COMP 212 Spring 2015
Lab 6

1   Valuability and Totality

First, we will review valuability and totality, to prepare you for written homework 5. Everyone should come into Exley 74 for this part.

2   Currying Error Messages

Consider a curried and uncurried version of the addition function:

```
fun add_curried (x : int) (y : int) : int = x + y
fun add (x : int, y : int) : int = x + y
```

Task 2.1 Which of the following are well-typed?

```
add (3,4)
add_curried (3,4)
add 3 4
add_curried 3 4
```

For the ones that are ill-typed, what is the error message that SMLNJ reports? Explain this error message in your own words.

3   Options

We can use trees to represent dictionaries.

Task 3.1 Define a datatype of trees, which are either empty, or a node with two subtrees. Each node should store a key, which is a string, and a value. The datatype should be parametrized by the type of keys.

Task 3.2 Define a function

```
lookup : 'a tree -> key -> 'a option
```

such that `lookup t k` returns `SOME v` if there is a value `v` associated with the key `k`, and returns `NONE` otherwise. Do **not** assume that the tree is sorted.

4   Shapes

Task 4.1 Download the Homework 6 code. Run

- `writeshape(100,100,Rect((25,25),(75,50)),"output.bmp");`

to test creating a shape file named `output.bmp`. Open this file (you can use a web browser, or Preview on a Mac, or Paint on Windows).

Task 4.2 Start the homework, starting with the `Disc` and `Without` cases of `contains`.