Set-once memory

Set-once memory is a special kind of synchronous memory with the following constraints.

- Multiple fibers can access the memory.
- We initialize the memory at most once, during the first \texttt{set}\ operation.
- We spin until the thunk has evaluated.

Our implementation has the following signature. The \texttt{new}\ operation creates a set-once cell. The \texttt{get}\ operation obtains the value of the cell. This operation spins if the thunk is already evaluating.

\begin{verbatim}
  type 'a set_once_mem
  type 'a thunk = unit -> 'a
  val new : 'a thunk -> 'a set_once_mem
  val get : 'a set_once_mem -> 'a

  We can completely specify the behavior of set-once memory in terms of futures.
  type 'a set_once_mem = 'a future
  fun set sm = (
    case poll sm of
    NONE => touch sm
    SOME v => v
  (* end case *))
\end{verbatim}