Week4_programs

January 16, 2025

[14]:
```
'''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.'''

def validate_integer(number):
    return 0<=number<=100
num = int(input("Enter an integer:"))
print(f"The number {num} is {validate_integer(num)} in the range 0 to 100.")
```

```
Enter an integer: 80
```

```
The number 80 is True in the range 0 to 100.
```

[12]:
```
'''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 count_case(s):
    uppercase = 0
    lowercase = 0

    for n in s:
        if n.isupper():
            uppercase += 1
        elif n.islower():
            lowercase += 1
    return uppercase, lowercase

input_string = input("Enter a string: ")
uppercase, lowercase = count_case(input_string)
print(f"Uppercase: {uppercase} and Lowercase: {lowercase}")
```

```
Enter a string:  DanIellE
```

```
Uppercase: 3 and Lowercase: 5
```

[16]:
```
'''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.'''

def Corrector():
    name = input("Enter your name: ")
    corrected_name = name[0].upper() + name[1:].lower()
    print(corrected_name)

Corrector()
```

```
Enter your name:  aDeLine
```

```
Adeline
```

[17]:
```
'''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.)'''

def last_char(word):
    return word[:-1] if len(word)>1 else word

string_input = input("Enter a string: ")
result = last_char(string_input)
print(result)
```

```
Enter a string:  nicee
```

```
nice
```

[29]:
```
'''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).'''

def celsius_to_farhenheit(celcius):
    return (celsius * 9/5)+32

def farhenheit_to_celsius(farhenheit):
    return (farhenheit-32)*5/9

celsius = float(input("Enter the temperature in Celsius: "))
farhenheit_temp = celsius_to_farhenheit(celsius)

farhenheit = float(input("Enter the temperature in Farhenheit: "))
celsius_temp = farhenheit_to_celsius(farhenheit)

print(f"The {celsius}C converts to {farhenheit_temp:.2f}F.")
print(f"The {farhenheit}F converts to {celsius_temp:.2f}C.")
```

```
Enter the temperature in Celsius:  25
```

```
Enter the temperature in Farhenheit:  99

The 25.0C converts to 77.00F.
The 99.0F converts to 37.22C.
```

[16]:
```python
'''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.'''

def celsius_to_farhenheit(temp):
    return (temp*9/5)+32

temperature = input("Enter the temperature followed by a letter C: ")

temp_value = float(temperature[:-1])
unit = temperature[-1].upper()

if unit == "C":
    farhenheit_temp = celsius_to_farhenheit(temp_value)
    print(f"The equivanlent of {temp_value}{unit} is {farhenheit_temp:.2f}F.")
else:
    print("Please enter the temperature with 'C' as the unit.")
```

```
Enter the temperature followed by a letter C:  25c

The equivanlent of 25.0C is 77.00F.
```

[25]:
```python
'''7. Write a program that reads 6 temperatures (in the same format as
before), and displays the maximum, minimum, and mean of the values.
Hint: You should know there are built-in functions for max and min. If you
hunt, you might also find one for the mean.'''

def celsius_to_farhenheit(temp):
    return (temp * 9/5) + 32

stored_temperatures = []

for i in range(6):
    temperature = input(f"Enter temperature {i+1}: ")
    type_change = float(temperature[:-1])

    if temperature[-1].upper() == "C":
        fahrenheit_temp = celsius_to_farhenheit(type_change)
        stored_temperatures.append(fahrenheit_temp)
    else:
        print("Please enter the temperature with 'C' as the unit.")

max_temp = max(stored_temperatures)
min_temp = min(stored_temperatures)
```

```
mean_temp = sum(stored_temperatures) / len(stored_temperatures)

print(f"Maximum temperature: {max_temp:.2f}F")
print(f"Minimum temperature: {min_temp:.2f}F")
print(f"Mean temperature: {mean_temp:.2f}F")
```

```
Enter temperature 1:  22.3C
Enter temperature 2:  19C
Enter temperature 3:  33C
Enter temperature 4:  28C
Enter temperature 5:  40C
Enter temperature 6:  30C

Maximum temperature: 104.00F
Minimum temperature: 66.20F
Mean temperature: 83.69F
```

[32]:
```
'''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.'''

def celsius_to_farhenheit(temp):
    return (temp * 9/5) + 32

stored_temperatures = []

while True:
    temperature = input(f"Enter temperature or press 'Enter' to finish: ")
    if temperature == "":
        break

    if temperature[-1].upper() == "C":
        type_change = float(temperature[:-1])
        fahrenheit_temp = celsius_to_farhenheit(type_change)
        stored_temperatures.append(fahrenheit_temp)
    else:
        print("Please enter the temperature with 'C' as the unit.")


if stored_temperatures:
    max_temp = max(stored_temperatures)
    min_temp = min(stored_temperatures)
    mean_temp = sum(stored_temperatures) / len(stored_temperatures)

    print(f"Maximum temperature: {max_temp:.2f}F")
    print(f"Minimum temperature: {min_temp:.2f}F")
    print(f"Mean temperature: {mean_temp:.2f}F")
else:
```

```
    print("Program terminated.")
```

```
Enter temperature or press 'Enter' to finish:  20C
Enter temperature or press 'Enter' to finish:  19.9C
Enter temperature or press 'Enter' to finish:  25C
Enter temperature or press 'Enter' to finish:  40C
Enter temperature or press 'Enter' to finish:

Maximum temperature: 104.00F
Minimum temperature: 67.82F
Mean temperature: 79.20F
```