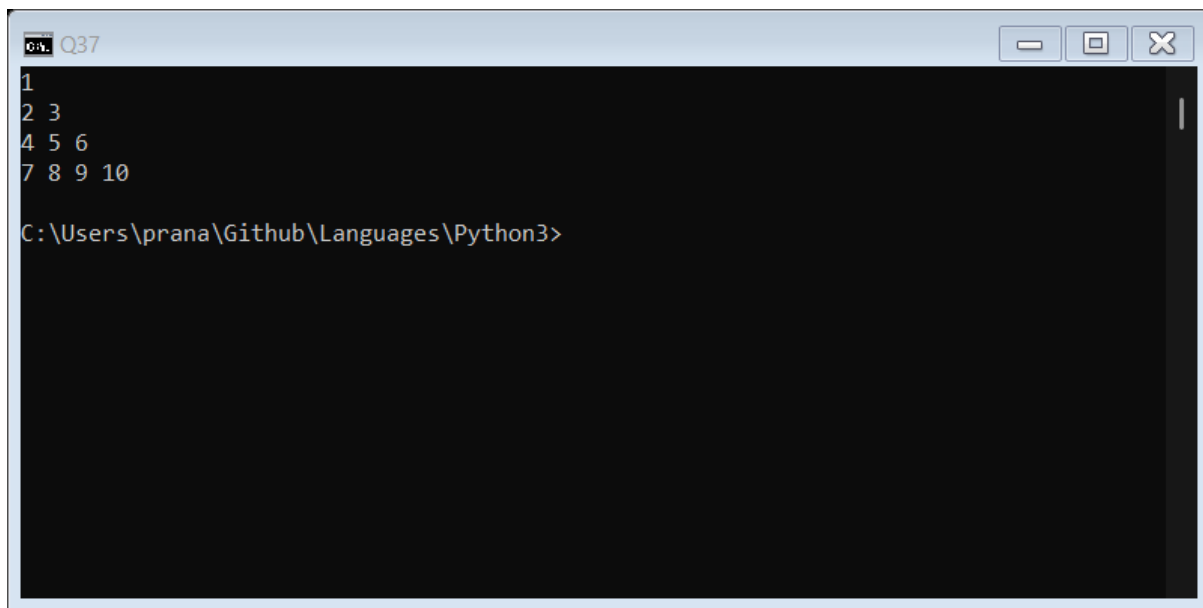


```
Q36
1
2 2
3 3 3

C:\Users\prana\Github\Languages\Python3>
```

37. Write a program to display the following pattern:

```
c = 0
for i in range(1, 5):
    for j in range(1, i + 1):
        c = c + 1
        print(c, end=' ')
    print()
```

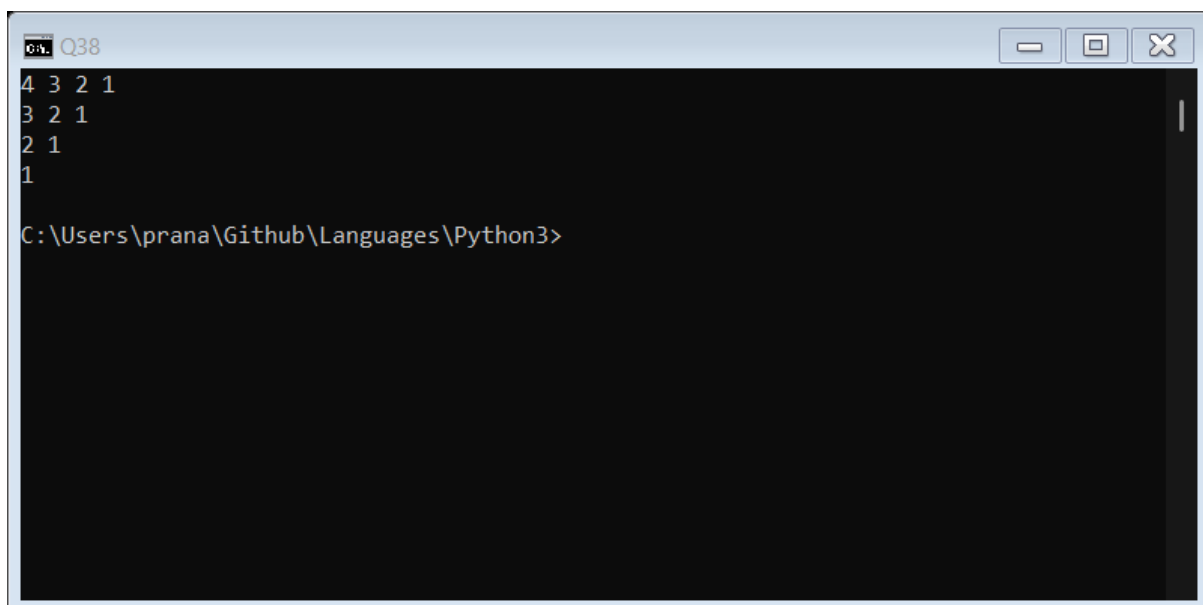


```
Q37
1
2 3
4 5 6
7 8 9 10

C:\Users\prana\Github\Languages\Python3>
```

38. Write a program to display the following pattern:

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



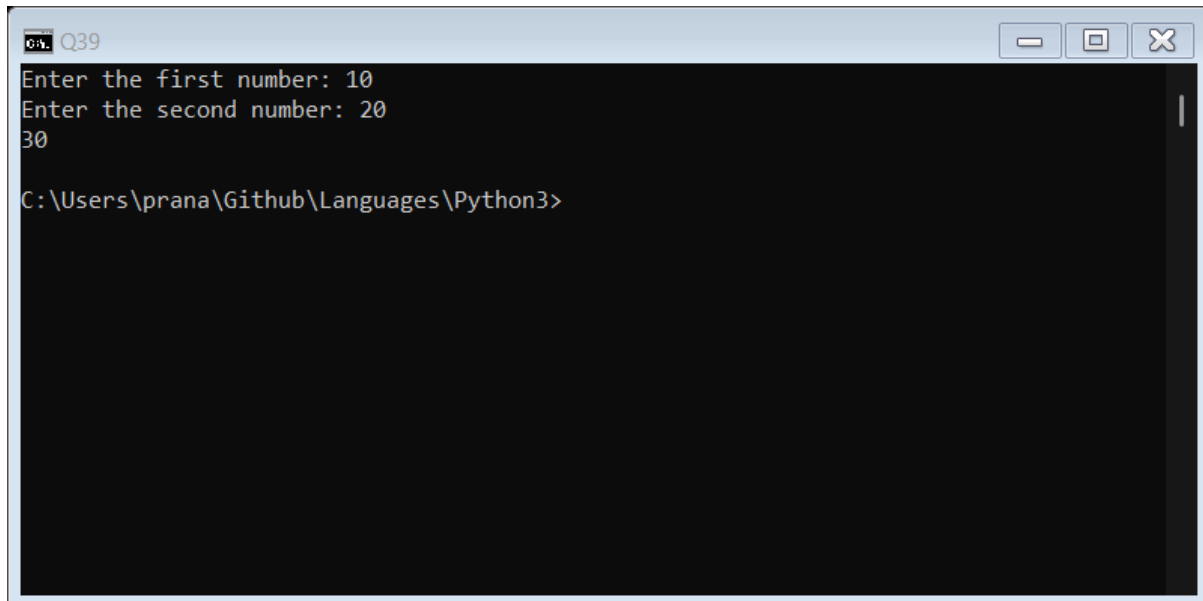
```
Q38
4 3 2 1
3 2 1
2 1
1

C:\Users\prana\Github\Languages\Python3>
```

39. Write a Python program to sum two integers. However, if the sum is between 15 to 20 it will return 20.

```
a = int(input("Enter the first number: "))
b = int(input("Enter the second number: "))
m = a + b
if m > 15 and m < 20:
    print("20")
```

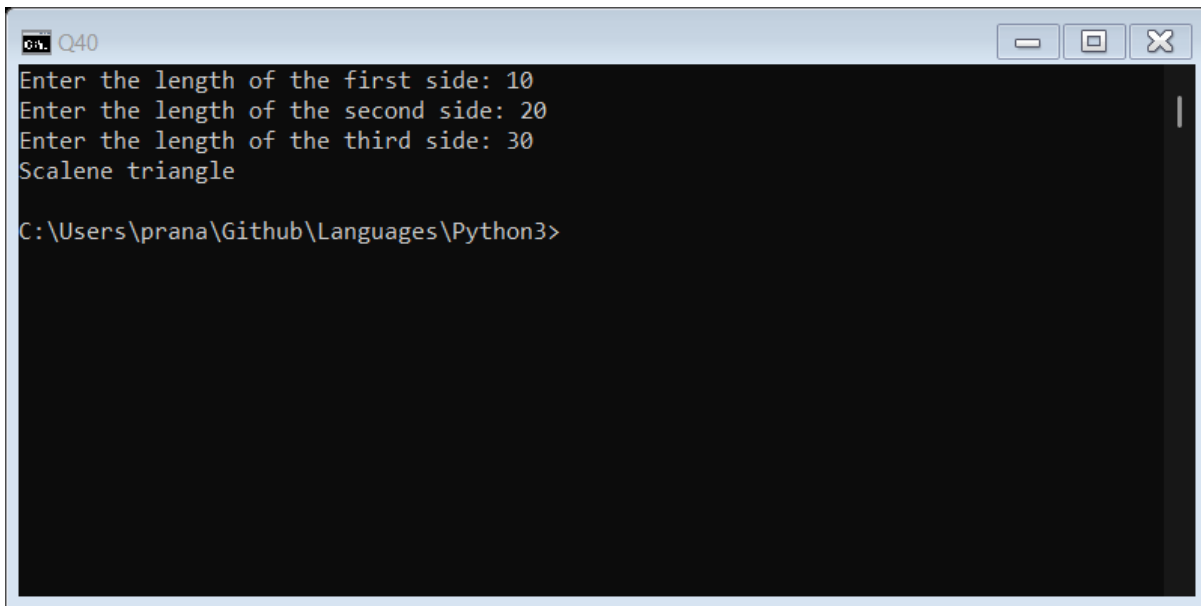
```
else:  
    print(m)
```



```
Q39  
Enter the first number: 10  
Enter the second number: 20  
30  
C:\Users\prana\Github\Languages\Python3>
```

40. Check whether a triangle is equilateral, scalene, or isosceles.

```
a = float(input("Enter the length of the first side: "))  
b = float(input("Enter the length of the second side: "))  
c = float(input("Enter the length of the third side: "))  
if a == b == c:  
    print("Equilateral triangle")  
elif a == b and a != c:  
    print("Isosceles triangle")  
elif b == c and c != a:  
    print("Isosceles triangle")  
elif a == c and a != b:  
    print("Isosceles triangle")  
elif a != b and b != c and a != c:  
    print("Scalene triangle")
```

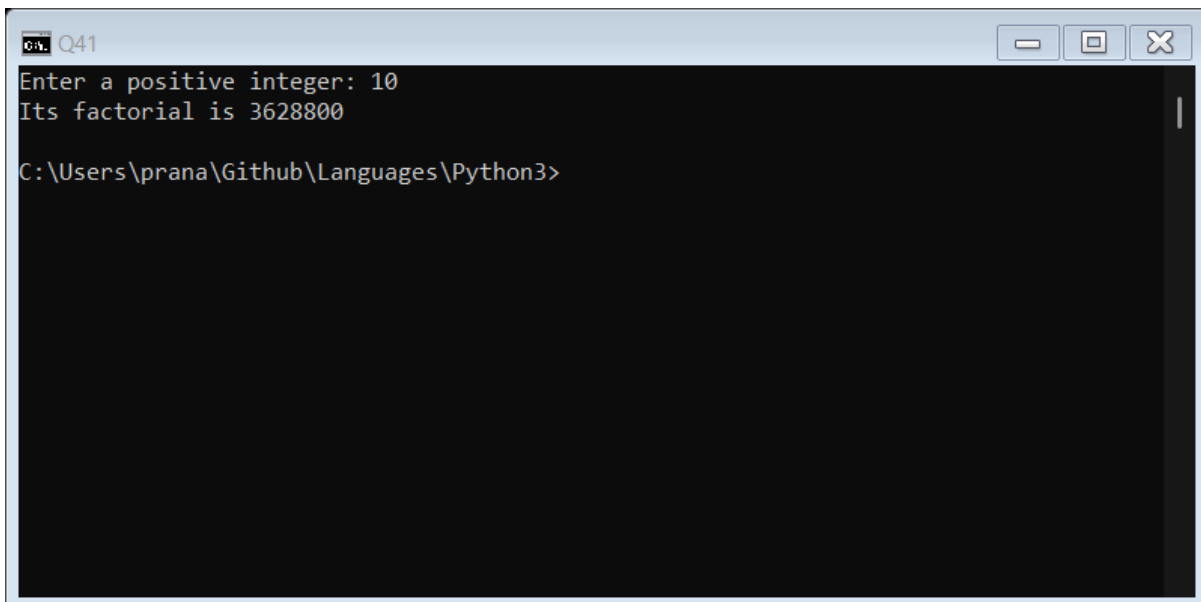



```
Q40
Enter the length of the first side: 10
Enter the length of the second side: 20
Enter the length of the third side: 30
Scalene triangle

C:\Users\prana\Github\Languages\Python3>
```

41. Display the factorial of a number.

```
x = int(input("Enter a positive integer: "))
c = 1
for i in range(1, x + 1):
    c = c * i
print("Its factorial is", c)
```

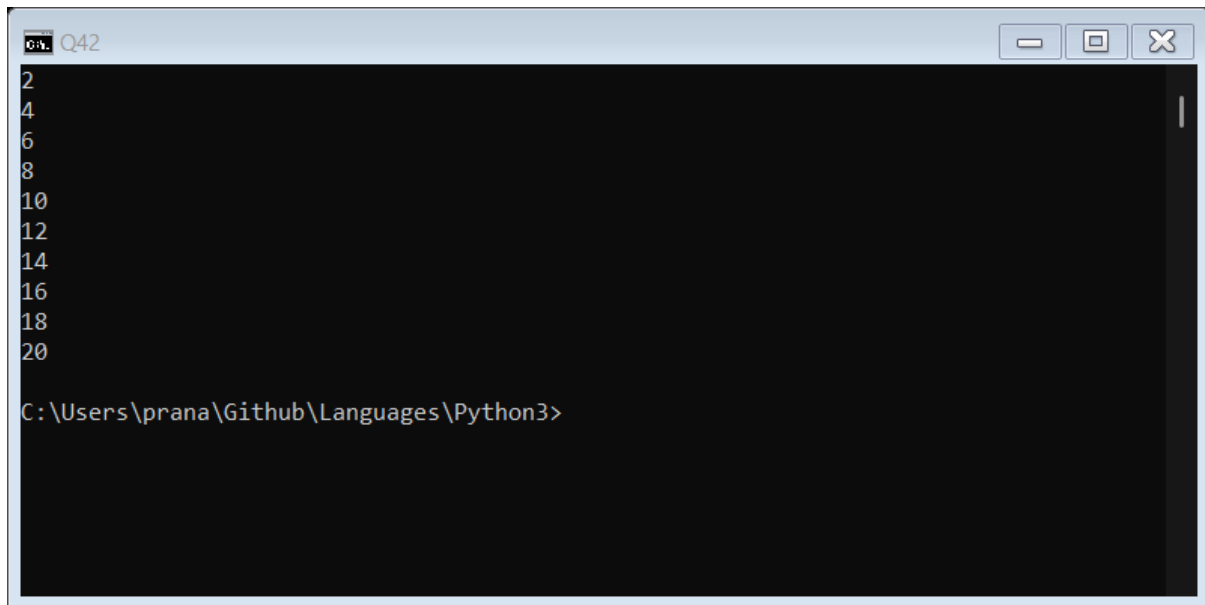


```
Q41
Enter a positive integer: 10
Its factorial is 3628800

C:\Users\prana\Github\Languages\Python3>
```

42. Print the first 10 even numbers.

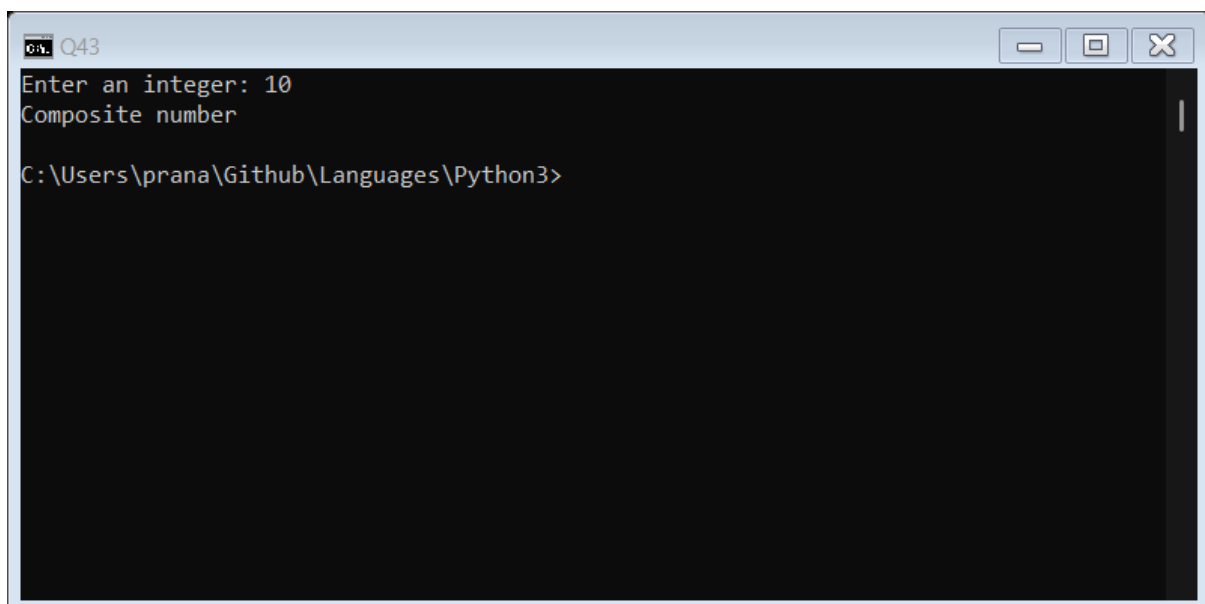
```
for i in range(1, 21):
    if i % 2 == 0:
        print(i)
```



```
Q42
2
4
6
8
10
12
14
16
18
20
C:\Users\prana\Github\Languages\Python3>
```

43. Write a code to check whether a number is composite or not.

```
x = int(input("Enter an integer: "))
for i in range(2, x):
    if x % i == 0:
        print("Composite number")
        break
else:
    print("Prime")
```

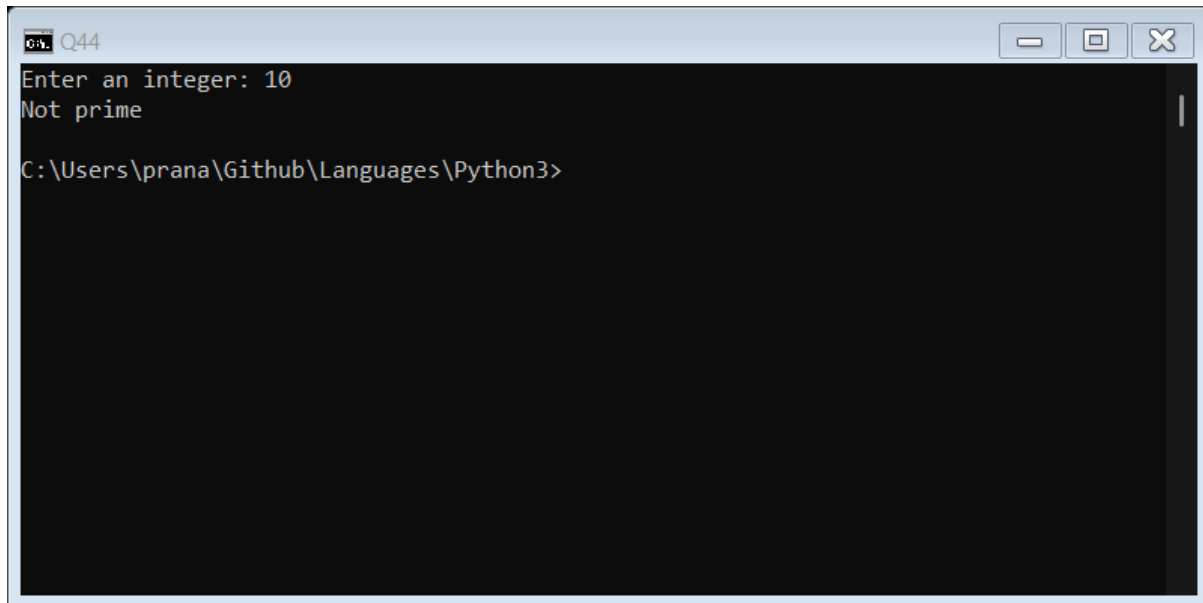


```
Q43
Enter an integer: 10
Composite number
C:\Users\prana\Github\Languages\Python3>
```

44. Write a code to check whether a number is prime or not.

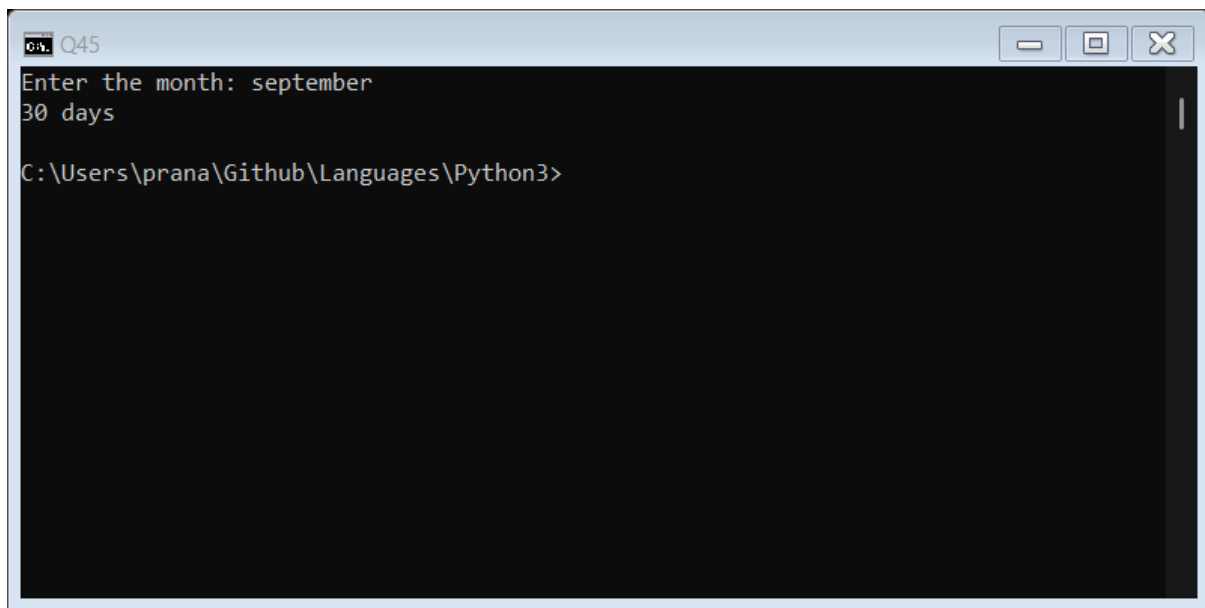
```
x = int(input("Enter an integer: "))
if x < 2:
    print("Not prime")
```

```
else:
    for i in range(2, int(x**0.5) + 1):
        if x % i == 0:
            print("Not prime")
            break
    else:
        print("Prime")
```



45. Take a month from the user and display the number of days.

```
m = input("Enter the month: ")
n = m.lower()
x = "january, march, may, july, august, october, december"
y = "february"
z = "april, june, september, november"
if n in x:
    print("31 days")
elif n == y:
    print("28 or 29 days")
else:
    print("30 days")
```

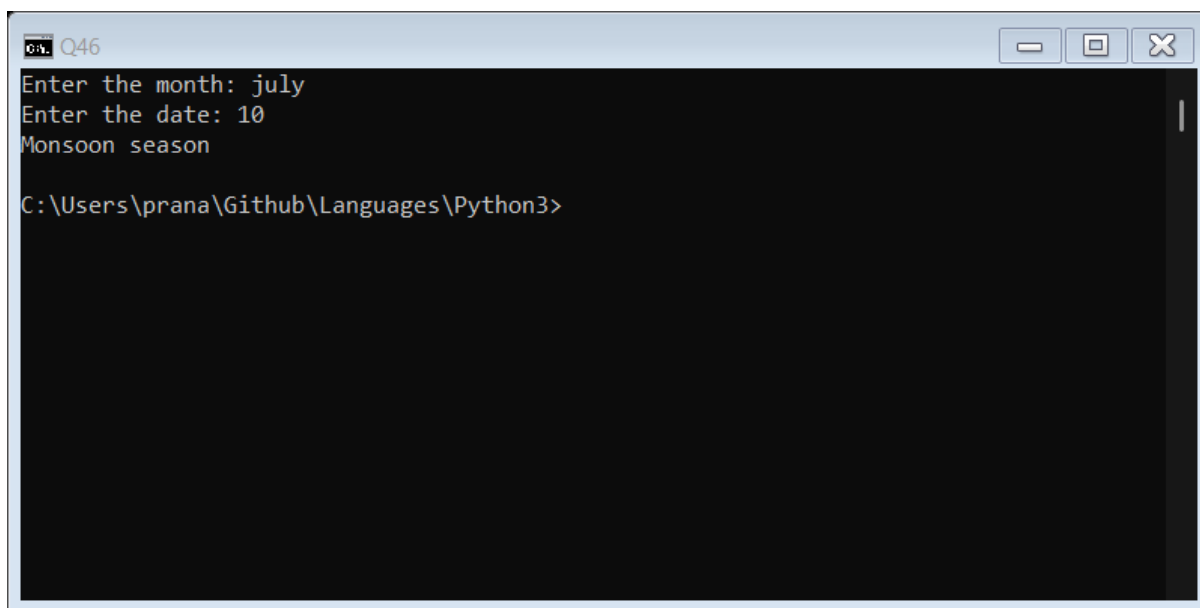


```
Q45
Enter the month: september
30 days

C:\Users\prana\Github\Languages\Python3>
```

46. Write a program that reads two integers representing a month and day and prints the season for that month and day.

```
x = input("Enter the month: ")
d = int(input("Enter the date: "))
y = x.lower()
s = "april, may, june"
m = "july, august, september"
a = "october"
w = "november, december, january, february"
sp = "march"
if y in s:
    print("Summer season")
elif y in m:
    print("Monsoon season")
elif y in w:
    print("Winter season")
elif y in a:
    print("Autumn season")
elif y in sp:
    print("Spring season")
```



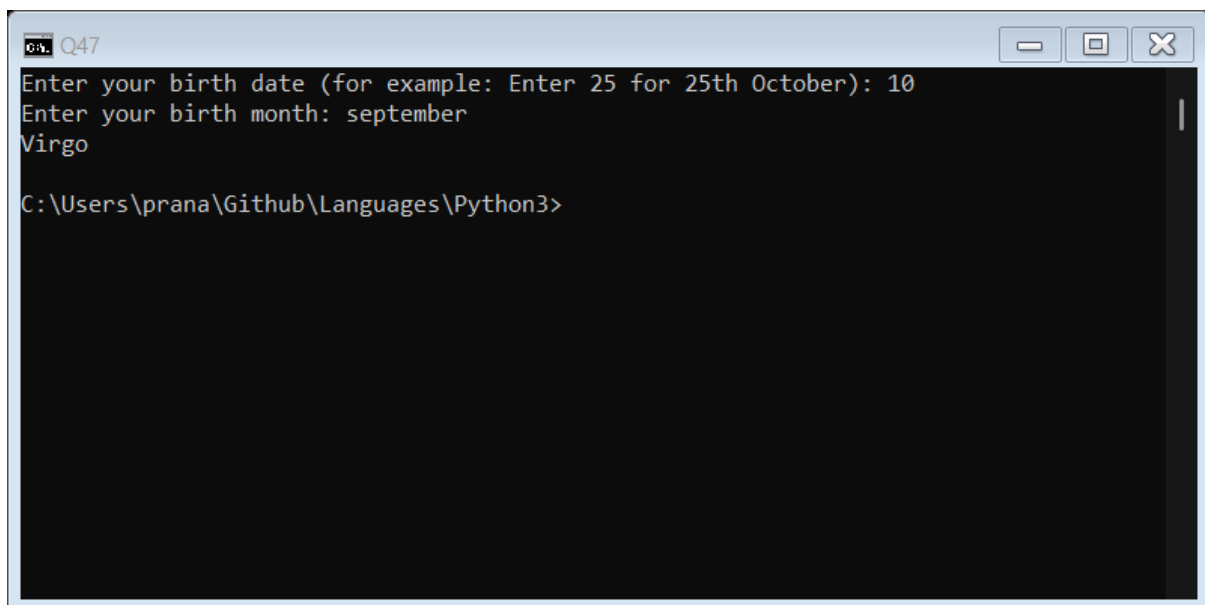
```
Q46
Enter the month: july
Enter the date: 10
Monsoon season

C:\Users\prana\Github\Languages\Python3>
```

47. Write a program to display the astrological sign for a given date of birth.

```
x = int(input("Enter your birth date (for example: Enter 25 for 25th October): "))
y = input("Enter your birth month: ")
z = y.lower()
if x >= 21 and x < 32 and z == "march":
    print("Aries")
elif x < 21 and z == "april":
    print("Aries")
elif x >= 21 and x < 32 and z == "april":
    print("Taurus")
elif x < 21 and z == "may":
    print("Taurus")
elif x >= 21 and x < 32 and z == "may":
    print("Gemini")
elif x < 21 and z == "june":
    print("Gemini")
elif x >= 21 and x < 32 and z == "june":
    print("Cancer")
elif x < 21 and z == "july":
    print("Cancer")
elif x >= 21 and x < 32 and z == "july":
    print("Leo")
elif x < 21 and z == "august":
    print("Leo")
elif x >= 21 and x < 32 and z == "august":
    print("Virgo")
elif x < 21 and z == "september":
    print("Virgo")
elif x >= 21 and x < 32 and z == "september":
```

```
    print("Libra")
elif x < 21 and z == "october":
    print("Libra")
elif x >= 21 and x < 32 and z == "october":
    print("Scorpio")
elif x < 21 and z == "november":
    print("Scorpio")
elif x >= 21 and x < 32 and z == "november":
    print("Sagittarius")
elif x < 21 and z == "december":
    print("Sagittarius")
elif x >= 21 and x < 32 and z == "december":
    print("Capricorn")
elif x < 21 and z == "january":
    print("Capricorn")
elif x >= 21 and x < 32 and z == "january":
    print("Aquarius")
elif x < 21 and z == "february":
    print("Aquarius")
elif x >= 21 and x < 32 and z == "february":
    print("Pisces")
elif x < 21 and z == "march":
    print("Pisces")
```

