

Last login: Fri Apr 6 13:17:39 on ttys008

carbon:\$ utop

```
Welcome to utop version 2.0.2 (using OCaml version 4.06.0)!
```

Type #utop\_help for help about using utop.

```
-( 13:27:44 )-< command 0 >-----{ counter: 0 }-
utop # #quit;;
carbon:$ pwd
/project/evw/Teaching/18_Spring_2041/carbon-repos
carbon:$ cd public-class-repo/Sample\ Programs/Sec_01_1-25pm/Search/
carbon:$ utop
```

```
Welcome to utop version 2.0.2 (using OCaml version 4.06.0)!
```

Type #utop\_help for help about using utop.

```
-( 13:28:07 )-< command 0 >-----{ counter: 0 }-
utop # #use "wolf.ml";;
val is_not_elem : 'a list -> 'a -> bool = <fun>
type loc = L | R
type state = loc * loc * loc * loc
val ok_state : state -> bool = <fun>
val final : loc * loc * loc * loc -> bool = <fun>
val other_side : loc -> loc = <fun>
val moves : state -> state list = <fun>
val crossing_v1 : unit -> unit = <fun>
exception FoundPath of (loc * loc * loc * loc) list
val crossing_v2 : unit -> unit = <fun>
val crossing_many_possible_moves : unit -> unit = <fun>
val crossing_many_possible_moves' : unit -> unit = <fun>
exception KeepLooking
val process_solution_exn : ('a -> string) -> 'a -> 'a option = <fun>
val show_list : ('a -> string) -> 'a list -> string = <fun>
val show_loc : 'a -> string = <fun>
val show_state : 'a * 'b * 'c * 'd -> string = <fun>
val show_path : ('_weak1 * '_weak2 * '_weak3 * '_weak4) list -> string = <fun>
File "wolf.ml", line 157, characters 22-26:
Error: This variant expression is expected to have type unit
      The constructor None does not belong to type unit
-( 13:28:07 )-< command 1 >-----{ counter: 0 }-
utop # #use "wolf.ml";;
val is_not_elem : 'a list -> 'a -> bool = <fun>
type loc = L | R
type state = loc * loc * loc * loc
val ok_state : state -> bool = <fun>
val final : loc * loc * loc * loc -> bool = <fun>
val other_side : loc -> loc = <fun>
val moves : state -> state list = <fun>
val crossing_v1 : unit -> unit = <fun>
exception FoundPath of (loc * loc * loc * loc) list
val crossing_v2 : unit -> unit = <fun>
```

```

val crossing_many_possible_moves : unit -> unit = <fun>
val crossing_many_possible_moves' : unit -> unit = <fun>
exception KeepLooking
val process_solution_exn : ('a -> string) -> 'a -> 'a option = <fun>
val show_list : ('a -> string) -> 'a list -> string = <fun>
val show_loc : 'a -> string = <fun>
val show_state : 'a * 'b * 'c * 'd -> string = <fun>
val show_path : ('_weak5 * '_weak6 * '_weak7 * '_weak8) list -> string = <fun>
-( 13:28:10 )-< command 2 >-----{ counter: 0 }-
utop # moves (L,L,L,L) ;;
- : state list = [(R, L, R, L)]
-( 13:28:41 )-< command 3 >-----{ counter: 0 }-
utop # moves (R,L,R,L) ;;
- : state list = [(L, L, R, L); (L, L, L, L)]
-( 13:28:52 )-< command 4 >-----{ counter: 0 }-
utop # List.mem ;;
- : 'a -> 'a list -> bool = <fun>
-( 13:29:10 )-< command 5 >-----{ counter: 0 }-
utop # #use "wolf.ml";;
val is_not_elem : 'a list -> 'a -> bool = <fun>
type loc = L | R
type state = loc * loc * loc * loc
val ok_state : state -> bool = <fun>
val final : loc * loc * loc * loc -> bool = <fun>
val other_side : loc -> loc = <fun>
val moves : state -> state list = <fun>
val crossing_v1 : unit -> state list option = <fun>
exception FoundPath of (loc * loc * loc * loc) list
val crossing_v2 : unit -> unit = <fun>
val crossing_many_possible_moves : unit -> unit = <fun>
val crossing_many_possible_moves' : unit -> unit = <fun>
exception KeepLooking
val process_solution_exn : ('a -> string) -> 'a -> 'a option = <fun>
val show_list : ('a -> string) -> 'a list -> string = <fun>
val show_loc : 'a -> string = <fun>
val show_state : 'a * 'b * 'c * 'd -> string = <fun>
val show_path : ('_weak9 * '_weak10 * '_weak11 * '_weak12) list -> string =
  <fun>
-( 13:34:37 )-< command 6 >-----{ counter: 0 }-
utop # crossing_v1 () ;;
- : state list option =
Some
  [(L, L, L, L); (R, L, R, L); (L, L, R, L); (R, R, R, L); (L, R, L, L);
   (R, R, L, R); (L, R, L, R); (R, R, R, R)]
-( 13:38:51 )-< command 7 >-----{ counter: 0 }-
utop # #use "wolf.ml";;
val is_not_elem : 'a list -> 'a -> bool = <fun>
type loc = L | R
type state = loc * loc * loc * loc
val ok_state : state -> bool = <fun>
val final : loc * loc * loc * loc -> bool = <fun>
val other_side : loc -> loc = <fun>
val moves : state -> state list = <fun>
val crossing_v1 : unit -> state list option = <fun>
exception FoundPath of (loc * loc * loc * loc) list

