Question 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.

```python
In [2]: def user_input():
            number1 = int(input("Enter any number to check: "))
            return number1

        def check(number1):
            return 0 <= number1 <= 100

        def main():
            number1 = user_input()
            if check(number1):
                print(f"{number1} is within the range 0 to 100.")
            else:
                print(f"{number1} is not within the range 0 to 100.")

        if __name__ == "__main__":
            main()
```

45 is within the range 0 to 100.

Question 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.

```python
In [51]: def count_the_case(name):
             name=str(input("enter any string"))
             uppercase=0
             lowercase=0
             for char in name:
                 if char.isupper():
                     uppercase+=1
                     print("The number of uppercase is",uppercase)
                 if char.islower():
                     lowercase+=1
                     print("The number of lowercase is",lowercase)
         name1=count_the_case(name)
```

The number of lowercase is 1
The number of lowercase is 2
The number of lowercase is 3
The number of lowercase is 4
The number of lowercase is 5
The number of lowercase is 6
The number of lowercase is 7
The number of lowercase is 8

Question 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.

```python
In [53]: def check(name):
             name=str(input("What is your name?"))

             rename=name.capitalize()

             print("Hello,",rename,"Welcome!")
         check(name)
```

Hello, Hi Welcome!

Question 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.)

```python
In [54]: def check(name):
             name=str(input("Enter any String value"))
             if len(name)<=1:
                 print(name)
             else:
                 print(name[:-1]) #slicling from the last character.
         check(name)
```

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Question 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).

```python
In [48]: def temp_centigrade(cent=float(input("enter a temperature in Celcius"))):
    calc1=(cent*1.8)+32
    print(f"The equivalent temperature of {cent}C in Fahrenheit is {calc1}F")
    return cent


def temp_fahrenheit(far=float(input("enter a temperature in Fahrenheit"))):
    calc2=(far-32)*1.8
    print(f"The equivalent temperature of {far}F in Celsius is {calc2}C")
    return far

val1=temp_centigrade()
val2=temp_fahrenheit()
```

```
The equivalent temperature of 30.0C in Fahrenheit is 86.0F
The equivalent temperature of 45.0F in Celsius is 23.400000000000002C
```

Question 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.

```python
In [45]: def celsius_to_float(temp):
    return float(temp[:-1])



def temp_centigrade():

    Temperatures=[]

    temp=input("enter a temperature in Celcius")
    if temp.endswith("C"):
        Temperatures.append(celsius_to_float(temp))
        val=Temperatures[0]   # we cannot do arthimatic solutions to a list so we make a seperate variable for
        calc1=(val*1.8)+32
        print(f"The value is {calc1}F")
        return

    else:
        print("Invalid input syntex. Please enter the temperature with C at the end")


temp_centigrade()
```

```
The value is 86.0F
```

Question 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
In [4]: import statistics

def celsius_to_float_value(temp):
    return float(temp[:-1])

def main_function():
    temperatures_list = []
    for i in range (1,7):
        temp= input(f"Enter {i} temperature in Celsius. << eg. 30C >>")
        if temp.endswith("C"):
            temperatures_list.append(celsius_to_float_value(temp))
        else:
            print("Invalid input syntex. Please enter the temperature with C at the end")
            return #to stop the program if user has put the wrong input we used return


    max_temp = max(temperatures_list)
    min_temp = min(temperatures_list)
    mean_temp =statistics.mean(temperatures_list)

    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")
```

```
main_function()
```

```
The Maximun Temperature is 67.0C
The Minimun Temperature is 23.0C
The Average Temperature is 43.166666666666664C
```

Question 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.

In [5]:
```python
import statistics

def celsius_to_float_value(temp):
    return int(temp[:-1])

def main_function():
    temperatures_list = []
    while True:
        temp= input(f"Enter the temperature in Celsius.")
        if temp=="":
            print("You have decided to end the program")
            break  #to stop the program if user has put the wrong input we used return
        elif temp.endswith("C"):
            temperatures_list.append(celsius_to_float_value(temp))

        else:
            print("Invalid input syntex. Please enter the temperature with C at the end")


    if temperatures_list:

        max_temp = max(temperatures_list)
        min_temp = min(temperatures_list)
        mean_temp =statistics.mean(temperatures_list)

        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")

    else:
        print("There are no Temperatures entered")

main_function()
```

```
Invalid input syntex. Please enter the temperature with C at the end
Invalid input syntex. Please enter the temperature with C at the end
You have decided to end the program
 The Maximun Temperature is 79C
 The Minimun Temperature is 5C
 The Average Temperature is 45.8C
```

In [ ]: