Report Erlang Assignment for CPL 2014-15

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1 Solution Task 2

This task is solved by adding two processes: the *tileInfoKeeper* and the *tileSupervisor*. The *manager* has two tasks. The first task is spawning a *tileInfoKeeper* and a *tileSuperVisor*. The second task is calling the *tileInfoKeeper* when the values are changed. The *tileSuperVisor* continuously checks whether all tiles are alive. If a tile is found dead, it is respawned with its old value. This old value is obtained from the *tileInfoKeeper*. The exchanged messages are:

- **{newTileData, TupleData}**: Sent from *manager* to *tileInfoKeeper*. This message contains the lastvalues of the tiles.
- **{getLastState, Repl}**: Normally sent from the *tileSuperVisor* to the *tileInfoKeeper*. This message is used for retreiving tilevalues of all tiles, including tiles that are killed.
- **{lastState, LastState}**: Sent from **tileInfoKeeper** to **tileSuperVisor** to reply to **getLastState**.

2 Solution Task 3

This task is solved by the *concurrencyMgr*. The manager spawns a *concurrencyMgr* and uses the *waitTillFinished()* function when it receives a **sendData** message istead of timer:sleep(700). In the *waitTillFinished()* function, the manager communicates with the *concurrencyMgr* to ask for sending a message when all tiles have finished their task by sending a **sendWhenFinished** message. It then waits until the *concurrencyMgr* sends a **allFinished** message. The **concurrencyMgr** knows when all tiles are finished because every time a *tile* receives a Direction message, it will send a **{finished, Id}** message to the concurrencyMgr. When the *waitTillFinished()* function returns, the manager sends a **reset** message to the *concurrencyMgr*. This is a problem when an invalid letter is typed into the gui because the sendData case is then triggered but the tiles will not send a **finished** message to the *concurrencyMgr*. For this case, the *waitTillFinished()* automatically stops the receive after 700 milliseconds. This was true in the code uploaded at 12:00 am, but I changed it to prove that

the *after 700 ...* can be easily dismissed. The *after 700 ...* is removed and the **reset** message is only sent when a direction is sent to a tile.

Looking back after writing, this was not the best approach because the tile has part of the responsibility of managing concurrency. A better approach would have been that the *concurrencyMgr* just sends some kind of ping message to the tiles and that it marks them as finished when they reply. Since I am already writing this report past the deadline, I have not implemented this method anymore.