

```
-module(helloworld).
```

```
-export([start/0,account/1,bank/0,clerk/0]).
```

```
n2s(N) -> lists:flatten(io_lib:format("~p", [N])). %% HACK!
```

```
account(Balance) ->
```

```
    receive
```

```
        {deposit,Amount} ->
```

```
            account(Balance+Amount);
```

```
        {printbalance} ->
```

```
            io:fwrite(n2s(Balance) ++ "\n")
```

```
    end.
```

```
bank() ->
```

```
    receive
```

```
        {transfer,Amount,From,To} ->
```

```
            From ! {deposit,-Amount},
```

```
            To ! {deposit,+Amount},
```

```
            bank()
```

```
    end.
```

```
random(N) -> random:uniform(N) div 10.
```

```
ntransfers(0,_,_,_) -> true;
```

```
ntransfers(N,Bank,From,To) ->
```

```
    R = random(100),
```

```
    Bank ! {transfer,R,From,To},
```

```
    ntransfers(N-1,Bank,From,To).
```

clerk() ->

receive

{start,Bank,From,To} ->

random:seed(now()),

ntransfers(100,Bank,From,To),

clerk()

end.

start() ->

A1 = spawn(helloworld,account,[0]),

A2 = spawn(helloworld,account,[0]),

B1 = spawn(helloworld,bank,[0]),

B2 = spawn(helloworld,bank,[0]),

C1 = spawn(helloworld,clerk,[0]),

C2 = spawn(helloworld,clerk,[0]),

C1 ! {start,B1,A1,A2},

C2 ! {start,B2,A2,A1},

timer:sleep(1000),

A1 ! {printbalance},

A2 ! {printbalance}.

Answer to question C):

"What happens if we replace {deposit, +-Amount} w/ the msgs?"

To be honest, I'm not completely sure I understand the question. But I guess that there could raise a race condition, since worst case would be something like "setting" a new balance between "inspect" and "balance", which would lead to the program getting the wrong balance value.