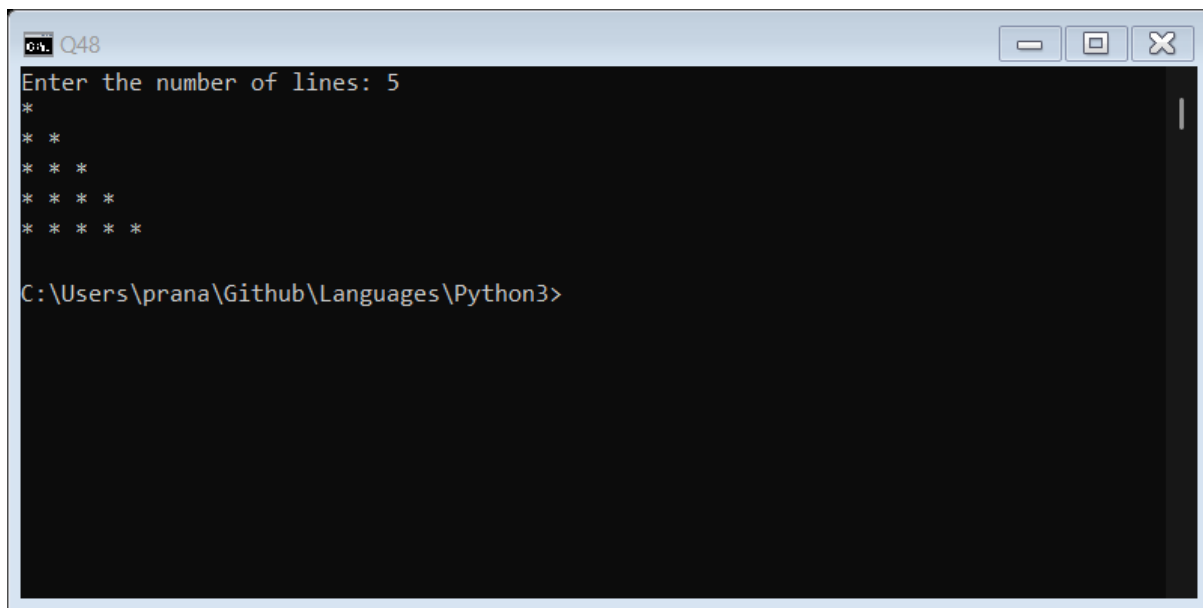


```
Q47
Enter your birth date (for example: Enter 25 for 25th October): 10
Enter your birth month: september
Virgo

C:\Users\prana\Github\Languages\Python3>
```

48. Pyramid star.

```
n = int(input("Enter the number of lines: "))
for i in range(1, n + 1):
    for j in range(1, i + 1):
        print("*", end=' ')
    print()
```

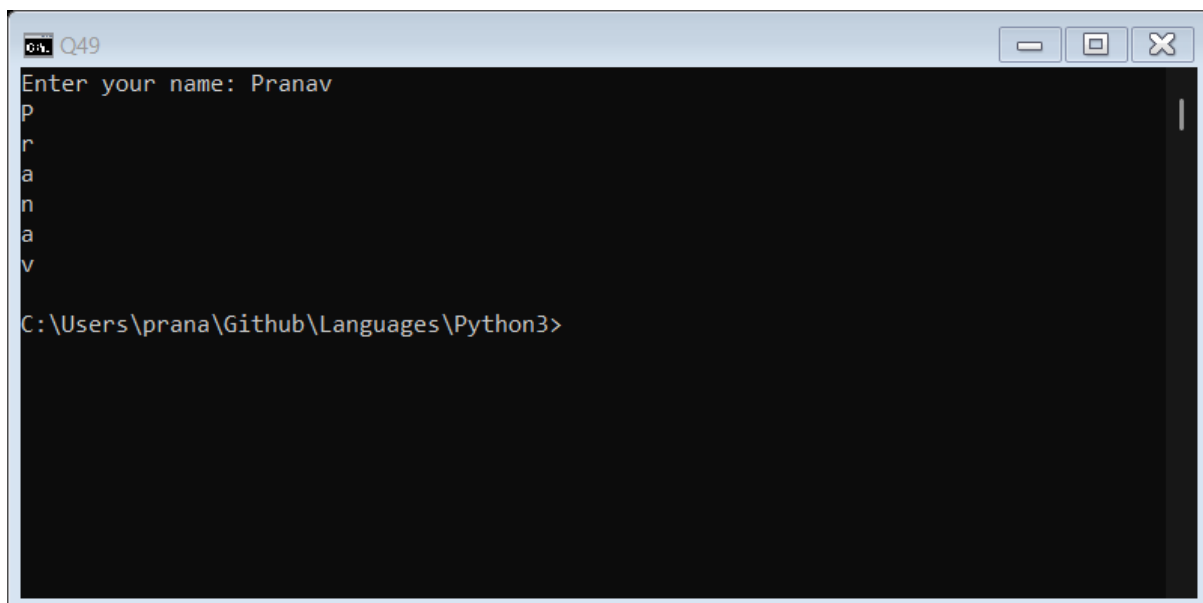


```
Q48
Enter the number of lines: 5
*
* *
* * *
* * * *
* * * * *

C:\Users\prana\Github\Languages\Python3>
```

49. Display every letter of your name in separate lines.

```
n = input("Enter your name: ")
for i in n:
    print(i)
```



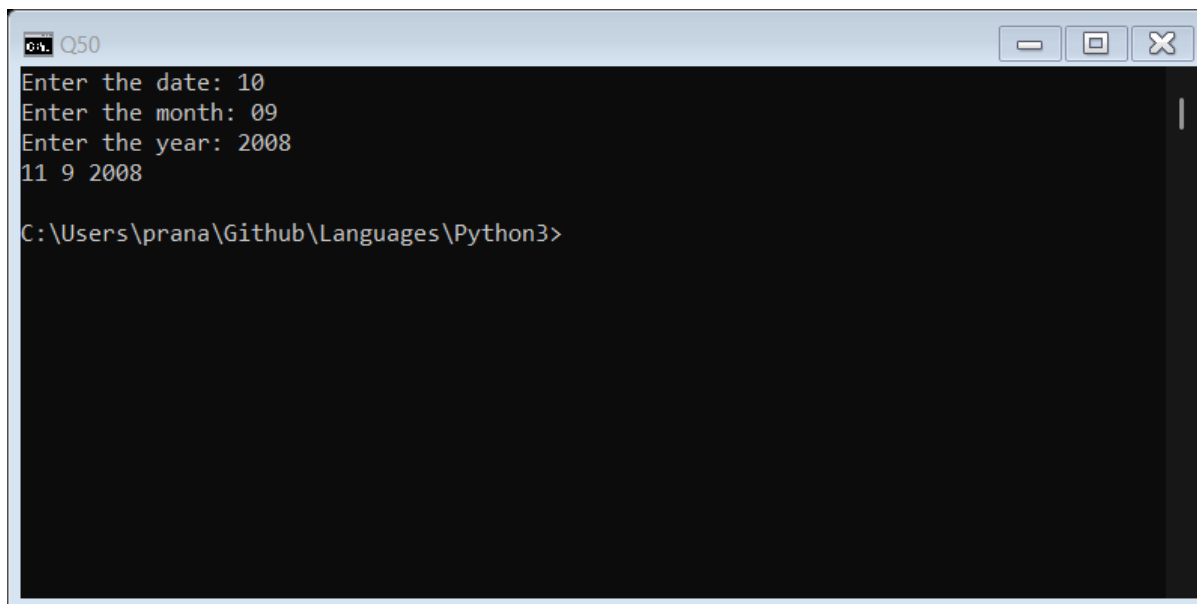
```
Q49
Enter your name: Pranav
P
r
a
n
a
v

C:\Users\prana\Github\Languages\Python3>
```

50. Write a program to get the next day of a given date.

```
a = int(input("Enter the date: "))
b = int(input("Enter the month: "))
c = int(input("Enter the year: "))
if a >= 1 and a < 31:
    if b == 1 or b == 3 or b == 5 or b == 7 or b == 8 or b == 10 or b == 12:
        a = a + 1
    print(a, b, c)
```

```
elif a == 31:
    if b == 1 or b == 3 or b == 5 or b == 7 or b == 8 or b == 10:
        b = b + 1
        print(1, b, c)
    elif a == 31 and b == 12:
        print(1, 1, c + 1)
elif a >= 1 and a < 30:
    if b == 2 or b == 4 or b == 6 or b == 9 or b == 11:
        print(a + 1, b, c)
```



```
Q50
Enter the date: 10
Enter the month: 09
Enter the year: 2008
11 9 2008

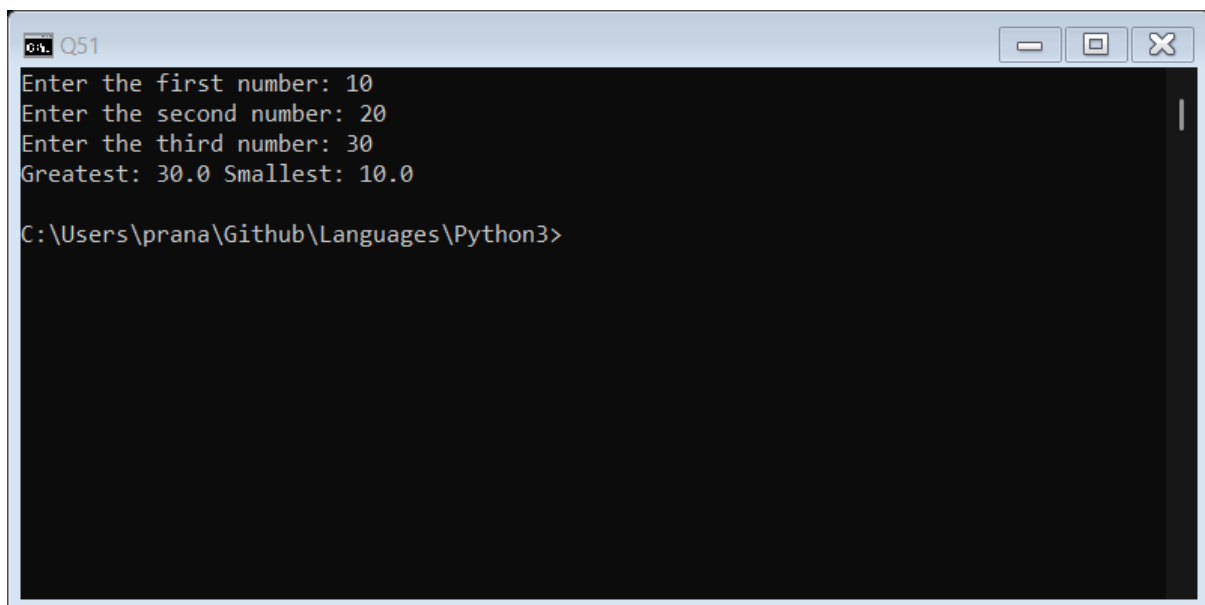
C:\Users\prana\Github\Languages\Python3>
```

51. Write a program to input three numbers and check whether they are equal or not. If they are unequal then display the greatest and smallest numbers, if they are equal, then display "numbers are equal".

```
a = float(input("Enter the first number: "))
b = float(input("Enter the second number: "))
c = float(input("Enter the third number: "))
if a == b == c:
    print("Equal")
elif a > b and b > c:
    print("Greatest:", a, "Smallest:", c)
elif b > a and a > c:
    print("Greatest:", b, "Smallest:", c)
elif c > a and a > b:
    print("Greatest:", c, "Smallest:", b)
elif a > c and c > b:
    print("Greatest:", a, "Smallest:", b)
elif b > c and c > a:
    print("Greatest:", b, "Smallest:", a)
elif c > b and b > a:
```



```
        print("Greatest:", c, "Smallest:", a)
elif a > b and b == c:
    print("Greatest:", a, "Smallest:", c)
elif b > a and a == c:
    print("Greatest:", b, "Smallest:", c)
elif c > b and a == b:
    print("Greatest:", c, "Smallest:", b)
elif a < b and b == c:
    print("Greatest:", b, "Smallest:", a)
elif b < a and a == c:
    print("Greatest:", a, "Smallest:", b)
elif c < b and a == b:
    print("Greatest:", b, "Smallest:", c)
```

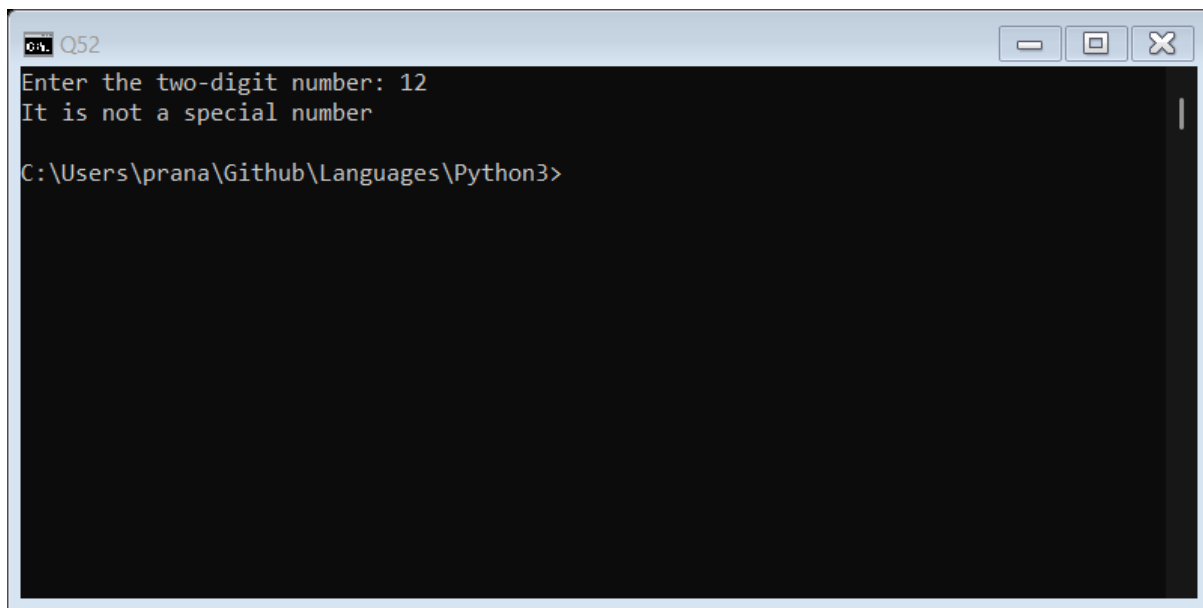


```
Q51
Enter the first number: 10
Enter the second number: 20
Enter the third number: 30
Greatest: 30.0 Smallest: 10.0

C:\Users\prana\Github\Languages\Python3>
```

52. A special two-digit number is such that when the sum of its digits is added to the product of the digits, the result will be the same as the original number.

```
x = int(input("Enter the two-digit number: "))
y = x // 10
z = x % 10
s = y + z
p = y * z
if s + p == x:
    print("It is a special number")
else:
    print("It is not a special number")
```

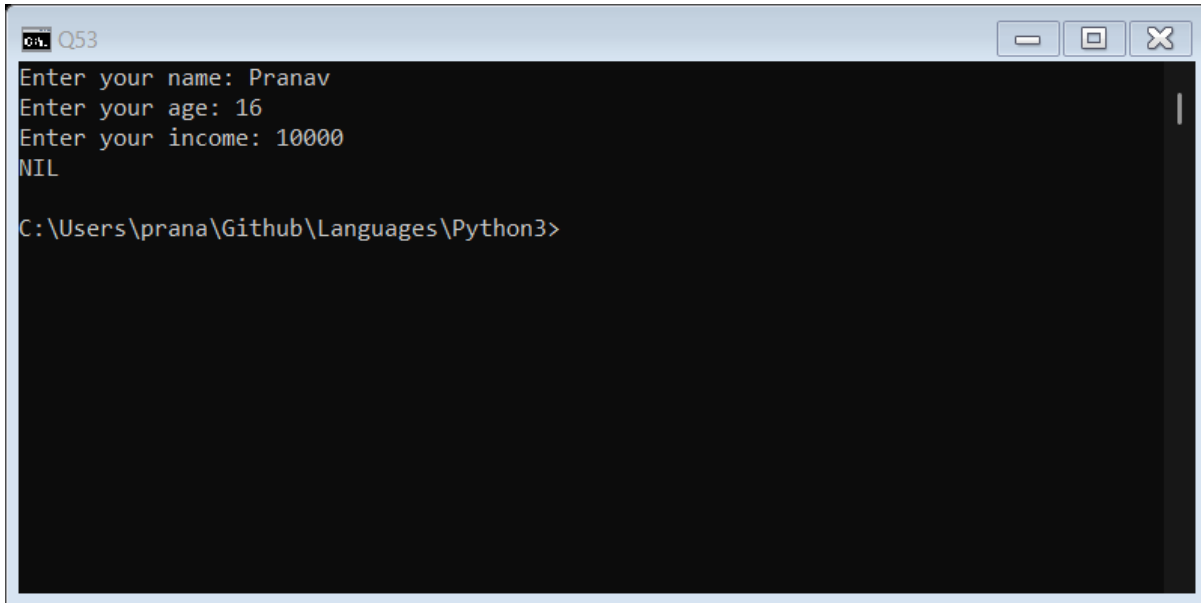


```
Q52
Enter the two-digit number: 12
It is not a special number

C:\Users\prana\Github\Languages\Python3>
```

53. Income Tax Calculator.

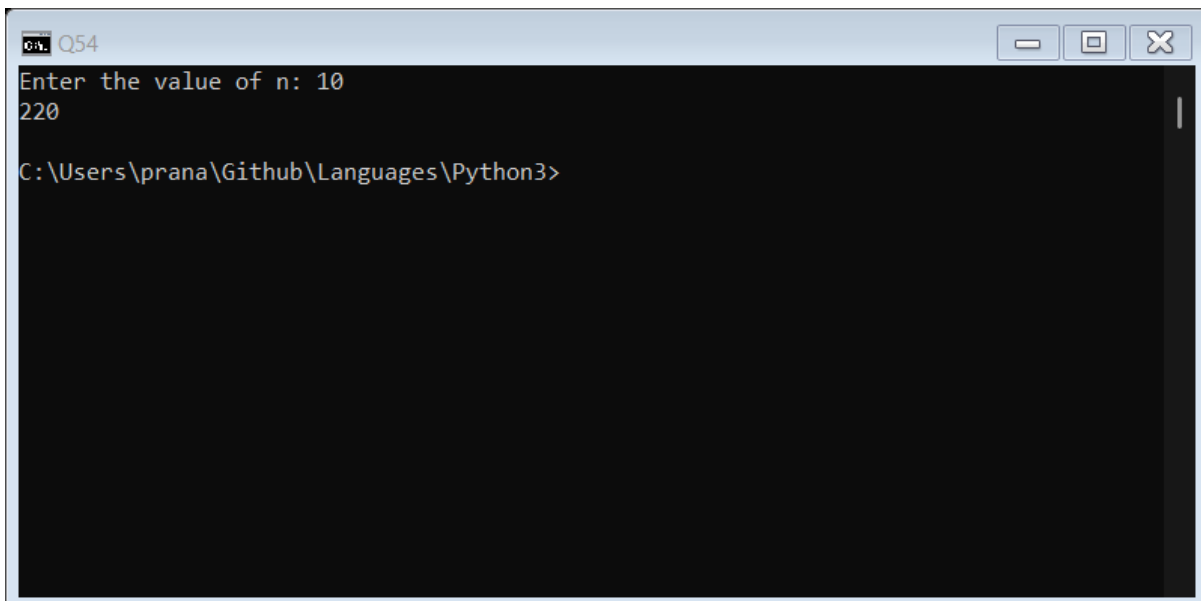
```
x = input("Enter your name: ")
a = int(input("Enter your age: "))
n = float(input("Enter your income: "))
if a > 60:
    print("Wrong Category")
elif a <= 60:
    if n <= 500000:
        print("NIL")
    elif n > 500000 and n <= 750000:
        t = (n - 500000) * (0.1)
        print("Name:", x, "Age:", a, "Income tax:", t)
    elif n > 750000 and n <= 1000000:
        t = ((n - 750000) * (0.2)) + 30000
        print("Name:", x, "Age:", a, "Income tax:", t)
    elif n > 1000000:
        t = ((n - 1000000) * (0.3)) + 90000
        print("Name:", x, "Age:", a, "Income tax:", t)
```



```
Q53
Enter your name: Pranav
Enter your age: 16
Enter your income: 10000
NIL
C:\Users\prana\Github\Languages\Python3>
```

54. Write a program to display the sum of the given series: $\text{Sum} = 1 + (1 + 2) + (1 + 2 + 3) + (1 + 2 + 3 + \dots n)$.

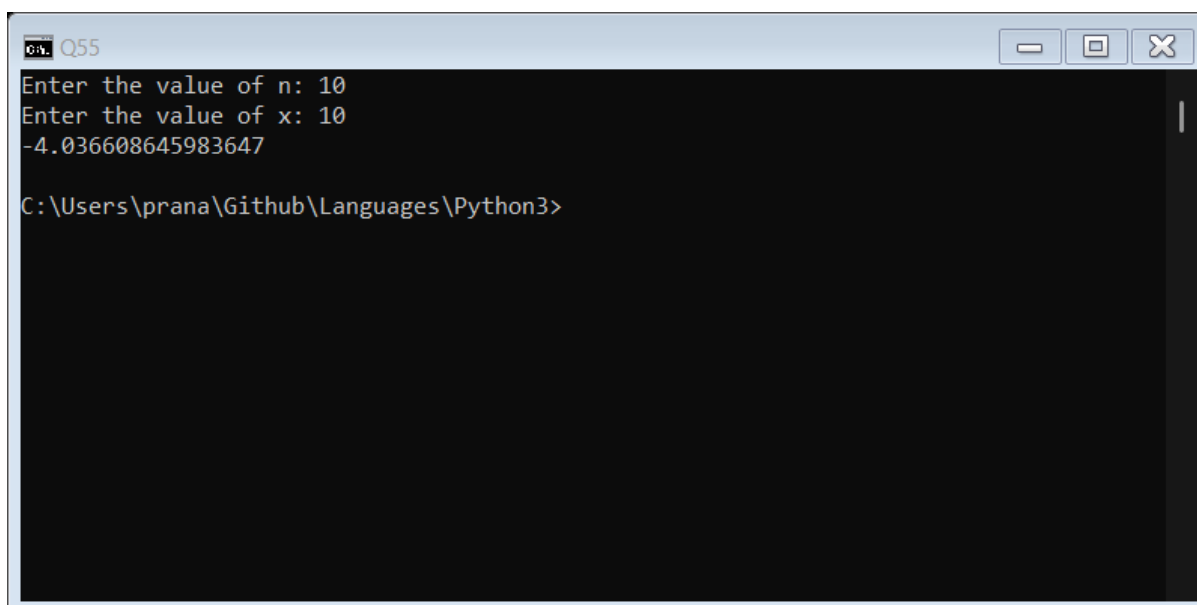
```
n = int(input("Enter the value of n: "))
c = 0
s = 0
d = 0
for i in range(1, n + 1):
    c = c + 1
    s = s + c
    d = d + s
print(d)
```



```
Q54
Enter the value of n: 10
220
C:\Users\prana\Github\Languages\Python3>
```

55. Write a program to display the series: $1 - x^1 / 2! + x^2 / 3! - x^3 / 4! + x^5 / 5! \dots x^n / (n + 1)!$.

```
n = int(input("Enter the value of n: "))
x = int(input("Enter the value of x: "))
f = 1
t = 0
s = 0
for i in range(1, n + 2):
    f = f * i
    for j in range(0, i):
        if j % 2 != 0:
            t = -((x * j) / f)
        elif j % 2 == 0:
            t = (x * j) / f
    s = s + t
print(s)
```



```
Q55
Enter the value of n: 10
Enter the value of x: 10
-4.036608645983647

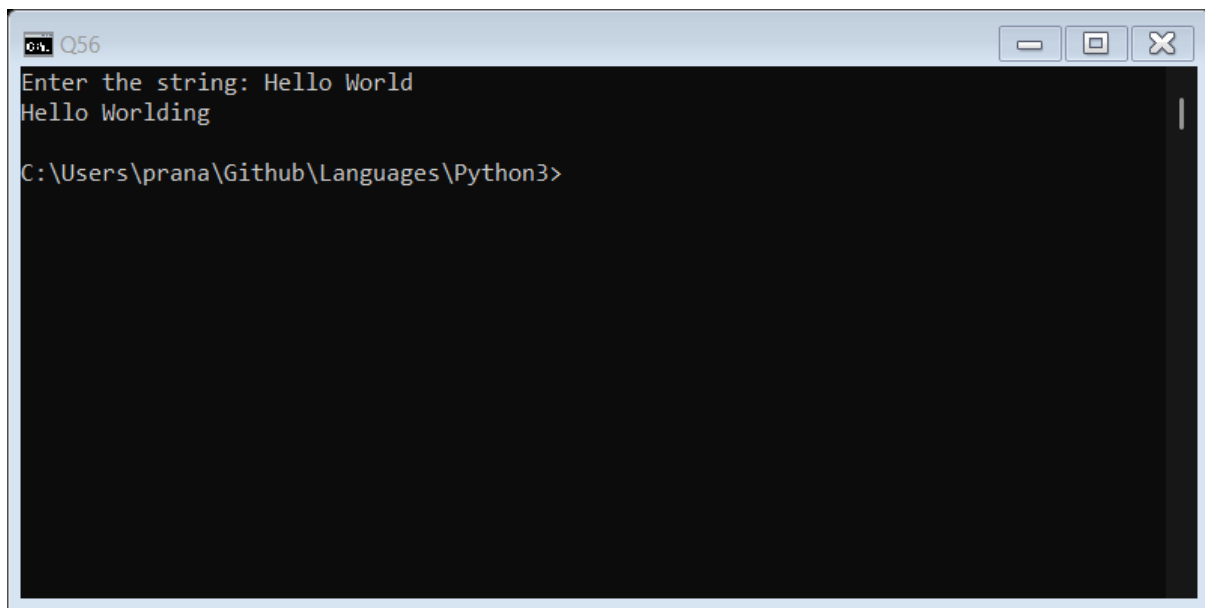
C:\Users\prana\Github\Languages\Python3>
```

Chapter 6: Strings in Python

56. Given a string, if its length is at least 3, add 'ing' to its end. Unless it already ends in 'ing', in which case add 'ly' instead. If the string length is less than 3, leave it unchanged. Return the resulting string.

```
x = input("Enter the string: ")
if len(x) >= 3:
    if x.endswith("ing"):
        x = x + "ly"
    else:
        x = x + "ing"
```

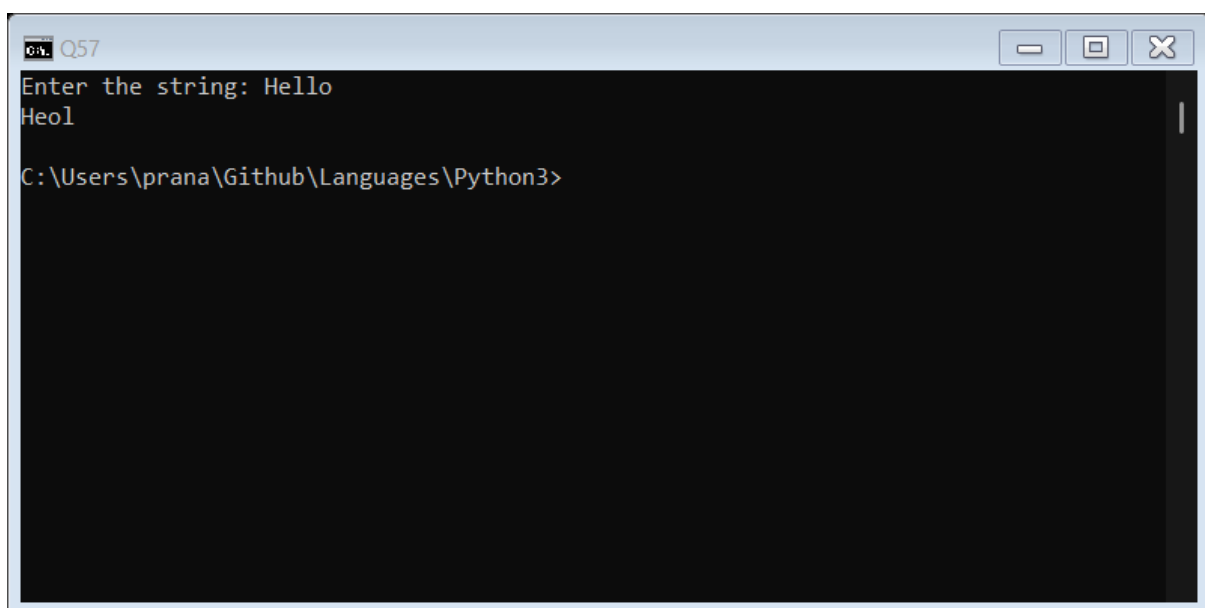
```
print(x)
```



```
Q56
Enter the string: Hello World
Hello Worlding
C:\Users\prana\Github\Languages\Python3>
```

57. Given a string *s*, return a string made of the first 2 and the last 2 chars of the original string, so 'spring' yields 'spng'. However, if the string length is less than 2, return instead the empty string.

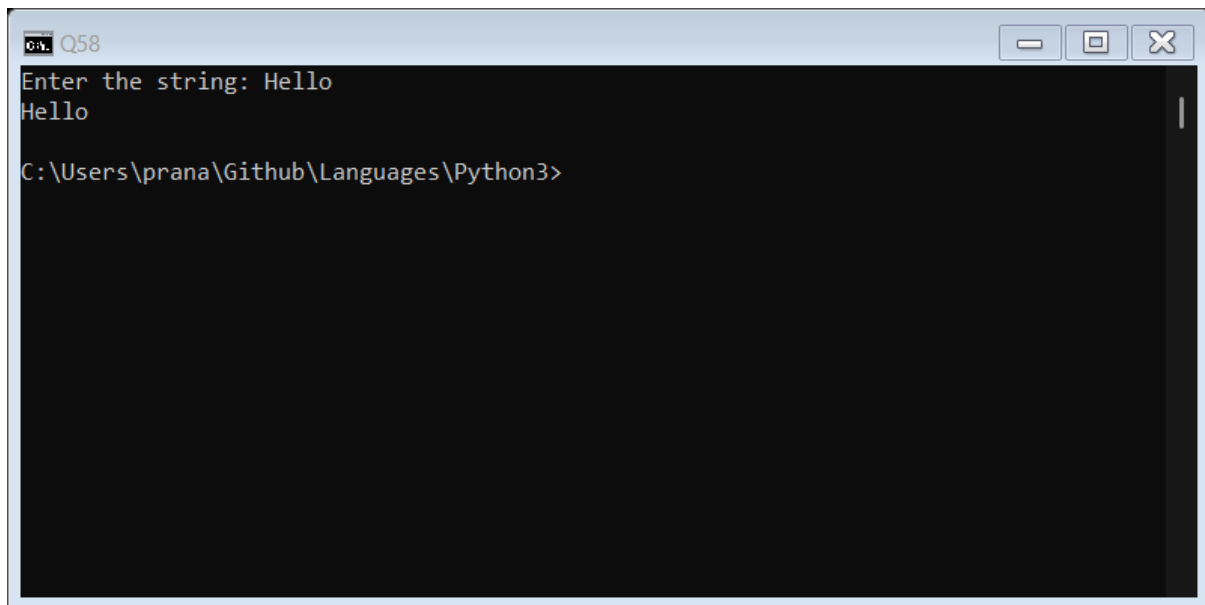
```
x = input("Enter the string: ")
if len(x) >= 2:
    x = x[0:2] + x[-1:-3:-1]
    print(x)
else:
    print(x)
```



```
Q57
Enter the string: Hello
Heol
C:\Users\prana\Github\Languages\Python3>
```

58. Given a string *s*, return a string where all occurrences of its first char have been changed to *, except do not change the first char itself. e.g. 'babble' yields 'ba**le'.

