A Project Report On

Go Programming Language

[By 2nd year IMCA]

REPORT BY

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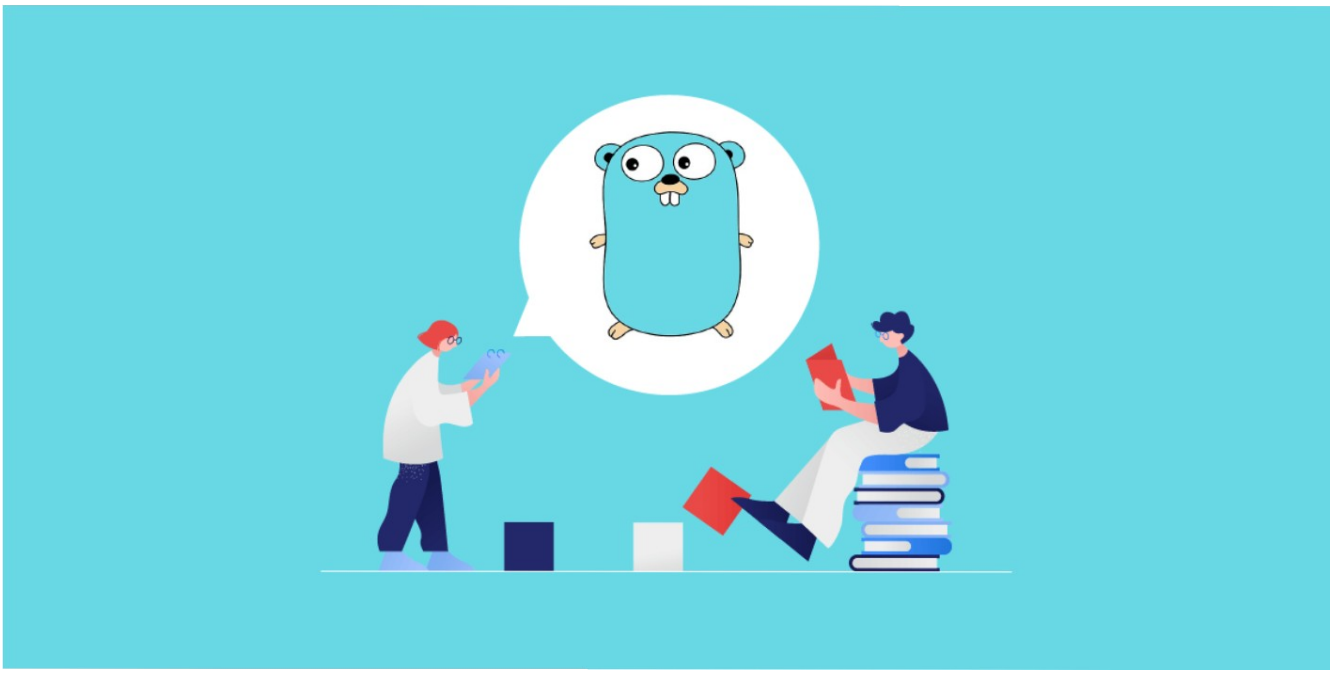


1. Introduction

This project involves the installation of **Go Programming Language version 1.24.6** and the development of a **Unit Converter application**. The application converts values between different units such as temperature and length. The project aims to introduce basic programming concepts using Go, including input/output operations, conditional statements, and arithmetic calculations. Go is a Simple, fast, and concurrent programming language. Go is a strong and statically typed programming language which essentially means each variable has a type that cannot be changed over time and must be defined at compile time This would help us to capture errors easily at compilation time As Go is developed by Google we are assured of a strong community supporting this language.

2. Objectives

- To install and configure Go Programming Language (version 1.24.6)

- To understand the basic syntax and structure of Go programs

- To develop a unit converter application using Go
- To perform unit conversions such as Celsius to Fahrenheit and meters to feet

3. Tools and Technologies Used

- Go Programming Language (Version 1.24.6)
- Visual Studio Code / Command Line Terminal
- Windows / Linux / macOS Operating System

4. System Requirements

- **Hardware Requirements**

  1. Computer or Laptop
  2. Minimum 4 GB RAM

- **Software Requirements**

  3. Go Programming Language (1.24.6)
  4. Code Editor (VS Code recommended)
  5. Terminal or Command Prompt

5. Installation of Go Programming Language

- Download Go version 1.24.6 from the official Go website
- Run the installer and follow the installation steps
- Set the environment variables if required
- Verify installation using the following command:
  `go version`
- Successful installation is confirmed when the Go version is displayed

6. Project Description

The Unit Converter application is a console-based program developed using the Go programming language. It allows users to convert values between different units.

