Day 17 – Go (Golang) Basics – Hello World, Variables, Data Types, and Constants

Go (or Golang) is a statically typed, compiled programming language designed for simplicity, speed, and scalability.

To run Go code:

1. Install Go from All releases - The Go Programming Language
2. Set up your workspace (e.g., ~/go)
3. Create a file with `.go` extension
4. Use `go run filename.go` to execute

Hello World

The most basic Go program:

```go
package main

import "fmt"

func main() {
    fmt.Println("Hello, world!")
}
```

Explanation:

- `package main`: Entry point package
- `import "fmt"`: Imports formatting utilities
- `func main()`: Main function (starting point)
- `fmt.Println()`: Prints with a newline

Variables

Go supports both explicit and implicit variable declarations.

Explicit Declaration:

```go
var x int = 10
```

Implicit Declaration:

```go
x := 10
```

Multiple Declarations:

```go
var a, b, c int = 1, 2, 3
```

Variable Rules:

- Variable names are case-sensitive
- Must begin with a letter or underscore

Data Types

Go is statically typed. Common data types include:

- Numeric Types: `int`, `int8`, `int16`, `int32`, `int64`
- Floating Point: `float32`, `float64`
- Boolean: `bool` (`true` or `false`)
- String: `string`
- Example:

```
var age int = 25
var name string = "Fatima"
var isDevOps bool = true
```

- Type Inference (with `:=`) lets Go deduce the type:

```
score := 99.5   // float64
```

Constants

- Constants are declared with the `const` keyword and cannot be changed after assignment.

```
const pi = 3.14159
const version string = "1.0.0"
```

- Grouped constants:

```
const (
    Red   = "red"
    Green = "green"
    Blue  = "blue"
)
```

- Constants are evaluated at compile time and must be assignable at that point.