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Last login: Wed Jan 24 13:25:06 on ttys005
carbon:$ utop
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        Welcome to utop version 2.0.2 (using OCaml version 4.06.0)!
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Type #utop_help for help about using utop.

─( 13:40:19 )─< command 0 >──────────────────────────────────{ counter: 0 }─
utop # #use "simple.ml";;
val power : int -> float -> float = <fun>
val cube : float -> float = <fun>
val gcd : int -> int -> int = <fun>
val sum : int list -> int = <fun>
val all : bool list -> bool = <fun>
val even2ways : int list -> bool = <fun>
File "simple.ml", line 41, characters 6-10:
Warning 26: unused variable even.
val even2ways_better : int list -> bool = <fun>
val string_concat : 'a -> 'b list = <fun>
val string_concat : string -> string list -> string = <fun>
─( 13:40:19 )─< command 1 >──────────────────────────────────{ counter: 0 }─
utop # string_concat "," ["a"; "b"; "c"] ;;
- : string = "a,b,c"
─( 13:40:22 )─< command 2 >──────────────────────────────────{ counter: 0 }─
utop # string_concat "," ["a"] ;;
- : string = "a"
─( 13:40:49 )─< command 3 >──────────────────────────────────{ counter: 0 }─
utop # string_concat "," [] ;;
- : string = ""
─( 13:41:00 )─< command 4 >──────────────────────────────────{ counter: 0 }─
utop # string_concat "," ["a"; "b"] ;;
- : string = "a,b"
─( 13:41:03 )─< command 5 >──────────────────────────────────{ counter: 0 }─
utop # #use "simple.ml";;
val power : int -> float -> float = <fun>
val cube : float -> float = <fun>
val gcd : int -> int -> int = <fun>
val sum : int list -> int = <fun>
val all : bool list -> bool = <fun>
val even2ways : int list -> bool = <fun>
File "simple.ml", line 41, characters 6-10:
Warning 26: unused variable even.
val even2ways_better : int list -> bool = <fun>
val string_concat : 'a -> 'b list = <fun>
val string_concat : string -> string list -> string = <fun>
─( 13:41:08 )─< command 6 >──────────────────────────────────{ counter: 0 }─
utop # string_concat "," ["a"; "b"] ;;
- : string = "a,b,"
─( 13:42:02 )─< command 7 >──────────────────────────────────{ counter: 0 }─
utop # string_concat "," ["a"; "b"; "c"] ;;
```

```
- : string = "a,b,c,"
-( 13:42:04 )-< command 8 >-------------------------------------{ counter: 0 }-
utop # #use "simple.ml";;
val power : int -> float -> float = <fun>
val cube : float -> float = <fun>
val gcd : int -> int -> int = <fun>
val sum : int list -> int = <fun>
val all : bool list -> bool = <fun>
val even2ways : int list -> bool = <fun>
File "simple.ml", line 41, characters 6-10:
Warning 26: unused variable even.
val even2ways_better : int list -> bool = <fun>
val string_concat : string -> string list -> string = <fun>
-( 13:42:13 )-< command 9 >-------------------------------------{ counter: 0 }-
utop # even2ways [2;4;6;8] ;;
- : bool = true
-( 13:53:44 )-< command 10 >------------------------------------{ counter: 0 }-
utop # even2ways [2;4;6] ;;
- : bool = false
-( 13:53:55 )-< command 11 >------------------------------------{ counter: 0 }-
utop # even2ways [2;4;5;8] ;;
- : bool = false
-( 13:53:57 )-< command 12 >------------------------------------{ counter: 0 }-
utop # xs ;;
Error: Unbound value xs
-( 13:54:03 )-< command 13 >------------------------------------{ counter: 0 }-
utop # let x1::x2::rest = 1 :: 2 :: 3 :: 4 :: 5 :: [] ;;
Characters 4-16:
Warning 8: this pattern-matching is not exhaustive.
Here is an example of a case that is not matched:
(_::[]|[])
val x1 : int = 1
val x2 : int = 2
val rest : int list = [3; 4; 5]
-( 13:54:49 )-< command 14 >------------------------------------{ counter: 0 }-
utop # let x1::x2::rest = 1 :: 2 :: [] ;;
Characters 4-16:
Warning 8: this pattern-matching is not exhaustive.
Here is an example of a case that is not matched:
(_::[]|[])
val x1 : int = 1
val x2 : int = 2
val rest : int list = []
-( 13:57:04 )-< command 15 >------------------------------------{ counter: 0 }-
utop # let x1::x2::rest = 1 :: [] ;;
Characters 4-16:
Warning 8: this pattern-matching is not exhaustive.
Here is an example of a case that is not matched:
(_::[]|[])
Exception: Match_failure ("//toplevel//", 1, 4).
-( 13:57:33 )-< command 16 >------------------------------------{ counter: 0 }-
```

