



# NCTU Golang 2021

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## Lab 1

2021 / 09 / 23



# Variable

How to declare a variable?



# Variable

- var **variable** type
- var **v1**, **v2**, **v3** type

# Variables with initializers

- var **variable** type = value
- var **v1**, **v2**, **v3** type = x1, x2, x3
- var **v1**, **v2**, **v3** = v1, v2, v3

## Short variable declarations

- **v1** := x1

# Variables – Zero values

- 0 for numeric types
- False for the Boolean type
- “” (the empty string) for strings

# Variables – Zero values

```
package main
```

```
import "fmt"
```

```
func main() {  
    var i int  
    var f float64  
    var b bool  
    var s string  
    fmt.Printf("%v %v %v %q\n", i, f, b, s)  
}
```

Output:

# Variables – Zero values

```
package main
```

```
import "fmt"
```

```
func main() {  
    var i int  
    var f float64  
    var b bool  
    var s string  
    fmt.Printf("%v %v %v %q\n", i, f, b, s)  
}
```

Output: 0 0 false ""

fmt.Printf

<https://golang.org/pkg/fmt>

# Basic types

- **bool** : true false
- **string** : “Hello”
- **int int8 int16 int32 int64** : 123 -123
- **uint uint8 uint16 uint32 uint64** 123
- **byte** [231 164 190 229 140 186]
- **rune** Unicode [31038 21306]
- **float32 float64** 1.5 -2.5
- **complex64 complex128** 3+2i





# Basic types

```
package main
```

```
import (  
    "fmt"  
    "math/cmplx"  
)
```

```
var (  
    ToBe bool    = false  
    MaxInt uint64 = 1<<64 - 1  
    z    complex128 = cmplx.Sqrt(-5 + 12i)  
)
```

```
func main() {  
    fmt.Printf("Type: %T Value: %v\n", ToBe, ToBe)  
    fmt.Printf("Type: %T Value: %v\n", MaxInt, MaxInt)  
    fmt.Printf("Type: %T Value: %v\n", z, z)  
}
```

```
output :  
Type: bool Value: false  
Type: uint64 Value:  
18446744073709551615  
Type: complex128 Value: (2+3i)
```



# Type casting

```
package main
```

```
import "fmt"
```

```
func main() {  
    i := 42  
    f := float64(i)  
    u := uint(f)  
    fmt.Println(i/4)  
    fmt.Println(f/4)  
    fmt.Println(u/4)  
}
```

Output:

# Type casting

```
package main
```

```
import "fmt"
```

```
func main() {  
    i := 42  
    f := float64(i)  
    u := uint(f)  
    fmt.Println(i/4)  
    fmt.Println(f/4)  
    fmt.Println(u/4)  
}
```

Output:

```
10  
10.5  
10
```



# Function

How to declare function?



# Function – example

```
package main

import "fmt"

func add(x int, y int) int {
    return x + y
}

func main() {
    fmt.Println(add(42, 13))
}
```

# Function – abbreviation of input

x int, y int

can be abbreviated as

x, y int



# Function – example2

```
package main
```

```
import "fmt"
```

```
func add(x, y int) int {  
    return x + y  
}
```

```
func main() {  
    fmt.Println(add(42, 13))  
}
```

# Function – multiple return values

```
package main

import "fmt"

func swap(x, y string) (string, string) {
    return y, x
}

func main() {
    a, b := swap("hello", "world")
    fmt.Println(a, b)
    c, _ := swap("No", "Yes")
    fmt.Println(c)
}
```





# Function – name return values

```
package main

import "fmt"

func split(sum int) (x int, y int){
    x = sum * 4 / 9
    y = sum - x
    return
}

func main() {
    fmt.Println(split(17))
}
```

# Lab 1-1 Broken Calculator

1. 完成lab1.go並把YourGithubUsername資料夾改成自己的github名稱
2. 除法的部份答案直接取整數
3. 把程式的四種功能output擷圖,命名為 學號\_姓名\_Lab1-1.jpg
4. 把圖檔跟lab1.go放在同一個資料夾
5. 像lab0一樣繳交,branch名稱中有lab0的部份須改為lab1


