

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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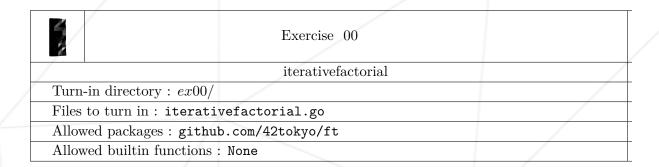
#### Chapter I

#### 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.

#### 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

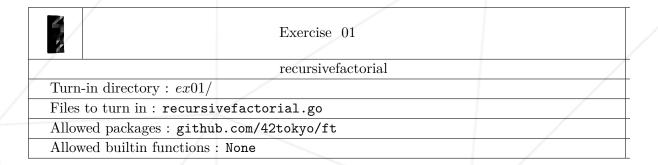
```
package main
import (
    "fmt"
    "piscine"
)

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

```
$ go 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

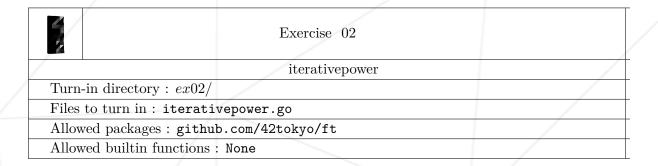
```
package main
import (
    "fmt"
    "piscine"
)

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

```
$ go run .
24
$
```

## 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

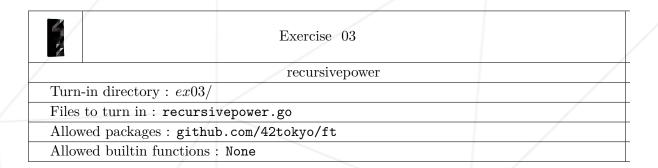
```
package main
import (
    "fmt"
    "piscine"
)

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

```
$ go run .
64
$
```

## Chapter V

### Exercice 03: recursivepower

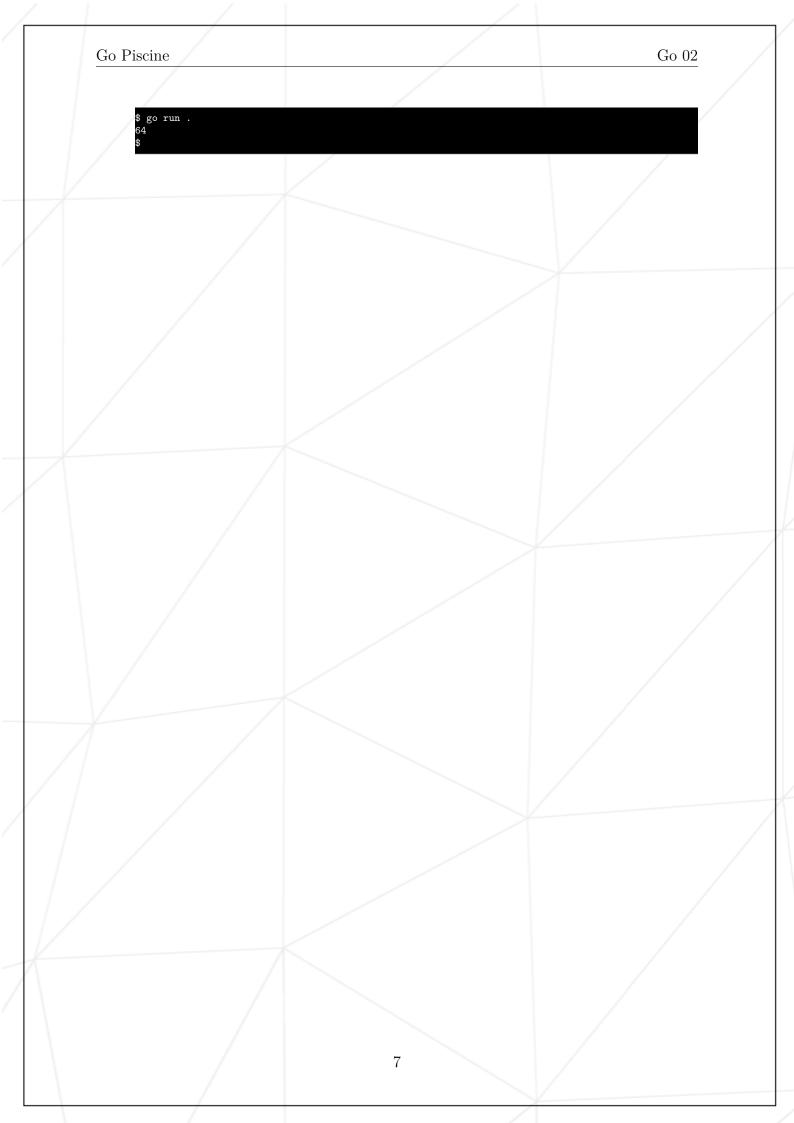


Write an iterative function that returns the value of nb to the power of power.

- 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



## Chapter VI

#### Exercise 04: fibonacci

	Exercise 04	
	fibonacci	
Turn-in directory : $ex04/$		
Files to turn in : fibonacci.go		
Allowed packages: github.com/42tokyo/ft		
Allowed builtin function		

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 {
}
```

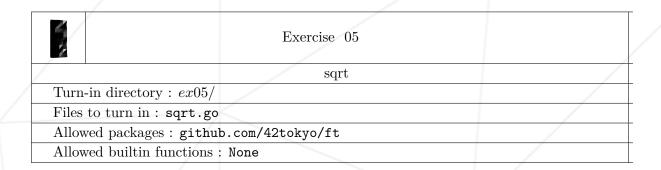
- Usage
- Output of usage

```
$ go run .
```

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## 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

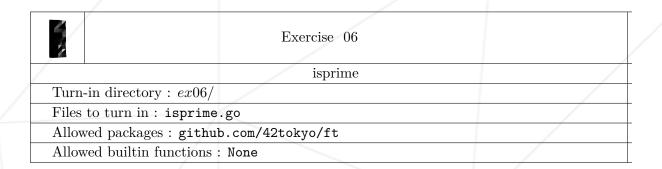
```
package main
import (
    "fmt"
    "piscine"
)

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

```
$ go 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

None	Exercise 07	
	findnextprime	
	Turn-in directory : $ex07/$	/
	Files to turn in: findnextprime.go	/
	Allowed packages: github.com/42tokyo/ft	
	Allowed builtin functions:	

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

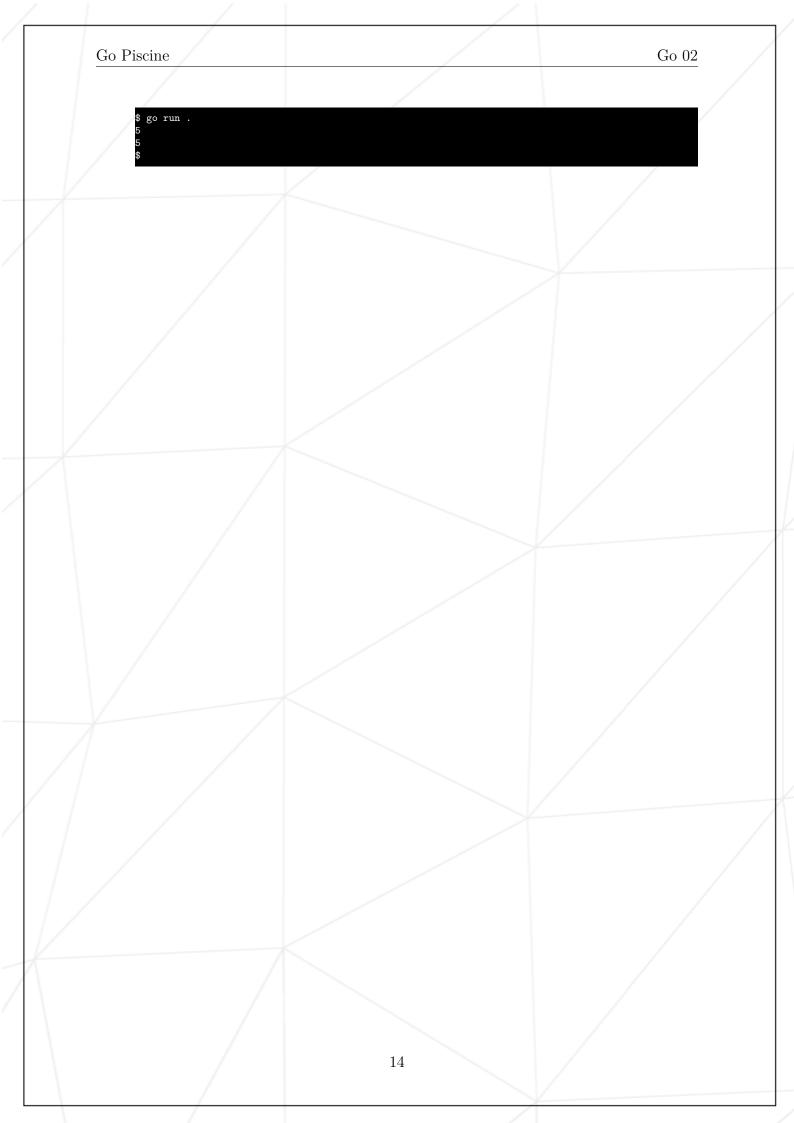
- The function must be optimized in order to avoid time-outs with the tester.
- (We consider that only positive numbers can be prime numbers)
- Expected function

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

• Usage

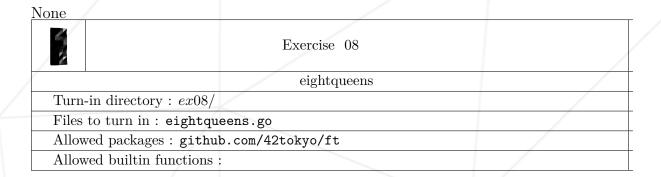
```
package main
import (
    "fmt"
    "piscine"
)

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. LINK TO EIGHT QUEENS PUZZLE HERE

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

```
$ go run .
15863724
16837425
17468253
...
```

• Expected function

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