Using Standard ML

Handout E

21 June 2007

For technical reasons, we will only have access to Standard ML using the EMACS and vi editors. To access Standard ML, use the `ssh` client installed on the lab machines and connect to `axon.cs.colorado.edu`. Your login is a slightly abbreviated/simplified form of your group name (ask your instructor for details), while the password should be the same as your PL Detective password.

1 Preparing your account

The ssh session will leave you at the command prompt of a UNIX setup. Here, use the command

```
mkdir worksheet-10
```

to create a directory "`worksheet-10`" into which you will store the results of todays exercises. Within that directory, your solutions should be labelled "`1.sml`" for the first exercise, "`2.sml`" for the second exercise, and so on. It is perhaps easiest if you execute

```
cd worksheet-10
```

before proceeding: now you can just edit "`1.sml`", and it will be in the right directory.

2 Interacting with SML (basic)

The exercises require you to

(a) interact with SML, and

(b) save your solutions in appropriately named files ("`1.sml`" etc.).

You can use the EMACS editor to do both. If you just wish to experiment, you can start

```
sml
```

or

```
cle sml
```

to interact with the Standard ML toplevel. The latter invocation will wrap the call to SML in an interactive editing environment. `cle` makes editing more

convenient, but it screws up the SML prompt somewhat. For your first couple of experiments, you might want to just use `sml`, until you need the editing features of `cle sml`.

If you use EMACS, you can interact with SML even more conveniently; this is discussed below.

If you start "`sml`" or "`cle sml`", you can directly type in SML definitions and expressions; the toplevel system will respond accordingly. Remember to terminate each expression/definition with a semicolon. Until you terminate your input, the system will keep waiting for input, displaying the "`=`" prompt instead of its regular "`-`" prompt.

- If SML is not respoinding anymore, press Ctrl-C to reset it to the "`-`" prompt.
- To quit SML, get to the "`-`" prompt and press Ctrl-D.

3 Editing

To edit, you can use one of the following programs:

- `vi` – only recommended if you already know it
- `nano` – easy to use, but can't interact with SML
- `emacs` – recommended

Each of these you start by entering its name, followed by the file name you want to edit (e.g., `vi 1.sml`).

4 EMACS interaction

The EMACS editor can directly interact with SML. First, start up EMACS and edit a file (such as `1.sml`). Write your SML input into the file. Now you can use

- Ctrl-C Ctrl-B to start up SML and copy your file contents over to it. The first time you do this, EMACS will ask you for your SML setup; just confirm both options.
- Ctrl-X Ctrl-O allows you to switch between direct SML interaction and EMACS editing. This only works after you have started up SML. (This command switches between all the different "frames" you have open in your EMACS editing window.)
- Ctrl-X Ctrl-S saves your current SML program, but only if you are currently editing it (not if you are in the SML interaction frame).
- Ctrl-X Ctrl-C quits EMACS. This will ask you whether you want to save any unsaved files.