CSCI 421 Project 1: First ML program

Objectives

- Install Standard ML of New Jersey on your computer.
- Write/Run SML functions.
- Write the SML functions in a text then load and run the code an SML interactive session.

Step-by-step directions

Step 1

Install Standard ML of New Jersey to your computer. You can find the official installation instructions here: Windows macOS. To install on Mac, you may also watch the video at https://youtu.be/qdUnCK85CoI.

Step 2

Write all of the following functions in a text editor and save the file as ProjectOne.sml.

1. Write a function named cube of type `int -> int` that returns the cube of its parameter.
2. Write a function named sqsum of type `int -> int` that takes an non-negative integer n and returns the sum of the squares of all the integers 0 through n. Your function need not behave well on negative input.
3. Write a function named max of type `int list -> int` that returns the largest element of a list of integers. Your function need not behave well if the list is empty. (Refer to exercise 13 on page 85 of the textbook.)

Step 3

Open a CMD (on Windows) or a Termianl (on macOS) window and navigate to the directory containing your ProjectOne.sml file. You can use the `cd` command to change directories, with `cd ..` moving you to the parent of current directory. The `dir` (Windows) or `ls` (macOS) command will show you a list of the files in the current directory. Most terminals allow you to drag-and-drop a folder onto the terminal window to insert the path of the folder.

Once you're in the correct directory run the `sml` command to start an interactive session. Then, type `use "ProjectOne.sml";` to import the functions from your SML file. From there you can test the correctness of your functions by trying a few different inputs.

An example:

```
$ sml
Standard ML of New Jersey (64-bit) v110.99 [built: Thu Dec 24 11:47:23 2020]
- use "ProjectOne.sml";
[opening ProjectOne.sml]
val cube = fn : int -> int
val sumsq = fn : int -> int
val max = fn : int list -> int
val it = () : unit
- cube 4;
val it = 64 : int
- cube 10;
val it = 1000 : int
- sumsq 3;
val it = 14 : int
- sumsq 5;
val it = 55 : int
- max [1,2,3,4];
val it = 4 : int
- max [~1,5,0];
val it = 5 : int
```

If you make a change to your .sml file, you don't need to exit the sml program to reload it, just type `use "ProjectOne.sml";` again. When you're done, you may exit the interactive SML session by pressing Ctrl-D.

Turn in your ProjectOne.sml file on Blackboard.

Grade breakdown

Criteria	Weight
Code is cleanly formatted & appropriately documented	20%
Correctness of `cube` function	20%
Correctness of `sumsq` function	30%
Correctness of `max` function	30%

If your code doesn't compile without modifications, 20% will be deducted from your score.