Learning to Program with F#
Exercises
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August 24, 2020

0.1 Awari

0.1.1: (a) I skal implementere spillet Awari, som kan spilles af 2 spillere, og skrive en kort rapport. Kravene til jeres aflevering er:

- Koden skal organiseres som bibliotek, en applikation og en test-applikation.
- Biblioteket skal tage udgangspunkt i følgende signatur- og implementationsfiler:

Listing 1 awariLibIncompleteLowComments.fsi: En ikke færdigskrevet signaturfil.

```
module Awari
type pit = // intentionally left empty
type board = // intentionally left empty
type player = Player1 | Player2

/// Print the board
val printBoard : b:board -> unit

/// Check whether a pit is the player's home
val isHome : b:board -> p:player -> i:pit -> bool

/// Check whether the game is over
val isGameOver : b:board -> bool

/// Get the pit of next move from the user
val getMove : b:board -> p:player -> q:string -> pit

/// Distributing beans counter clockwise,
/// capturing when relevant
val distribute :
    b:board -> p:player -> i:pit -> board * player *
   pit

/// Interact with the user through getMove to perform
/// a possibly repeated turn of a player
val turn : b:board -> p:player -> board

/// Play game until one side is empty
val play : b:board -> p:player -> board
```

Listing 2 awariLibIncomplete.fs:
En ikke færdigskrevet implementationsfil.

```
module Awari
type pit = // intentionally left empty
type board = // intentionally left empty
type player = Player1 | Player2

// intentionally many missing implementations and
   additions

let turn (b : board) (p : player) : board =
  let rec repeat (b: board) (p: player) (n: int) :
   board =
    printBoard b
    let str =
      if n = 0 then
        sprintf "Player %A's move? " p
      else
        "Again? "
    let i = getMove b p str
    let (newB, finalPitsPlayer, finalPit)= distribute
   b p i
    if not (isHome b finalPitsPlayer finalPit)
       || (isGameOver b) then
      newB
    else
      repeat newB p (n + 1)
  repeat b p 0

let rec play (b : board) (p : player) : board =
  if isGameOver b then
    b
  else
    let newB = turn b p
    let nextP =
      if p = Player1 then
        Player2
      else
        Player1
    play newB nextP
```

En version af signaturfilen med yderligere dokumentation og implementationsfilen findes i Absalon i opgaveområdet for denne opgave.

- Jeres løsning skal benytte funktionsparadigmet såvidt muligt.
- Koden skal dokumenteres vha. kommentarstandarden for F#
- Jeres aflevering skal indeholde en afprøvning efter white-box metoden.
- I skal skrive en kort rapport i LaTeX på maks. 10 sider og som indeholder:
  - en beskrivelse af jeres design og implementation
  - en gennemgang af jeres white-box afprøvning
  - kildekoden som appendiks.