

A Whirlwind Tour of Go

Just the Cool Parts

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The Point

- “What *is* Go?”
- “What is it actually good for?”
- “Why should I care?”

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- Includes direct experience with C from day 1 to now.

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 - ∴ Go’s syntax is very much like C’s
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- Dreamed up while waiting on a 45-minute C++ compile
 - Fast compilation
 - Native binary compiler with low overhead
 - Strong static typing
 - Extraordinarily spartan

Go Syntax

- Type declarations *follow* identifier names

```
var x int
```

```
var UserName string
```

```
func AddNumbers(x, y int) int { ... }
```

```
func DivideNumbers(x, y int) (int, error) { ... }
```

```
type Shape struct {
```

```
    X      int
```

```
    Y      int
```

```
    Color  ColorCode
```

```
}
```


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- Import packages into the program using the `import` statement.
- Always prefix identifiers from imported packages with their package name.
- Identifiers can be *public* or *private* w/r/t package boundaries.
 - Identifier names starting with an uppercase letter are public.
 - All others are private.

Hello, World

```
/* Standard-issue "Hello, World" program in Go */  
  
package main  
  
import "fmt"  
  
func main() {  
    fmt.Println("Hello, 世界")  
}
```

The Playground

- Interactive playground to immediately try something in Go.
- <https://go.dev/play/>

The screenshot shows the Go Playground web interface. At the top is a teal navigation bar with the Go logo, 'Why Go', 'Learn', 'Docs', 'Packages', and 'Community' links. Below this is a dark grey header area with 'The Go Playground' title, a version selector set to 'Go 1.22', and buttons for 'Run', 'Format', and 'Share'. To the right of these buttons is a dropdown menu showing 'Hello, World!'. The main area is a code editor with a dark background. It contains the following Go code:

```
1 // You can edit this code!
2 // Click here and start typing.
3 package main
4
5 import "fmt"
6
7 func main() {
8     fmt.Println("Hello, 世界")
9 }
10
11
```

Below the code editor, the output of the program is displayed: 'Hello, 世界' followed by 'Program exited.' on a new line.

Importing Third-Party Packages

- Standard library package names are simple names:

```
import "fmt"  
import "encoding/json"  
import "flag"  
import "math"
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- Getting packages from public repositories:

```
import "github.com/MadScienceZone/go-gma/v5/dice"
```

Automatic API Documentation

• <https://pkg.go.dev/repository-url>

The screenshot shows the Go Package documentation page for the 'dice' package. The page has a dark theme with teal accents. At the top, there's a navigation bar with the Go logo, a search bar, and links for 'Why Go', 'Learn', 'Docs', 'Packages', and 'Community'. Below the navigation bar, the breadcrumb 'Discover Packages > github.com/MadScienceZone/go-gma/v5 > dice' is visible. The package name 'dice' is prominently displayed with a 'package' label. Below this, metadata is shown: 'Version: v5.17.0' (marked as 'Latest'), 'Published: Feb 28, 2024', 'License: BSD-3-Clause', 'Imports: 16', and 'Imported by: 0'. A section with tabs for 'Details', 'Repository', and 'Links' follows. 'Details' shows checkmarks for 'Valid go.mod file', 'Redistributable license', 'Tagged version', and 'Stable version', along with a link to 'Learn more about best practices'. 'Repository' shows the GitHub URL 'github.com/MadScienceZone/go-gma'. 'Links' shows 'Open Source Insights'. Below this is a 'Jump to ...' dropdown and a 'Documentation' sidebar. The main content area is titled '<> Documentation' and 'Overview'. The overview text states: 'Package dice provides a general facility for generating random numbers in fantasy role-playing games. The preferred usage model is to use the higher-level abstraction provided by DieRoller, which rolls dice as described by strings. For example:'. A code block shows:

```
label, results, err := Roll("d20+16 | c")
label, result, err := RollOnce("15d6 + 15 fire + 1 acid")
```

. Below this, another paragraph says: 'If you need to keep the die roller itself around after the dice are rolled, to query its status, or to produce a repeatable string of die rolls given a custom seed or number generator, create a new DieRoller value and reuse that as needed:'. A final code block shows:

```
dr, err := NewDieRoller()
label, results, err := dr.DoRoll("d20+16 | c")
```

. A refresh icon is in the bottom right corner of the page content.

GO Search packages or symbols Why Go Learn Docs Packages Community

Discover Packages > github.com/MadScienceZone/go-gma/v5 > dice

dice package

Version: v5.17.0 **Latest** | Published: Feb 28, 2024 | License: BSD-3-Clause | Imports: 16 | Imported by: 0

Details [Valid go.mod file](#) [Redistributable license](#) [Tagged version](#) [Stable version](#) [Learn more about best practices](#)

Repository [github.com/MadScienceZone/go-gma](#)

Links [Open Source Insights](#)

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Overview

Package dice provides a general facility for generating random numbers in fantasy role-playing games.

The preferred usage model is to use the higher-level abstraction provided by DieRoller, which rolls dice as described by strings. For example:

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If you need to keep the die roller itself around after the dice are rolled, to query its status, or to produce a repeatable string of die rolls given a custom seed or number generator, create a new DieRoller value and reuse that as needed:

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“Factored” Notation

```
import "fmt"  
import "encoding/json"  
import "flag"  
import "math"
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```
import "fmt"
import "encoding/json"
import "flag"
import "math"

import (
    "fmt"
    "encoding/json"
    "flag"
    "math"
)
```

“Factored” Notation

```
var initialized bool
var usernames    []string
var Greeting     string    = "Hello"
var TheAnswer    = 42

var (
    initialized bool
    usernames    []string
    Greeting     string    = "Hello"
    TheAnswer    = 42
)
```

“Factored” Notation

```
const initialized = false
const Greeting    = "Hello"
const TheAnswer   byte = 42

const (
    initialized      = false
    Greeting         = "Hello"
    TheAnswer        byte = 42
)
```

“Factored” Notation and iota

```
type MessageType byte
const (
    ServerCommand MessageType = 0
    ServerReply    MessageType = 1
    ServerError    MessageType = 2
    UrgentMessage  MessageType = 3
)
```

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```
type MessageType byte
const (
    ServerCommand MessageType = 0
    ServerReply    MessageType = 1
    ServerError    MessageType = 2
    UrgentMessage  MessageType = 3
)
```

```
type MessageType byte
const (
    ServerCommand MessageType = iota
    ServerReply    MessageType = iota
    ServerError    MessageType = iota
    UrgentMessage  MessageType = iota
)
```


“Factored” Notation and iota

```
type MessageType byte
const (
    ServerCommand MessageType = 0
    ServerReply      MessageType = 1
    ServerError      MessageType = 2
    UrgentMessage    MessageType = 3
)
```

```
type MessageType byte
const (
    ServerCommand MessageType = iota
    ServerReply
    ServerError
    UrgentMessage
)
```

“Factored” Notation and iota

```
type MessageType byte
const (
    ServerCommand MessageType = 0
    ServerReply    MessageType = 1
    ServerError    MessageType = 2
    UrgentMessage  MessageType = 3
)
```

```
type MessageType byte
const (
    ServerCommand MessageType = 1 << iota
    ServerReply
    ServerError
    UrgentMessage
)
```