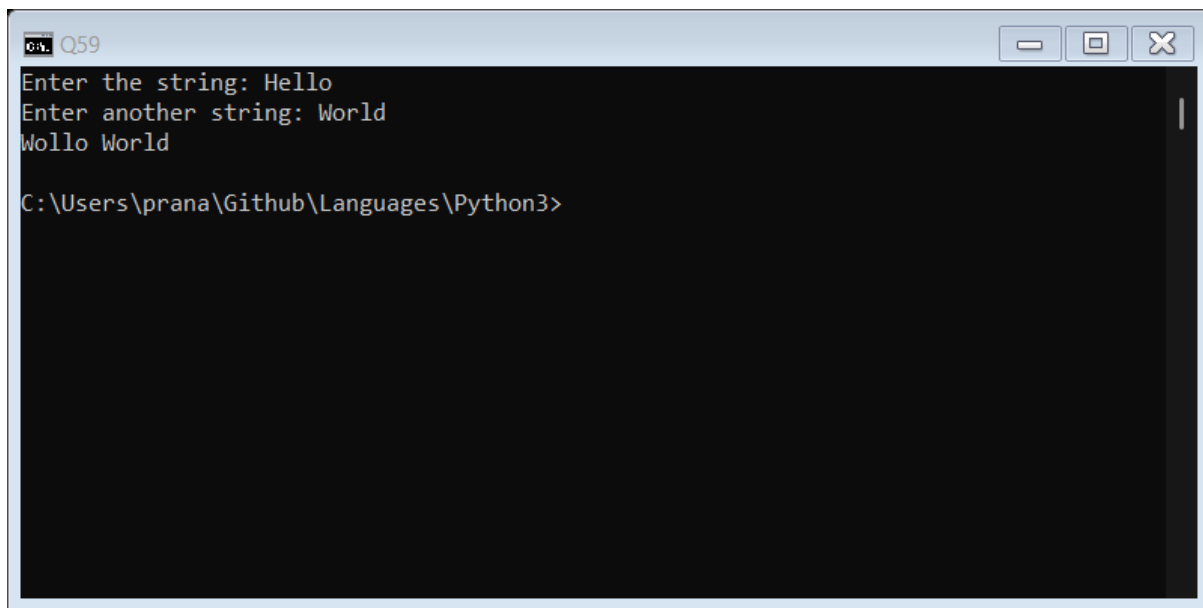
```
x = input("Enter the string: ")
y = x[1:]
for i in y:
    if i == x[0]:
        y = y.replace(i, "*")
x = x[0] + y
print(x)
```



The screenshot shows a Python IDE window titled 'Q58'. The code from the previous block is pasted into the editor. The console output shows the prompt 'Enter the string: Hello' followed by the input 'Hello' and the resulting output 'Hello'.

59. Given strings *a* and *b*, return a single string with *a* and *b* separated by a space '*a* *b*', except swap the first 2 chars of each string. e.g. 'mix', 'pod' -> 'pox mid', 'dog', 'dinner' -> 'dig donner'. Assume *a* and *b* are length 2 or more.

```
x = input("Enter the string: ")
y = input("Enter another string: ")
x = y[0:2] + x[2:]
y = x[0:2] + y[2:]
print(x, y)
```

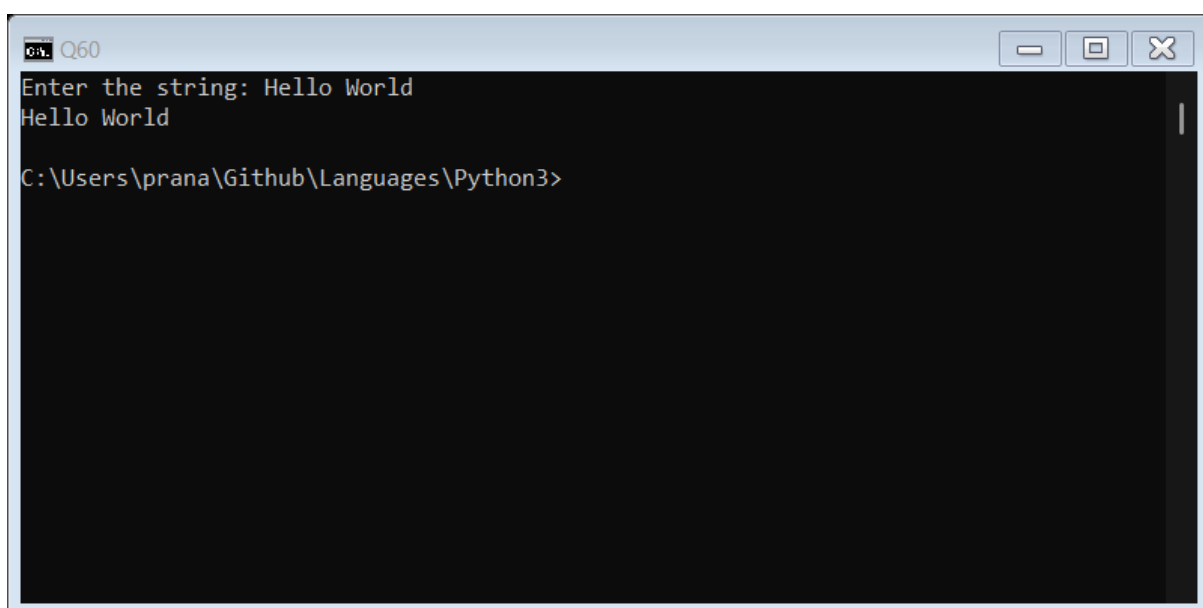


```
Q59
Enter the string: Hello
Enter another string: World
Wollo World

C:\Users\prana\Github\Languages\Python3>
```

60. Given a string, find the first appearance of the substring 'not' and 'bad'. If the 'bad' follows the 'not', replace the whole 'not'...'bad' substring with 'good'. Return the resulting string. So 'This dinner is not that bad!' yields: This dinner is good!

```
x = input("Enter the string: ")
y = x.find("not")
z = x.find("bad")
s = 0
if z > y:
    s = x[y:z + 3]
    x = x.replace(s, "good")
print(x)
```

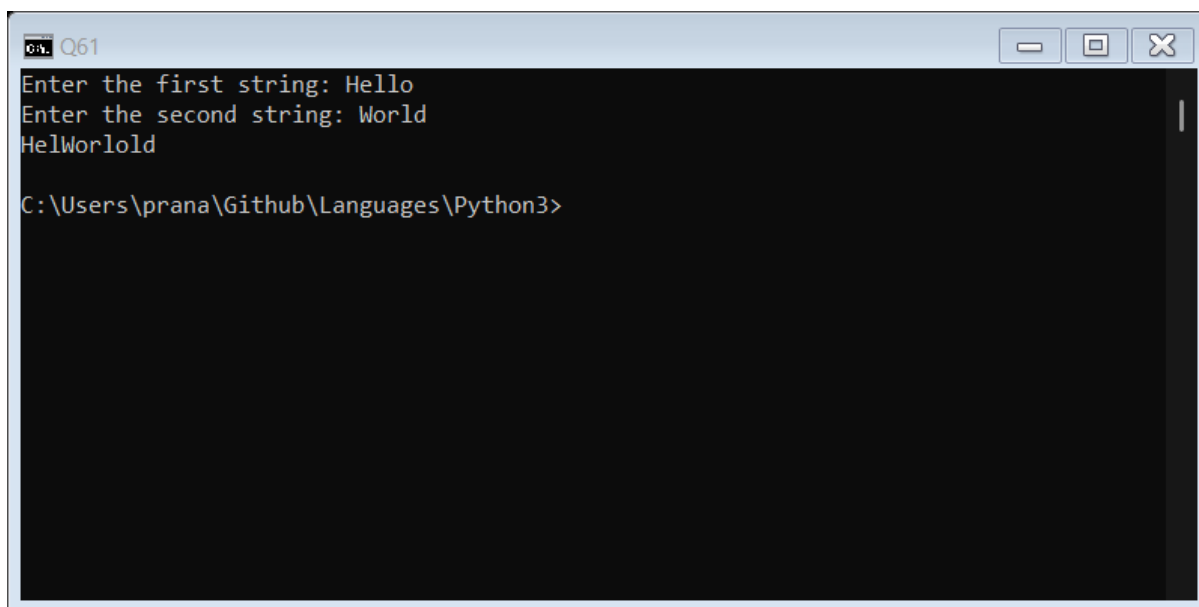


```
Q60
Enter the string: Hello World
Hello World

C:\Users\prana\Github\Languages\Python3>
```

61. Consider dividing a string into two halves. If the length is even, the front and back halves are the same length. If the length is odd, we'll say that the extra char goes in the front half. e.g. 'abcde', the front half is 'abc', the back half 'de'. Given 2 strings, a and b, return a string of the form - a-front + b-front + a-back + b-back.

```
a = input("Enter the first string: ")
b = input("Enter the second string: ")
m = len(a)
if m % 2 != 0:
    n = (m - 1) // 2
else:
    n = m // 2
afront = a[0:n + 1]
aback = a[n + 1:]
x = len(b)
if x % 2 != 0:
    y = (x - 1) // 2
else:
    y = x // 2
bfront = b[0:y + 1]
bback = b[y + 1:]
c = afront + bfront + aback + bback
print(c)
```



```
Q61
Enter the first string: Hello
Enter the second string: World
HelWorld

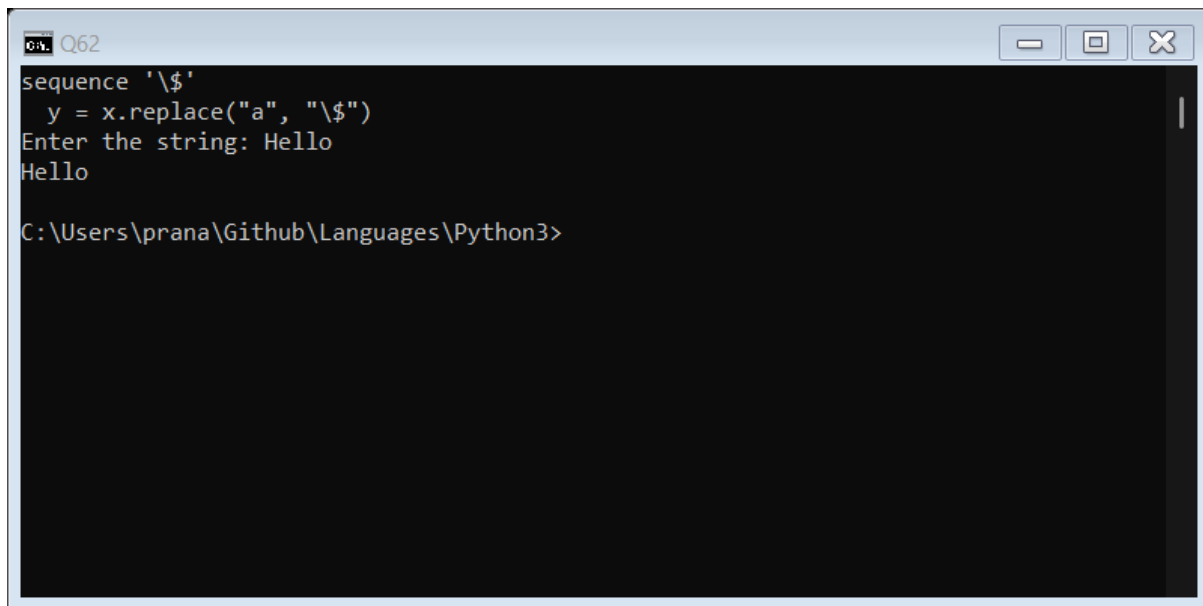
C:\Users\prana\Github\Languages\Python3>
```

62. Python Program to Replace all Occurrences of 'a' with \$ in a String.

```
x = input("Enter the string: ")
y = x.replace("a", "$")
```



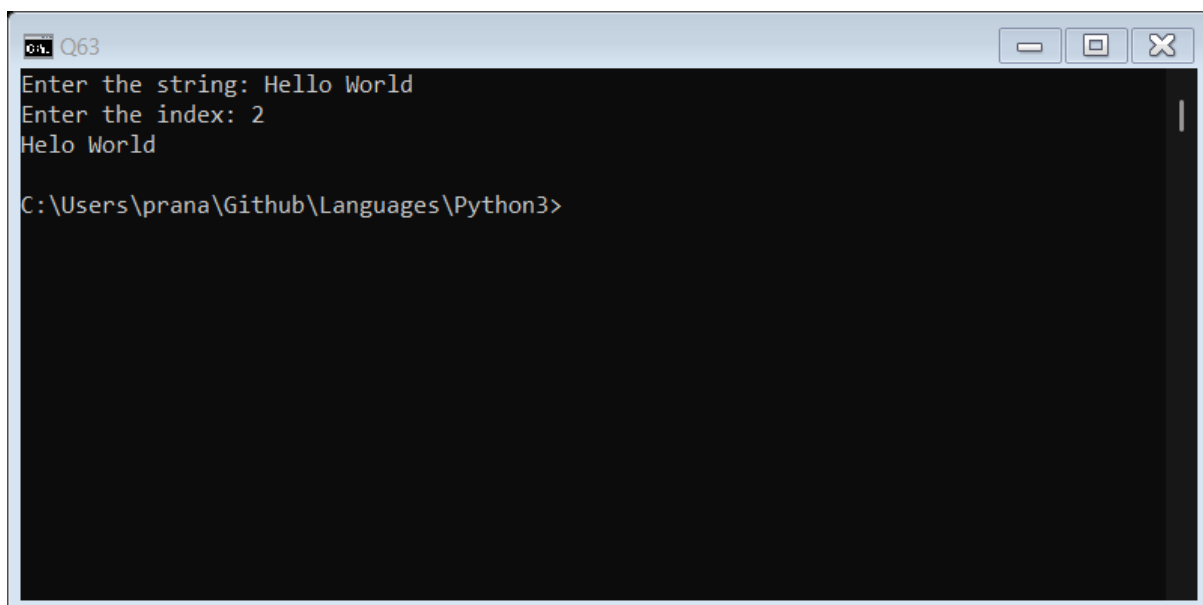
```
print(y)
```



```
sequence '\$'  
y = x.replace("a", "\$")  
Enter the string: Hello  
Hello  
  
C:\Users\prana\Github\Languages\Python3>
```

63. Python Program to Remove the nth Index Character from a Non-Empty String.

```
x = input("Enter the string: ")  
n = int(input("Enter the index: "))  
x = x[0:n] + x[n + 1:]  
print(x)
```

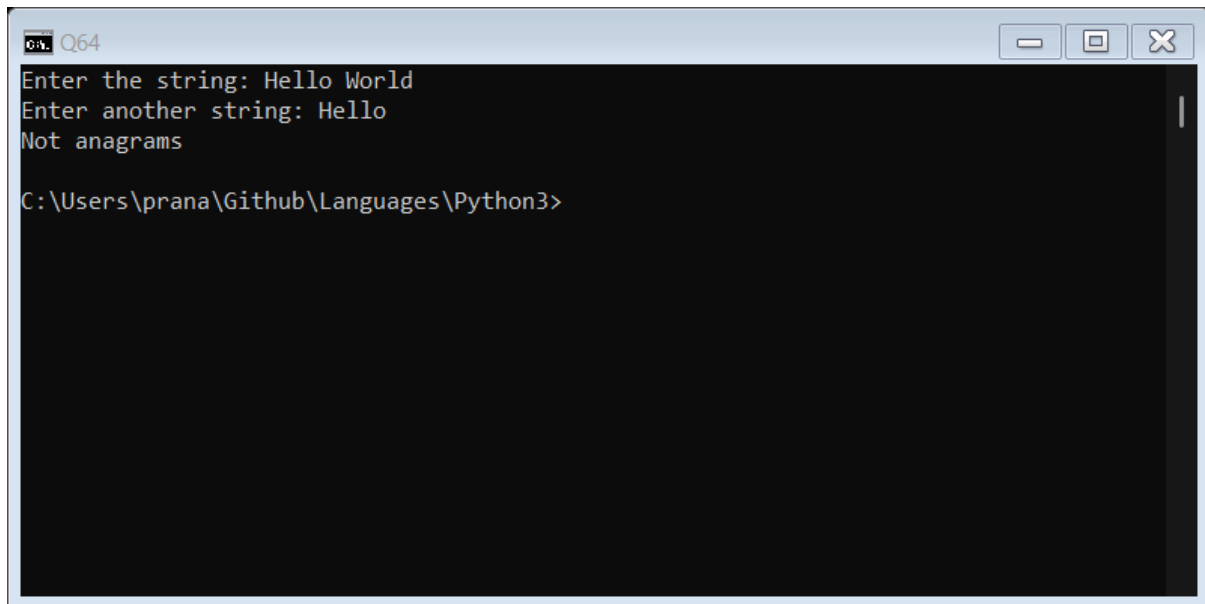


```
Enter the string: Hello World  
Enter the index: 2  
Helo World  
  
C:\Users\prana\Github\Languages\Python3>
```

64. Python Program to Detect if Two Strings are Anagrams.

```
x = input("Enter the string: ")  
y = input("Enter another string: ")  
if len(x) == len(y):
```

```
    for i in x:
        if i not in y:
            print("Not an anagram")
            break
    else:
        print("Anagram")
else:
    print("Not anagrams")
```

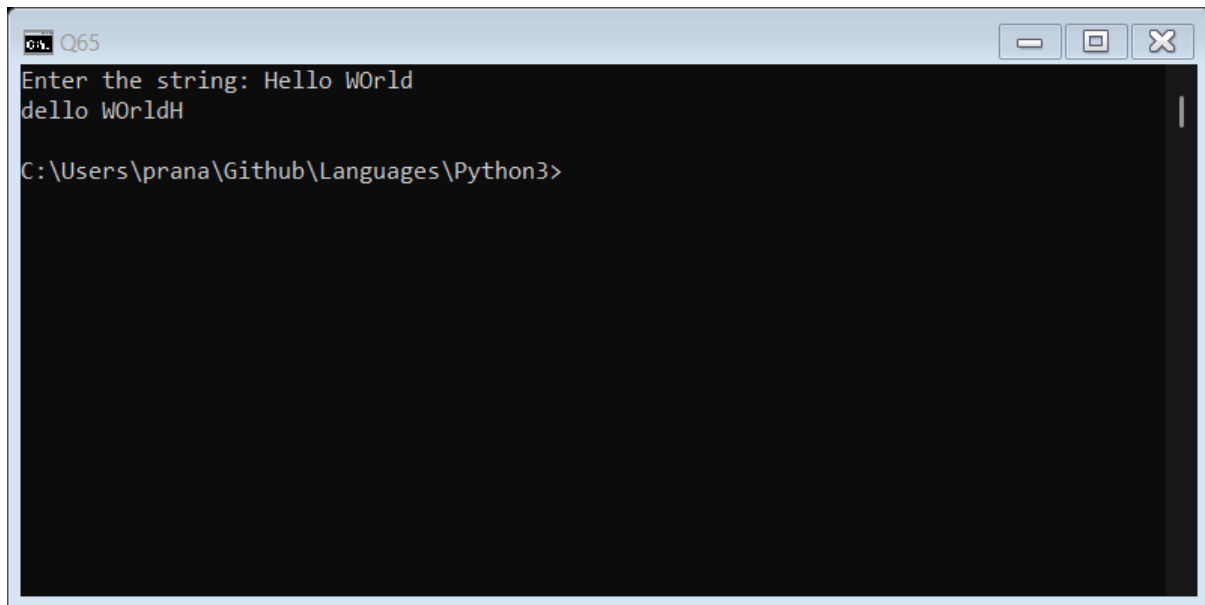


```
Q64
Enter the string: Hello World
Enter another string: Hello
Not anagrams

C:\Users\prana\Github\Languages\Python3>
```

65. Python Program to Form a New String where the First Character and the Last Character have been Exchanged.

```
x = input("Enter the string: ")
y = len(x)
x = x[-1] + x[1:y] + x[0]
print(x)
```

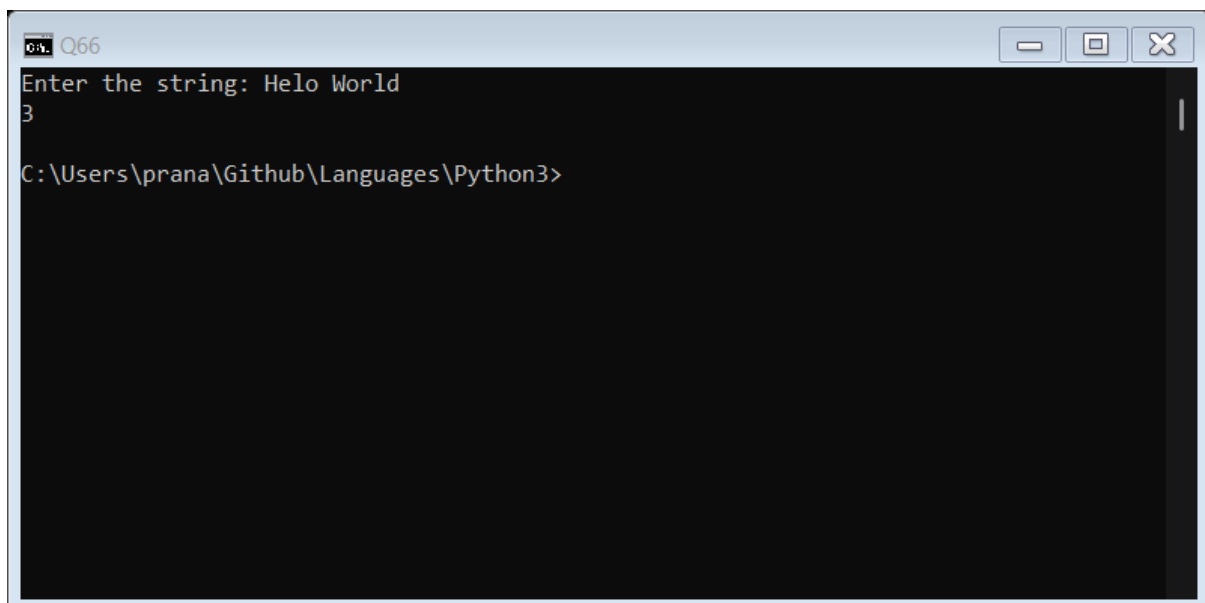


```
Q65
Enter the string: Hello World
dello WOrldH

C:\Users\prana\Github\Languages\Python3>
```

66. Python Program to Count the Number of Vowels in a String.

```
x = input("Enter the string: ")
x = x.lower()
s = 'aeiou'
c = 0
for i in x:
    if i in s:
        c = c + 1
print(c)
```



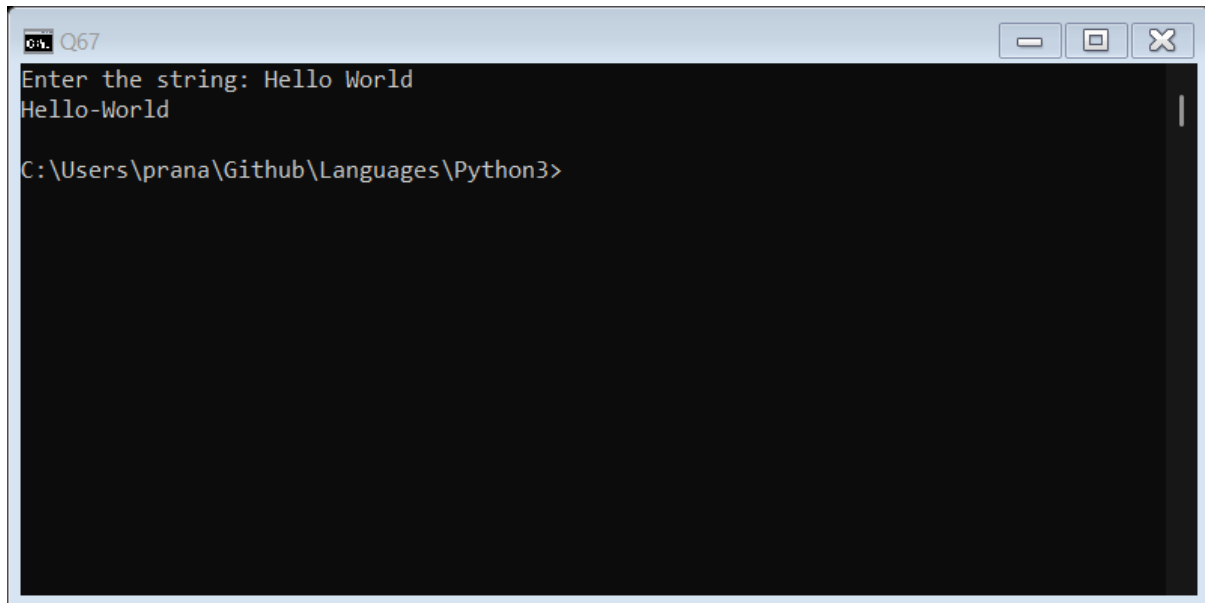
```
Q66
Enter the string: Helo World
3

C:\Users\prana\Github\Languages\Python3>
```

67. Python Program to Take in a String and Replace Every Blank Space with Hyphen.

```
x = input("Enter the string: ")
```

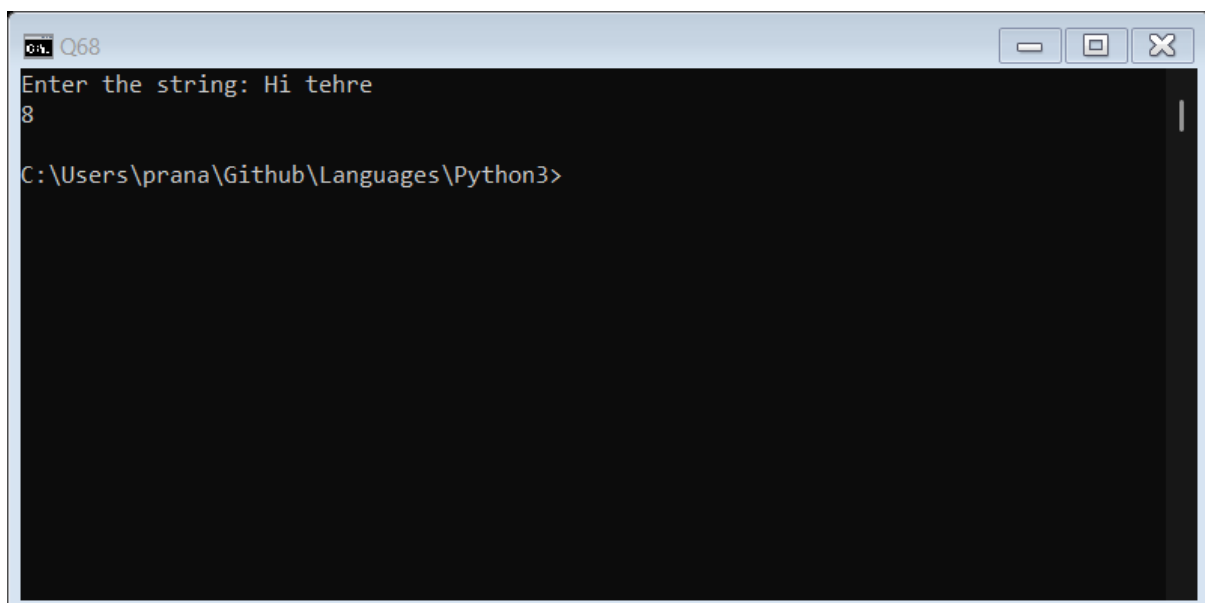
```
x = x.replace(" ", "-")  
print(x)
```



The screenshot shows a Python IDE window titled "Q67". The input text is "Enter the string: Hello World" and the output is "Hello-World". The command prompt shows the file path "C:\Users\prana\Github\Languages\Python3>".

68. Python Program to Calculate the Length of a String Without Using a Library Function.

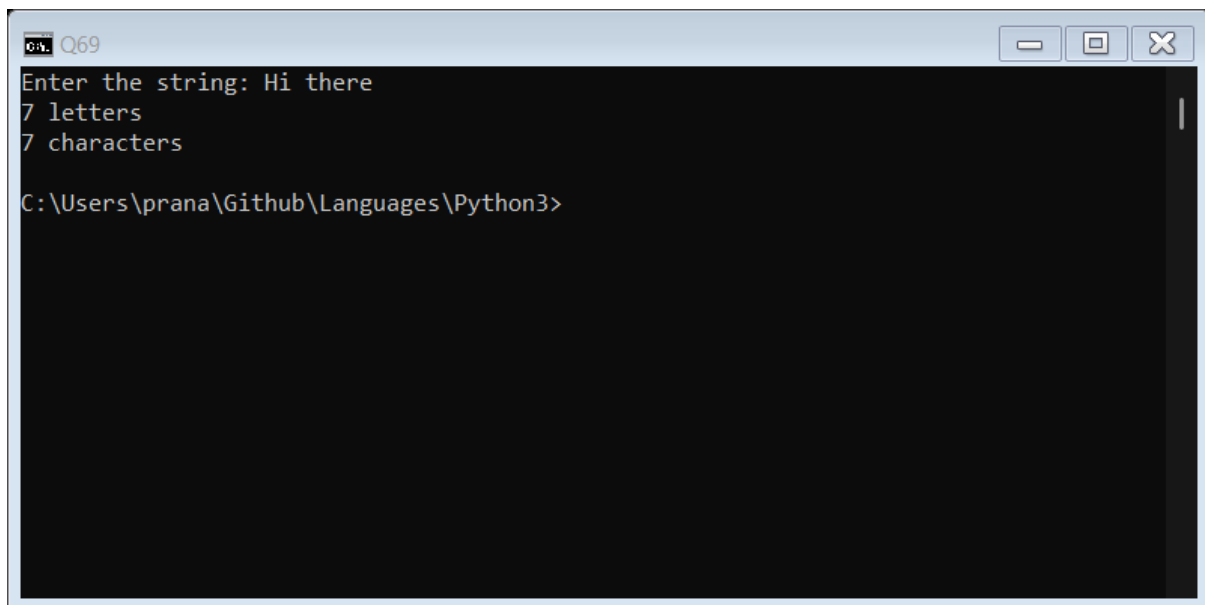
```
x = input("Enter the string: ")  
c = 0  
for i in x:  
    c = c + 1  
print(c)
```



The screenshot shows a Python IDE window titled "Q68". The input text is "Enter the string: Hi tehre" and the output is "8". The command prompt shows the file path "C:\Users\prana\Github\Languages\Python3>".

