

Programming Paradigms Exercise 9 - Erlang 2

Theodoros Chondrogiannis

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1. (a) Write a **server** function which receives a message and sends it back to the sender. Also write a **client** function that sends a message, waits for the reply, and outputs the returned message. Start two processes running these functions.
(b) Modify the **server** function so that it does not return the received message, but computes the factorial and sends back the result. In case the message does not contain a number, return an error message to the client.
2. (a) Write a function **master** for a process that will understand and process the following messages:
 - **create** will spawn a new slave process
 - **{send,X}** will send message **X** to all slave processes
 - **kill** will terminate all slave processes
 - **terminate** will terminate the master process (after terminating all the slave processes)

In addition, write a function **slave** that will understand and process the following messages:

- **terminate** will finish the process
- **X** will print message **X** (together with its process id) on the screen

The master process needs to keep information about all the slave processes it created so far.

- (b) Modify the above functions so that the master process will also monitor the slave processes, i.e., it links to each slave process and traps potential exit signals. If the master process receives an exit signal it should take the process out of the current slave process id list and respawn a new slave process. The reaction to the message **kill** also has to be modified: before terminating the slave processes, they have to be unlinked. (Hint: check out functions **delete/2** and **unlink/1**).