```
utop # x1 ;;
- : int = 1
─( 13:57:41 )─< command 17 >──────────────────────────────────{ counter: 0 }─
utop # x2 ;;
- : int = 2
─( 13:58:15 )─< command 18 >──────────────────────────────────{ counter: 0 }─
utop # rest ;;
- : int list = []
─( 13:58:33 )─< command 19 >──────────────────────────────────{ counter: 0 }─
utop # let xs = 1::2::3::4::[] ;;
val xs : int list = [1; 2; 3; 4]
─( 13:58:41 )─< command 20 >──────────────────────────────────{ counter: 0 }─
utop # let x1::rest = xs ;;
Characters 4-12:
Warning 8: this pattern-matching is not exhaustive.
Here is an example of a case that is not matched:
[]
val x1 : int = 1
val rest : int list = [2; 3; 4]
─( 13:59:01 )─< command 21 >──────────────────────────────────{ counter: 0 }─
utop # xs ;;
- : int list = [1; 2; 3; 4]
─( 13:59:12 )─< command 22 >──────────────────────────────────{ counter: 0 }─
utop # #use "simple.ml";;
val power : int -> float -> float = <fun>
val cube : float -> float = <fun>
val gcd : int -> int -> int = <fun>
val sum : int list -> int = <fun>
val all : bool list -> bool = <fun>
val even2ways : int list -> bool = <fun>
File "simple.ml", line 41, characters 6-10:
Warning 26: unused variable even.
val even2ways_better : int list -> bool = <fun>
val string_concat : string -> string list -> string = <fun>
val is_empty : 'a list -> bool = <fun>
─( 14:00:30 )─< command 23 >──────────────────────────────────{ counter: 0 }─
utop # is_empty [] ;;
- : bool = true
─( 14:04:50 )─< command 24 >──────────────────────────────────{ counter: 0 }─
utop # is_empty 1:: [] ;;
Error: This expression has type int but an expression was expected of type
         'a list
─( 14:04:54 )─< command 25 >──────────────────────────────────{ counter: 0 }─
utop # is_empty 1::[] ;;
Error: This expression has type int but an expression was expected of type
         'a list
─( 14:04:59 )─< command 26 >──────────────────────────────────{ counter: 0 }─
utop # is_empty (1::[]) ;;
- : bool = false
─( 14:05:03 )─< command 27 >──────────────────────────────────{ counter: 0 }─
utop # #use "simple.ml";;
```

```
val power : int -> float -> float = <fun>
val cube : float -> float = <fun>
val gcd : int -> int -> int = <fun>
val sum : int list -> int = <fun>
val all : bool list -> bool = <fun>
val even2ways : int list -> bool = <fun>
File "simple.ml", line 41, characters 6-10:
Warning 26: unused variable even.
val even2ways_better : int list -> bool = <fun>
val string_concat : string -> string list -> string = <fun>
val is_empty : 'a list -> bool = <fun>
─( 14:05:12 )─< command 28 >──────────────────────────────────{ counter: 0 }─
utop # is_empty (1::[]) ;;
- : bool = false
─( 14:06:11 )─< command 29 >──────────────────────────────────{ counter: 0 }─
utop # is_empty [] ;;
- : bool = true
─( 14:06:13 )─< command 30 >──────────────────────────────────{ counter: 0 }─
utop # is_empty 4 ;;
Error: This expression has type int but an expression was expected of type
         'a list
─( 14:06:17 )─< command 31 >──────────────────────────────────{ counter: 0 }─
utop # is_empty ;;
- : 'a list -> bool = <fun>
─( 14:08:56 )─< command 32 >──────────────────────────────────{ counter: 0 }─
utop # #use "simple.ml";;
val power : int -> float -> float = <fun>
val cube : float -> float = <fun>
val gcd : int -> int -> int = <fun>
val sum : int list -> int = <fun>
val all : bool list -> bool = <fun>
val even2ways : int list -> bool = <fun>
File "simple.ml", line 44, characters 10-16:
Error: Unbound value is_evn
Hint: Did you mean is_even?
─( 14:09:26 )─< command 33 >──────────────────────────────────{ counter: 0 }─
utop # #use "simple.ml";;\
val power : int -> float -> float = <fun>
val cube : float -> float = <fun>
val gcd : int -> int -> int = <fun>
val sum : int list -> int = <fun>
val all : bool list -> bool = <fun>
val even2ways : int list -> bool = <fun>
val is_even : int -> bool = <fun>
File "simple.ml", line 47, characters 6-10:
Warning 26: unused variable even.
val even2ways_better : int list -> bool = <fun>
val string_concat : string -> string list -> string = <fun>
val is_empty : 'a list -> bool = <fun>
val length : 'a list -> int = <fun>
─( 14:14:49 )─< command 34 >──────────────────────────────────{ counter: 0 }─
```