69. Python Program to Calculate the Number of Words and the Number of Characters Present in a String.

```
x = input("Enter the string: ")
c = 0
s = "0123456789"
d = 0
for i in x:
    if i.isalpha() == True:
        c = c + 1
for j in x:
    if j in s:
        d = d + 1
print(c, "letters")
print(c + d, "characters")
```

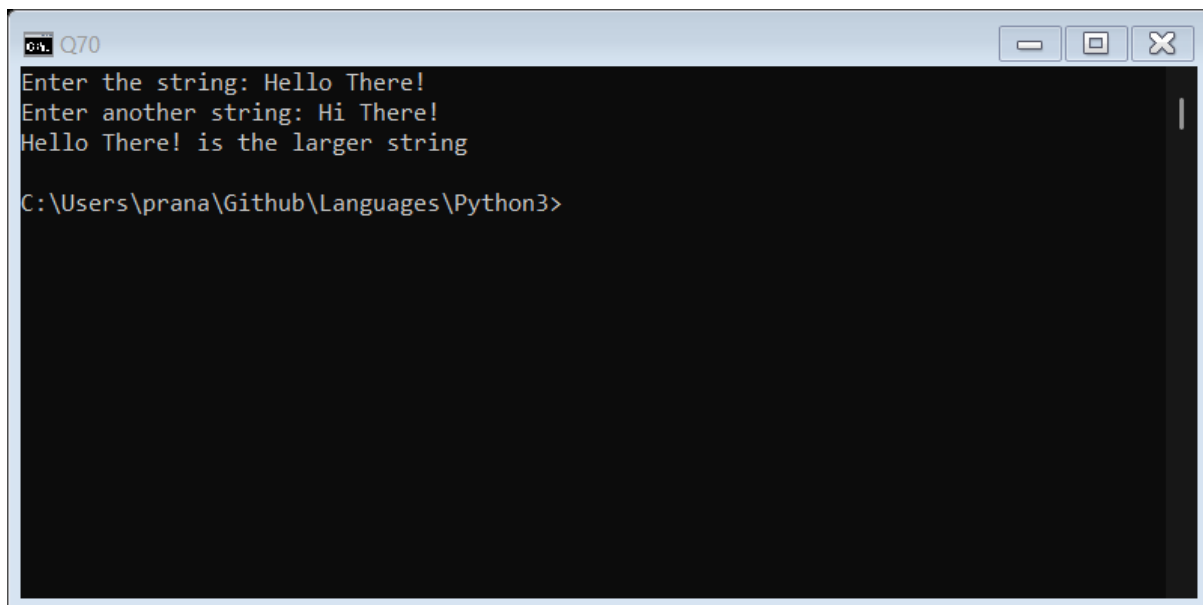


```
Q69
Enter the string: Hi there
7 letters
7 characters

C:\Users\prana\Github\Languages\Python3>
```

70. Python Program to Take in Two Strings and Display the Larger String without Using Built-in Functions.

```
x = input("Enter the string: ")
y = input("Enter another string: ")
c = 0
d = 0
for i in x:
    c = c + 1
for j in y:
    d = d + 1
if d > c:
    print(y, "is the larger string")
elif c > d:
    print(x, "is the larger string")
```

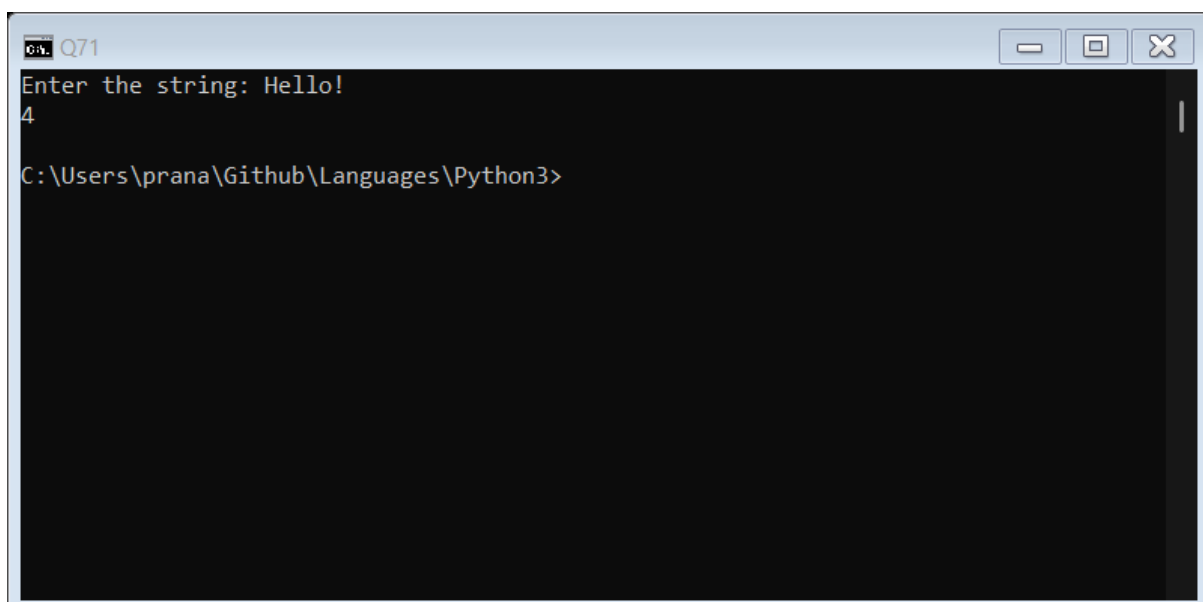


```
Q70
Enter the string: Hello There!
Enter another string: Hi There!
Hello There! is the larger string

C:\Users\prana\Github\Languages\Python3>
```

71. Python Program to Count Number of Lowercase Characters in a String.

```
x = input("Enter the string: ")
c = 0
for i in x:
    if i.islower() == True:
        c = c + 1
print(c)
```



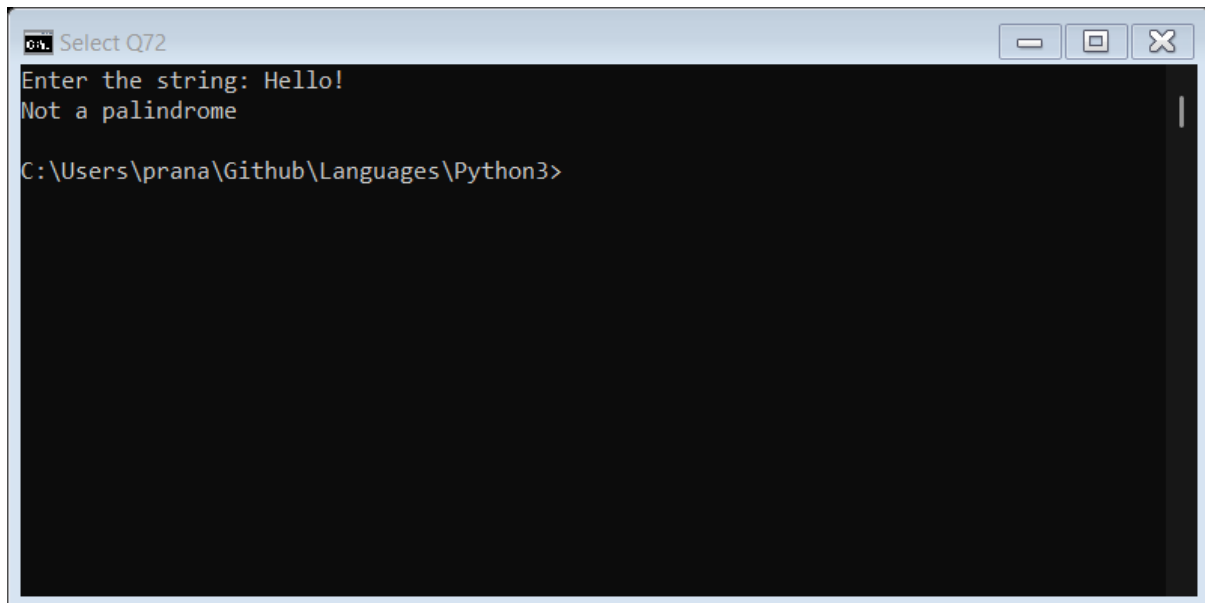
```
Q71
Enter the string: Hello!
4

C:\Users\prana\Github\Languages\Python3>
```

72. Python Program to Check if a String is a Palindrome or Not.

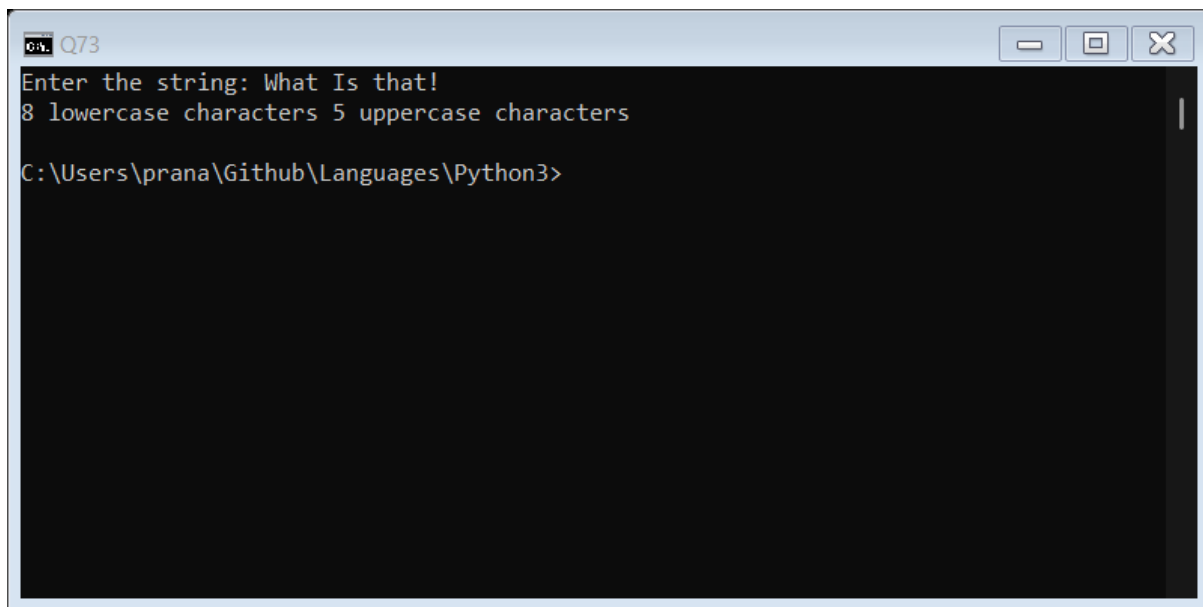
```
x = input("Enter the string: ")
y = x[-1::-1]
if x == y:
```

```
    print("It is a palindrome")
else:
    print("Not a palindrome")
```



73. Python Program to Calculate the Number of Upper Case Letters and Lower Case Letters in a String.

```
x = input("Enter the string: ")
u = 0
l = 0
for i in x:
    if i.islower() == True:
        l = l + 1
    else:
        u = u + 1
print(l, "lowercase characters", u, "uppercase characters")
```

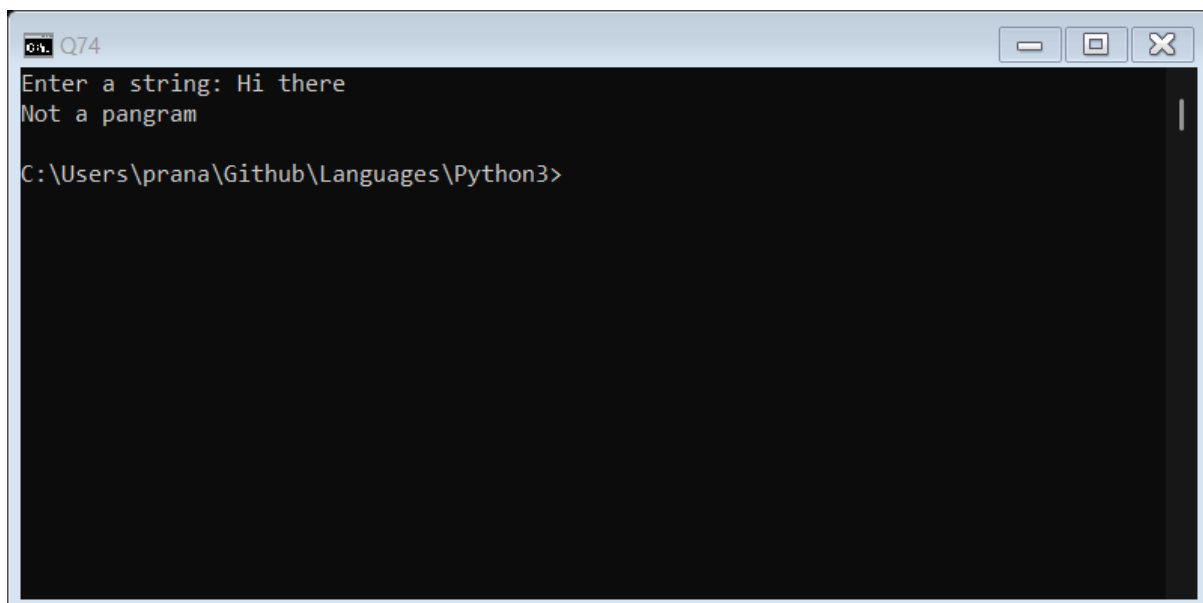


```
Q73
Enter the string: What Is that!
8 lowercase characters 5 uppercase characters

C:\Users\prana\Github\Languages\Python3>
```

74. Python Program to Check if a String is a Pangram or Not.

```
x = input("Enter a string: ")
s = "abcdefghijklmnopqrstuvwxyz"
for i in s:
    if i not in x:
        print("Not a pangram")
        break
else:
    print("It is a pangram")
```



```
Q74
Enter a string: Hi there
Not a pangram

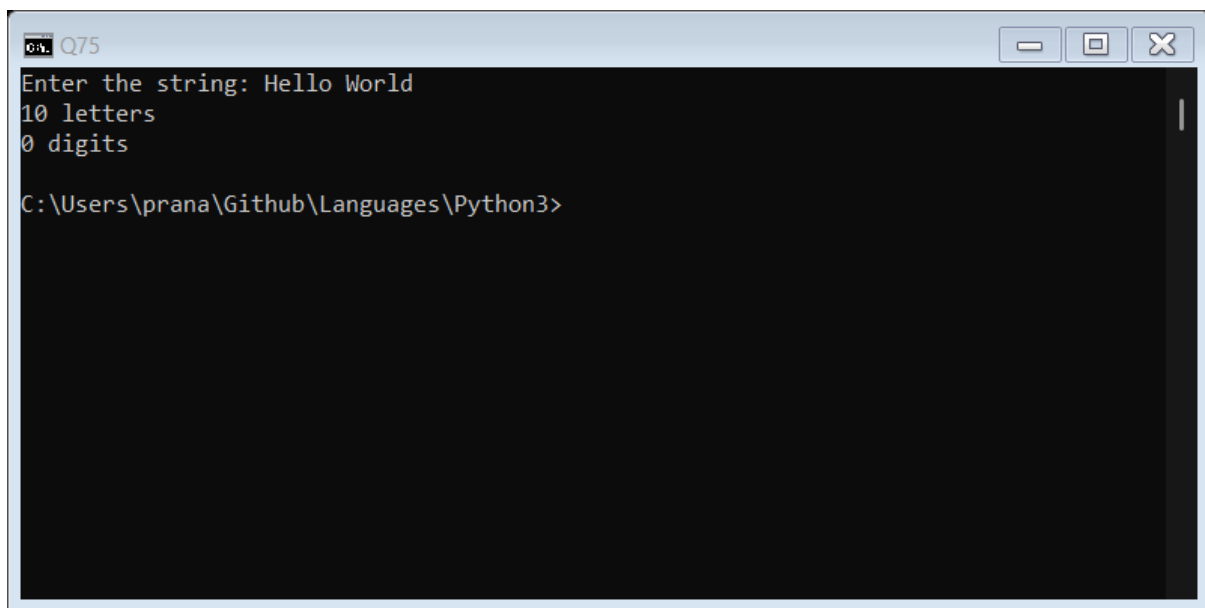
C:\Users\prana\Github\Languages\Python3>
```

75. Python Program to Calculate the Number of Digits and Letters in a String.

```
x = input("Enter the string: ")
```



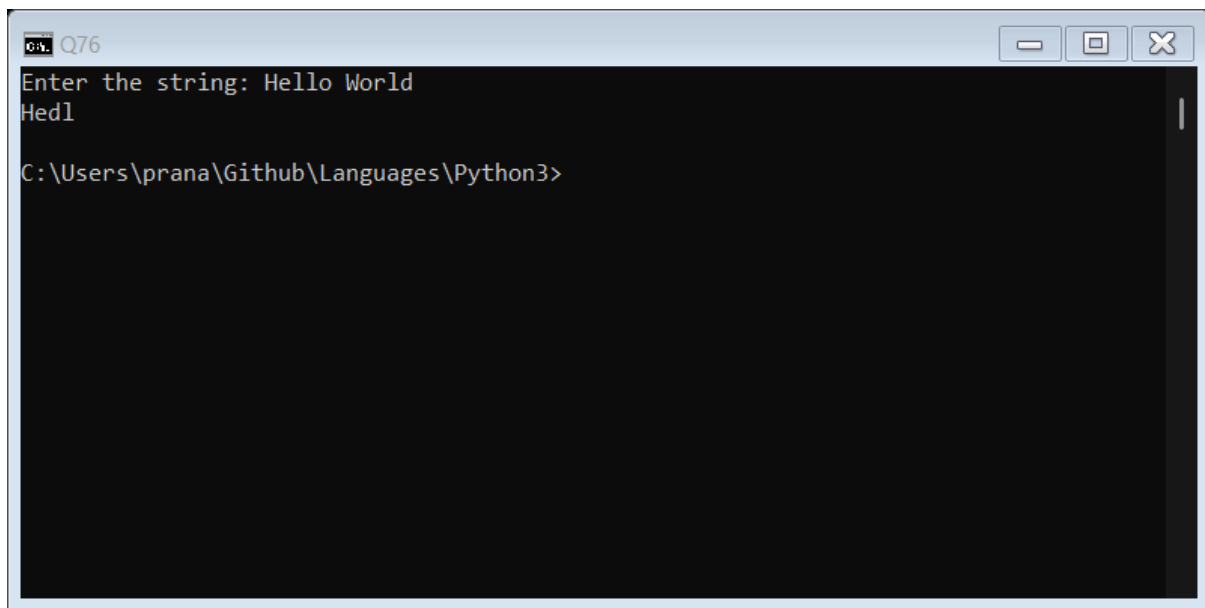
```
c = 0
s = "0123456789"
d = 0
for i in x:
    if i.isalpha() == True:
        c = c + 1
for j in x:
    if j in s:
        d = d + 1
print(c, "letters")
print(d, "digits")
```



```
Q75
Enter the string: Hello World
10 letters
0 digits
C:\Users\prana\Github\Languages\Python3>
```

76. Python Program to Form a New String Made of the First 2 and Last 2 Characters From a Given String.

```
x = input("Enter the string: ")
y = x[0:2] + x[-1:-3:-1]
print(y)
```

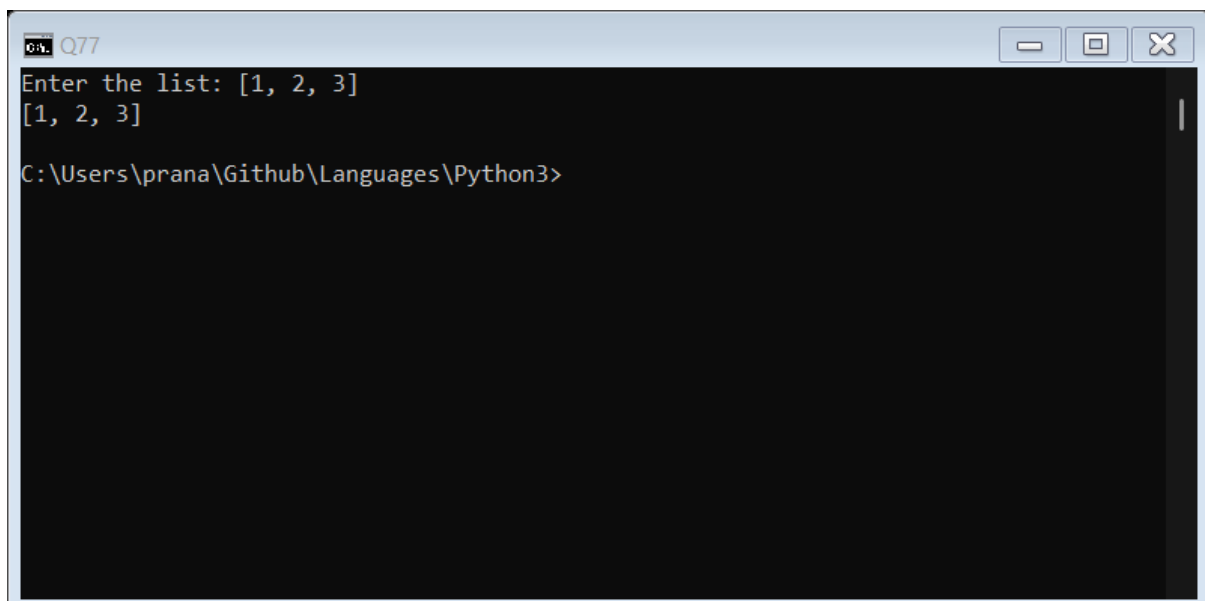


```
Q76
Enter the string: Hello World
Hedl
C:\Users\prana\Github\Languages\Python3>
```

Chapter 7: Lists

77. Write a program to read a list of elements. Modify this list so that it does not contain any duplicate elements, i.e., all elements occurring multiple times in the list should appear only once.

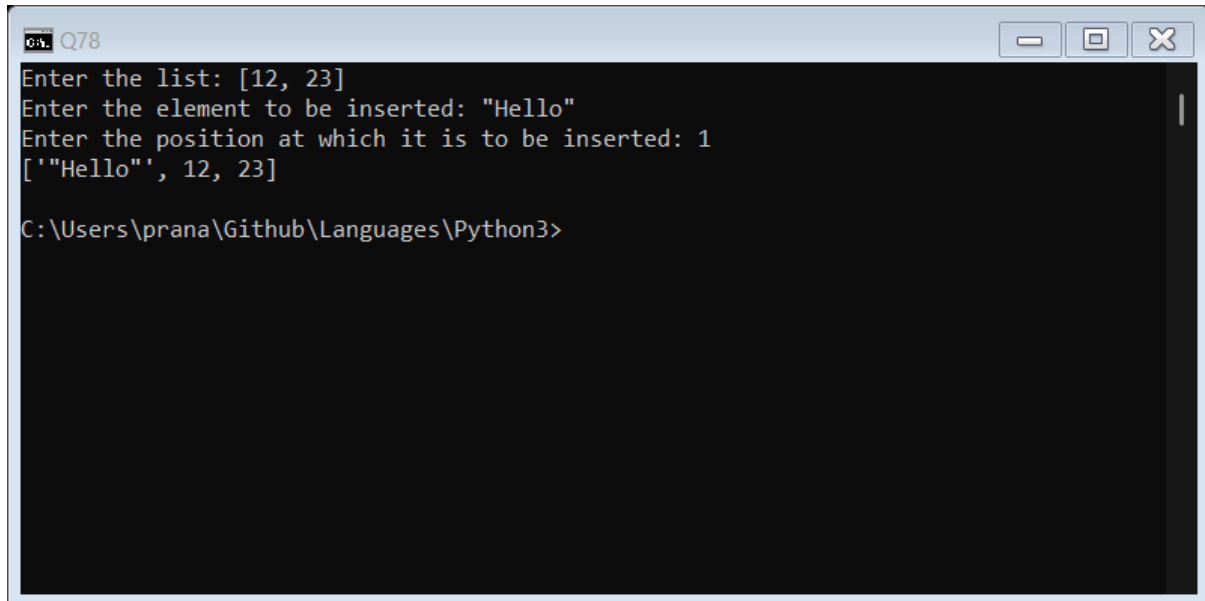
```
x = eval(input("Enter the list: "))
y = []
for i in range(len(x)):
    m = x.index(x[i])
    if i == m:
        y.insert(i, x[i])
print(y)
```



```
Q77
Enter the list: [1, 2, 3]
[1, 2, 3]
C:\Users\prana\Github\Languages\Python3>
```

78. Write a program to create a list of elements. Input an element from the user that has to be inserted in the list. Also input the position at which it is to be inserted.

```
x = eval(input("Enter the list: "))
a = input("Enter the element to be inserted: ")
n = int(input("Enter the position at which it is to be inserted: "))
x.insert(n - 1, a)
print(x)
```

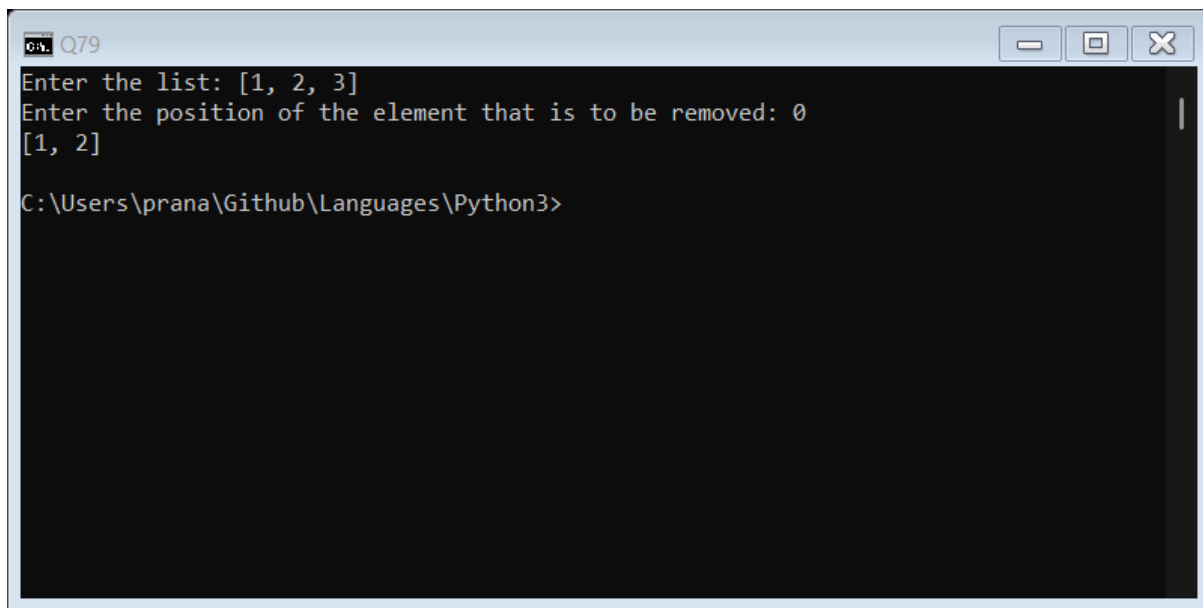
A screenshot of a Windows command prompt window titled "Q78". The window has standard Windows window controls (minimize, maximize, close) in the top right corner. The terminal text shows the following interaction: "Enter the list: [12, 23]", "Enter the element to be inserted: \"Hello\"", "Enter the position at which it is to be inserted: 1", and the output "[\"Hello\", 12, 23]". The prompt "C:\Users\prana\Github\Languages\Python3>" is visible at the bottom.

```
Q78
Enter the list: [12, 23]
Enter the element to be inserted: "Hello"
Enter the position at which it is to be inserted: 1
["Hello", 12, 23]

C:\Users\prana\Github\Languages\Python3>
```

79. Write a program which asks for the position of the element to be deleted from the list and delete the desired element at the desired position.

```
x = eval(input("Enter the list: "))
n = int(input("Enter the position of the element that is to be removed: "))
x.pop(n - 1)
print(x)
```

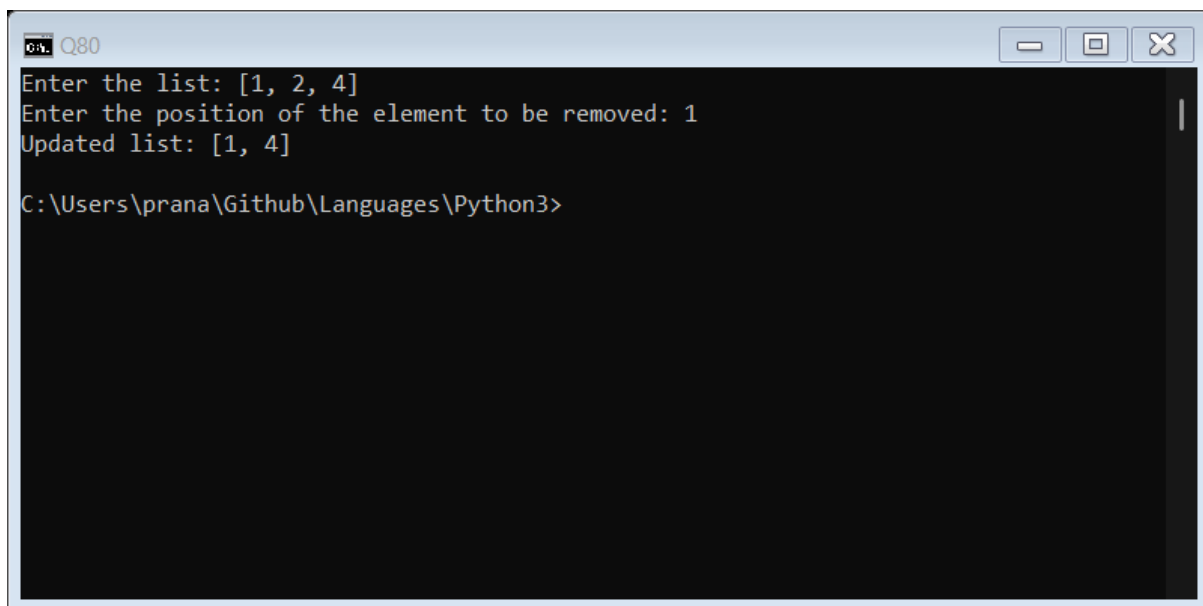


```
Q79
Enter the list: [1, 2, 3]
Enter the position of the element that is to be removed: 0
[1, 2]

C:\Users\prana\Github\Languages\Python3>
```

80. Write a program which asks for the value of the element to be deleted from the list and delete the desired element at the desired position.

```
x = eval(input("Enter the list: "))
a = int(input("Enter the position of the element to be removed: "))
if 0 <= a < len(x):
    x.pop(a)
    print("Updated list:", x)
else:
    print("Invalid position. Please enter a valid index.")
```

