Python Programming : TP1

Exercise 1: Basic Data Types and Operators

Write a program that:

a) Asks the user to enter two numbers

b) Performs addition, subtraction, multiplication, and division on these numbers

c) Prints the results of each operation

d) Checks if the first number is greater than, less than, or equal to the second number and prints the result

Exercise 2: Control Flow

Write a program that:

a) Asks the user to enter a number

b) If the number is divisible by 3, print "Fizz"

c) If the number is divisible by 5, print "Buzz"

d) If the number is divisible by both 3 and 5, print "FizzBuzz"

e) Otherwise, print the number itself

Exercise 3: Lists and Loops

Write a program that:

a) Creates a list of 10 random numbers between 1 and 100

b) Prints the original list

c) Uses a loop to calculate the sum of all numbers in the list

d) Finds and prints the maximum and minimum values in the list

e) Creates a new list containing only the even numbers from the original list

Exercise 4: Functions

Write a function called `calculate_factorial` that:

a) Takes a positive integer as an input

b) Calculates the factorial of that number

c) Returns the result

d) Include error handling for invalid inputs (negative numbers or non-integers)

e) Write a main program that asks the user for a number and calls your function to calculate its factorial

Exercise 5: Dictionaries

Create a program that simulates a simple phone book:

a) Create an empty dictionary to store names and phone numbers

b) Implement a menu system with the following options:

   i) Add a new contact
   ii) Look up a phone number
   iii) Delete a contact
   iv) Display all contacts
   v) Quit the program

c) Use appropriate dictionary methods to implement each feature

d) Implement basic error handling (e.g., looking up a non-existent contact)

Bonus Challenge: Temperature Converter

Create a temperature conversion program that:

a) Defines two functions: `celsius_to_fahrenheit` and `fahrenheit_to_celsius`

b) Presents a menu to the user to choose which conversion they want to perform

c) Asks for the temperature value and performs the conversion

d) Prints the result rounded to two decimal places

e) Allows the user to perform multiple conversions until they choose to quit

Note: Remember to test your code with various inputs, including edge cases and potential error situations. Good luck!