Variable Declaration in Go

Implicit and Explicit Creation

Variable Declaration in Go

- Go is statically typed, but it offers flexibility in variable creation.

- You can declare variables explicitly or let Go infer the type.

```
var age int        // Explicit declaration
name := "Alice"    // Implicit declaration
```

- `var` keyword for explicit, `:=` for implicit.

Implicit Variable Declaration in Go

- Go uses type inference to determine the variable's type.

```
name := "Alice"      // string
age := 30            // int
average := 87.5      // float64
isStudent := true    // bool
```

- Type is inferred from the value.

Explicit Variable Declaration in Go

- Declare variables with a specified type.

```go
var name string = "Alice"
var age int = 30
var average float64 = 87.5
var isStudent bool = true
```

- Type is explicitly mentioned.

Equivalent in Python

- Python uses dynamic typing, so variable types are determined at runtime.

```python
name = "Alice"       # str
age = 30             # int
average = 87.5       # float
is_student = True    # bool
```

- No type declarations needed.

Equivalent in C++

- C++ is statically typed, similar to Go.

```
std::string name = "Alice";
int age = 30;
double average = 87.5;
bool isStudent = true;
```

- Type is explicitly declared.

Short Variable Declaration in Go

- Go allows short variable declaration inside functions.

```go
func main() {
    count := 42
    message := "Hello"
}
```

- `:=` is used within functions.

Global Variable Declaration in Go

- Global variables are declared using `var`.

```
var globalVar int = 100
```

- Global scope, explicit type.

Constants in Go

- Go allows constant declarations using `const`.

```go
const pi = 3.14159265
const companyName string = "Acme Inc."
```

- Constants are immutable.

Comparison: Implicit Declaration

- Go uses `:=` for implicit declaration.

- Python is dynamically typed; no explicit declarations.

- C++ requires explicit type declarations.

Comparison: Explicit Declaration

- Go uses `var variableName typeName` for explicit declarations.
- Python doesn't need explicit type declarations.
- C++ requires explicit type declarations.

Comparison: Constants

- Go uses `const` for constants.

- Python can use variables as constants.

- C++ uses `const` as well.

Summary

- Go offers both implicit and explicit variable declarations.

- Python uses dynamic typing.

- C++ is statically typed like Go.

- Constants are declared using `const` in Go.