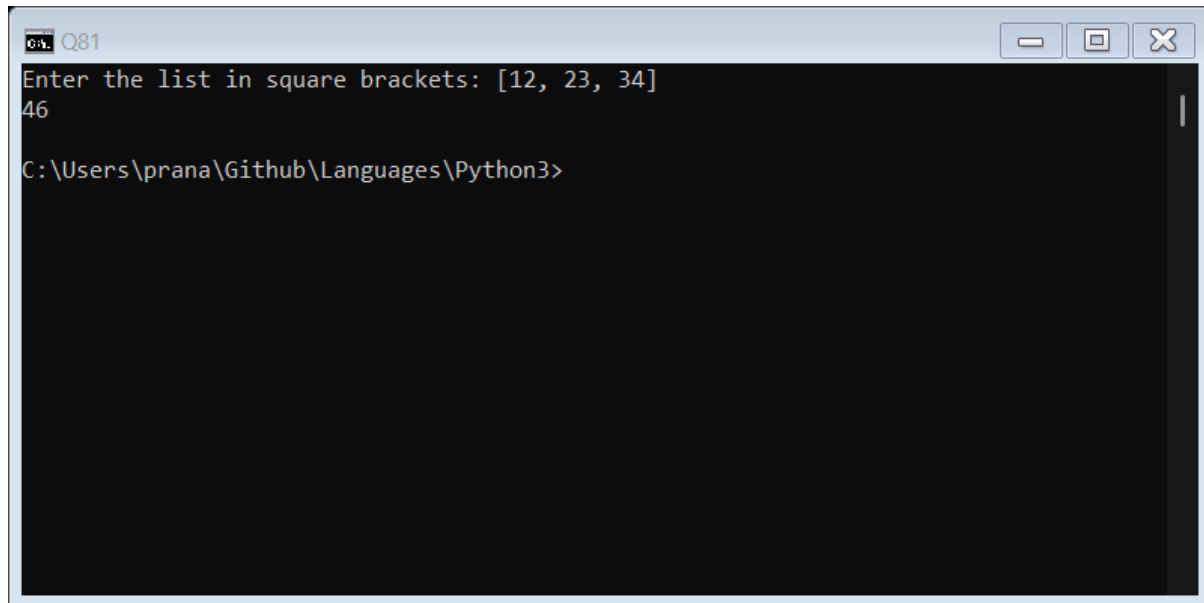


```
Q80
Enter the list: [1, 2, 4]
Enter the position of the element to be removed: 1
Updated list: [1, 4]

C:\Users\prana\Github\Languages\Python3>
```

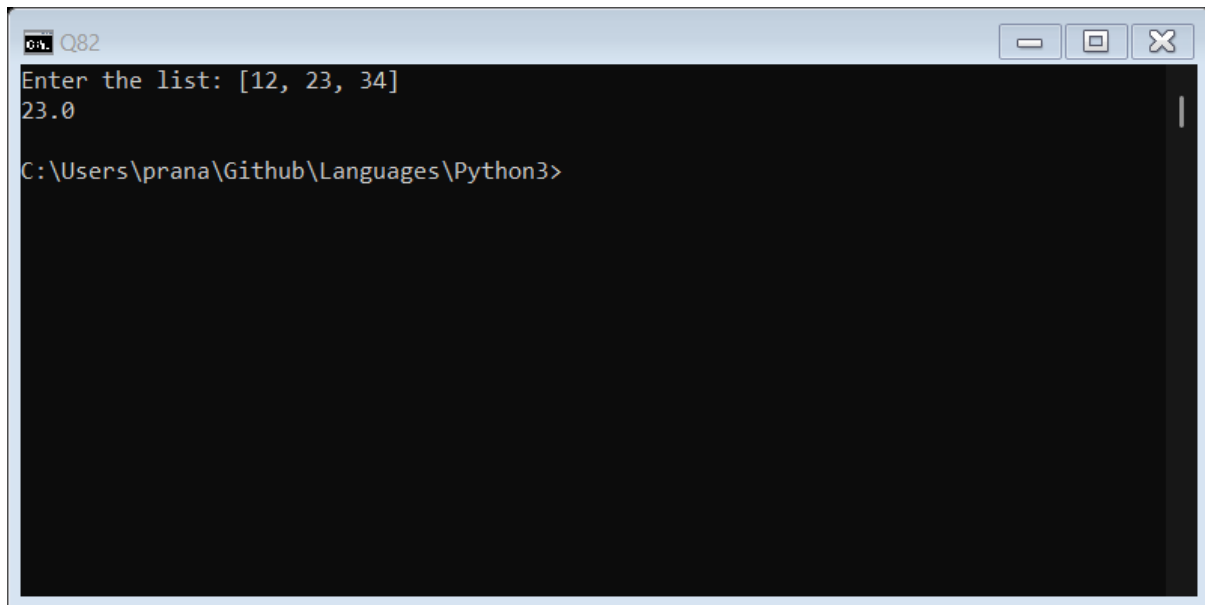
81. Write a program that takes an array S as an argument and all the odd values and display the sum.

```
s = eval(input("Enter the list in square brackets: "))
t = 0
for i in range(len(s)):
    if i % 2 == 0:
        t = t + s[i]
print(t)
```

A screenshot of a Python 3.7.4 shell window titled "Q81". The window has a black background with white text. The prompt "Enter the list in square brackets: [12, 23, 34]" is displayed. The user has entered "46". The prompt "C:\Users\prana\Github\Languages\Python3>" is displayed. The window has standard Windows window controls (minimize, maximize, close) in the top right corner.

82. Write a program to calculate the mean of a given list of numbers.

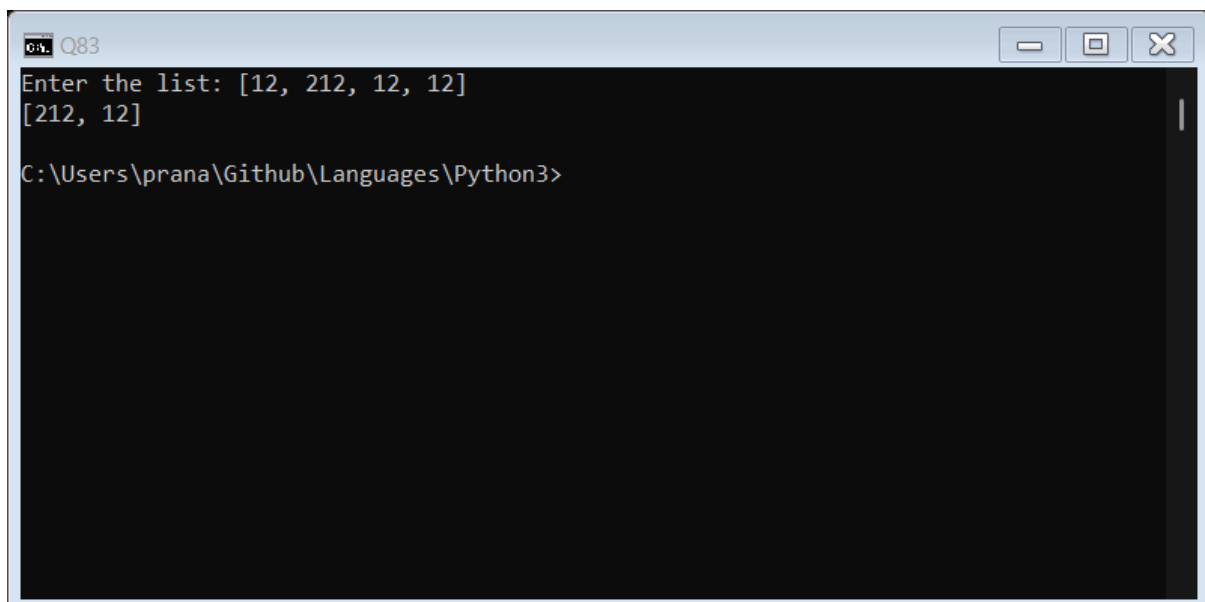
```
x = eval(input("Enter the list: "))
s = 0
for i in x:
    s = s + i
s = s / len(x)
print(s)
```



```
Q82
Enter the list: [12, 23, 34]
23.0
C:\Users\prana\Github\Languages\Python3>
```

83. Write a program to delete all duplicate elements in a list.

```
l = eval(input("Enter the list: "))
for i in range(len(l) - 1, 0, -1):
    if l.count(l[i]) > 1:
        l.remove(l[i])
print(l)
```



```
Q83
Enter the list: [12, 212, 12, 12]
[212, 12]
C:\Users\prana\Github\Languages\Python3>
```

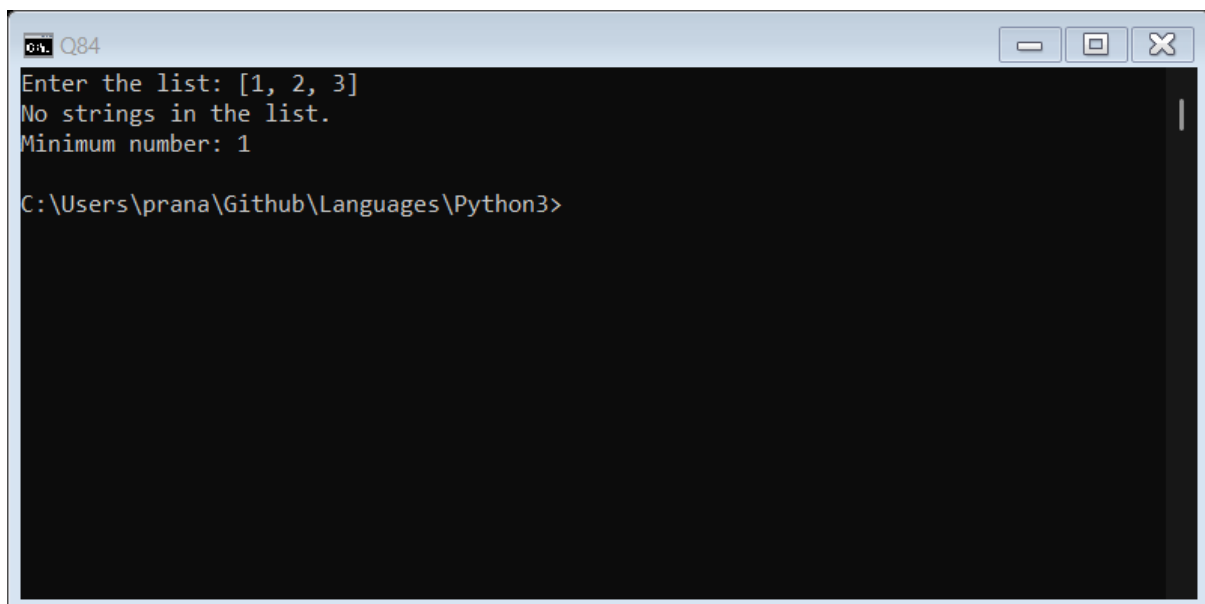
84. Write a program to calculate the minimum element of a given list.

```
l = eval(input("Enter the list: "))
s = []
num = []
```

```
for i in l:
    if isinstance(i, str):
        s.append(i)
    elif isinstance(i, (int, float)):
        num.append(i)

if s:
    print("Minimum string:", min(s))
else:
    print("No strings in the list.")

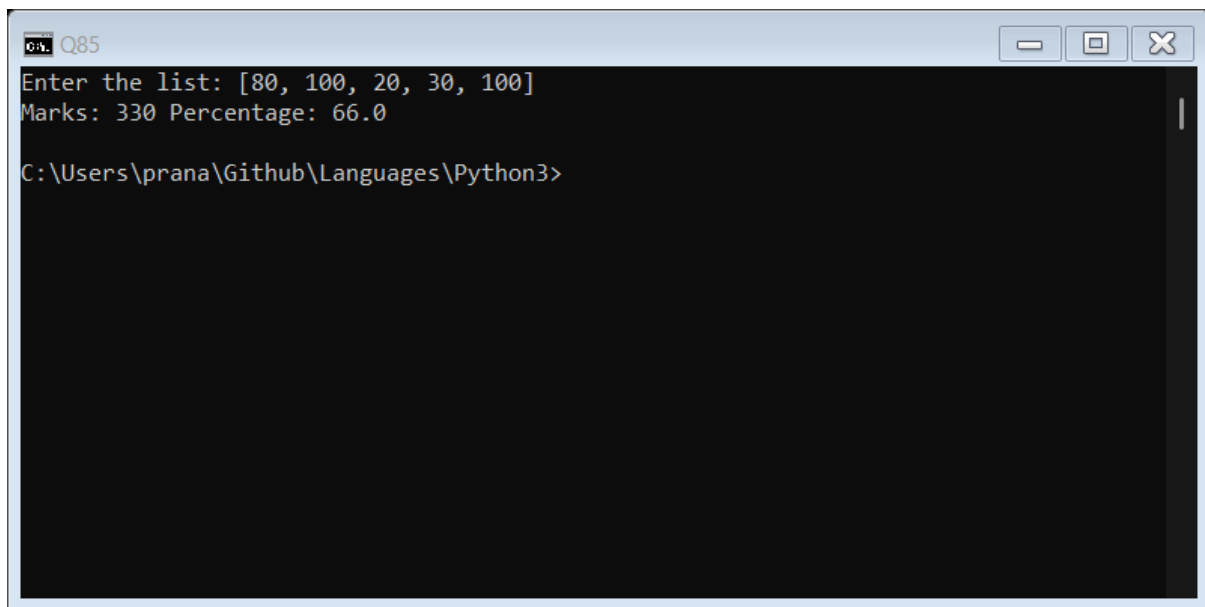
if num:
    print("Minimum number:", min(num))
else:
    print("No numbers in the list.")
```



```
Q84
Enter the list: [1, 2, 3]
No strings in the list.
Minimum number: 1
C:\Users\prana\Github\Languages\Python3>
```

85. Write a code to calculate and display the total marks and percentage of a student from the given list storing marks of a student.

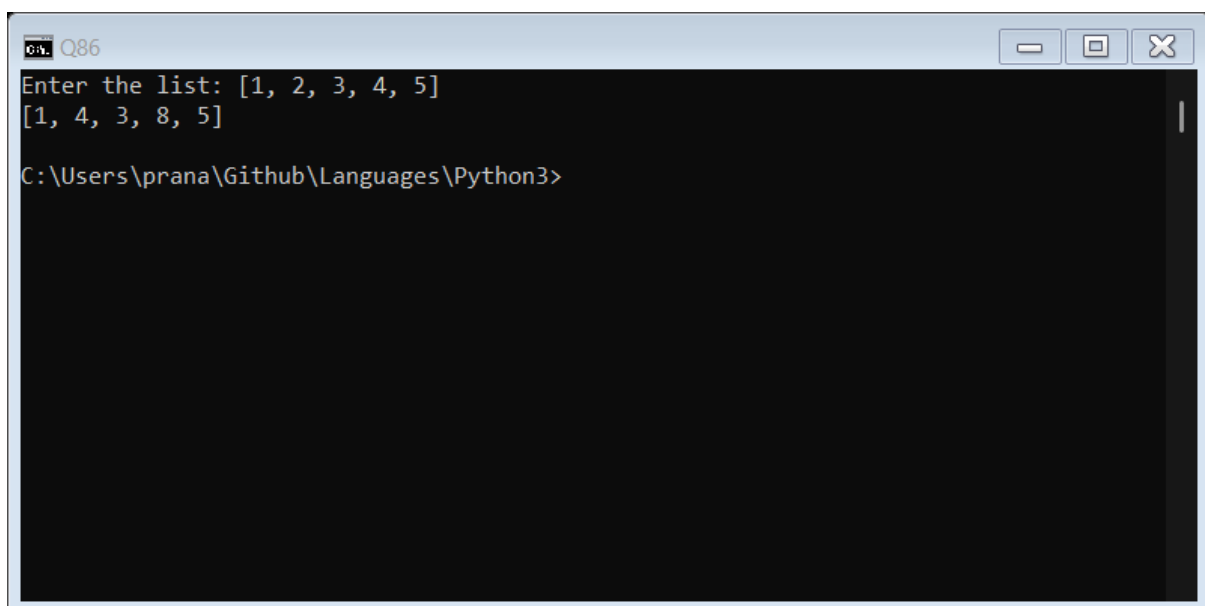
```
l = eval(input("Enter the list: "))
total = 0
perc = 0
for i in l:
    total += i
perc = (total / len(l))
print("Marks:", total, "Percentage:", perc)
```



```
Q85
Enter the list: [80, 100, 20, 30, 100]
Marks: 330 Percentage: 66.0
C:\Users\prana\Github\Languages\Python3>
```

86. Write a program to multiply an element by 2 if it is at an odd index for a given list storing marks of a student.

```
l = eval(input("Enter the list: "))
for i in range(len(l)):
    if i % 2 != 0:
        l[i] = l[i] * 2
print(l)
```



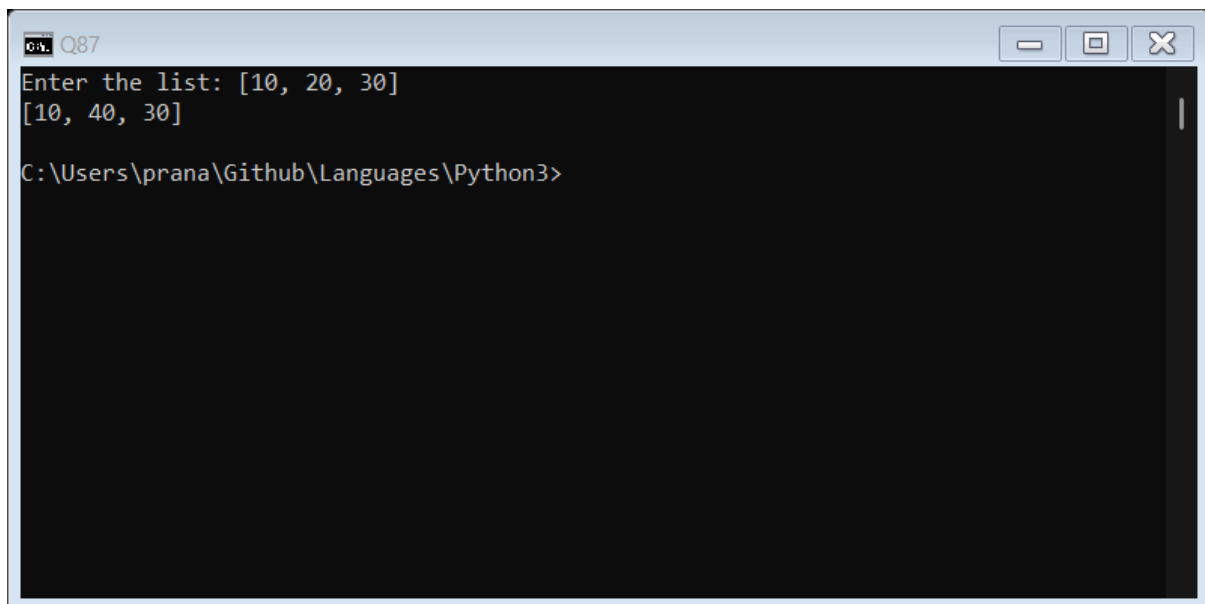
```
Q86
Enter the list: [1, 2, 3, 4, 5]
[1, 4, 3, 8, 5]
C:\Users\prana\Github\Languages\Python3>
```

87. Write a program to multiply an element by 2 if it is at an odd index for a given list containing both numbers and strings.

```
l = eval(input("Enter the list: "))
for i in range(len(l)):
```



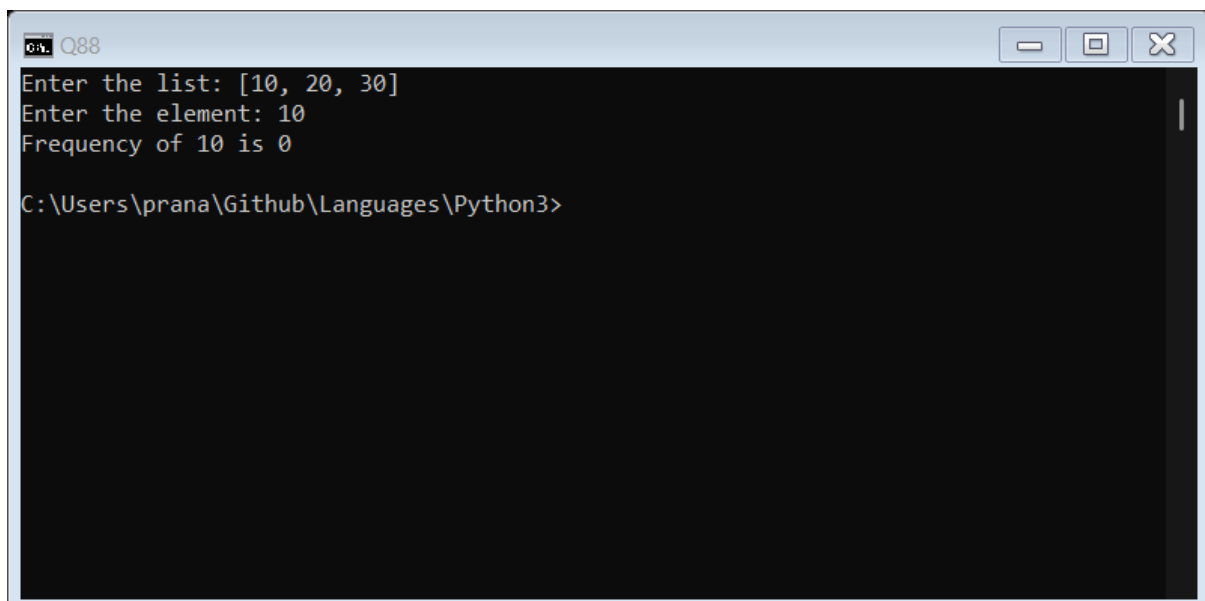
```
    if i % 2 != 0:
        l[i] = l[i] * 2
print(l)
```



```
Q87
Enter the list: [10, 20, 30]
[10, 40, 30]
C:\Users\prana\Github\Languages\Python3>
```

88. Write a program to calculate the frequency of an element in a given list.

```
l = eval(input("Enter the list: "))
x = input("Enter the element: ")
print("Frequency of", x, "is", l.count(x))
```

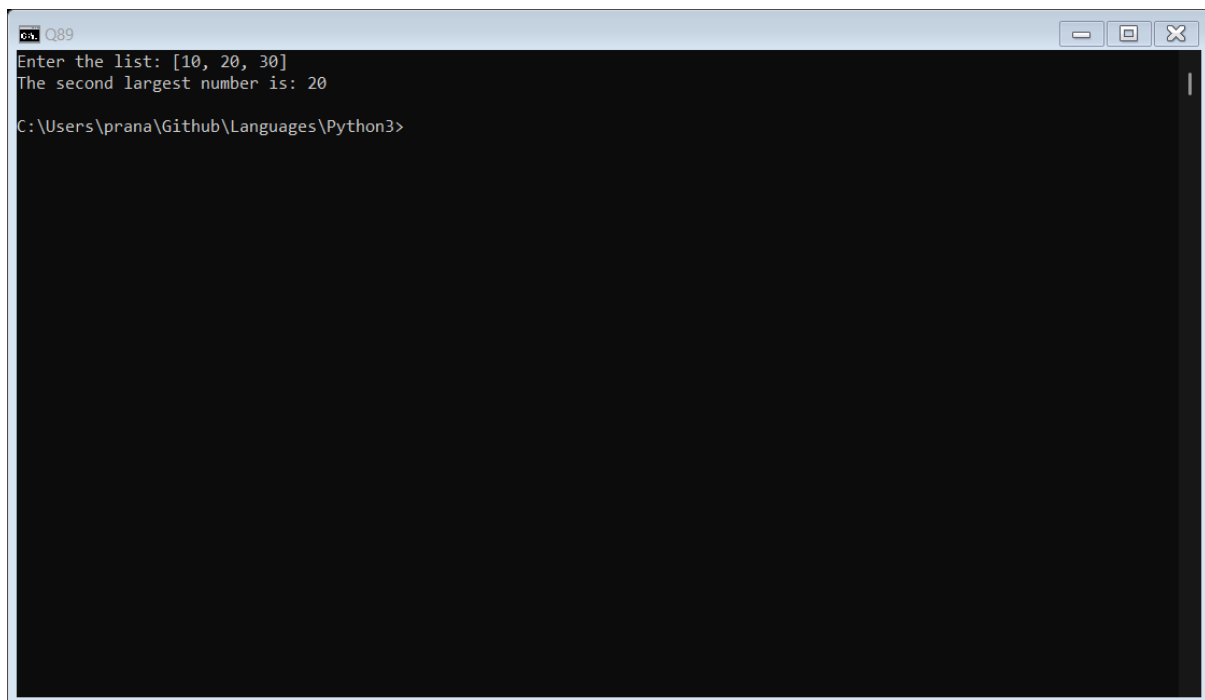


```
Q88
Enter the list: [10, 20, 30]
Enter the element: 10
Frequency of 10 is 0
C:\Users\prana\Github\Languages\Python3>
```

89. Write a program to find the second largest number in a list.

```
l = eval(input("Enter the list: "))
l.sort()
```

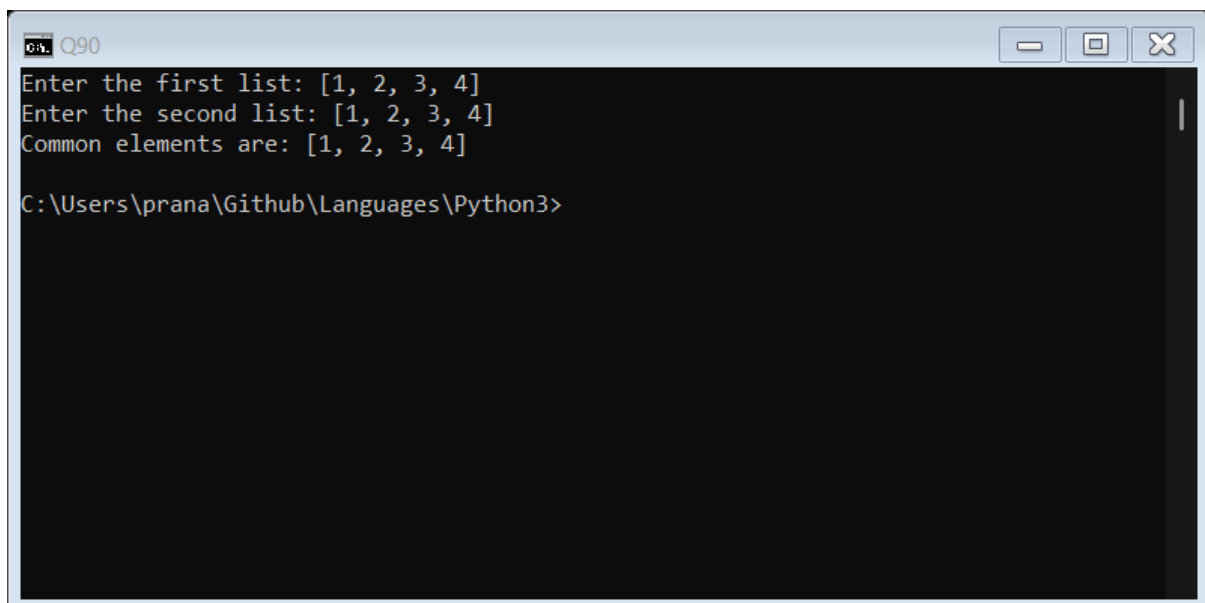
```
print("The second largest number is:", l[-2])
```



The screenshot shows a Python IDE window titled 'Q89'. The code entered is: `Enter the list: [10, 20, 30]` and `The second largest number is: 20`. The output is displayed in the console area.

90. Write a program to find the common elements between two lists.

```
l1 = eval(input("Enter the first list: "))
l2 = eval(input("Enter the second list: "))
common = list(set(l1) & set(l2))
print("Common elements are:", common)
```

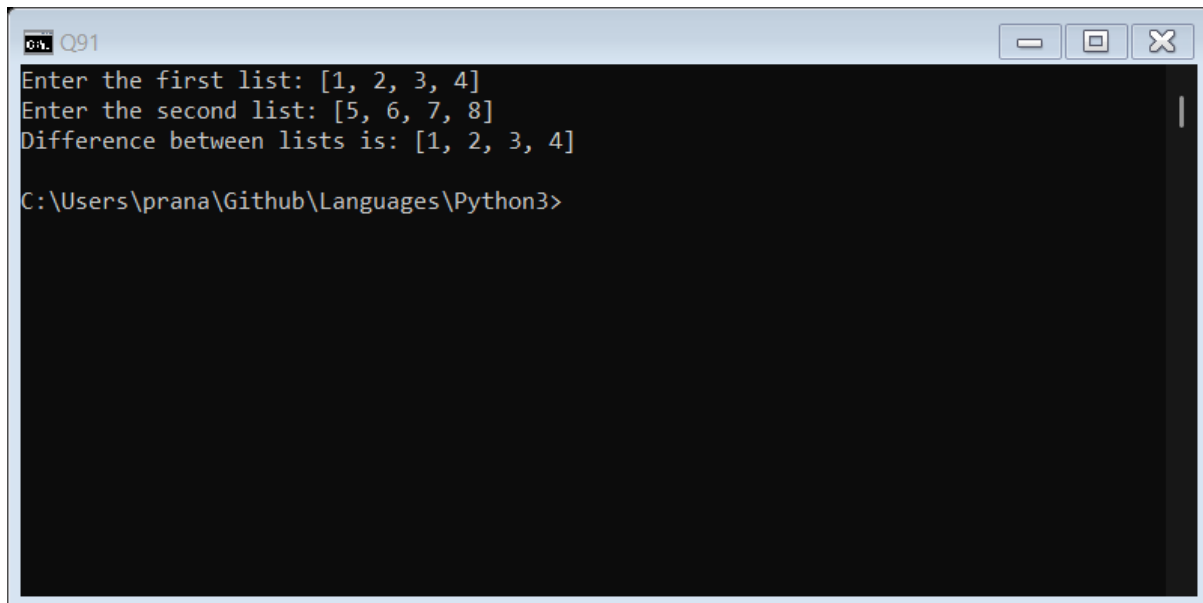


The screenshot shows a Python IDE window titled 'Q90'. The code entered is: `Enter the first list: [1, 2, 3, 4]`, `Enter the second list: [1, 2, 3, 4]`, and `Common elements are: [1, 2, 3, 4]`. The output is displayed in the console area.

