非手続き型言語 2回目課題 解答例

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1 関数 comb (第 2 回のスライドの問題)

```
fun comb (n, m) =
  if m = 0 orelse n = m then 1
  else comb(n-1, m) + comb(n-1, m-1);
```

2 演習問題 3.2.1 d) − f)

```
(* 3.2.1 d)*)

fun ex321d (L) = if L = [] then 0
                    else 1 + ex321d(tl(L));

(* 3.2.1 e)*)

fun ex321e (x, i) = if i = 0 then 1.0
                        else x * ex321e(x, i-1);

(* 3.2.1 f) 素直な考え方*)
fun ex321f (L) = if tl(L) = [] then hd(L)
else if hd(L) > ex321f(tl(L)) then hd(L)
     else ex321f(tl(L));

(* ex321f の再帰呼び出しを減らす工夫をした解答 *)
fun maxList(L) =
    if tl(L) = nil then hd(L)
    else (* 少なくとも二つの要素がある場合 *)
       if hd(L)>hd(tl(L)) then maxList(hd(L)::tl(tl(L)))
       else maxList(tl(L));
```

3 実行結果

```
- use "ML2answer.ml";
[opening ML2answer.ml]
val comb = fn : int * int -> int
ML2answer.ml:7.23 Warning: calling polyEqual
val ex321d = fn : ''a list -> int
val ex321e = fn : real * int -> real
val ex321f = fn : int list -> int
val maxList = fn : int list -> int
val it = () : unit
- comb (5,2);
val it = 10 : int
- ex321d [];
val it = 0 : int
- ex321d (["abc", "c", "dd"]);
val it = 3 : int
- ex321e (2.0, 4);
val it = 16.0 : real
- ex321f ([4,1,5,~2]);
val it = 5 : int
-
```