TYPES, VARIABLES , CONDITIONALS

Friday, July 21, 2023 10:37 PM

BASIC TYPES:

- int, int8, int16, int32, int64
- uint, uint8, uint16, uint32, uint64
- float32, float64
- byte - alias for unit8
- rune - alias for int32 , represents unicode point
- bool, string
- complex64, complex128

NOTE: The value of an initialized variable with no assignment will be its zero-value

ZERO VALUES:

- 0 for numeric types,
- false for the boolean (bool) type
- "" (an empty string) for strings.
- (0+0i) is for complex numbers

VARIABLE DECLARATION:

Examples:
- var myNumber int
- var myString string
- var myFLoat float32
- var myFLoat float64
- var myBooleanVal bool
- var myComplexNum complex64

NOTE: Default values for above mentioned variables (in the same order) would be 0, "", 0, 0, false, (0+0i)

VARIABLE ASSIGNMENT AND SHORT VARIABLE DECLARATION:

- The **:=** short assignment operator infers the type of a new variable based on the value mentioned
- It replaces the var assignment to a variable
- **:=** or **=** used to declare a variable without specifying an explicit type

Examples for Variable Assignment:

```
•var myNumber int  = 12;
•var myString string = "Golang"
```

TYPE INFERENCE:

Examples:

```
•myNumber := 12               // type inferred here will be an integer
•myString := "Golang"         // type inferred here will be a string
•myComplexNumber :=0.867+0.5i // type would be complex128
•var pi = 3.1459     // it’s a direct assignment here and type here would be a
 float
•var myVariable int
 j := myVariable  // here j is also an int
```

SAME LINE DECLARATIONS:

- Multiple variables can be declared on a same line
  E.g:

  ```
  myNumber, myString := 27, "Golang"
  ```

  The above same line variable declaration is same as below:

  ```
  myNumber := 23
  myString := "Golang"
  ```

TYPE SIZES:

Size: Indicates the number of bits that will be stored in the memory for a specific type

Standard Sizes used are:

- Int
- uint
- float64
- Complex128

TYPE CONVERSION:

Example:

- Integer to Float:
  - `testMileage := 35`
  - `actualMileage := float64(testMileage); // 35`

- Float to integer:
  - `testMileage := 3.5`
  - `actualMileage := int(testMileage); // 3`

NOTE: float to int conversion results in truncating the floating / decimal values.

TYPES THAT SHOULD BE USED:

If you do not have a specific requirement, following types should be used.

- bool
- string

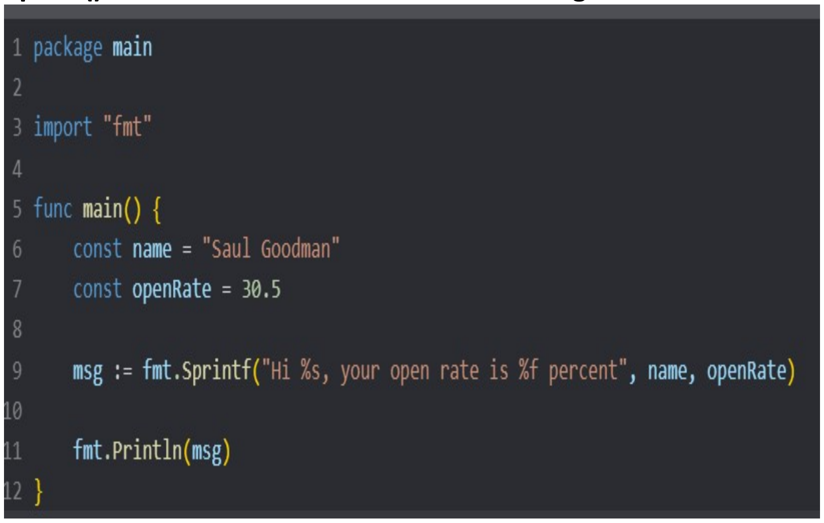
- int
- iint32
- byte
- rune
- float64
- Complex128

CONSTANTS:

- These can be declared as Variables But we use const keyword

  ```
  const myConstVariable = "GO"
  ```
- Can be character, string, bool, or numeric values but not more complex types like slices, maps and structs
- Must be initialized once a variable is declared with const keyword
- Should not a declare a const variable that will be computed at runtime

FORMATTING STRINGS:

- GO follows C languages printf style
- **Sprinf()** method returns the formatted string
- 

  ```go
  package main

  import "fmt"

  func main() {
      const name = "Saul Goodman"
      const openRate = 30.5

      msg := fmt.Sprintf("Hi %s, your open rate is %f percent", name, openRate)

      fmt.Println(msg)
  }
  ```
- Output: Hi Saul Goodman, your open rate is 30.5 percent

Default Representation:

- `%v is used here`
- `s :=fmt.Sprintf("I am %v years old",10)`
  `// I am 10 years old`
- `s :=fmt.Sprintf("I am %v years old","way too many")`
  `// I am way too many  years old`

Interpolate a decimal value:

- `s :=fmt.Sprintf("I am %d years old",10)// I am 10 years old`
  `The ".2" rounds the number to 2 decimal places`
- `s :=fmt.Sprintf("I am %.2f years old",10.523) // I am 10.53 years old`

CONDITIONAL STATEMENTS:

If, else, elseif are supported in GO

E.g:

```
value := 132
If value > 5 {
    fmt.Println("Its valid")
}
```

Comparison operators in Go:

- == equal to
- != not equal to
- < less than
- > greater than
- <= less than or equal to
- >= greater than or equal to

<u>THE INITIAL STATEMENT IN IF CONDITIONAL:</u>

If conditional statement will have an initial statement in which variables can be created - shortens the syntax

Syntax:

```
If INITIAL_STATEMENT;CONDITION {
    // code
}
```

E.g:

```
length :=getLength(email)
If length <1 {
    fmt.Println("Email is invalid")
}
```

The above code snippet will be same as below

```

If length :=getLength(email); length <1 {
    fmt.Println("Email is invalid")
}
```

Example for an complete IF conditional:

```
if CONDITION {
    // code
}
else if CONDITION {
    // code
}
else {
    // code
}
```