```
In [16]: #Question number 1
         # Functions are often used to validate input. Write a function that accepts a single
         # integer as a parameter and returns True if the integer is in the range 0 to 100
         # (inclusive), or False otherwise. Write a short program to test the function.

         # Define a function to check if the number is in the range 0 to 100
         def condition(number):
             # Check if the number is between 0 and 100 (inclusive)
             if number >= 0 and number <= 100:
                 return True  # Return True if the number is in the range
             else:
                 return False  # Return False if the number is out of the range

         # Prompt the user to input a number
         number = int(input("Enter any number from 0-100: "))

         # Call the condition function and pass the input number
         if condition(number):
             # If the condition is True, print that the number is within the range
             print("The number is in the range 0-100.")
         else:
             # If the condition is False, print that the number is out of range
             print("The number is out of the range 0-100.")

         The number is out of the range 0-100.
```

```
In [1]: #Question number 2
        #Write a function that has a single string as its parameter, and returns the number of
        # uppercase letters, and the number of lowercase letters in the string. Test the
        # function with a short program.

        def letter_count (word):
            uppercase=0
            lowercase=0

            for i in word:
                if i.isupper():
                    uppercase +=1
                else:
                    lowercase+=1
            return uppercase, lowercase

        word="The British College"
        uppercase, lowercase= letter_count(word)

        print(f"Uppercase letters: {uppercase}")
        print(f"Lowercase letters: {lowercase}")

        Uppercase letters: 3
        Lowercase letters: 16
```

```
In [9]: #Question number 3
        # Modify your "greetings" program so that the first letter of the name entered is
        # always in uppercase with the rest in lowercase. This should happen even if the user
        # entered their name differently. So if the user entered arthur, ARTHUR, or even
        # arTHur the name should be displayed as Arthur.

        # Define the function
        def format_and_greet(name):
            # Format the name: capitalize the first letter and lowercase the rest
            formatted_name = name.capitalize()
            # Return the greeting message
            return f"Hello, {formatted_name}!"

        # prompt user input
        user_name = input("Enter your name: ")

        # Call the function and display the result
        print(format_and_greet(user_name))

        Hello, Arthur!
```

```
In [21]: # Question number 4
         # When processing data it is often useful to remove the last character from some
         # input (it is often a newline). Write and test a function that takes a string parameter
         # and returns it with the last character removed. (If the string contains one or fewer
         # characters, return it unchanged.)

         #function to remove last character
         def last_character (character):
             #check if string has more than one character.
             if len(character)>1:
                 #return string without last character
```

```python
        return character[:-1]

    else:
        #returns unchanged if string has one or few character
        return character

test_string= input("Enter the character you like:" ) #prompt user to enter string

display = last_character(test_string) #call of function

print(display) #display the result
```

waterfal

In [7]:
```python
#Question number 5
Write and test a function that converts a temperature measured in degrees
centigrade into the equivalent in fahrenheit, and another that does the reverse
conversion. Test both functions. (Google will find you the formulae).

#function to convert temperature from centigrade to fahrenheit
def for_fahrenheit (temp_centigrade):
    fahrenheit= (temp_centigrade*9/5)+32
    return fahrenheit

#prompt the user to input temperature
centigrade=float(input("Enter the centigrade temprature to change in fahrenheit:"))

#function call for conversion
fahrenheit= for_fahrenheit(centigrade)

#display result
print(f"{centigrade}C is equal to {fahrenheit}F")

#function to convert temperature from fahrenheit to centigrade
def for_centigrade (temp_fahrenheit):
    centigrade= (temp_fahrenheit - 32) * 5/9
    return centigrade

#proomt the user to input a temperature
fahrenheit=float(input("Enter the fahrenheit temprature to change in centigrade:"))

#function call for conversion
centigrade= for_centigrade(fahrenheit)

#display result
print(f"{fahrenheit}F is equal to {centigrade}C")
```