91. Write a program to find the difference between two lists.

```
l1 = eval(input("Enter the first list: "))
```

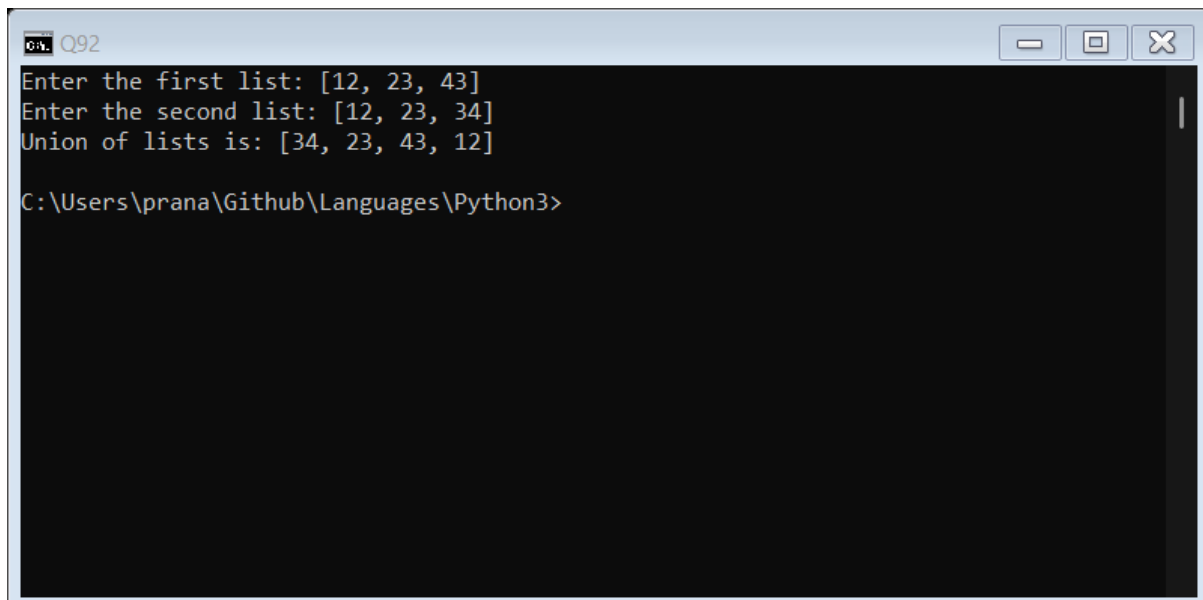
```
l2 = eval(input("Enter the second list: "))  
diff = list(set(l1) - set(l2))  
print("Difference between lists is:", diff)
```



The screenshot shows a Python IDE window titled "Q91". The code being executed is: `l2 = eval(input("Enter the second list: "))`, `diff = list(set(l1) - set(l2))`, and `print("Difference between lists is:", diff)`. The output displayed is: `Enter the first list: [1, 2, 3, 4]`, `Enter the second list: [5, 6, 7, 8]`, and `Difference between lists is: [1, 2, 3, 4]`. The command prompt shows the file path: `C:\Users\prana\Github\Languages\Python3>`.

92. Write a program to find the union of two lists.

```
l1 = eval(input("Enter the first list: "))  
l2 = eval(input("Enter the second list: "))  
union = list(set(l1) | set(l2))  
print("Union of lists is:", union)
```

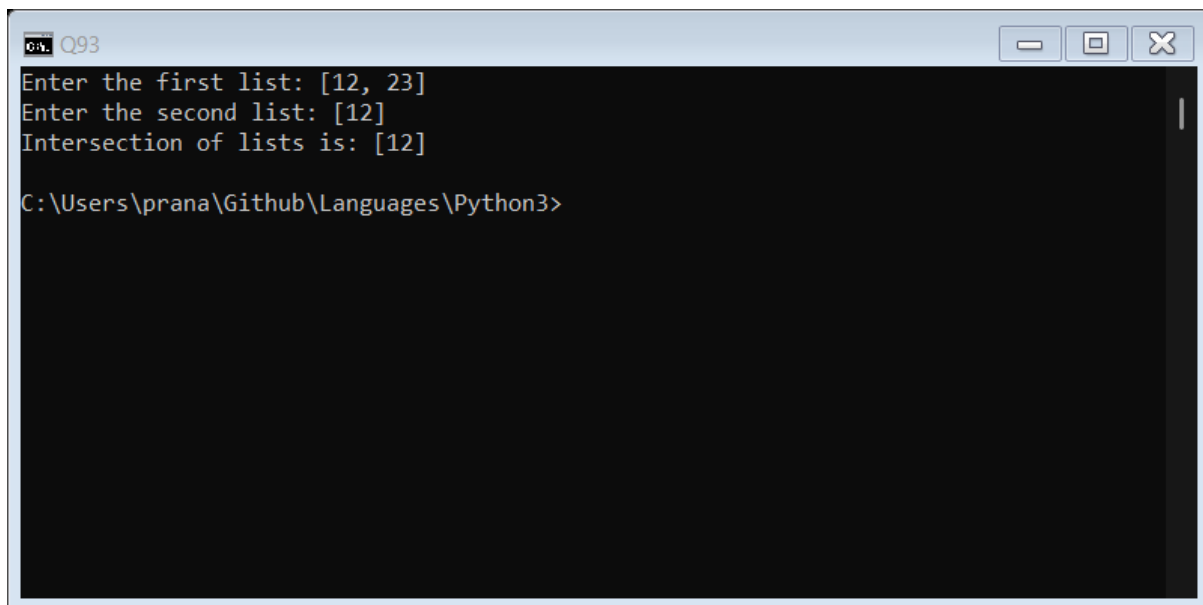


The screenshot shows a Python IDE window titled "Q92". The code being executed is: `l1 = eval(input("Enter the first list: "))`, `l2 = eval(input("Enter the second list: "))`, `union = list(set(l1) | set(l2))`, and `print("Union of lists is:", union)`. The output displayed is: `Enter the first list: [12, 23, 43]`, `Enter the second list: [12, 23, 34]`, and `Union of lists is: [34, 23, 43, 12]`. The command prompt shows the file path: `C:\Users\prana\Github\Languages\Python3>`.

93. Write a program to find the intersection of two lists.

```
l1 = eval(input("Enter the first list: "))  
l2 = eval(input("Enter the second list: "))
```

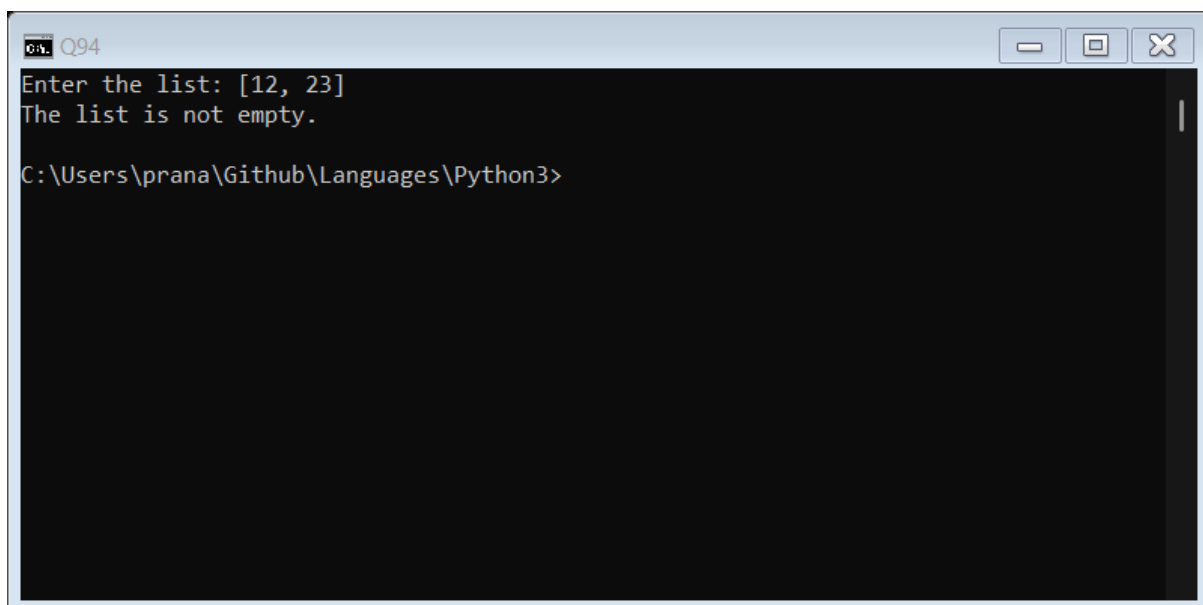
```
intersection = list(set(l1) & set(l2))  
print("Intersection of lists is:", intersection)
```



```
Q93  
Enter the first list: [12, 23]  
Enter the second list: [12]  
Intersection of lists is: [12]  
C:\Users\prana\Github\Languages\Python3>
```

94. Write a program to check if a list is empty or not.

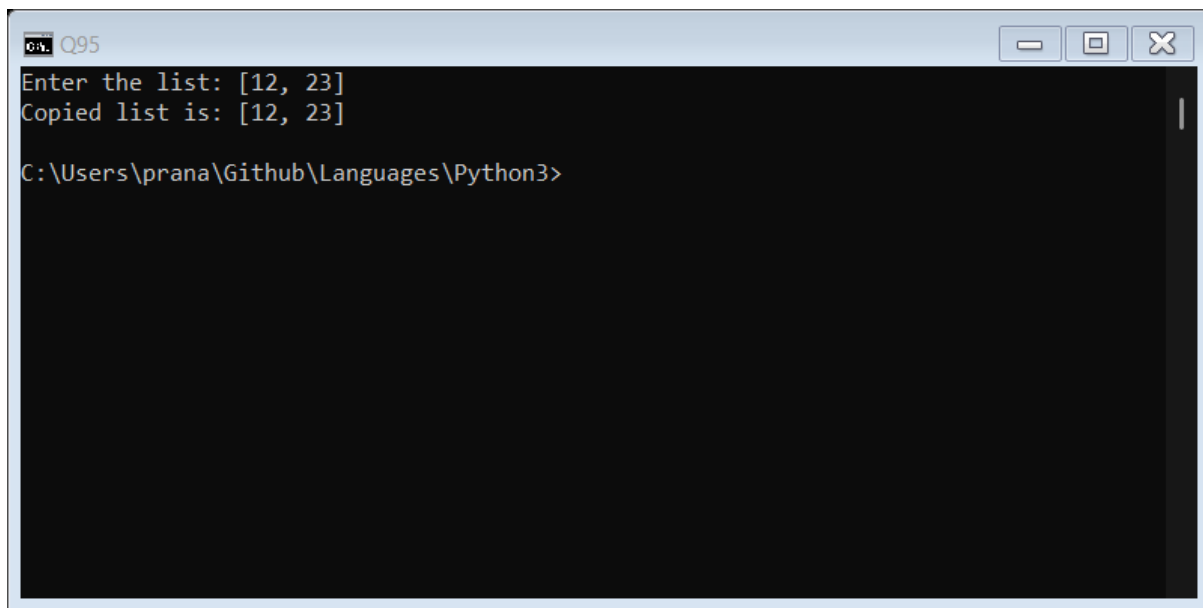
```
l = eval(input("Enter the list: "))  
if len(l) == 0:  
    print("The list is empty.")  
else:  
    print("The list is not empty.")
```



```
Q94  
Enter the list: [12, 23]  
The list is not empty.  
C:\Users\prana\Github\Languages\Python3>
```

95. Write a program to clone or copy a list.

```
l = eval(input("Enter the list: "))  
copied_list = l.copy()  
print("Copied list is:", copied_list)
```

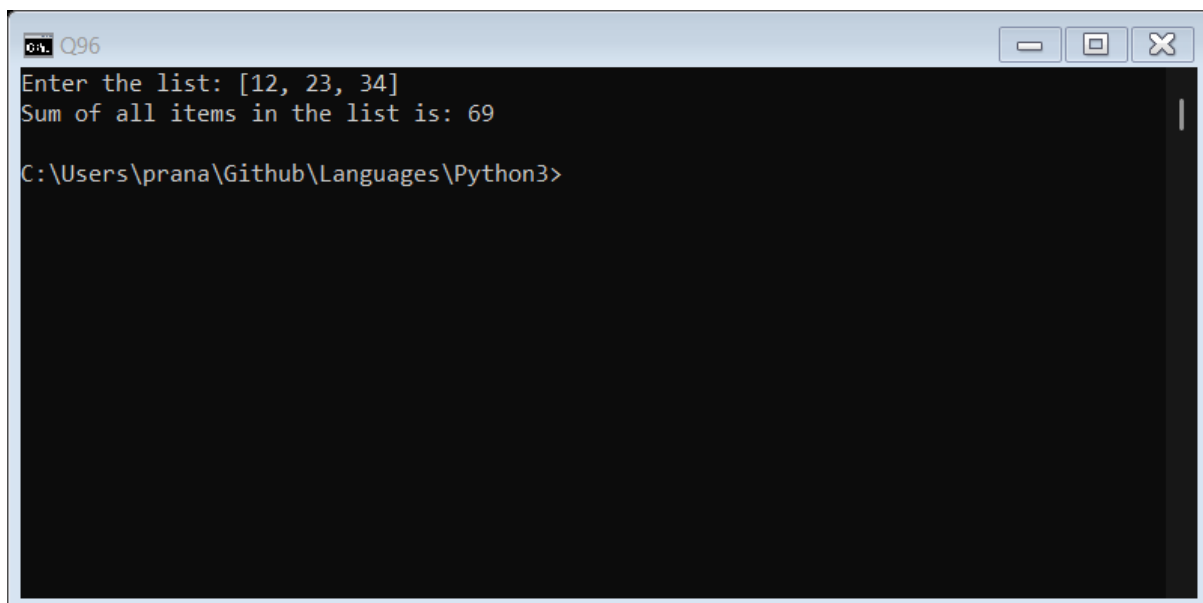


```
Q95
Enter the list: [12, 23]
Copied list is: [12, 23]

C:\Users\prana\Github\Languages\Python3>
```

96. Write a program to find the sum of all items in a list.

```
l = eval(input("Enter the list: "))
total = sum(l)
print("Sum of all items in the list is:", total)
```

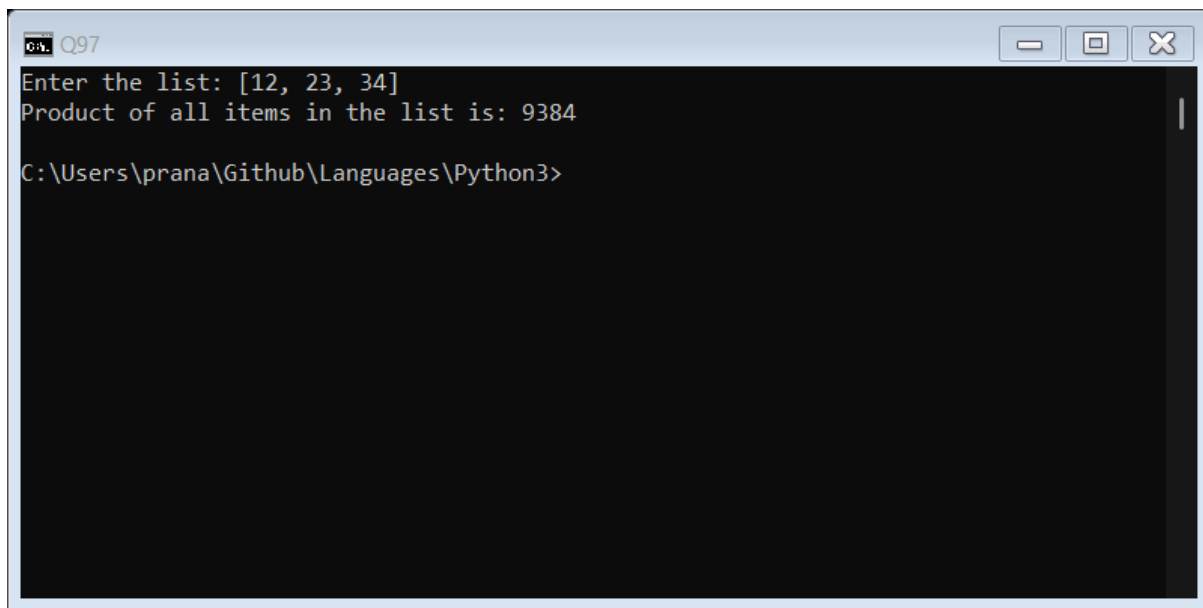


```
Q96
Enter the list: [12, 23, 34]
Sum of all items in the list is: 69

C:\Users\prana\Github\Languages\Python3>
```

97. Write a program to multiply all items in a list.

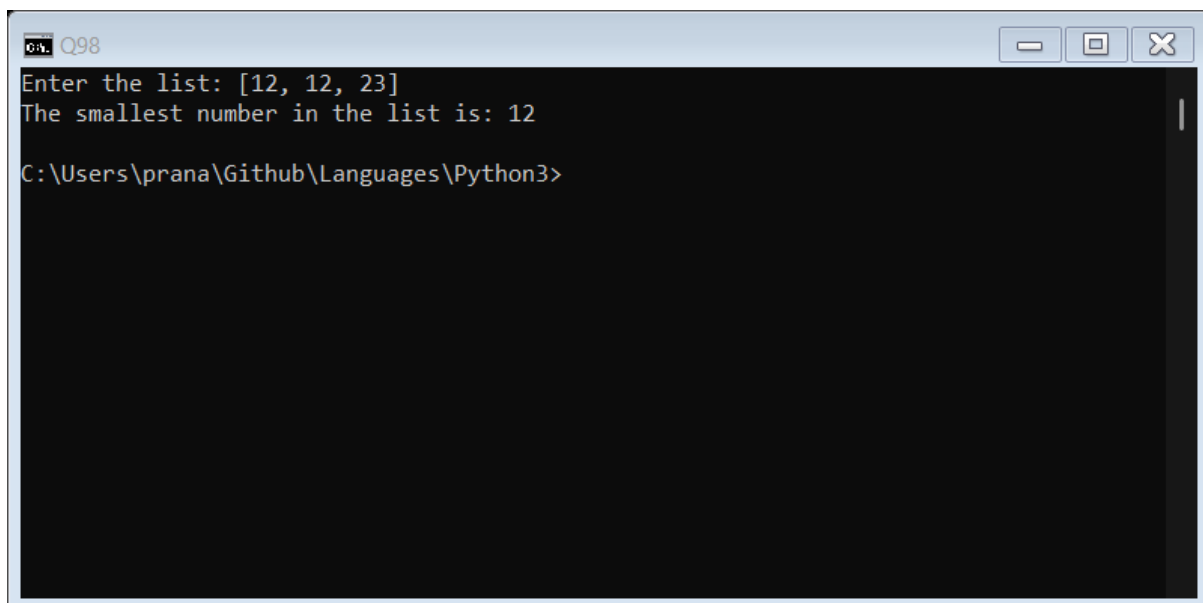
```
from functools import reduce
l = eval(input("Enter the list: "))
product = reduce((lambda x, y: x * y), l)
print("Product of all items in the list is:", product)
```



```
Q97
Enter the list: [12, 23, 34]
Product of all items in the list is: 9384
C:\Users\prana\Github\Languages\Python3>
```

98. Write a program to find the smallest number in a list.

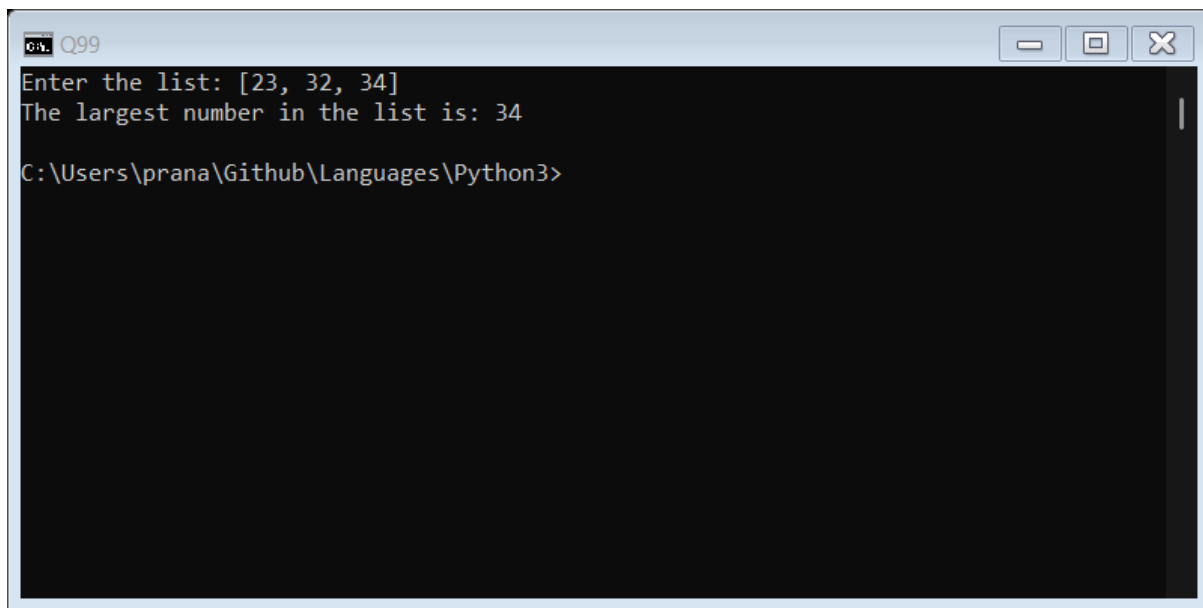
```
l = eval(input("Enter the list: "))
smallest = min(l)
print("The smallest number in the list is:", smallest)
```



```
Q98
Enter the list: [12, 12, 23]
The smallest number in the list is: 12
C:\Users\prana\Github\Languages\Python3>
```

99. Write a program to find the largest number in a list.

```
l = eval(input("Enter the list: "))
largest = max(l)
print("The largest number in the list is:", largest)
```

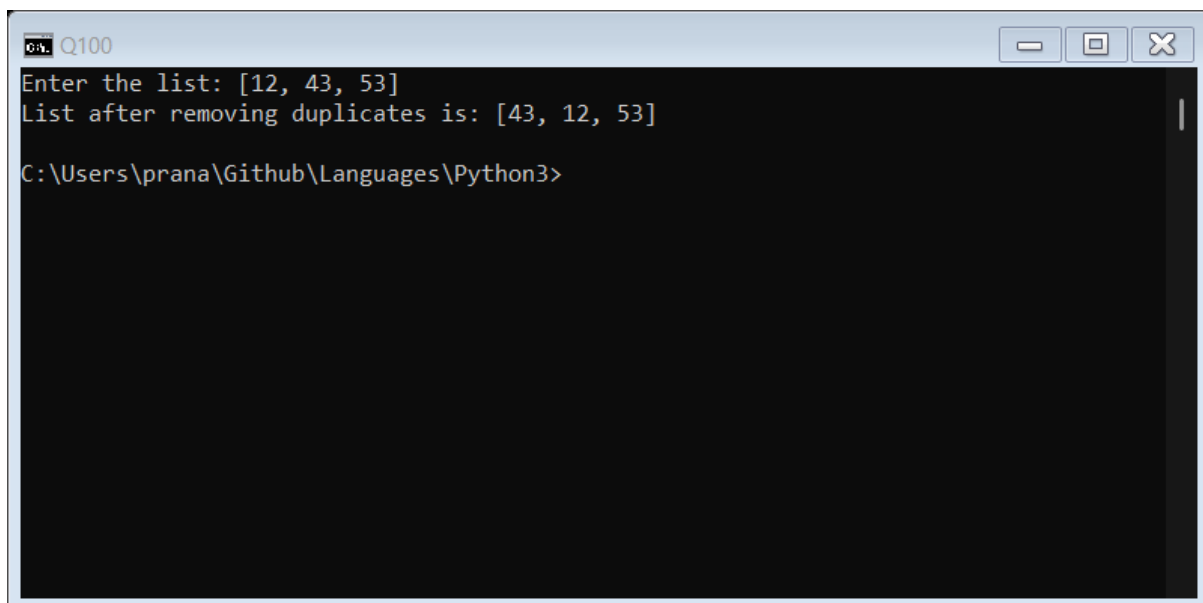


```
Q99
Enter the list: [23, 32, 34]
The largest number in the list is: 34

C:\Users\prana\Github\Languages\Python3>
```

100. Write a program to remove duplicates from a list.

```
l = eval(input("Enter the list: "))
unique_list = list(set(l))
print("List after removing duplicates is:", unique_list)
```

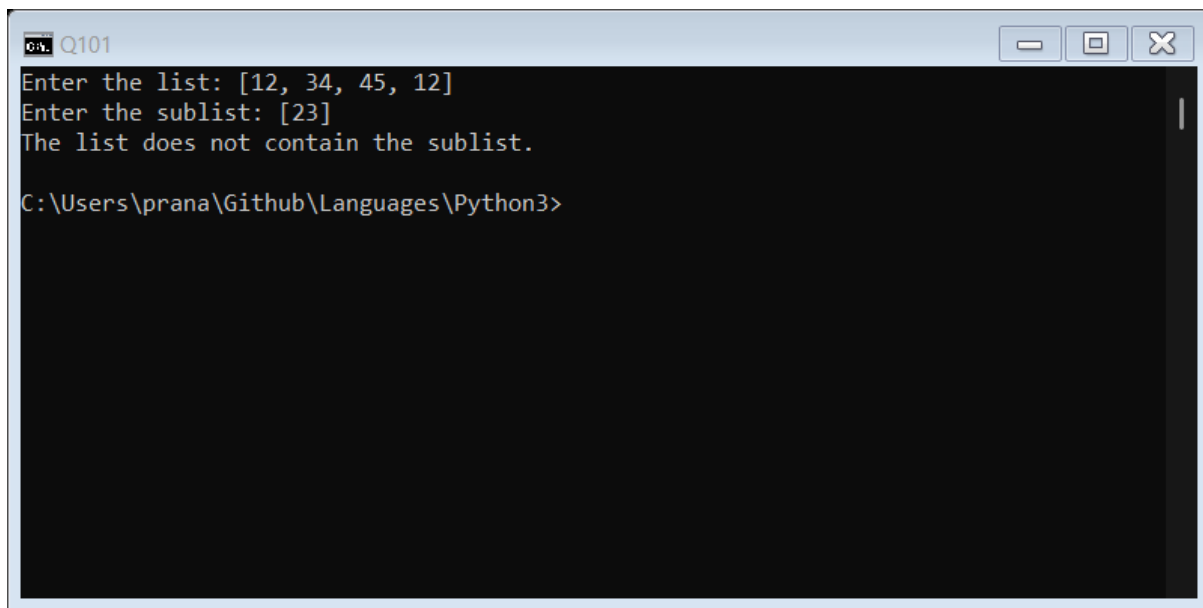


```
Q100
Enter the list: [12, 43, 53]
List after removing duplicates is: [43, 12, 53]

C:\Users\prana\Github\Languages\Python3>
```

101. Write a program to check if a list contains a sublist.

```
l = eval(input("Enter the list: "))
sublist = eval(input("Enter the sublist: "))
if set(sublist).issubset(set(l)):
    print("The list contains the sublist.")
else:
    print("The list does not contain the sublist.")
```

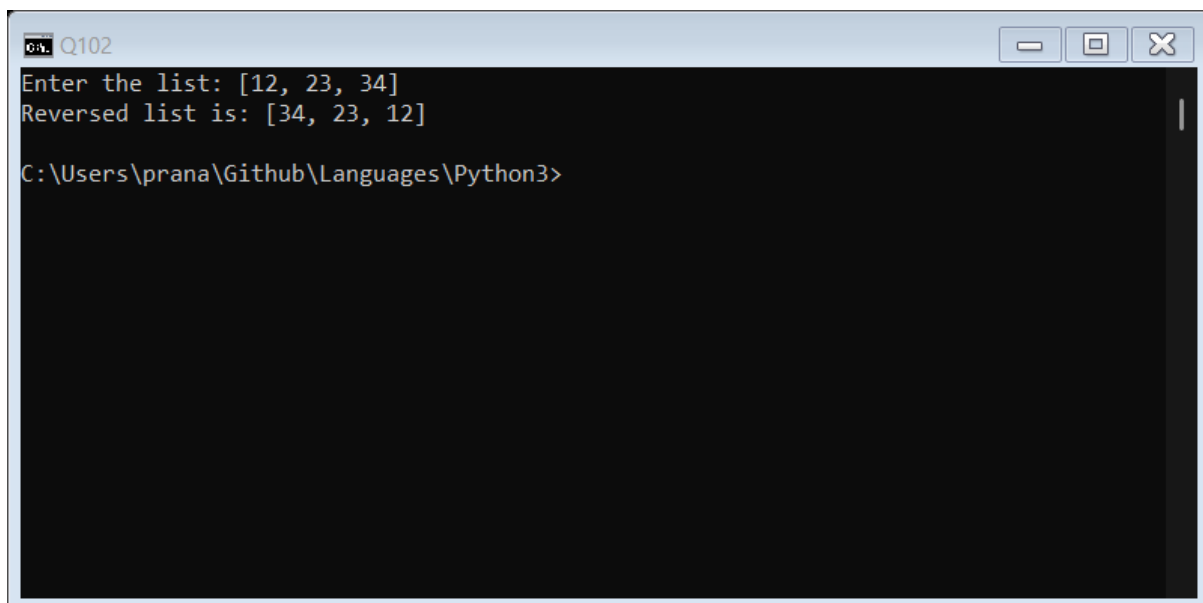


```
Q101
Enter the list: [12, 34, 45, 12]
Enter the sublist: [23]
The list does not contain the sublist.

C:\Users\prana\Github\Languages\Python3>
```

102. Write a program to reverse a list.

```
l = eval(input("Enter the list: "))
l.reverse()
print("Reversed list is:", l)
```

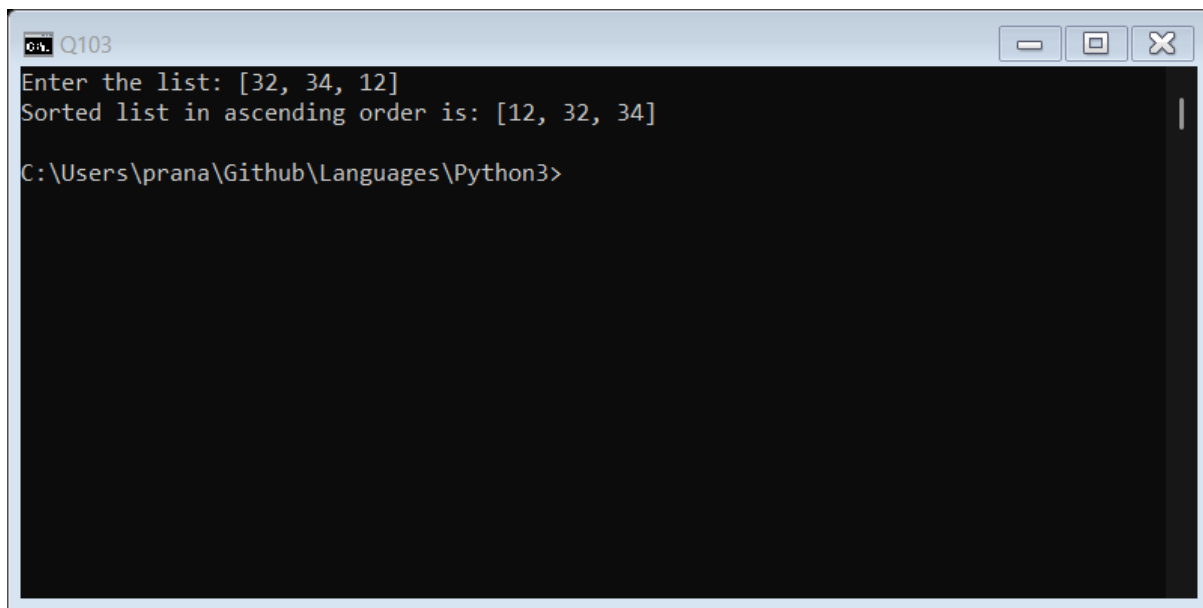


```
Q102
Enter the list: [12, 23, 34]
Reversed list is: [34, 23, 12]

C:\Users\prana\Github\Languages\Python3>
```

103. Write a program to sort a list in ascending order.

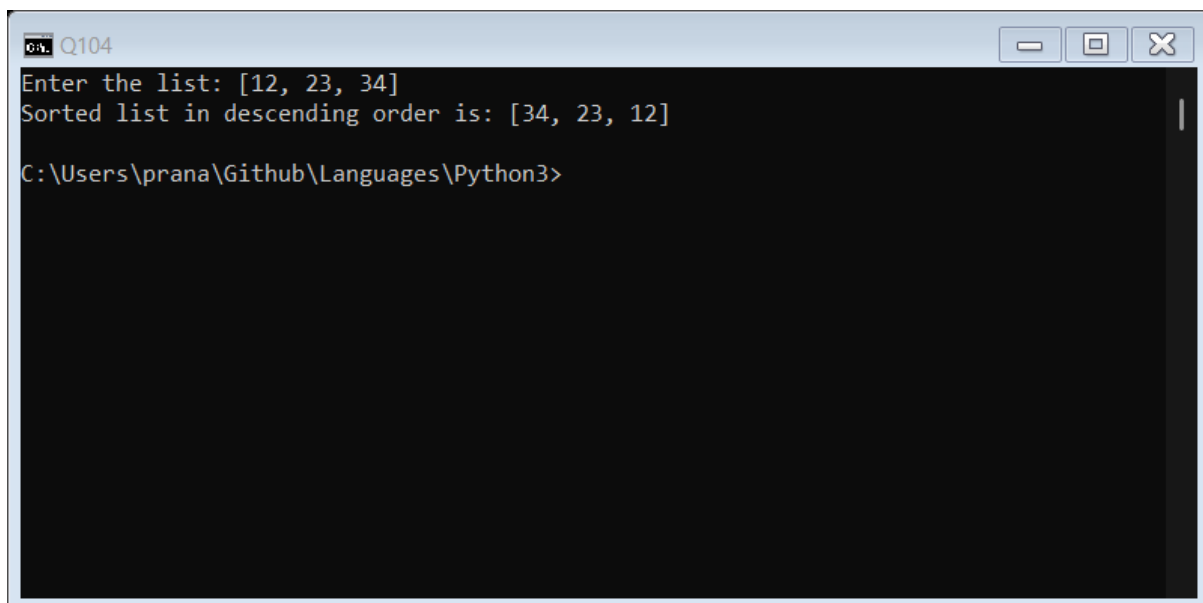
```
l = eval(input("Enter the list: "))
l.sort()
print("Sorted list in ascending order is:", l)
```

```
Q103
Enter the list: [32, 34, 12]
Sorted list in ascending order is: [12, 32, 34]
C:\Users\prana\Github\Languages\Python3>
```

104. Write a program to sort a list in descending order.

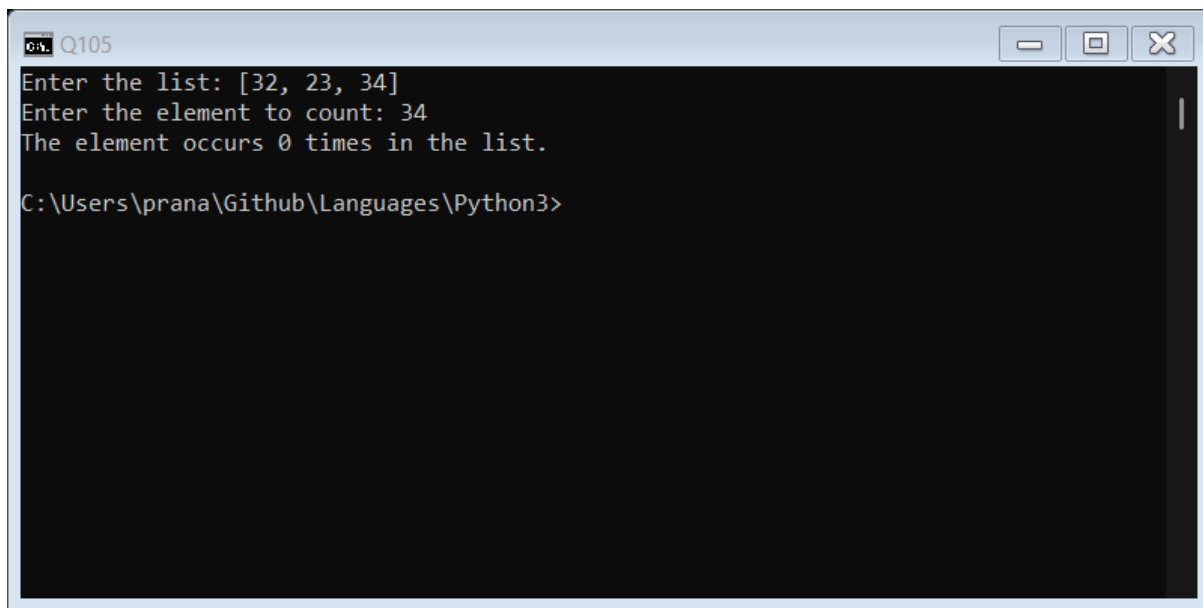
```
l = eval(input("Enter the list: "))
l.sort(reverse=True)
print("Sorted list in descending order is:", l)
```



```
Q104
Enter the list: [12, 23, 34]
Sorted list in descending order is: [34, 23, 12]
C:\Users\prana\Github\Languages\Python3>
```

105. Write a program to count the occurrences of an element in a list.

```
l = eval(input("Enter the list: "))
element = input("Enter the element to count: ")
count = l.count(element)
print("The element occurs", count, "times in the list.")
```

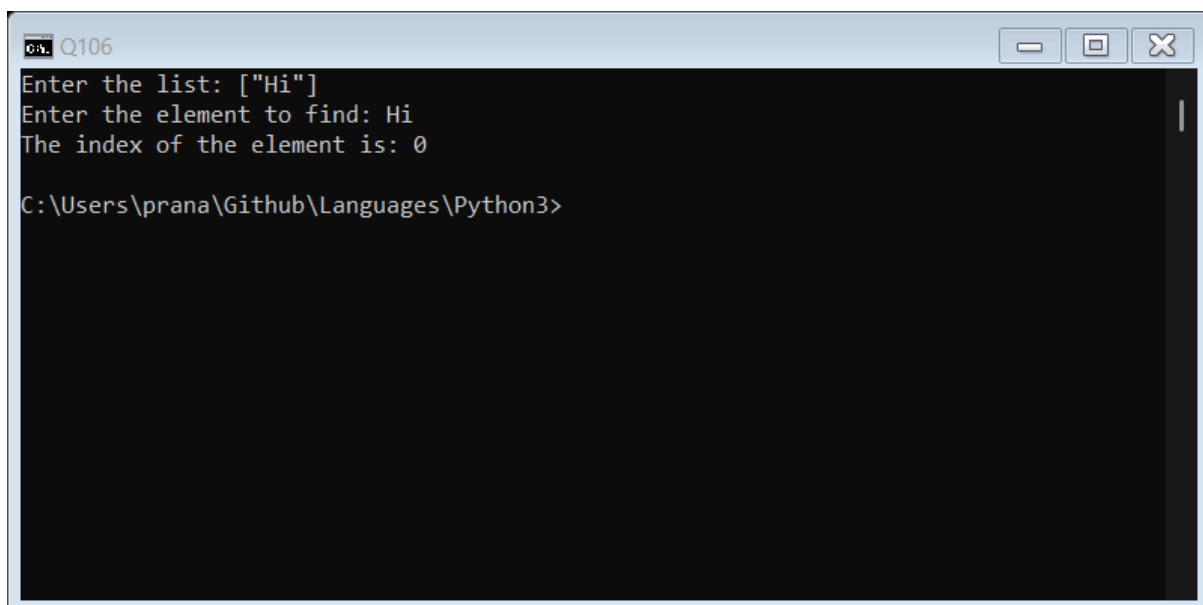


```
Q105
Enter the list: [32, 23, 34]
Enter the element to count: 34
The element occurs 0 times in the list.

C:\Users\prana\Github\Languages\Python3>
```

106. Write a program to find the index of an element in a list.

```
l = eval(input("Enter the list: "))
element = input("Enter the element to find: ")
index = l.index(element)
print("The index of the element is:", index)
```

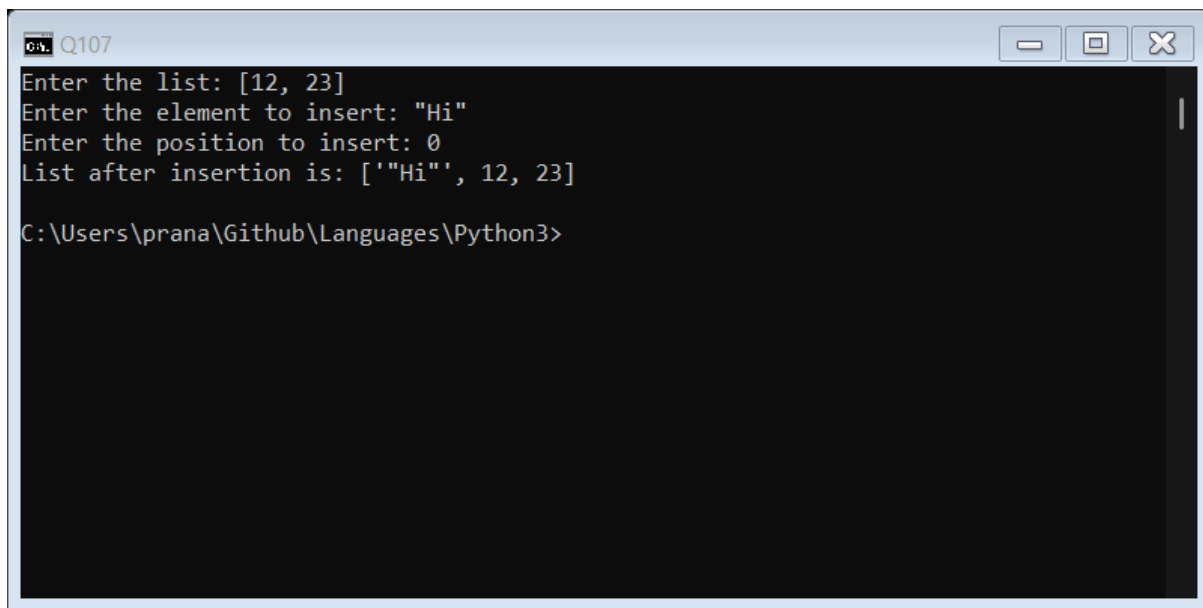


```
Q106
Enter the list: ["Hi"]
Enter the element to find: Hi
The index of the element is: 0

C:\Users\prana\Github\Languages\Python3>
```

107. Write a program to insert an element at a specific position in a list.

```
l = eval(input("Enter the list: "))
element = input("Enter the element to insert: ")
position = int(input("Enter the position to insert: "))
l.insert(position, element)
print("List after insertion is:", l)
```

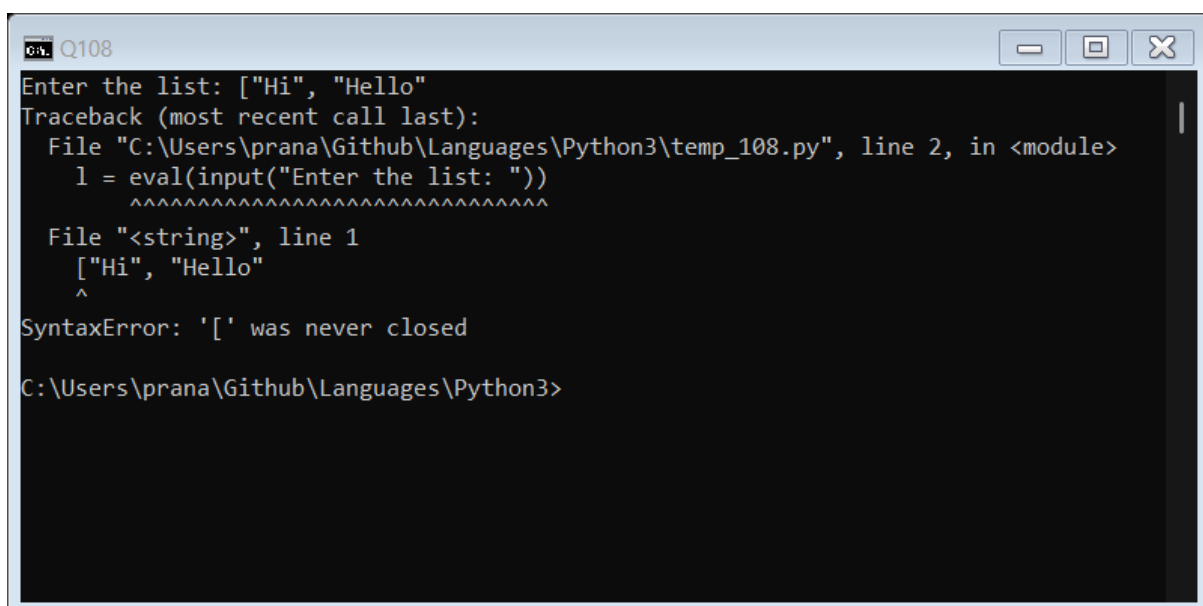


```
Q107
Enter the list: [12, 23]
Enter the element to insert: "Hi"
Enter the position to insert: 0
List after insertion is: ['Hi', 12, 23]

C:\Users\prana\Github\Languages\Python3>
```

108. Write a program to remove an element from a list.

```
l = eval(input("Enter the list: "))
element = input("Enter the element to remove: ")
l.remove(element)
print("List after removal is:", l)
```

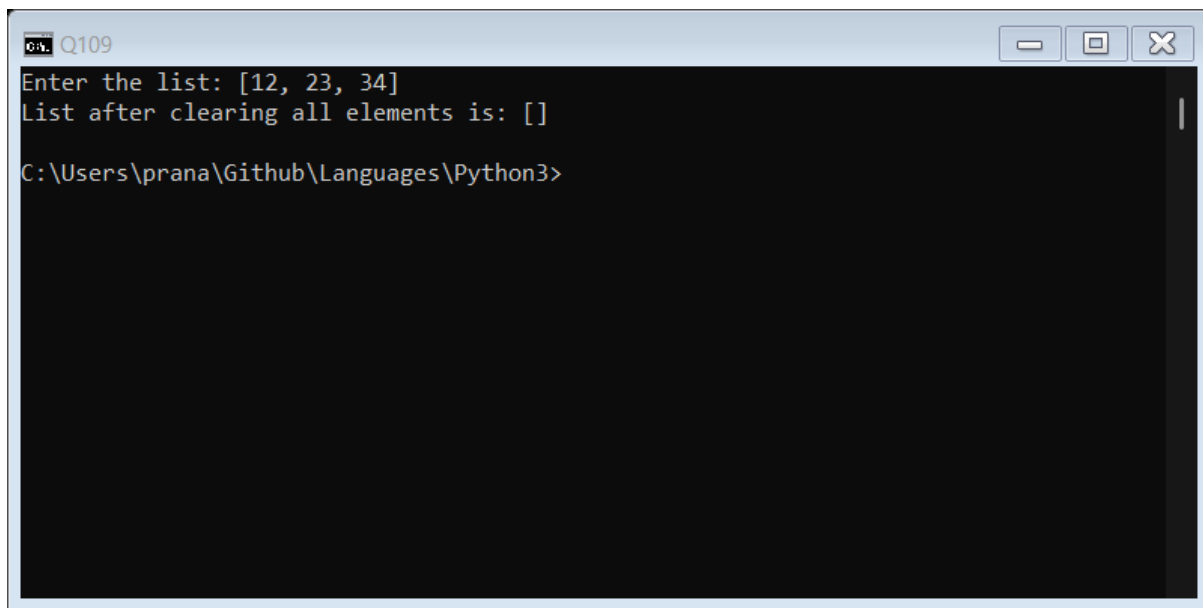


```
Q108
Enter the list: ["Hi", "Hello"]
Traceback (most recent call last):
  File "C:\Users\prana\Github\Languages\Python3\temp_108.py", line 2, in <module>
    l = eval(input("Enter the list: "))
    ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "<string>", line 1
    ["Hi", "Hello"]
    ^
SyntaxError: '[' was never closed

C:\Users\prana\Github\Languages\Python3>
```

109. Write a program to clear all elements from a list.

```
l = eval(input("Enter the list: "))
l.clear()
print("List after clearing all elements is:", l)
```

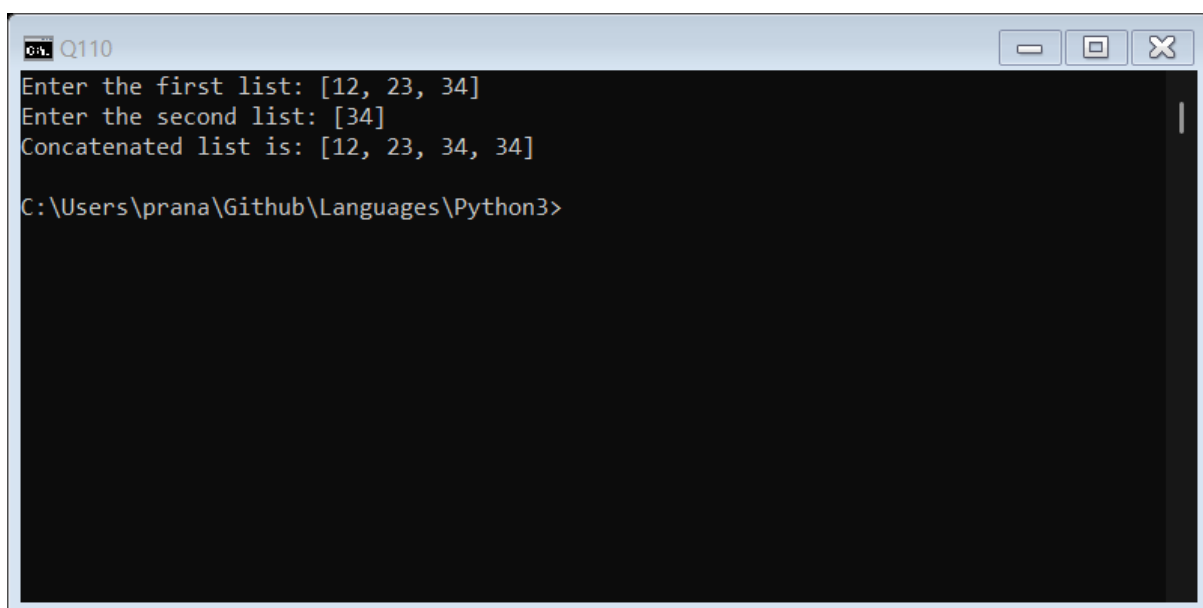


```
Q109
Enter the list: [12, 23, 34]
List after clearing all elements is: []

C:\Users\prana\Github\Languages\Python3>
```

110. Write a program to concatenate two lists.

```
l1 = eval(input("Enter the first list: "))
l2 = eval(input("Enter the second list: "))
concatenated_list = l1 + l2
print("Concatenated list is:", concatenated_list)
```

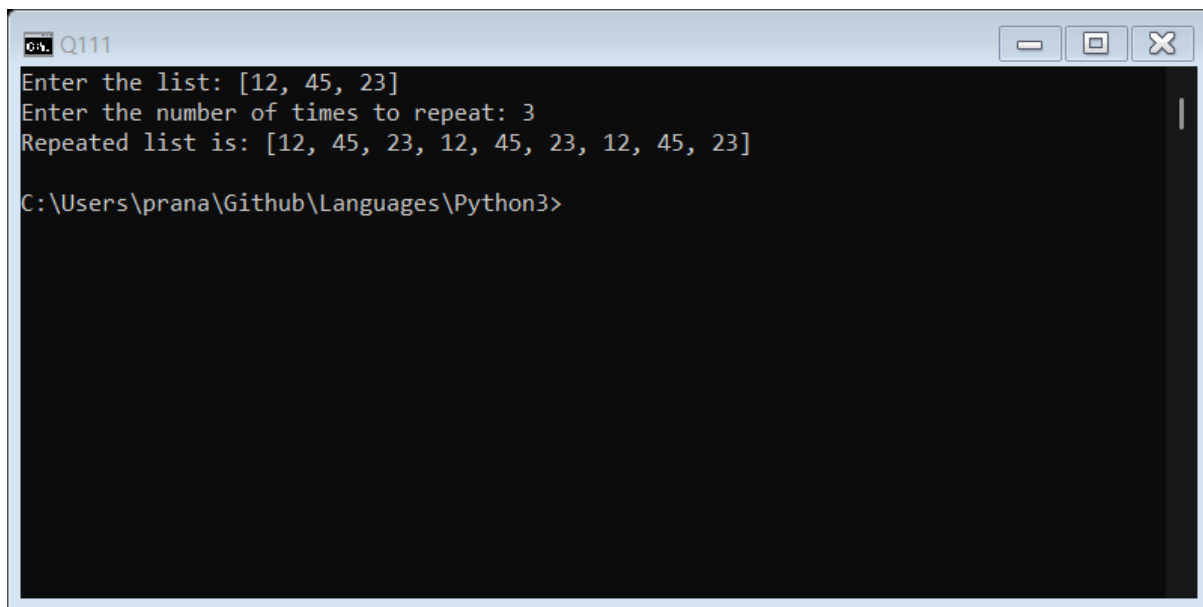


```
Q110
Enter the first list: [12, 23, 34]
Enter the second list: [34]
Concatenated list is: [12, 23, 34, 34]

C:\Users\prana\Github\Languages\Python3>
```

111. Write a program to repeat a list n times.

```
l = eval(input("Enter the list: "))
n = int(input("Enter the number of times to repeat: "))
repeated_list = l * n
print("Repeated list is:", repeated_list)
```

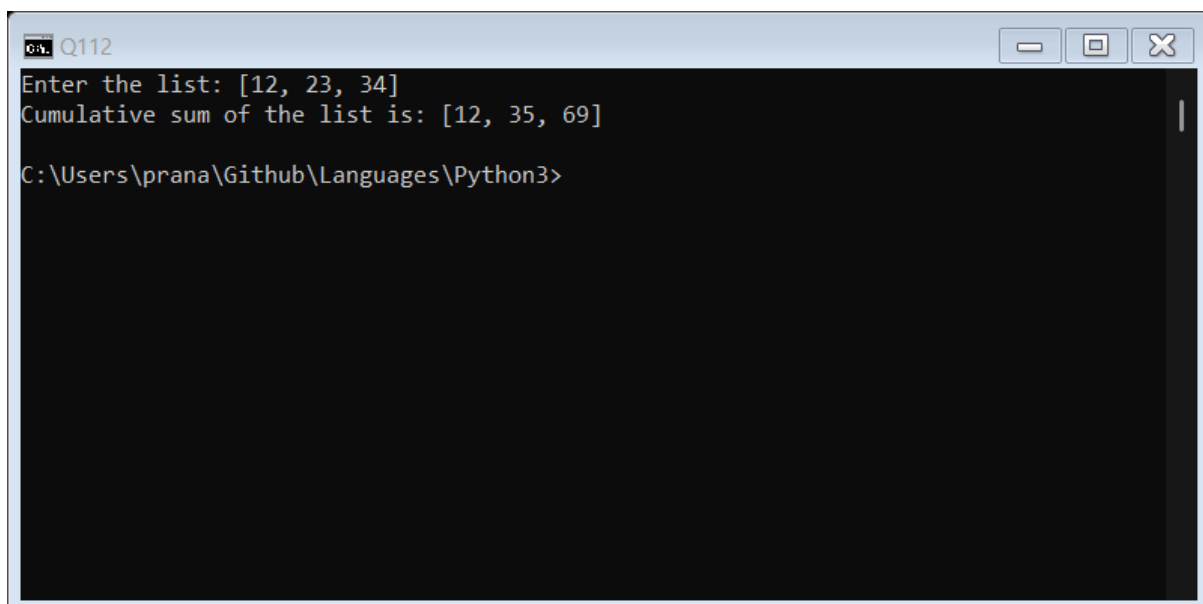


```
Q111
Enter the list: [12, 45, 23]
Enter the number of times to repeat: 3
Repeated list is: [12, 45, 23, 12, 45, 23, 12, 45, 23]

C:\Users\prana\Github\Languages\Python3>
```

112. Write a program to find the cumulative sum of a list.

```
l = eval(input("Enter the list: "))
cumulative_sum = []
total = 0
for i in l:
    total += i
    cumulative_sum.append(total)
print("Cumulative sum of the list is:", cumulative_sum)
```



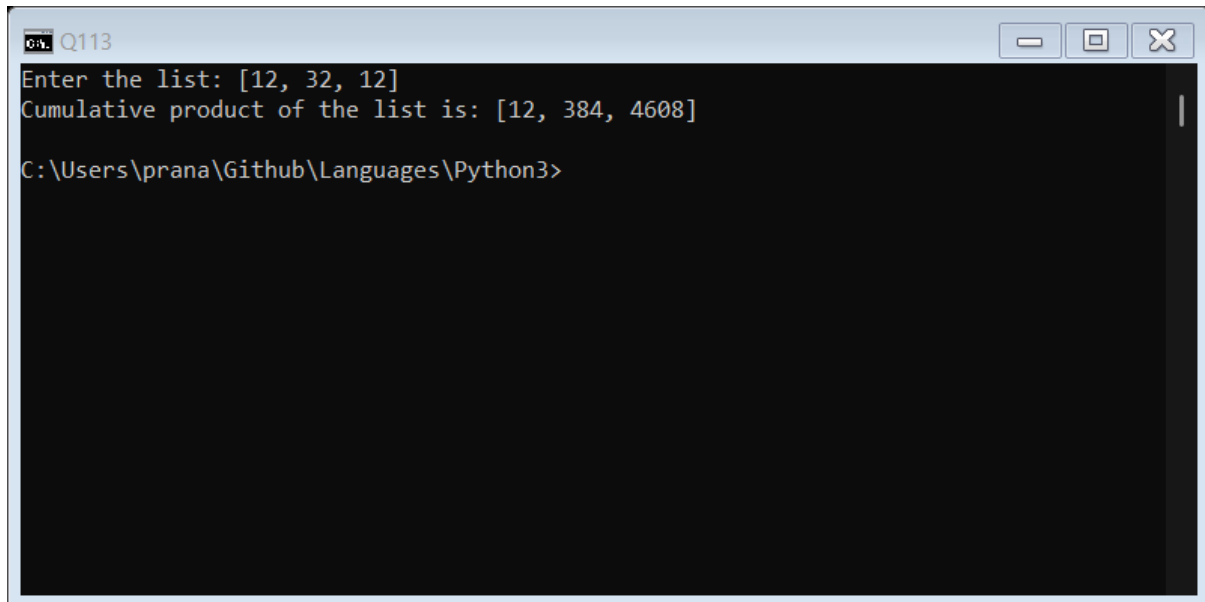
```
Q112
Enter the list: [12, 23, 34]
Cumulative sum of the list is: [12, 35, 69]

C:\Users\prana\Github\Languages\Python3>
```

113. Write a program to find the cumulative product of a list.

```
l = eval(input("Enter the list: "))
cumulative_product = []
product = 1
```

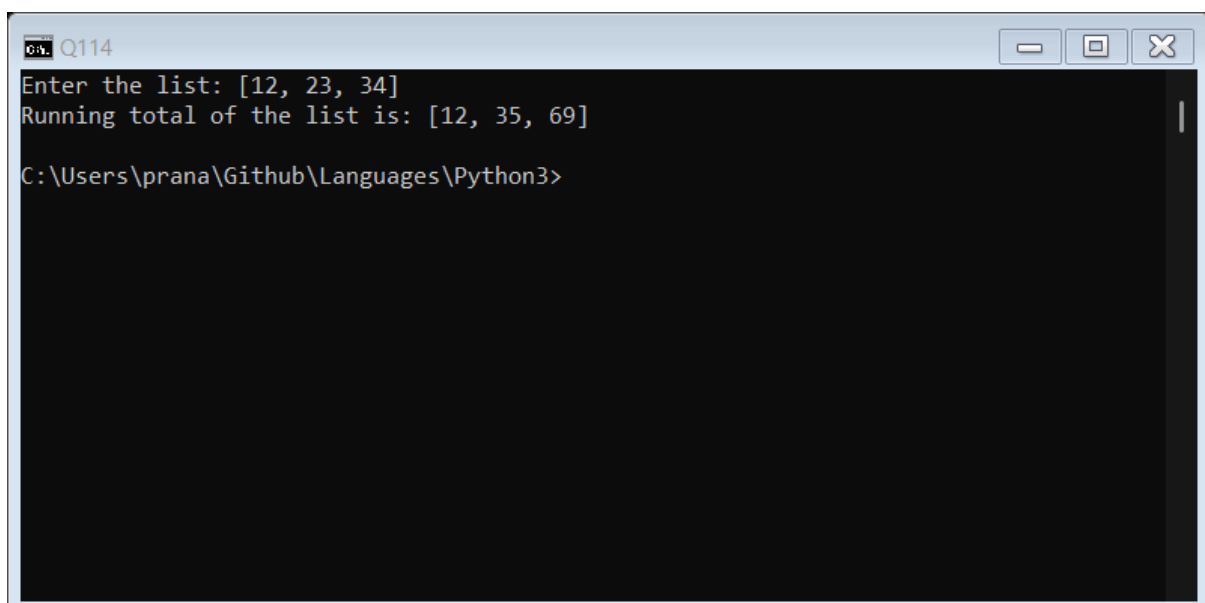
```
for i in l:
    product *= i
    cumulative_product.append(product)
print("Cumulative product of the list is:", cumulative_product)
```



The screenshot shows a Python IDE window titled "Q113". The input is "Enter the list: [12, 32, 12]" and the output is "Cumulative product of the list is: [12, 384, 4608]". The command prompt shows the file path "C:\Users\prana\Github\Languages\Python3>".

