**Assignment: Kotlin Basic Syntax Practice**

**Objective:**

The goal of this assignment is to help you practice and familiarize yourself with Kotlin's basic syntax. You will work with variables, data types, conditionals, loops, functions, and basic input/output operations.

**Task 1: Variables and Data Types**

1. **Description**: Create a Kotlin program that defines variables of various data types such as integers, decimals, text, and boolean values. Initialize these variables and print their values.
2. **Requirements**:
   * Declare at least one variable of each type: Int, Double, String, and Boolean.
   * Use the val and var keywords appropriately.
   * Print the values of the variables to the console.

**Task 2: Conditionals**

1. **Description**: Write a program that asks the user to input an integer and determines whether the number is positive, negative, or zero.
2. **Requirements**:
   * Use if-else statements to check the condition.
   * Print a message to the console based on the result (e.g., "The number is positive").
   * Ensure the program handles various inputs correctly.

**Task 3: Loops**

1. **Description**: Implement a program that prints the multiplication table for a number provided by the user.
2. **Requirements**:
   * Use a for loop to iterate through the multiplication table (from 1 to 10).
   * The program should prompt the user for a number.
   * Print the results in the format: "number x i = result".

**Task 4: Functions**

1. **Description**: Write a program that defines and calls a function to calculate the factorial of a number. The number should be input by the user.
2. **Requirements**:
   * Create a function that takes an integer as input and returns the factorial of that number.
   * Use recursion or a loop to calculate the factorial.
   * Print the result to the console.

**Task 5: Lists and Collections**

1. **Description**: Create a Kotlin program that manages a list of student names. Allow the user to add, remove, and display names from the list.
2. **Requirements**:
   * Create a list to store the names.
   * Provide options to the user to add a name, remove a name, and display all names in the list.
   * Use when expressions to handle the user's menu choices.

**Task 6: Basic Input and Output**

1. **Description**: Write a Kotlin program that asks the user for their name and age, then prints a personalized message.
2. **Requirements**:
   * Prompt the user for their name and age.
   * Print a message that includes the user’s name and age.
   * Ensure the program handles different types of input (e.g., non-integer input for age).

**Task 7: Big Assignment**

Write a robot simulator.

A robot factory's test facility needs a program to verify robot movements.

The robots have three possible movements:

*turn right*

*turn left*

*advance*

Robots are placed on a hypothetical infinite grid, facing a particular direction (north, east, south, or

west) at a set of {x,y} coordinates, e.g., {3,8}, with coordinates increasing to the north and east.

The robot then receives a number of instructions, at which point the testing facility verifies the

robot's new position, and in which direction it is pointing.

The letter-string "RAALAL" means:

*Turn right*

*Advance twice*

*Turn left*

*Advance once*

*Turn left yet again*

Say a robot starts at {7, 3} facing north. Then running this stream of instructions should leave it at

{9, 4} facing west.

**Submission:**

* Submit the Kotlin code files for each task.
* Ensure that each program is well-documented with comments explaining the logic.

**Evaluation Criteria:**

* Correct use of Kotlin syntax and features.
* Code readability and organization.
* Proper handling of user inputs and edge cases.