Supported Conversions

- Celsius to Fahrenheit
- Fahrenheit to Celsius
- Meters to Kilometers
- Kilometers to Meters

- Meters to Feet
- Feet to Meters

Working of the Application

- The program displays a menu with conversion options
- The user selects a conversion type
- The user enters the value to be converted
- The program performs the required calculation
- The converted value is displayed on the screen

Code:

C: > Users > udays > OneDrive > Desktop > unit_converter.go > main

```go
package main

import (
    "fmt"
)
func main() {
    var choice int
    var value float64

    fmt.Println("==== UNIT CONVERTER ====")
    fmt.Println("1. Meters to Kilometers")
    fmt.Println("2. Kilometers to Meters")
    fmt.Println("3. Celsius to Fahrenheit")
    fmt.Println("4. Fahrenheit to Celsius")
    fmt.Println("5. Meters to Feet")
    fmt.Println("6. Feet to Meters")
    fmt.Print("Enter your choice: ")
    fmt.Scan(&choice)

    fmt.Print("Enter value: ")
    fmt.Scan(&value)

    switch choice {
    case 1:
        fmt.Printf("Result: %.2f km\n", value/1000)
    case 2:
        fmt.Printf("Result: %.2f m\n", value*1000)
    case 3:
        fmt.Printf("Result: %.2f °F\n", (value*9/5)+32)
    case 4:
        fmt.Printf("Result: %.2f °C\n", (value-32)*5/9)
    case 5:
        fmt.Printf("Result: %.2f ft\n", value*3.28084)
    case 6:
        fmt.Printf("Result: %.2f m\n", value/3.28084)
    default:
        fmt.Println("Invalid choice!")
    }
}
```

7. Algorithm

- Start
- Display conversion menu
- Read user choice
- Accept input value
- Perform conversion using predefined formulas
- Display converted result
- End

8. Sample Output

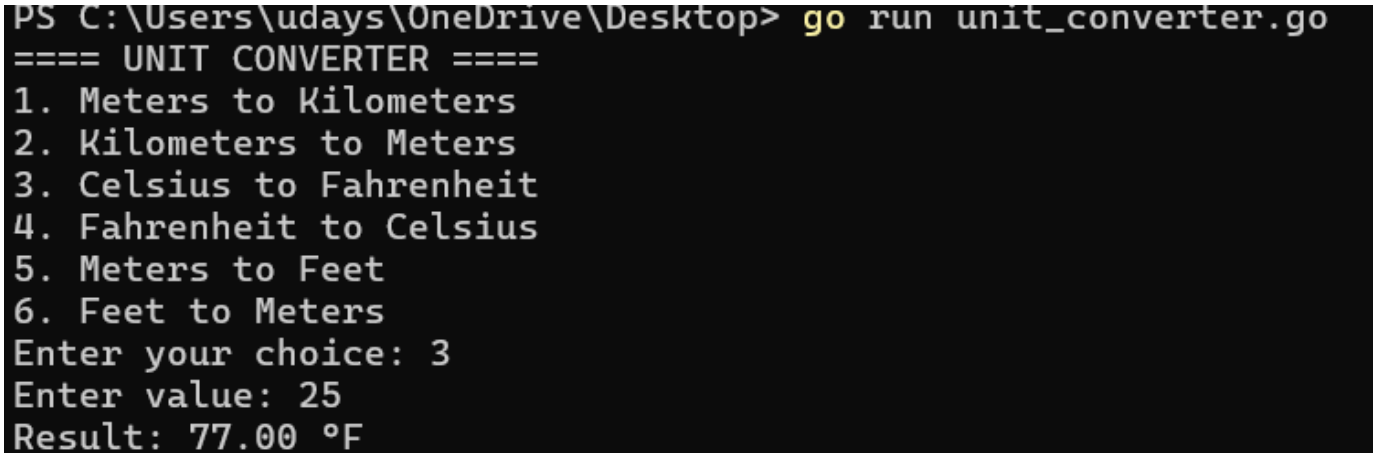
Input:

Enter temperature in Celsius: 25

```
PS C:\Users\udays\OneDrive\Desktop> go run unit_converter.go
==== UNIT CONVERTER ====
1. Meters to Kilometers
2. Kilometers to Meters
3. Celsius to Fahrenheit
4. Fahrenheit to Celsius
5. Meters to Feet
6. Feet to Meters
Enter your choice: 3
Enter value: 25
```

Output:

Temperature in Fahrenheit: 77



9. Conclusion

The Unit Converter project successfully demonstrates the use of the Go programming language for basic application development. Through this project, fundamental concepts such as user input, conditional logic, and arithmetic operations were implemented. This project provides a practical understanding of how Go can be used to solve real-world problems efficiently.

10. References

- Go Official Documentation
- Online Go Programming Tutorials