CS3110 OCaml Cheat Sheet

() : unit

3 : int

3.0 : float

'A' : char

"xyz" : string

false : bool

3 < 5 && true : bool

Some 3 : int option

None : 'a option

ref 3 : int ref

[3; 4] : int list

[] : 'a list

(2, "xyz", 3.0) : int \* string \* float

fun x -> x + 1 : int -> int

fun x y -> x + y : int -> int -> int

fun (x, y) -> x + y : int \* int -> int

fun () -> 4 : unit -> int

Not\_found : exn

if x < 0 || x > 0

then "nonzero"

else "zero"

match x with

 0 -> "zero"

| 1 -> "one"

| \_ -> "more than one"

Char.code 'a' 97

Char.code 'A' 65

Char.code '0' 48

Char.chr 97 'a'

(fun x -> x + 1) 3 4

"x" ^ "y" ^ "z" "xyz"

-5 + 7 2

let compose f g x = f (g x) in

let f x = x \* x in

let ff = compose f f in

let fff = compose f ff in

 (f 2, ff 2, fff 2) (4, 16, 256)

List.hd [3; 4] 3

List.tl [3; 4] [4]

List.tl [4] []

3 :: [4; 5] [3; 4; 5]

[1;2;3] @ [4;5;6] [1;2;3;4;5;6]

fst (2, "abc") 2

snd (2, "abc") "abc"

type 'a option = Some of 'a | None

type 'a stack = Empty | Top of ('a \* 'a stack)

Top (3, Empty) : int stack

type rcrd = {foo:int; bar:string}

{foo=3; bar="xyz"} : rcrd

List.map : ('a -> 'b) -> 'a list -> 'b list

List.map (fun x -> x + 100) [2;3;4] [102;103;104]

List.map (fun x -> x = 3) [2;3;4] [false;true;false]

List.filter : ('a -> bool) -> 'a list -> 'a list

List.filter (fun x -> x < 4) [4;3;9;6;1;0;5] [3;1;0]

List.fold\_right: ('a->'b->'b) -> 'a list -> 'b -> 'b

List.fold\_right (^) ["a";"b";"c"] "x" "abcx"

List.fold\_left : ('a->'b->'a) -> 'a -> 'b list -> 'a

List.fold\_left (^) "x" ["a";"b";"c"] "xabc"

List.find : ('a -> bool) -> 'a list -> 'a

List.find (fun x -> x > 10) [1;5;10;13;19] 13

List.find (fun x -> x > 10) [1;5;10] raises Not\_found

String.length "hello" 5

List.length [8; 9; 10] 3

List.rev [8; 9; 10] [10; 9; 8]

List.nth [8; 9; 10] 2 10

List.nth [8; 9; 10] 3 raises Failure "nth"

let (x, y) = (Some 111, 2999) in

 match (x, y) with

 (Some z, \_) -> z + y

 | (None, \_) -> y 3110

let e = exp 1. in

let pi = 2. \*. asin 1. in

 (e, pi) (2.7182818284590451, 3.1415926535897931)

let uncurried (x, y) = x + y in

let curried x y = x + y in

 (uncurried (1, 2), curried 1 2) (3, 3)

let rec sum (x : int list) : int =

 match x with

 [] -> 0

 | u :: t -> u + sum t

module type STACK = sig

 type 'a stack

 exception Empty of string

 val make : unit -> 'a stack

 val push : 'a stack \* 'a -> 'a stack

 val pop : 'a stack -> 'a \* 'a stack

 val isEmpty : 'a stack -> bool

end

module Stack : STACK = struct

 type 'a stack = 'a list

 exception Empty of string

 let make () = []

 let push (s, x) = x :: s

 let pop s =

 match s with

 x :: t -> (x, t)

 | [] -> raise (Empty "empty")

 let isEmpty = fun x -> x = []

end

let xr : int ref = ref 2999 in

 xr := !xr + 111 ()

 sets xr to 3110 as a side effect

(print\_endline "hello"; 3110) 3110

 prints "hello" as a side effect

try Some (List.find (fun x -> x > 10) [1;5;10])

with Not\_found -> None None

raise Not\_found

raise (Failure "error")

failwith "error"