

Go Programming Language Assignment

Assignment Description

In this assignment, you will have the opportunity to practice and demonstrate your understanding of the Go programming language. Go, also known as Golang, is a statically-typed, compiled language known for its simplicity and efficiency. This assignment will cover essential concepts, including variables, control structures, functions, data types, and error handling.

<https://go.dev/doc/tutorial/getting-started>

Assignment Tasks

Task 1: Hello, World!

Write a simple Go program that prints "Hello, World!" to the console. This will help you set up your development environment and understand the basic structure of a Go program.

Task 2: Variables and Data Types

Create a Go program that does the following:

- ☐ Declare variables of various data types (integer, string, float64).
- ☐ Assign values to these variables.
- ☐ Print the variables and their types to the console.

Task 3: Control Structures

Write a program that uses Go's control structures, including if statements and loops. Perform the following:

- ☐ Take user input for an integer.
- ☐ Check if the number is even or odd using an if statement.
- ☐ Use a for loop to print numbers from 1 to the input number.

Task 4: Functions

Create a Go program that demonstrates the use of functions. Perform the following:

- ☐ Write a function that calculates the factorial of a given positive integer.
- ☐ Call this function from the main program and print the factorial.

Task 5: Slices and Maps

Write a Go program that uses slices and maps. Do the following:

- ☐ Create a slice of integers with some elements.
- ☐ Use a loop to calculate the sum of the elements in the slice.
- ☐ Create a map with string keys and integer values to represent a simple dictionary. Add and retrieve values from the map.

Task 6: Error Handling

Implement a Go program that deals with error handling:

- ☐ Write a function that divides two numbers but handles the division by zero error.
- ☐ Call this function from the main program, and if an error occurs, print an appropriate error message.

Task 7: Structs and Methods

Create a program that demonstrates the use of structs and methods:

- ☐ Define a struct representing a book with fields for title, author, and publication year.
- ☐ Create a method for the book struct that prints its details.
- ☐ Create instances of the book struct and call the method to print their details.

Submission Guidelines:

Your code should be well-documented with comments explaining the purpose of functions, variables, and important steps.

You should use proper naming conventions for variables and functions.
Submit a single Go source file (.go) for this assignment.

Grading Criteria:

Your assignment will be graded based on the following criteria:

- ☐ Correctness and functionality of the code.
- ☐ Proper use of Go's features and concepts.
- ☐ Code readability and documentation.
- ☐ Adherence to best practices and naming conventions.

Additional Notes:

Make sure to test your code with various inputs to ensure it works correctly.

If you face any issues or have questions, don't hesitate to reach out for help.

This assignment is designed to help you become proficient in Go programming, so make the most of it and enjoy the learning process.

Good luck!