

Go Piscine Go 02

Summary: THIS document is the subject for the Go 02 module of the Go Piscine @ 42 Tokyo.

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Chapter I

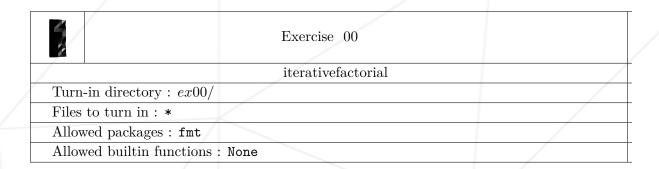
Instructions

- Only this page will serve as reference; do not trust rumors.
- Watch out! This document could potentially change up to an hour before submission.
- These exercises are carefully laid out by order of difficulty from easiest to hardest. We will not take into account a successfully completed harder exercise if an easier one is not perfectly functional.
- Make sure you have the appropriate permissions on your files and directories.
- You have to follow the submission procedures for every exercise.
- Your exercises will be checked and graded by your fellow classmates.
- You <u>cannot</u> leave <u>any</u> additional file in your directory than those specified in the subject.
- Got a question? Ask your peer on the right. Otherwise, try your peer on the left.
- Your reference guide is called Google / man / the Internet /
- Examine the examples thoroughly. They could very well call for details that are not explicitly mentioned in the subject...
- If no other explicit information is displayed, you must use the latest versions of Go.
- Your turn-in directory for each exercise should look something like this:

```
ex[XX]
|-- main.go
|-- vendor
|-- ft
|-- printrune.go
|-- piscine
|-- [excercisename].go
```

Chapter II

Exercise 00: iterative factorial



Write an iterative function that returns the factorial of the int passed as parameter.

- Errors (non possible values or overflows) will return 0.
- Expected function

```
func IterativeFactorial(nb int) int {
}
```

• Usage

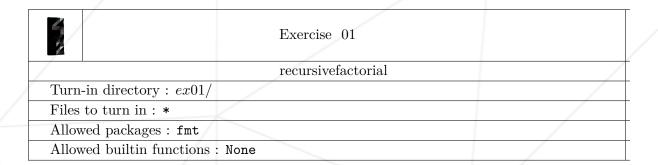
```
package main
import (
    "fmt"
    "piscine"
)

func main() {
    arg := 4
    fmt.Println(piscine.IterativeFactorial(arg))
}
```

```
$ go mod init ex00
$ go run .
24
$
```

Chapter III

Exercise 01: recursive factorial



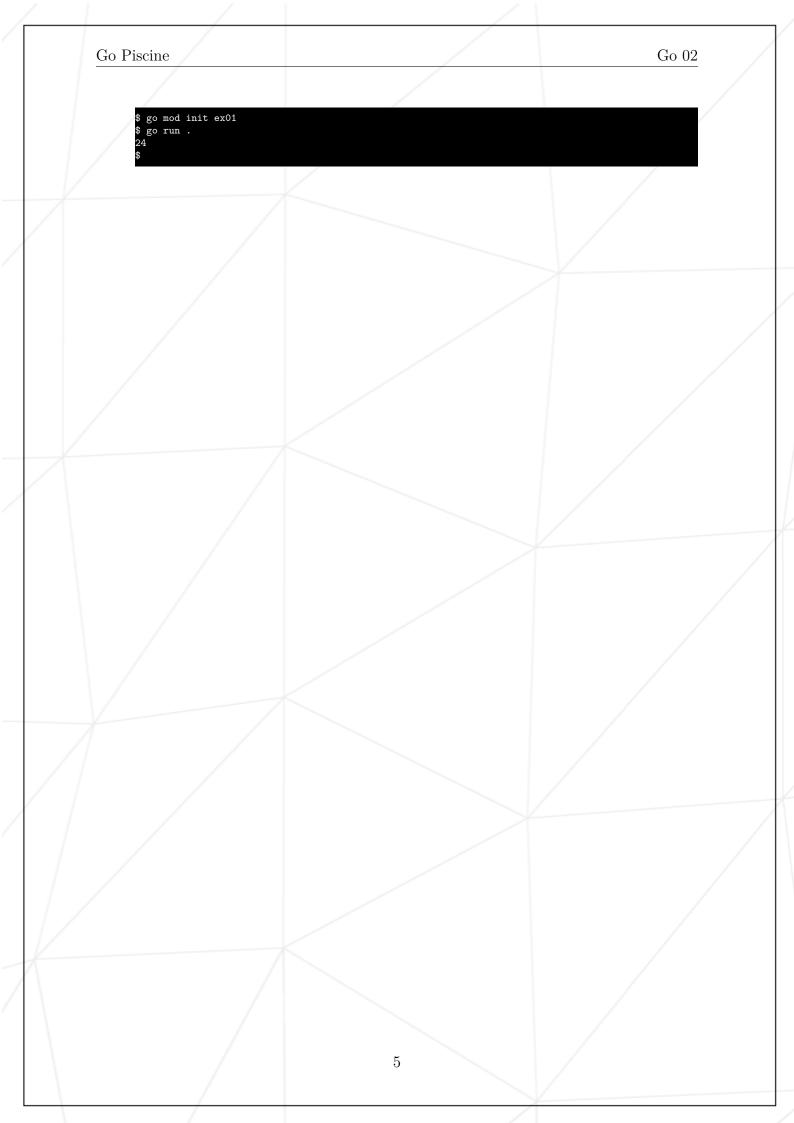
Write a recursive function that returns the factorial of the int passed as parameter.

- Errors (non possible values or overflows) will return 0.
- for is forbidden for this exercise.
- Expected function

```
func RecursiveFactorial(nb int) int {
}
```

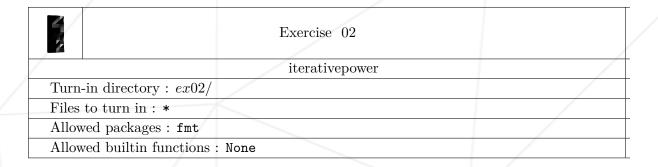
• Usage

```
package main
import (
        "fmt"
        "piscine"
)
func main() {
        arg := 4
        fmt.Println(piscine.RecursiveFactorial(arg))
}
```



Chapter IV

Exercice 02: iterativepower



Write an iterative function that returns the value of nb to the power of power.

- Negative powers will return 0. Overflows do not have to be dealt with.
- Expected function

```
func IterativePower(nb int, power int) int {
}
```

• Usage

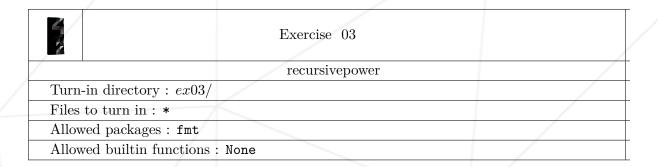
```
package main
import (
    "fmt"
    "piscine"
)

func main() {
    fmt.Println(piscine.IterativePower(4, 3))
}
```

```
$ go mod init ex02
$ go run .
64
$
```

Chapter V

Exercice 03: recursivepower



Write an iterative function that returns the value of nb to the power of power.

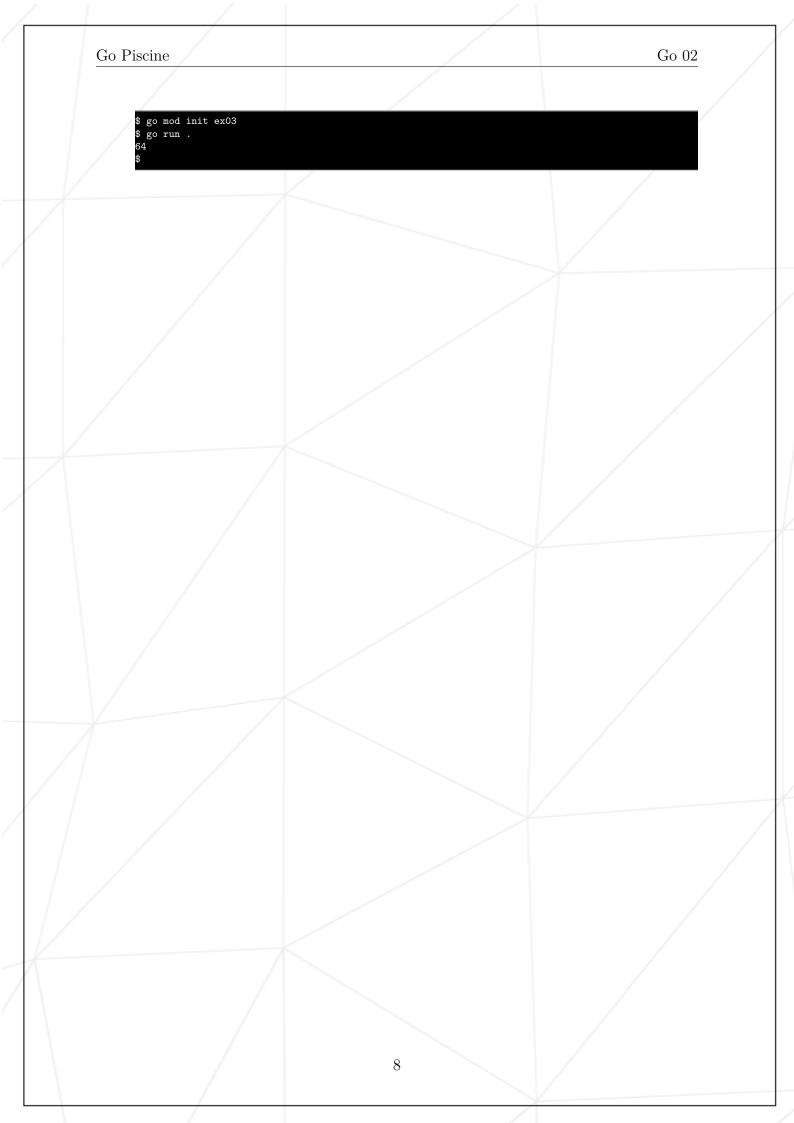
- Negative powers will return 0. Overflows do not have to be dealt with.
- for is forbidden for this exercise.
- Expected function

```
func RecursivePower(nb int, power int) int {
}
```

• Usage

```
package main
import (
    "fmt"
    "piscine"
)

func main() {
    fmt.Println(piscine.RecursivePower(4, 3))
}
```



Chapter VI

Exercise 04: fibonacci

Exercise 04	
fibonacc	
Turn-in directory : $ex04/$	
Files to turn in : *	
Allowed packages: fmt	
Allowed builtin functions : None	

Write a recursive function that returns the value at the position index in the fibonacci sequence.

- The first value is at index 0.
- The sequence starts this way: 0, 1, 1, 2, 3 etc...
- A negative index will return -1.
- for is forbidden for this exercise.
- Expected function

```
func Fibonacci(index int) int {
}
```

Go Piscine Go 02

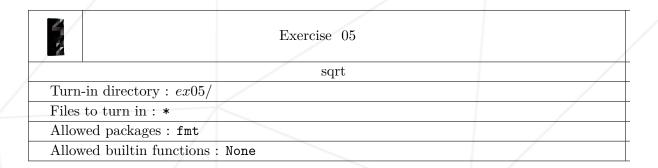
• Usage

```
package main
import (
    "fmt"
    "piscine"
)
func main() {
    arg1 := 4
    fmt.Println(piscine.Fibonacci(arg1))
}
```

```
$ go mod init ex04
$ go run .
3
$
```

Chapter VII

Exercise 05: sqrt



Write a function that returns the square root of the int passed as parameter, if that square root is a whole number. Otherwise it returns 0.

• Expected function

```
func Sqrt(nb int) int {
}
```

• Usage

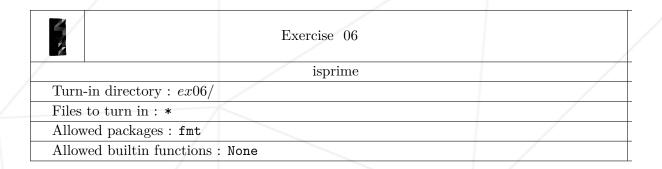
```
package main
import (
    "fmt"
    "piscine"
)

func main() {
    fmt.Println(piscine.Sqrt(4))
    fmt.Println(piscine.Sqrt(3))
}
```

```
$ go mod init ex05
$ go run .
2
0
$
```

Chapter VIII

Exercise 06: isprime



Write a function that returns true if the int passed as parameter is a prime number. Otherwise it returns false.

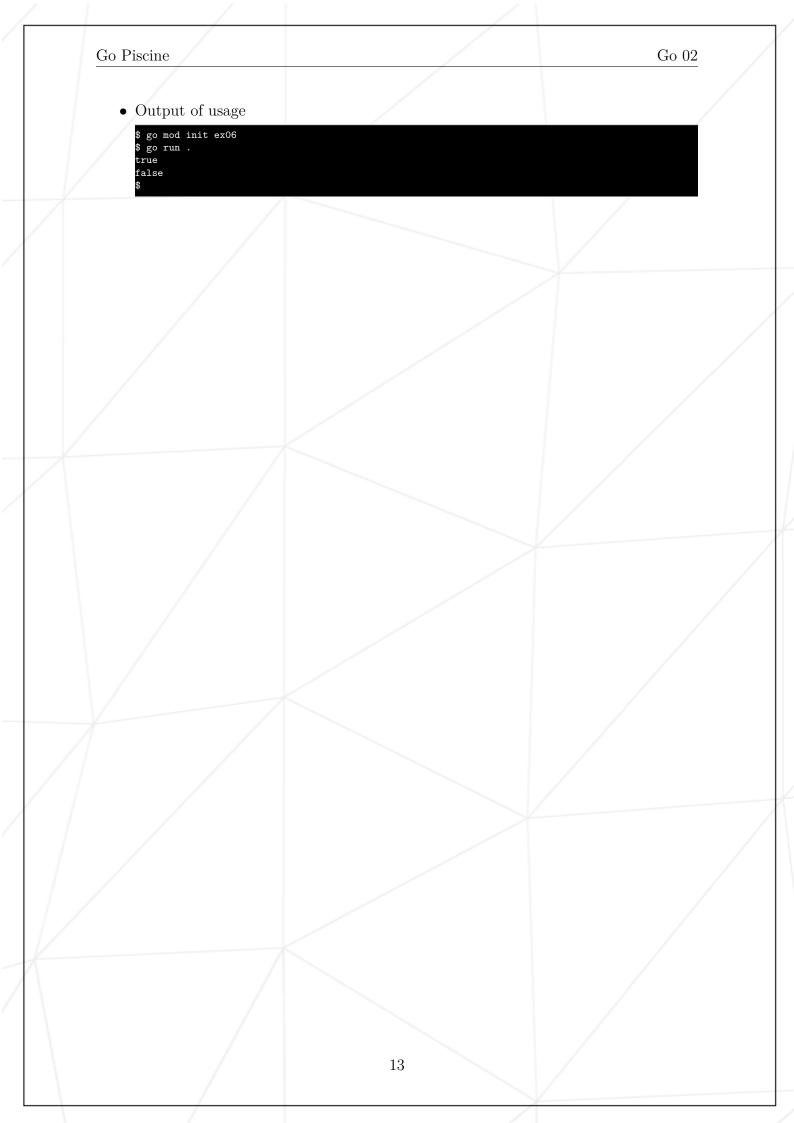
- The function must be optimized in order to avoid time-outs with the tester.
- (We consider that only positive numbers can be prime numbers)
- (We also consider that 1 is not a prime number)
- Expected function

```
func IsPrime(nb int) bool {
}
```

• Usage

```
package main
import (
    "fmt"
    "piscine"
)

func main() {
    fmt.Println(piscine.IsPrime(5))
    fmt.Println(piscine.IsPrime(4))
}
```



Chapter IX

Exercise 07: findnextprime

	Exercise 07	
	findnextprime	
Turn-in directory: $ex07/$		
Files to turn in: *		
Allowed packages: fmt		
Allowed builtin functions : None		

Write a function that returns the first prime number that is equal or superior to the int passed as parameter.

- The function must be optimized in order to avoid time-outs with the tester.
- (We consider that only positive numbers can be prime numbers)
- Expected function

```
func FindNextPrime(nb int) int {
}
```

• Usage

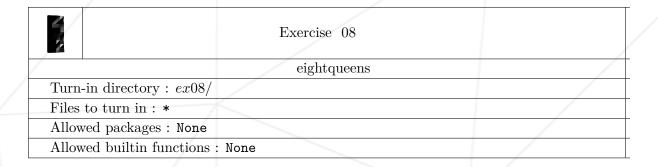
```
package main
import (
    "fmt"
    "piscine"
)

func main() {
    fmt.Println(piscine.FindNextPrime(5))
    fmt.Println(piscine.FindNextPrime(4))
}
```



Chapter X

Exercise 08: eightqueens



Write a function that prints the solutions to the eight queens puzzle.

- Recursivity must be used to solve this problem.
- Your function should print something like this:

```
$ go mod init ex08
$ go run .
15863724
16837425
17468253
...
```

• Expected function

```
func EightQueens() {
}
```