

Matthew Silva

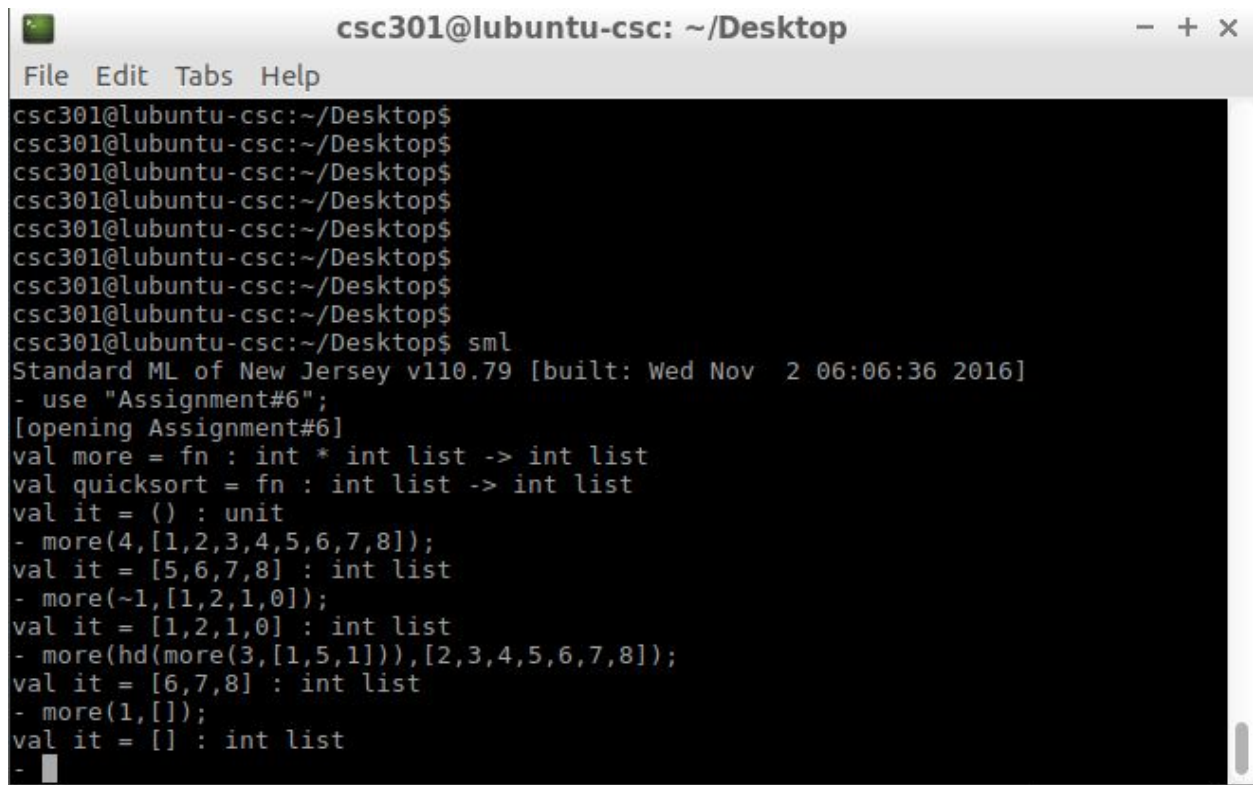
Professor Hamel

CSC 301

21 October 2017

## Assignment #6

```
fun more(e, []) = []  
|   more(e, first::rest) = if first > e then first::more(e, rest)  
                           else more(e, rest)
```



