c(module.erl).

### Now that module's functions can be accessed with:

module:func

-module(filename).

... for a program defined in filename.erl.



-import(filename, [func1/arity1, ..., funcN/arityN]).

-export(filename, [func1/arity1, ..., funcN/arityN]).

or

-compile(export\_all).

Similar to Prolog, and Haskell, functions and atoms begin with

a lower case, variables begin with a capital letter or an

underscore.

An atom is a word that stands for itself.
It begins with a lowercase letter or is enclosed in single

quotes.

Integers, floats, strings, atoms, lists, tuples, binaries.

## Lists are enclosed in square brackets, tuples in curly brackets, and binaries in double angle brackets.

They don't short-circuit by default. For short-circuiting you have andalso and orelse.

>= and =<. **not** <=.

- == equal to
  /= not equal to
  =:= exactly equal to
- =/= not exactly equal to

The non-exact versions will coerce its into floats. Otherwise use exact versions to give better hints to the compiler.

Pattern matching, not assignment. "Assignment" is just a

simple case of pattern matching.

```
case Expression of
   Pattern1 [when Guard1] -> Expression_sequence1;
```

...
PatternN [when GuardN] -> Expression\_sequenceN

A sequence of expressions separated by commas.

The value of the last expression evaluated.

```
if
    Guard1 -> Expression_sequence1;
    ...
    Guard2 -> Expression_sequence2
```

end

An error will be returned.

One can use the true atom as the final guard, although it is usually better to use something more explicit than true when possible.

To enforce no-side-effects, they cannot be user-defined.

You can use type tests, many operators, and a number of built-in functions.

length(List)		
size(Tuple)		

name(Patterns1) -> Expression\_sequence1;
...

name(PatternsN) -> Expression\_sequenceN.

They are often used as parameters to other functions.

[Expression || Generator, GuardOrGenerator, ..., GuardOrGenerator]

The expression typically makes use of variables defined by a generator. Guards are simply boolean expressions.

Generators are of the form El <- List.

```
[X * 2 || X <- [1, 2, 3, 4]]
```

hd (head), tl (tail), length	

lists:seq(From, To, Step)

lists:seq(From, To)

Note: To is inclusive, unlike in Scala/Python/etc

```
Line = io:get_line(Prompt).
```

io:format(FormatString, ListOfData).

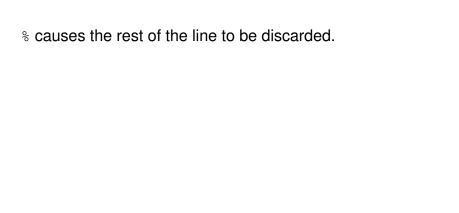
```
{ok, Stream} = file:open(FileName, write),
io:format(Stream, FormatString, ListOfData),
file:close(Stream).
```

~s a string

 $\sim_W$  a value in its standard syntax (e.g., strings as lists of integers)

 $\sim$ p a value, pretty printed (e.g., strings with quotes around them)

~n or \n newline



First the function to apply to the members of the list, and then the list.

0 > 2 rem 3.

Create an anonymous function in-line using the function's full name, *funcName/arity*.

E.g.,

```
get_red() -> filter(fun is_red/1, fruit()).
```

Lists of ASCII integer values.

## The same as Scala's forall and exists.

# The two lists must be of the same length.

```
lists:append([1, 2], [3, 4])

or
[1, 2] ++ [3, 4]

result in

[1, 2, 3, 4]
```

takewhile scans through a list until the predicate fails for the first time, at which point it discards the failed element and everything after.

 ${\tt dropwhile} \ \ \text{scans through the list, discarding everything until the predicate holds for the first time.}$ 

It creates a tuple of two lists. The first list holds the elements of the input list for which the predicate held, and the second holds the elements for which the predicate failed.

```
Pid = spawn(Function)
```

self() results in the Pid of the executing process.

```
receive
    Pattern1 [when Guard1] -> Expression_sequence1;
    ...
    PatternN [when GuardN] -> Expression_sequenceN
```

PatternN [when GuardN] -> Expression\_sequenceN
after Timeout ->

Timeout ->
TimeoutExpressionSequence

loop in Scala is a control structure in the actors library that does the looping for you.

In Erlang loop is just the name of a function you're calling so you must make the recursive call at the end of each receive case.

Provide a function that takes as an argument the Pid of the instance of the module to send the message to.

Send the message there, wait for a response, and then reply.

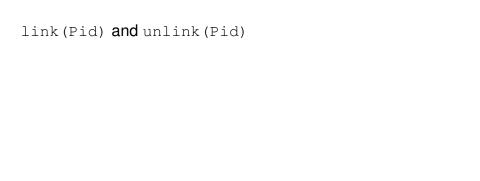
Ultimately a user may start several processes, but after that point will interact with the blocking rpc function.

Registering a Pid makes it globally available.

register(AnAtom, Pid) gives Pid a name
unregister(AnAtom)
registered() -> [AnAtom :: atom()]
returns a list of all registered processes
whereis(AnAtom) -> Pid | undefined
gets Pid of a registered process, or undefined if no such
process

spawn creates a processes independent from the current one.

spawn\_link creates a new process linked to the current one, such that if the new process exits non-normally, so will the current one.



 ${\tt exit}$  (Reason)  $\,$  exits and sends signals to linked processes.

exit (Pid, Reason sends the exit signal to the given process, but doesn't terminate the current process.

process\_flag(trap\_exit, true)
spawn\_link(Function)

Now exit signals are converted to regular { 'EXIT', From, Reason} messages.

However, if the reason is  ${\tt kill}$  , exit will still be forced.

Crashed processes are normally handled through linking, not in catch sequences.

## Create a helper function with an additional argument that will serve as an accumulator.