Gist: <https://github.com/benchen216/NCTU-GoProgramming-2021>

# Check your program pass the testcase

綠色勾代表程式編譯有成果，點進去可以看測資是否有通過

☐  **13579and2468 lab1 attempt1** 

#56 opened 36 minutes ago by 13579and2468  5 tasks

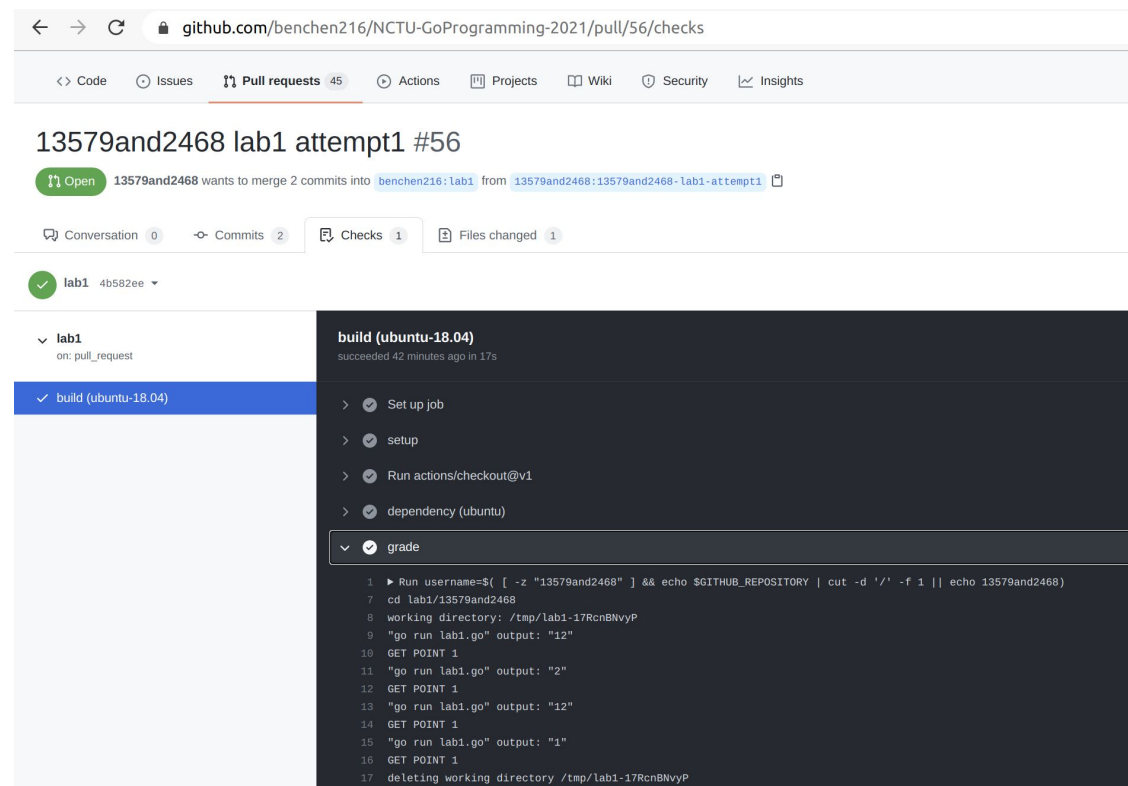
☐  **13579and2468 lab1 attempt1** 

#55 opened 36 minutes ago by 13579and2468  5 tasks

可以在這裡看測試結果：<https://github.com/benchen216/NCTU-GoProgramming-2021/pulls>

# Check your program pass the testcase

可以在grade看每筆測資的測試情況，或從validate.sh直接看測試資料



The screenshot shows a GitHub pull request for the repository `benchen216/NCTU-GoProgramming-2021`, pull request #56. The title is `13579and2468 lab1 attempt1 #56`. The pull request is open and shows 2 commits from `13579and2468:lab1-attempt1` into `benchen216:lab1`. The status bar indicates 1 check, 2 commits, and 1 file changed.

The check `lab1` (4b582ee) is successful. The build job `build (ubuntu-18.04)` is highlighted, showing it succeeded 42 minutes ago. The job steps are:

- Set up job
- setup
- Run actions/checkout@v1
- dependency (ubuntu)
- grade

The `grade` step output is as follows:

```
1 ▶ Run username=${ [ -z "13579and2468" ] && echo $GITHUB_REPOSITORY | cut -d '/' -f 1 || echo 13579and2468 }
2 cd lab1/13579and2468
3 working directory: /tmp/lab1-17RcnBNvyp
4 "go run lab1.go" output: "12"
5 GET POINT 1
6 "go run lab1.go" output: "2"
7 GET POINT 1
8 "go run lab1.go" output: "12"
9 GET POINT 1
10 "go run lab1.go" output: "1"
11 GET POINT 1
12 deleting working directory /tmp/lab1-17RcnBNvyp
```



# 上次的作業成績

<https://docs.google.com/spreadsheets/d/15HUiFbS6OUx0iyywR2mLib7igOOeHwtfpo9NOhXArK4>