Module 4 Assignment Solution

Welcome to our last assignment!

This assignment is about testing your understanding of flow control: repetition.

We are going to create some simple programs using these tools. Are you ready? Let's get started!

You will find some small tasks in sections below. You should use input() to get the user to enter the information and use print() to print the information on the screen. At this moment, we can assume users will follow instructions carefully - they will enter the valid inputs as required.

Prime Numbers

Instruction:

Step 1: Ask the user to enter an integer

Step 2: find and print all prime numbers up to the integer.

```python
n = int(input('Enter an integer: '))
for i in range(1, n+1):
  prime = True
  for j in range(2, i):
    if i % j == 0:
      prime = False
      break
  if prime:
    print(i)
```

```
Enter an integer: 20
1
2
3
5
7
11
13
17
19
```

Binary Converter

###Instruction: You are going to program a decimal to binary converter.

step1: Ask the user to enter a positive decimal integer.

step2: Calculate the binary representation of the integer by keep dividing until the reminder is less than 2, keep record of all the reminders.

step3: Print reminders as the binary representation.

```python
n = int(input('Enter a positive integer: '))
bin = ''
while n > 0:
  reminder = n % 2
  bin = str(reminder) + bin
  n = n // 2
print(bin)
```

```
Enter a positive integer: 10
1010
```

A Simple Grade Book

###Instruction: You are going to program a simple grade book.

step1: Ask the user to enter the number of students in a class

step2: Ask the user to enter the grade (in a 0-100 scale) of each student

step3: Calculate and print the average, min, and max grade of the class.

```
n = int(input('Enter the number of students: '))
total = 0
min = 100
max = 0
for i in range(n):
  grade = int(input('Enter the grade of the student: '))
  total += grade
  if grade < min:
    min = grade
  if grade > max:
    max = grade
print('Average:', total/n, '. Min:', min, '. Max:', max)
```

```
Enter the number of students: 3
Enter the grade of the student: 100
Enter the grade of the student: 80
Enter the grade of the student: 90
Average: 90.0 . Min: 80 . Max: 100
```

Fahrenheit to Celcius Converter

###Instruction: You are going to program a simple converter which converts a Fahrenheit degree to Celcius degree..

step1: Ask the user to enter the number in Fahrenheit, (enter stop to quit the program)

step2: Calculate the celcius based on the formular c = (f - 32) * 5 / 9

step3: print the celcius

```
f = input('Enter the Fahrenheit (enter stop to quit): ')
while f != 'stop':
  f = float(f)
  c = (f - 32) * 5 / 9
  print('Celcius is', c)
  f = input('Enter the Fahrenheit (enter stop to quit): ')
```

```
Enter the Fahrenheit (enter stop to quit): 100
Celcius is 37.77777777777778
Enter the Fahrenheit (enter stop to quit): 50
Celcius is 10.0
Enter the Fahrenheit (enter stop to quit): 30
Celcius is -1.1111111111111112
Enter the Fahrenheit (enter stop to quit): 80
Celcius is 26.666666666666668
Enter the Fahrenheit (enter stop to quit): stop
```

How many E and e in a sentence?

###Instruction: You are going to program a simple counter which finds how many 'E' and 'e' in a sentence entered by the user.

step1: Ask the user to enter a sentence

step2: Count the number of 'E', and the number of 'e'

step3: print the result

```
sentence = input('Enter a sentence: ')
number_e = 0
number_E = 0
for c in sentence:
  if c == 'e':
    number_e += 1
  elif c == 'E':
    number_E += 1
print('Number of e:', number_e, '. Number of E: ', number_E)
```

```
Enter a sentence: Welcome to my Email! Eeee
Number of e: 5 . Number of E:  2
```

Congratulations! You finished this Assignment and completed Module 4!