```

**File "wolf.ml", line 105, characters 6-346:**

**Warning 8:** this pattern-matching is not exhaustive.

Here is an example of a case that is not matched:

```
_::_::_::_::_
val crossing_v2 : unit -> unit = <fun>
val crossing_many_possible_moves : unit -> unit = <fun>
val crossing_many_possible_moves' : unit -> unit = <fun>
exception KeepLooking
val process_solution_exn : ('a -> string) -> 'a -> 'a option = <fun>
val show_list : ('a -> string) -> 'a list -> string = <fun>
val show_loc : 'a -> string = <fun>
val show_state : 'a * 'b * 'c * 'd -> string = <fun>
val show_path : ('_weak13 * '_weak14 * '_weak15 * '_weak16) list -> string =
  <fun>
-( 13:39:00 )-< command 8 >-----{ counter: 0 }-
utop # crossing_v2 () ;;
Exception:
FoundPath
  [(L, L, L, L); (R, L, R, L); (L, L, R, L); (R, R, R, L); (L, R, L, L);
   (R, R, L, R); (L, R, L, R); (R, R, R, R)].
-( 13:44:26 )-< command 9 >-----{ counter: 0 }-
utop # List.fold_left ;;
- : ('a -> 'b -> 'a) -> 'a -> 'b list -> 'a = <fun>
-( 13:44:30 )-< command 10 >-----{ counter: 0 }-
utop # #use "wolf.ml";;
```

```
val is_not_elem : 'a list -> 'a -> bool = <fun>
type loc = L | R
type state = loc * loc * loc * loc
val ok_state : state -> bool = <fun>
val final : loc * loc * loc * loc -> bool = <fun>
val other_side : loc -> loc = <fun>
val moves : state -> state list = <fun>
val crossing_v1 : unit -> state list option = <fun>
exception FoundPath of (loc * loc * loc * loc) list
```

**File "wolf.ml", line 105, characters 6-346:**

**Warning 8:** this pattern-matching is not exhaustive.

Here is an example of a case that is not matched:

```
_::_::_::_::_
val crossing_v2 : unit -> unit = <fun>
val crossing_many_possible_moves : unit -> unit = <fun>
val crossing_many_possible_moves : unit -> unit = <fun>
val crossing_many_possible_moves' : unit -> unit = <fun>
exception KeepLooking
val process_solution_exn : ('a -> string) -> 'a -> 'a option = <fun>
val show_list : ('a -> string) -> 'a list -> string = <fun>
val show_loc : 'a -> string = <fun>
val show_state : 'a * 'b * 'c * 'd -> string = <fun>
val show_path : ('_weak17 * '_weak18 * '_weak19 * '_weak20) list -> string =
  <fun>
-( 13:49:01 )-< command 11 >-----{ counter: 0 }-
utop # crossing_many_possible_moves () ;;
- : unit = ()
-( 13:52:10 )-< command 12 >-----{ counter: 0 }-
utop # #use "wolf.ml";;
```

**File "wolf.ml", line 149, characters 0-3:**

**Error:** Syntax error

```
-( 13:52:25 )-< command 13 >-----{ counter: 0 }-
```

```
utop # #use "wolf.ml";;  
val is_not_elem : 'a list -> 'a -> bool = <fun>  
type loc = L | R  
type state = loc * loc * loc * loc  
val ok_state : state -> bool = <fun>  
val final : loc * loc * loc * loc -> bool = <fun>  
val other_side : loc -> loc = <fun>  
val moves : state -> state list = <fun>  
val crossing_v1 : unit -> state list option = <fun>  
exception FoundPath of (loc * loc * loc * loc) list
```

**File "wolf.ml", line 105, characters 6-346:**

**Warning** 8: this pattern-matching is not exhaustive.  
Here is an example of a case that is not matched:

```
_::_::_::_::_  
val crossing_v2 : unit -> unit = <fun>  
val crossing_many_possible_moves : unit -> unit = <fun>  
val crossing_many_possible_moves' : unit -> unit = <fun>  
exception KeepLooking  
val process_solution_exn : ('a -> string) -> 'a -> 'a option = <fun>  
val show_list : ('a -> string) -> 'a list -> string = <fun>  
val show_loc : 'a -> string = <fun>  
val show_state : 'a * 'b * 'c * 'd -> string = <fun>  
val show_path : ('_weak21 * '_weak22 * '_weak23 * '_weak24) list -> string =  
  <fun>
```

```
-( 13:54:16 )-< command 14 >-----{ counter: 0 }-
```

```
utop # crossing_many_possible_moves () ;;
```

Exception:

FoundPath

```
[(L, L, L, L); (R, L, R, L); (L, L, R, L); (R, R, R, L); (L, R, L, L);  
(R, R, L, R); (L, R, L, R); (R, R, R, R)].
```

```
-( 13:54:27 )-< command 15 >-----{ counter: 0 }-
```

```
utop # #quit ;;
```

```
carbon:$
```