```
Last login: Mon Mar  6 13:22:33 on ttys026
carbon:SamplePrograms$ cd Sec_01_1\:25pm/
carbon:Sec_01_1:25pm$ cat references.ml
(* Construct a circular structure of the form

c -->  1  -->  2  -->  3
       ^               |
       |               |
       +---------------+
Write a function that returns the first n elements.

Each number above should be a pair with an int and a reference to the
next pair.
*)

type box = Box of int * box ref
let dummy : box = Box (999, ref dummy)
let c =
  let ref_in_one = ref dummy in
  let one = Box (1, ref_in_one) in
  let three = Box (3, ref one) in
  let two = Box (2, ref three) in
  let () =  ref_in_one := ref two
carbon:Sec_01_1:25pm$ utop
────────────┌─────────────────────────────────────────────────────────────┐─────────
            │ Welcome to utop version 1.14 (using OCaml version 4.01.0)! │
            └─────────────────────────────────────────────────────────────┘

Type #utop_help for help about using utop.

─( 18:00:00 )─< command 0 >──────────────────────────────────────{ counter: 0 }─
utop # #use "references.ml";;
File "references.ml", line 21, characters 0-0:
Error: Syntax error
─( 13:42:01 )─< command 1 >──────────────────────────────────────{ counter: 0 }─
utop # #use "references.ml";;
type box = Box of int * box ref
File "references.ml", line 14, characters 32-37:
Error: Unbound value dummy
─( 13:42:05 )─< command 2 >──────────────────────────────────────{ counter: 0 }─
utop # #use "references.ml";;
type box = Box of int * box ref
val dummy : box =
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File "references.ml", line 21, characters 26-33:
Error: This expression has type box ref but an expression was expected of type
         box
─( 13:42:41 )─< command 3 >──────────────────────────────────────{ counter: 0 }─
utop # #use "references.ml";;
type box = Box of int * box ref
val dummy : box =
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val dummy : box =
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utop # #use "references.ml";;
type box = Box of int * box ref
val dummy : box =
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val first_n : int -> box -> int list = <fun>
─( 13:46:39 )─< command 6 >──────────────────────────────────────{ counter: 0 }─
utop # first 8 c;;
Error: Unbound value first
Did you mean first_n or fst?
─( 13:56:51 )─< command 7 >──────────────────────────────────────{ counter: 0 }─
utop # first_n 8 c;;
Error: This expression has type box ref but an expression was expected of type
         box
─( 13:56:58 )─< command 8 >──────────────────────────────────────{ counter: 0 }─
utop # first_n 8 (!c);;
- : int list = [1; 2; 3; 1; 2; 3; 1; 2]
─( 13:57:02 )─< command 9 >──────────────────────────────────────{ counter: 0 }─
utop # #use "references.ml";;
```

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type box = Box of int * box ref
val dummy : box =
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val c : box ref =
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  val c' : box =
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  )})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})})}
  )})})})})})})})})
  val first_n : int -> box -> int list = <fun>
  ─( 13:57:14 )─< command 10 >─────────────────────────────────────{ counter: 0 }─
  utop # first_n 8 (!c);;
  - : int list = [1; 2; 3; 1; 2; 3; 1; 2]
```