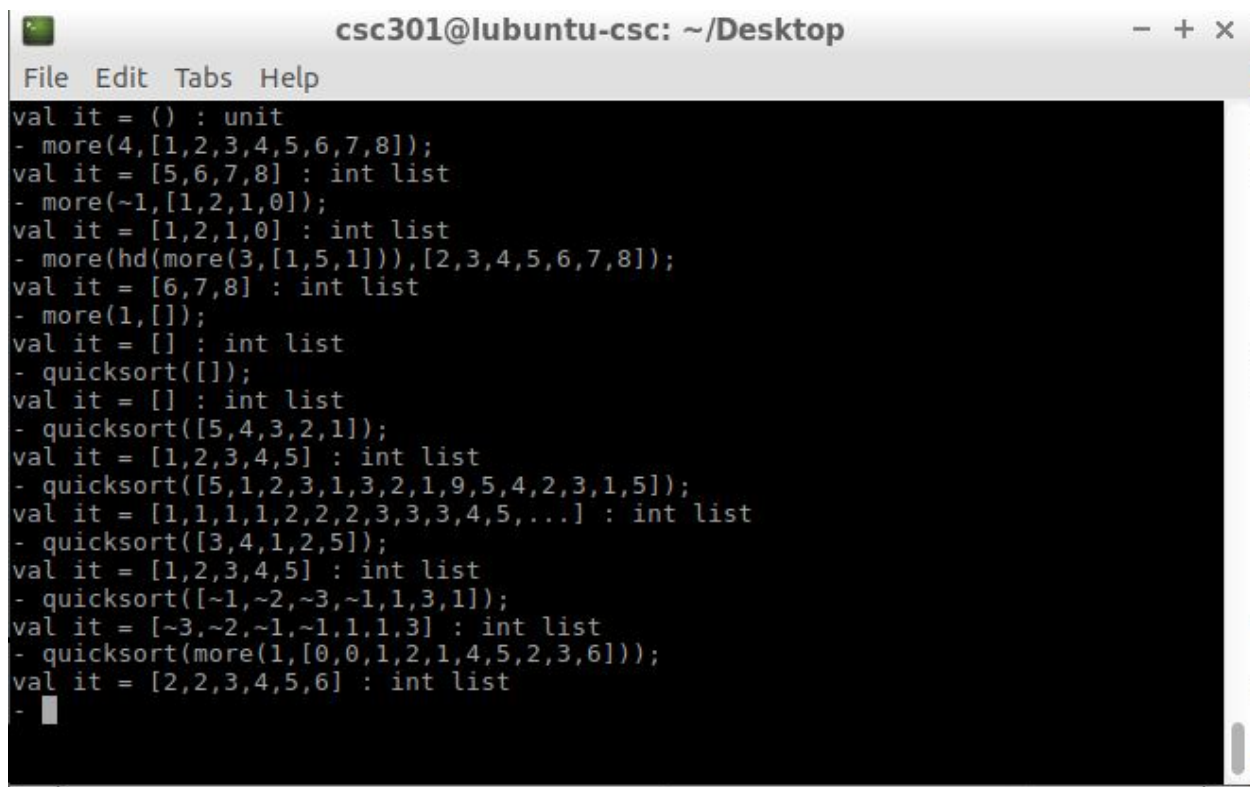
The screenshot shows a terminal window titled "csc301@lubuntu-csc: ~/Desktop". The window contains the following text:

```
File Edit Tabs Help  
csc301@lubuntu-csc:~/Desktop$  
csc301@lubuntu-csc:~/Desktop$  
csc301@lubuntu-csc:~/Desktop$  
csc301@lubuntu-csc:~/Desktop$  
csc301@lubuntu-csc:~/Desktop$  
csc301@lubuntu-csc:~/Desktop$  
csc301@lubuntu-csc:~/Desktop$  
csc301@lubuntu-csc:~/Desktop$  
csc301@lubuntu-csc:~/Desktop$ sml  
Standard ML of New Jersey v110.79 [built: Wed Nov  2 06:06:36 2016]  
- use "Assignment#6";  
[opening Assignment#6]  
val more = fn : int * int list -> int list  
val quicksort = fn : int list -> int list  
val it = () : unit  
- more(4,[1,2,3,4,5,6,7,8]);  
val it = [5,6,7,8] : int list  
- more(~1,[1,2,1,0]);  
val it = [1,2,1,0] : int list  
- more(hd(more(3,[1,5,1])),[2,3,4,5,6,7,8]);  
val it = [6,7,8] : int list  
- more(1,[]);  
val it = [] : int list  
-
```

```

fun quicksort [] = []
| quicksort [a] = [a]
| quicksort (pivot::rest) =
  let
    fun compareToPivot(pivot, []) = ([], [])
    | compareToPivot(pivot, next::rest) =
      let
        val (x,y) = compareToPivot(pivot, rest)
      in
        if next < pivot then (next::x, y) else (x, next::y)
      end;
    val (smaller, larger) = compareToPivot(pivot, rest)
  in
    (quicksort(smaller))@[pivot]@(quicksort(larger))
  end;

```



```

csc301@lubuntu-csc: ~/Desktop
File Edit Tabs Help
val it = () : unit
- more(4,[1,2,3,4,5,6,7,8]);
val it = [5,6,7,8] : int list
- more(~1,[1,2,1,0]);
val it = [1,2,1,0] : int list
- more(hd(more(3,[1,5,1])),[2,3,4,5,6,7,8]);
val it = [6,7,8] : int list
- more(1,[]);
val it = [] : int list
- quicksort([]);
val it = [] : int list
- quicksort([5,4,3,2,1]);
val it = [1,2,3,4,5] : int list
- quicksort([5,1,2,3,1,3,2,1,9,5,4,2,3,1,5]);
val it = [1,1,1,1,2,2,2,3,3,3,4,5,...] : int list
- quicksort([3,4,1,2,5]);
val it = [1,2,3,4,5] : int list
- quicksort([~1,~2,~3,~1,1,3,1]);
val it = [~3,~2,~1,~1,1,1,3] : int list
- quicksort(more(1,[0,0,1,2,1,4,5,2,3,6]));
val it = [2,2,3,4,5,6] : int list
-

```