CSci 340, Spring 2003, Assignment 3

This assignment is due *Tuesday, March 25* at 11:20pm. You should submit a paper copy of your Haskell code to my office or at the beginning of class.

1. Write a Haskell function `isPrime`, which takes an Integer and returns a Bool indicates whether the integer parameter is prime. (Note that the `mod` function takes two integers as parameters and returns the remainder when the first is divided by the second.)

   For this problem, and for the next one, you can feel free to define other identifiers in your program code.

2. Suppose we want a data type to represent an assignment of values to identifiers (akin to the Context object of Project 2). We can define this as a function from a String to an Integer.

   ```
   type Context = String -> Integer
   ```

   Such a Context object would take an identifier name and return the integer associated with the identifier, or it would raise an error if there is no such identifier association.

   Define the following two identifiers.

   ```
   emptyContext :: Context
   addIdent     :: Context -> String -> Integer -> Context
   ```

   The *emptyContext* identifier represents a Context object containing no identifier associations. The *addIdent* function essentially takes three arguments — a Context c, a String id, and an Integer val – and returns a Context that is identical to c except that it associates val with id.

   The following example test expression, using these new identifiers, should return 4.

   ```
   (addIdent (addIdent emptyContext "a" 4) "b" 8) "a"
   ```

   This sample generates a Context associating 4 with *a* and 8 with *b*. It then asks the Context to return the value associated with *a*. The following example generates the same Context and then asks it for the value of *d*. The interpreter should display an error message.

   ```
   (addIdent (addIdent emptyContext "a" 4) "b" 8) "d"
   ```