

Lab 2 Exercises (Iterative Structure and Function)

1. (*Conversion from kilograms to pounds*) Write a program that displays the following table (note that 1 kilogram is 2.2 pounds):

Kilograms	Pounds
1	2.2
3	6.6
...	
197	433.4
199	437.8

2. (*Sum a series*) Write a program to sum the following series:

$$\frac{1}{3} + \frac{3}{5} + \frac{5}{7} + \frac{7}{9} + \frac{9}{11} + \frac{11}{13} + \dots + \frac{95}{97} + \frac{97}{99}$$

3. (*Find the highest score*) Write a program that prompts the user to enter the number of students and each student's score, and displays the highest score.

```
Enter the number of students: 3
Enter a student name: pagna
Enter a student score: 50
Enter a student name: kanha
Enter a student score: 40
Enter a student name: bopha
Enter a student score: 30
Top student pagna's score is 50
```

4. (*Decimal to binary*) Write a program that prompts the user to enter a decimal integer and displays its corresponding binary value.

```
Enter an integer: 6
6's binary representation is 110
```

5. Write a program which calls a function *temperature_conversion(val, type)*. This function receives two inputs such as the temperature value and the type of conversion. The value of the type of conversion is labelled as follows:

type = 1 : Celsius to Fahrenheit ($\text{fahrenheit} = (9.0 / 5.0) * \text{celsius} + 32$)

type = 2: Fahrenheit to Celsius ($\text{celsius} = (5.0 / 9) * (\text{fahrenheit} - 32)$)

type = other values: Show message "Invalid conversion type. Expected type value is 1 or 2"

The function returns the result of the converted temperature value from the values input by the user.

The program is run as follows:

```
Enter the temperature value: 100
Enter the conversion type
(1 : Celsius to Fahrenheit, 2: Fahrenheit to Celsius): 1
The result is 212.0
```

```
Enter the temperature value: 212
Enter the conversion type
(1 : Celsius to Fahrenheit, 2: Fahrenheit to Celsius): 2
The result is 100.0
```

```
Enter the temperature value: 122
Enter the conversion type
(1 : Celsius to Fahrenheit, 2: Fahrenheit to Celsius): a
Invalid conversion type. Expected type value is 1 or 2
The result is None
```

6. Write a program which calls a function *arithmetic_operation(val1, val2, operation_name)*.

This function receives the inputs of two numbers and an operation name. The operation name is chosen from the choices such as “Addition”, “Subtraction”, “Multiplication”, and “Division”.

If the *user input other values in the operation name*, it will show the message

" Invalid conversion type. Expected type value is “Addition”, “Subtraction”, “Multiplication”, or “Division”. "

The function returns the result of the operation chosen by the user. The program is run as follows:

```
Enter the first number: 4
Enter the second number: 2
What arithmetic operation you would like to do?
(Addition, Subtraction, Multiplication, Division): Division
The result is: 2.0
```