COP 4020

HW 1

1.Fix the syntax errors in the program below, and test your solution using GHCi.

```
N = a 'div' length xs
    where
       a = 10
      xs = [1,2,3,4,5]
```

n = a `div` length xs

where

a = 10

xs = [1,2,3,4,5]

There were three changes that I made.

1. **Changed the function name from ‘N’ to ‘n’ since all function names should begin with a lowercase letter.**
2. **Changed the quotes around div to be backwards quotes, as intended for Haskell.**
3. **Aligned xs to be in the same column as the variable above it in order to be in line with Haskell guidelines.**

2. Show how the library function last that selects the last element of a list can be defined using the functions introduced in this lecture. For example:

> last [1,2,3,4,5]

> 5

```
pseudoLast xs = drop a xs
    where
        a = length xs – 1
```

I chose to utilize the drop function, the user inputs a list and the drop function then calculates the length of the list and drops every element from the size of the list minus one, leaving only the final element of the list behind and returning it.

3. Show how the library function init that removes the last element from a list can be defined. For example:

>init [1,2,3,4,5]

> [1,2,3,4]

```
pseudoInit xs = take a xs
    where
        a = length xs – 1
```

I applied the same strategy from number two, except this time taking every element based on the length of the list minus one instead of dropping, thus giving us every element of the list minus the last one, as Init does.

4. What are the types of the following values?

- [’a’,’b’,’c’] = **[char]**
- (’a’,’b’,’c’) = **(char, char, char)**
- [(False,’0’),(True,’1’)] = **[(bool, int)]**

5. What are the types of the following functions?

- second xs = head (tail xs)= **[a] -> a** **because head and tail are both [a]-> a**
- swap (x,y) = (y,x)= **(a, b) -> (b, a)** **because fst is (a, b) ->a I used that as a reference**
- pair x y = (x,y)= **a->b->(a, b)** **using the given example for zip**