Programming Paradigms Exercise 9 - Erlang 2

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1. (a) Write a server function that 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 simply echo the re-
ceived message, but operates as follows: if the message is a number,
it returns the factorial of such a number; if the message is not a
number, it return an error message to the client.

2. (a) Write a function master for a process that understands and reacts
to the following messages:
  • create: spawns a new slave process.
  • {send, X}: sends message X to all slave processes.
  • kill: terminates all slave processes.
  • terminate: terminates the master process after having termi-
nated all the slave ones.

In addition, write a function slave that understands and reacts to
the following messages:
  • terminate: terminates the process
  • X: prints on the screen message X, together with the process id
    of the slave itself.

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 monitors 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 removes
the slave process from the list of active slave processes, and respawn
a new slave process. The reaction to the message kill also has to
be modified: before terminating the slave processes, they must be
unlinked.

Hint: check out functions delete/2 and unlink/1.