114. Write a program to find the running total of a list.

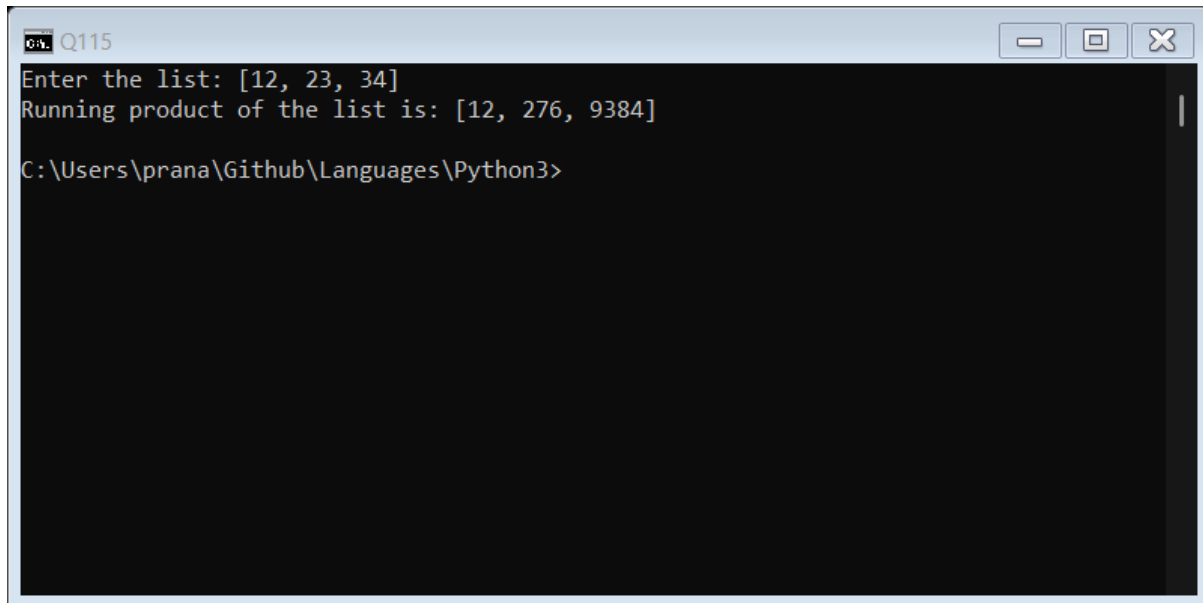
```
l = eval(input("Enter the list: "))
running_total = []
total = 0
for i in l:
    total += i
    running_total.append(total)
print("Running total of the list is:", running_total)
```



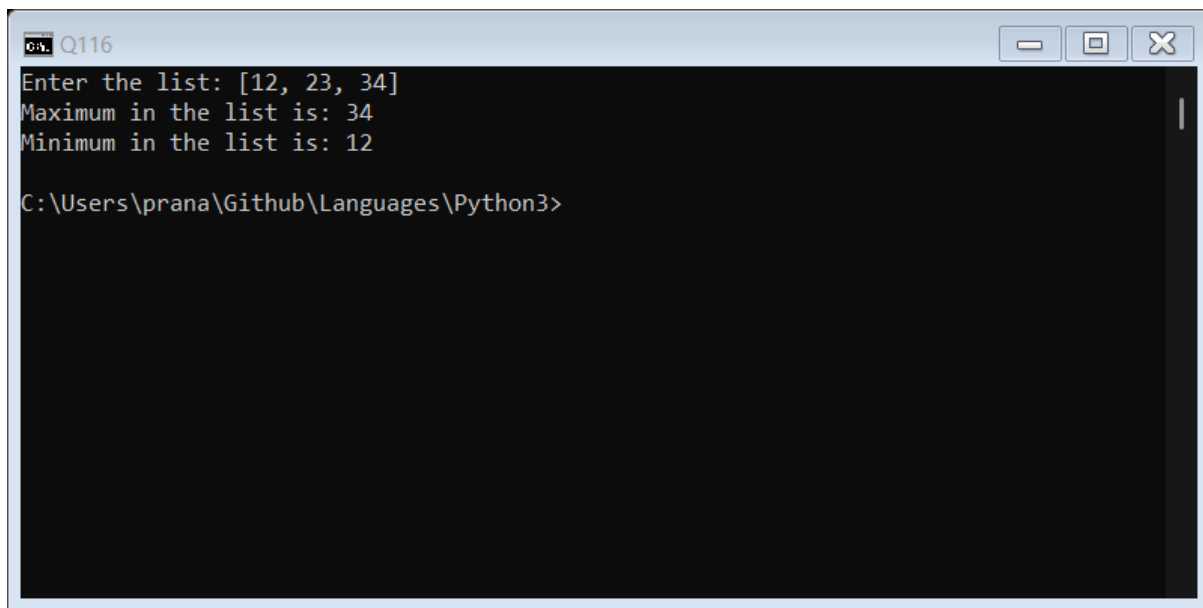
The screenshot shows a Python IDE window titled "Q114". The input is "Enter the list: [12, 23, 34]" and the output is "Running total of the list is: [12, 35, 69]". The command prompt shows the file path "C:\Users\prana\Github\Languages\Python3>".

115. Write a program to find the running product of a list.

```
l = eval(input("Enter the list: "))
running_product = []
product = 1
for i in l:
    product *= i
    running_product.append(product)
print("Running product of the list is:", running_product)
```

A screenshot of a Python IDE window titled "Q115". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The main area is a black console with white text. The text shows the user inputting the list [12, 23, 34] and the program outputting the running product list [12, 276, 9384]. The command prompt path is visible at the bottom: C:\Users\prana\Github\Languages\Python3>.**116. Write a program to find the maximum and minimum in a list.**

```
l = eval(input("Enter the list: "))
maximum = max(l)
minimum = min(l)
print("Maximum in the list is:", maximum)
print("Minimum in the list is:", minimum)
```



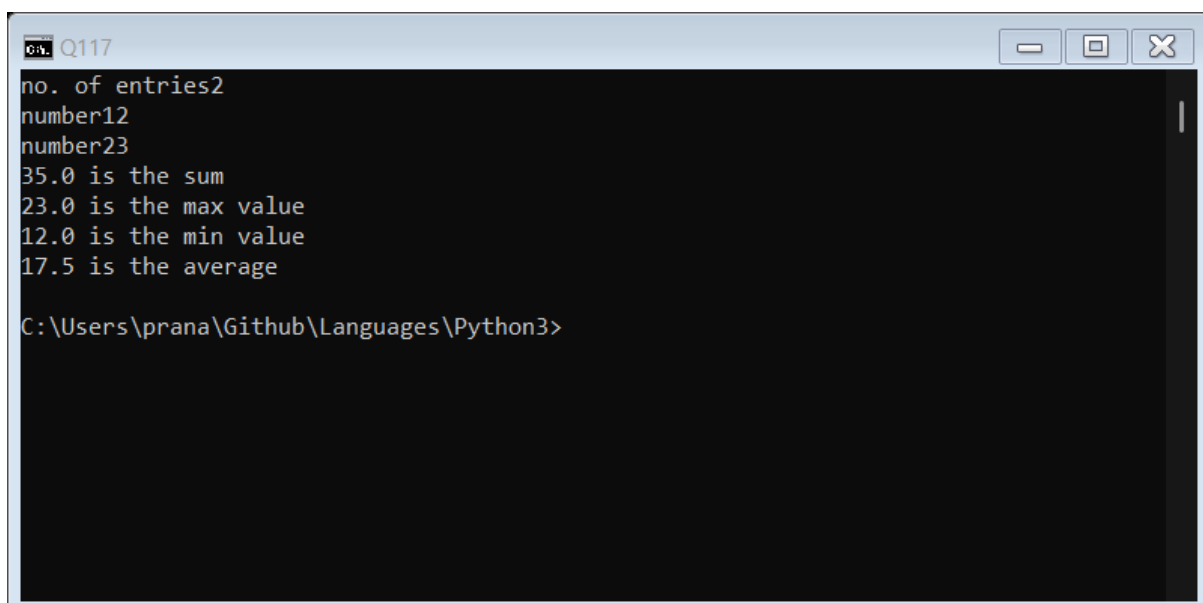
```
Q116
Enter the list: [12, 23, 34]
Maximum in the list is: 34
Minimum in the list is: 12

C:\Users\prana\Github\Languages\Python3>
```

Chapter 7: Tuples and Dictionaries

117. Write a program to input n numbers, store them in a tuple and print the maximum, minmum, sum and mean.

```
t=()
n=int(input('no. of entries'))
for i in range(n):
    x=float(input('number'))
    t=t+(x,)
print(sum(t), 'is the sum')
print(max(t), 'is the max value')
print(min(t), 'is the min value')
print(sum(t)/n, 'is the average')
```

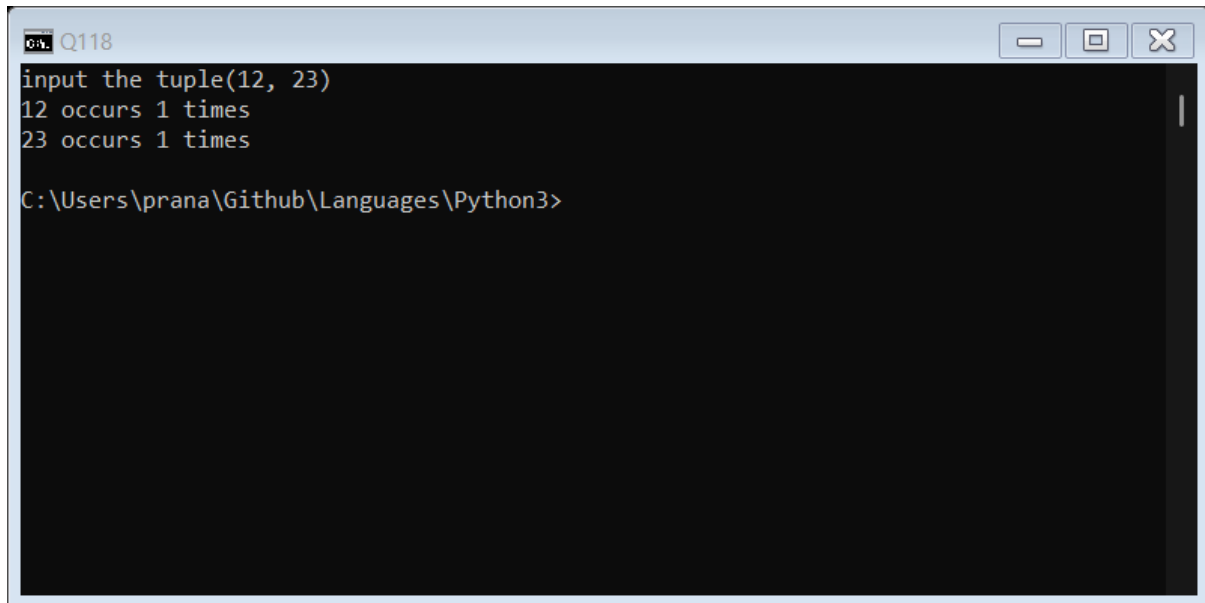


```
Q117
no. of entries2
number12
number23
35.0 is the sum
23.0 is the max value
12.0 is the min value
17.5 is the average

C:\Users\prana\Github\Languages\Python3>
```


118. Write a program to count the frequency of elements in a tuple.

```
t=eval(input('input the tuple'))
for i in range(len(t)):
    if t.index(t[i])==i:
        print(t[i], 'occurs', t.count(t[i]), 'times')
```

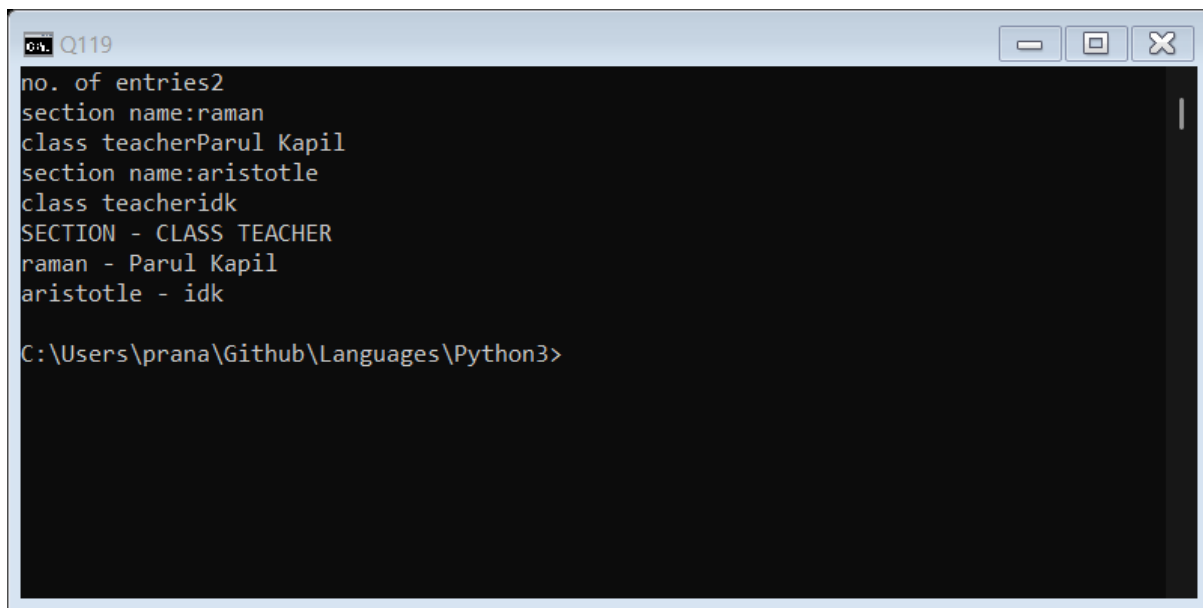


```
Q118
input the tuple(12, 23)
12 occurs 1 times
23 occurs 1 times

C:\Users\prana\Github\Languages\Python3>
```

119. Write a Python program to input north classes and the names of their class teachers to store it in a dictionary

```
d={}
n=int(input('no. of entries'))
for i in range(n):
    a=input('section name:')
    b=input('class teacher')
    d[a]=b
print('SECTION', '-', 'CLASS TEACHER')
for i in d:
    print(i, '-', d[i])
```

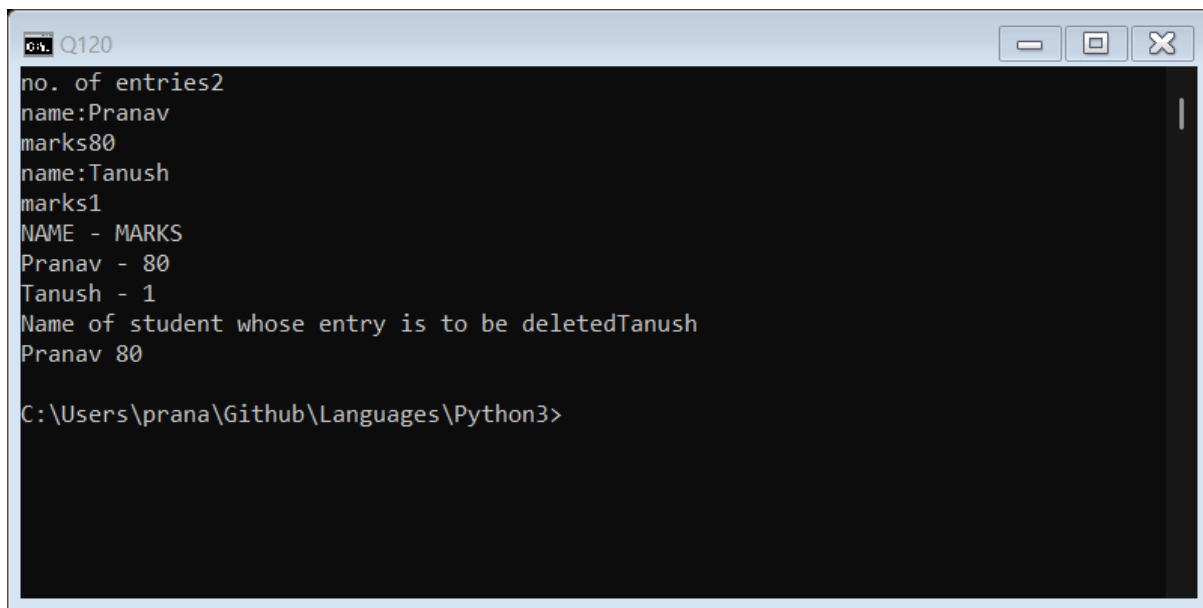


```
Q119
no. of entries2
section name:raman
class teacherParul Kapil
section name:aristotle
class teacheridk
SECTION - CLASS TEACHER
raman - Parul Kapil
aristotle - idk

C:\Users\prana\Github\Languages\Python3>
```

120. Write a Python program to store student names in their percentage in a dictionary delete a particular students name from the dictionary and also display dictionary after deletion

```
d={}
n=int(input('no. of entries'))
for i in range(n):
    a=input('name:')
    b=input('marks')
    d[a]=b
print('NAME', '-', 'MARKS')
for i in d:
    print(i,'-',d[i])
x=input('Name of student whose entry is to be deleted')
del d[x]
for i in d:
    print(i, d[i])
```

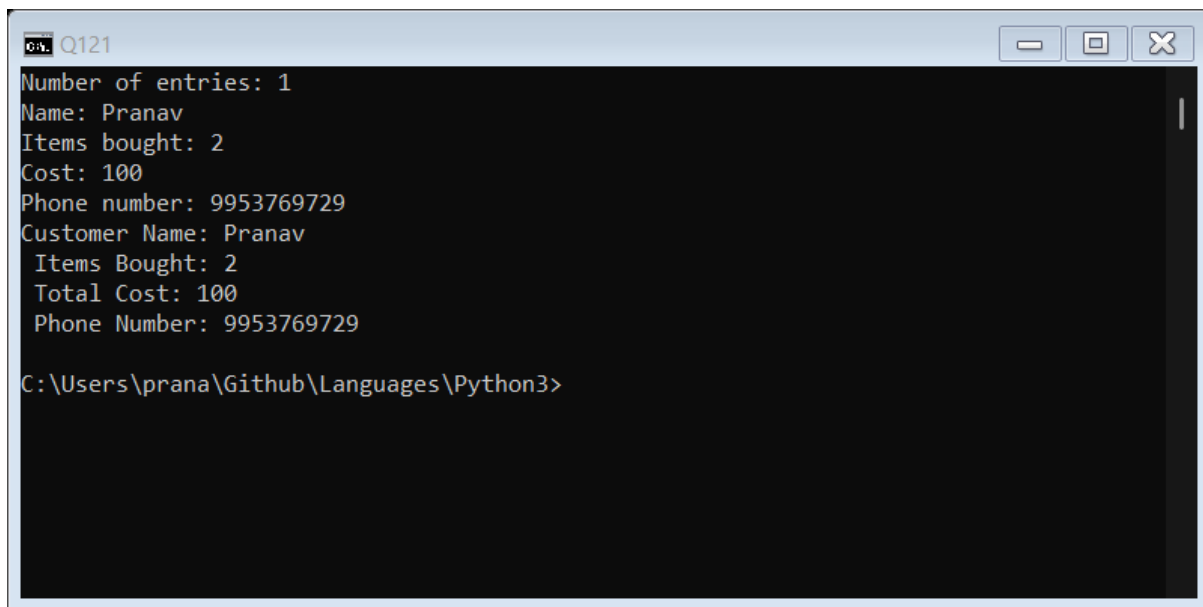


```
Q120
no. of entries2
name:Pranav
marks80
name:Tanush
marks1
NAME - MARKS
Pranav - 80
Tanush - 1
Name of student whose entry is to be deletedTanush
Pranav 80

C:\Users\prana\Github\Languages\Python3>
```

121. Write a Python program to input names of north customers and their details like items bought cost and phone number store it in a dictionary and display all the details in a tabular form

```
n = int(input('Number of entries: '))
data = {}
for i in range(n):
    name = input('Name: ')
    items_bought = input('Items bought: ')
    cost = input('Cost: ')
    phone_number = input('Phone number: ')
    data[name] = [items_bought, cost, phone_number]
for name, details in data.items():
    print("Customer Name: " + name)
    print(" Items Bought: " + details[0])
    print(" Total Cost: " + details[1])
    print(" Phone Number: " + details[2])
```

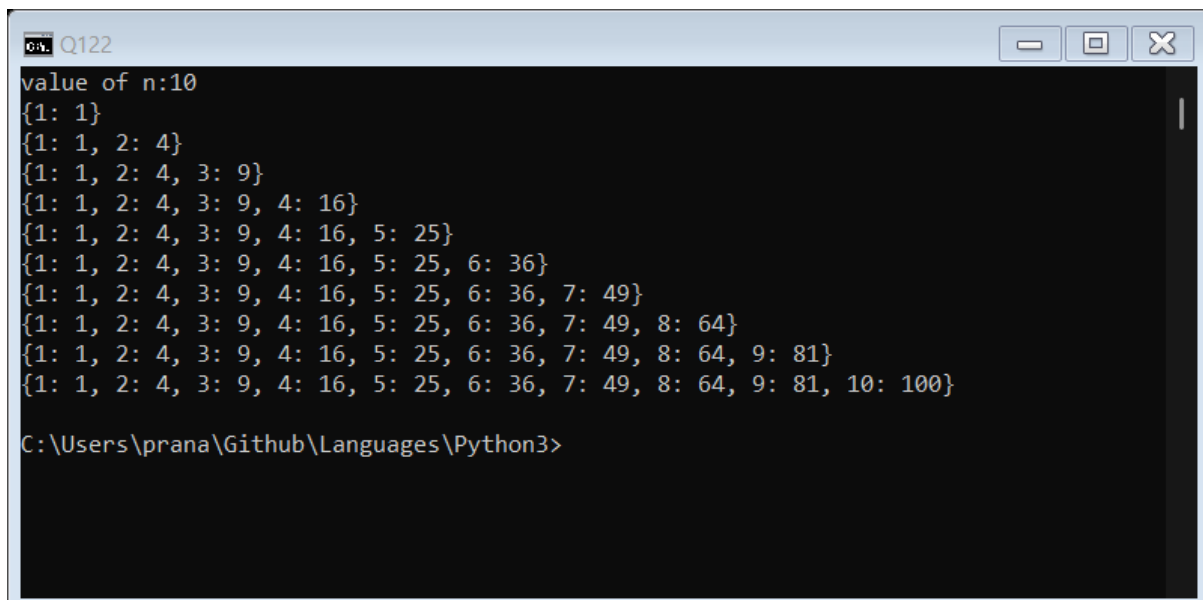


```
Q121
Number of entries: 1
Name: Pranav
Items bought: 2
Cost: 100
Phone number: 9953769729
Customer Name: Pranav
Items Bought: 2
Total Cost: 100
Phone Number: 9953769729

C:\Users\prana\Github\Languages\Python3>
```

122. Write a Python program to input names of north customers and their details like items bought cost and phone number store it in a dictionary and display all the details in a tabular form

```
n=int(input("value of n:"))
d={}
for i in range(1,n+1):
    d[i]=i*i
    print(d)
```



```
Q122
value of n:10
{1: 1}
{1: 1, 2: 4}
{1: 1, 2: 4, 3: 9}
{1: 1, 2: 4, 3: 9, 4: 16}
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25}
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36}
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49}
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64}
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81}
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100}

C:\Users\prana\Github\Languages\Python3>
```

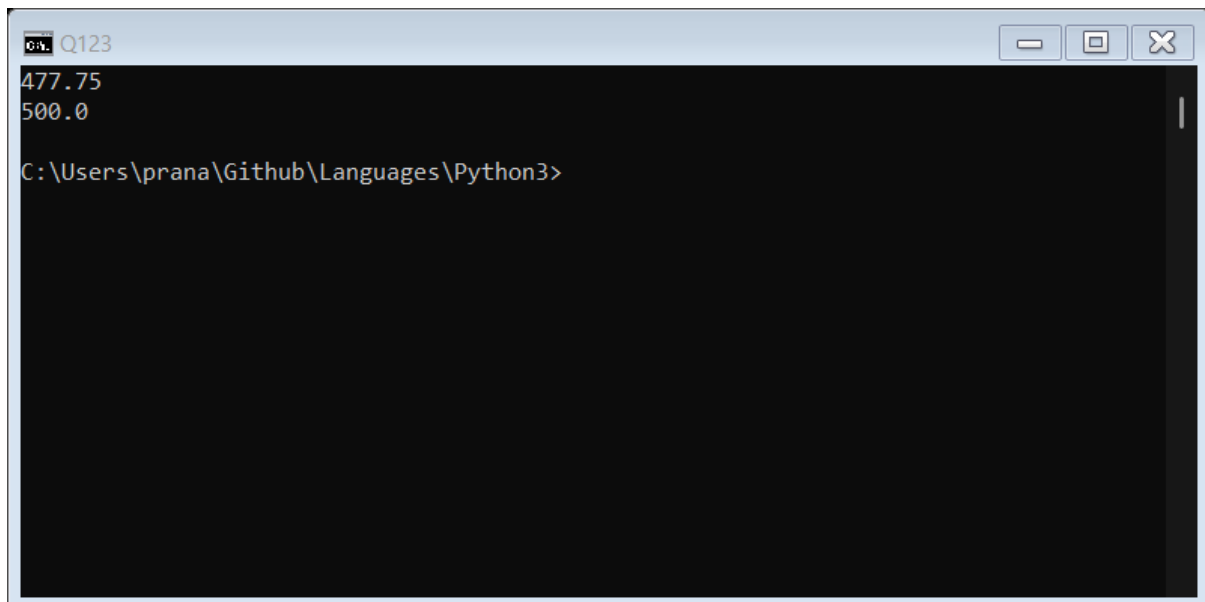
Chapter 9: Python Modules

123. Consider the amount of donations received by a charitable organization given as under

```
observations = [  
    100, 60, 70, 900, 100, 200, 500, 500,  
    503, 600, 1000, 1200  
]
```

Now write a Python program to calculate the average amount obtained and median of the above data.

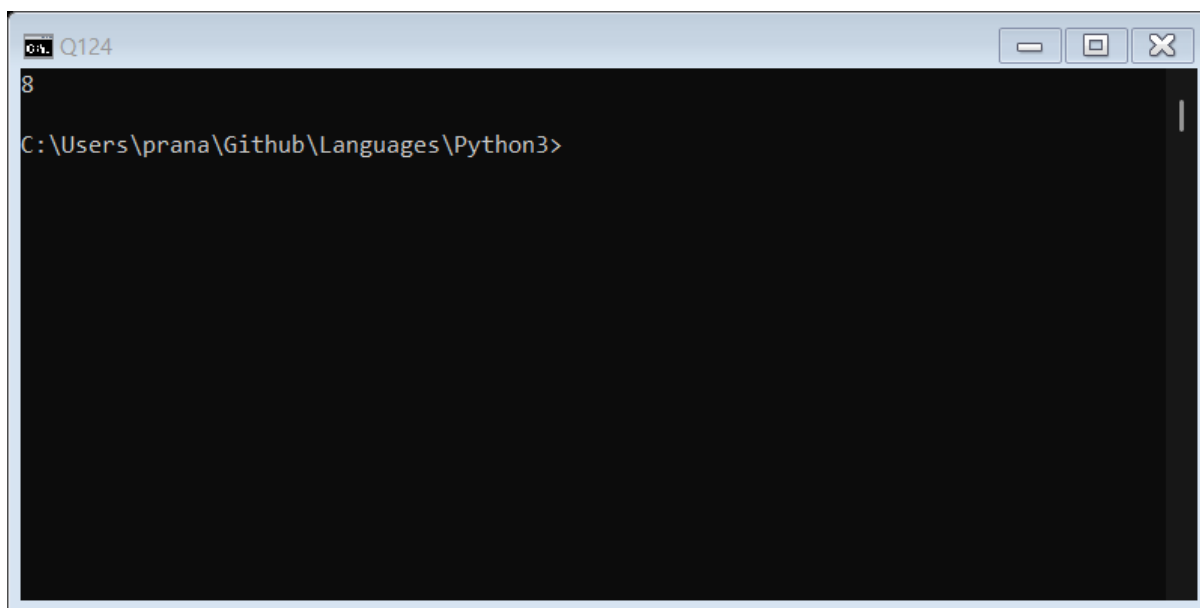
```
from statistics import *  
observations=[100,60,70,900,100,200,500,500,503,600,1000,1200]  
print(mean(observations))  
print(median(observations))
```

A screenshot of a Python 3 terminal window titled 'Q123'. The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The terminal output shows the mean of the observations as 477.75 and the median as 500.0. The command prompt shows the current directory as 'C:\Users\prana\Github\Languages\Python3>'.

```
Q123  
477.75  
500.0  
C:\Users\prana\Github\Languages\Python3>
```

124. Write a program to generate a random number between 0 and 9

```
from random import randint  
print(randint(0,9))
```



125. Consider the temperature given below for the month of June and north India calculate the average temperature and median value this temperature gets dipped within a variation of 20 degree Celsius in the month of December write a Python program to calculate the changed median value and average temperature import statistics.

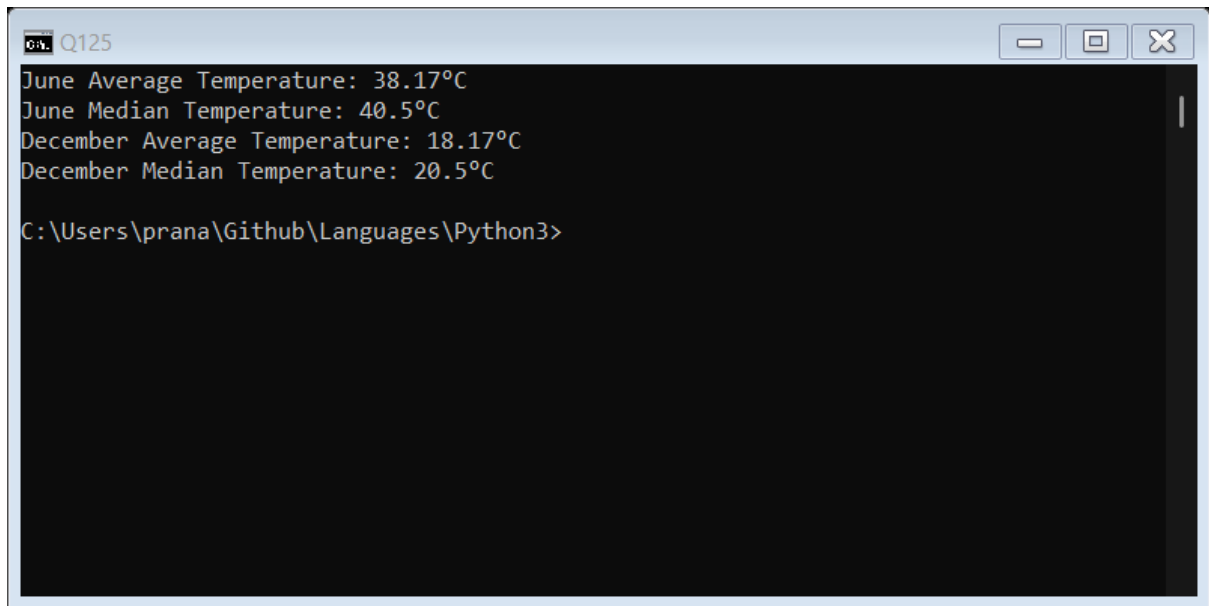
```
from statistics import median

def calculate_average(temperatures):
    return sum(temperatures) / len(temperatures)

temperatures_june = [41, 32, 43, 40, 28, 45]
average_june = calculate_average(temperatures_june)
median_june = median(temperatures_june)

temperatures_december = [temp - 20 for temp in temperatures_june]
average_december = calculate_average(temperatures_december)
median_december = median(temperatures_december)

print(f"June Average Temperature: {round(average_june, 2)}°C")
print(f"June Median Temperature: {median_june}°C")
print(f"December Average Temperature: {round(average_december, 2)}°C")
print(f"December Median Temperature: {median_december}°C")
```



```
Q125
June Average Temperature: 38.17°C
June Median Temperature: 40.5°C
December Average Temperature: 18.17°C
December Median Temperature: 20.5°C

C:\Users\prana\Github\Languages\Python3>
```