89.0C is equal to 192.2F
192.2F is equal to 89.0C

In [1]:
```python
# Question Number:6
# Write a program that takes a centigrade temperature and displays the equivalent in
# fahrenheit. The input should be a number followed by a letter C. The output should
# be in the same format.


#function to convert centigrade temperature to fahrenheit
def for_fahrenhiet():

    #prompt the user to input temperature.
    temp=input("Enter a tempertaure in celsius:")

    #check if the input ends with C
    if temp[-1] == "C":

        #extracct numeric part and converts it to float
        celsius = float(temp[:-1])

        #convert temperature using formula
        fahrenheit = (celsius * 9 / 5) + 32

        #display output
        print( f"The resulting temperature is: {fahrenheit}F")

    else:
        return "Invalid input. The temperature must end with 'C'."

#call the function to execute the temperature conversion.
for_fahrenhiet()
```

The resulting temperature is: 194.0F

In [28]:
```python
# Question Number: 7
# Write a program that reads 6 temperatures (in the same format as before), and
# displays the maximum, minimum, and mean of the values.
```

```python
# Hint: You should know there are built-in functions for max and min. If you hunt, you
# might also find one for the mean.

#Function to process multiple temperatures and calculate max, min, and mean
def for_all_temperatures():

    # List to store temperatures entered by the user
    temperatures=[]

    # Loop to take 6 temperature inputs
    for i in range(6):
        temp = input("Enter the tempertaure in Celsisus : ")

        # Check if the temperature ends with 'C'
        if temp[-1] == "C":
            # Append the numeric part of the temperature to the list
            temperatures.append(celsius_ends(temp))

        else:
            # Display an error message for invalid input and exit
            print("Invalid input syntex. Please enter the temperature with C at the end")
            return
    # Calculate the maximum temperature
    max_temp = max(temperatures)
    # Calculate the minimum temperature
    min_temp = min(temperatures)
    # Calculate the average (mean) temperature
    mean_temp = sum(temperatures) / len(temperatures)

    #display result
    print(f" The Maximun Temperature is {max_temp}C")
    print(f" The Minimun Temperature is {min_temp}C")
    print(f" The Average Temperature is {mean_temp}C")

# Call the function to execute
for_all_temperatures()
```

```
The Maximun Temperature is 90.0C
The Minimun Temperature is 20.0C
The Average Temperature is 45.833333333333336C
```

In [2]:
```python
# Question Number: 8
# Modify the previous program so that it can process any number of values. The input
# terminates when the user just pressed "Enter" at the prompt rather than entering a
# value.

#function to extract numeric temperature from input ending in 'C'
def celsius_ends(temp):
    # Remove the 'C' at the end and convert the remaining part to a float
    at_end= float(temp[:-1])
    return at_end

# Function to process temperatures until the user decides to stop
def for_all_temperatures():
    # Infinite loop to keep accepting temperatures until the user ends the input
    temperatures=[]

    # Infinite loop to keep accepting temperatures until the user ends the input
    while True:
        # Prompt the user to enter a temperature
        temp = input("Enter the tempertaure in Celsisus : ")
        # If the input is empty, the user wants to end the program
        if temp =="":
            print("You have decided to end the program")
            break
        # Check if the input ends with 'C
        elif temp[-1] == "C":
            # Convert the temperature and add it to the list
            temperatures.append(celsius_ends(temp))

        # Handle invalid input that doesn't end with 'C'
        else:
            print("Invalid input syntax. Please enter a valid temperature with 'C' at the end.")

    # Calculate the maximum temperature
    max_temp = max(temperatures)
    # Calculate the minimum temperature
    min_temp = min(temperatures)
    # Calculate the average (mean) temperature
    mean_temp = sum(temperatures) / len(temperatures)

    #display output
    print(f" The Maximun Temperature is {max_temp}C")
    print(f" The Minimun Temperature is {min_temp}C")
```

```python
    print(f" The Average Temperature is {mean_temp}C")

#call the function to execute
for_all_temperatures()
```

```
You have decided to end the program
 The Maximun Temperature is 80.0C
 The Minimun Temperature is 20.0C
 The Average Temperature is 50.0C
```

In [ ]: