

# Tutorial Worksheet 1

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## Task 1 · Installing Erlang

The pre-built Erlang package for your operating system can be downloaded from [Erlang Solutions](#).

## Task 2 · Testing the Erlang shell

To confirm that Erlang has been successfully installed, we can try to invoke its shell. This can be done by typing **erl** in your operating system's terminal. You should get something that looks similar to the following:

```
1 duncan@term:/example$ erl
2
3 Erlang/OTP 18 [erts-7.2] [source] [smp:4:4] [async-threads:10] [kernel-poll:false]
4 Eshell V7.2 (abort with ^G)
5 1> _
```

Type **1 + 1**, followed by enter. What happens? Try out other arithmetic expressions for yourself. When ready, quit the Erlang shell by typing **q()**.

### Shell expressions

Erlang expressions entered in the shell *must* terminate with the period symbol **'.'**. Issuing enter without typing in **'.'** gives us the opportunity to type in code that can extend over multiple lines (e.g. a lengthy function). Code spanning multiple lines can then be terminated accordingly by typing **'.'**.

To recall the latest executed shell command, tap the *up* arrow key on your keyboard.

## Task 3\* · Fibonacci numbers

Write a recursive function **fib(N)** that calculates the fibonacci number for a given non-negative number (*i.e.*,  $n \geq 0$ ). Try to run your function using very large numbers and observe what happens.

## Task 4\* . Fibonacci numbers revisited

Why do you think the `fib(N)` did not perform as well as expected when tested with large numbers?

Implement a new tail-recursive function `fib2(N)` that calculates the fibonacci number using *two* accumulator values to store the values for  $n - 1$  and  $n - 2$ . The following snippet should act as a scaffolding for your work.

```
1 fib2(N) -> fib2(N, 1, 0).
2 fib2(0, Nminus1, Nminus2) ->
3   % Base case implementation.
4   ok;
5 fib2(N, Nminus1, Nminus2) ->
6   % Recursive case implementation.
7   ok.
```