CSCI 2100: Spring 2022
Class Activity: 02/17/2022
Due: Monday (11:30 PM)
Points: 25

Topic: Types and Typeclasses, Functions and Conditionals <not today>

To-do:
#Complete the tasks.
#Save the expressions, compiled outputs, and your observation (if asked) in a file.
Name the file as worksheet_2_17_2022.(txt/pdf/doc)

Task 1: Types

```
csci2100> x = "hello"
csci2100> :t x
x :: [Char]
```

We read the above instruction as the following:

x is an instance of a List of Chars.

Now **test and record the output of each of the questions**. Also, include a one-line statement describing the meaning of each of the output.

a)
```
csci2100> :t ((4 + 5) > 99/11)
```

b)
```
csci2100> number1 =  (100 / 99) :: Rational
csci2100> :t number1
```

c)
```
csci2100> p = 13 + 15
csci2100> :t p
```

d)
```
csci2100> z = "Hello" ++ ['1', '2', '0']
csci2100> :t z
```

e) Identify the types, typeclasses, and functions. (Hint: You may use information from slide #22 of lecture note 2/14/22)

tail, Int, Char, [Char], Eq, Ord, ==, +, Bool, head, Integer, Fractional,

- **Infix Function**: If a function is composed only of special characters.
  Example: + is an infix function.
- **Polymorphic Function:** A function that deals with type variables.
  Example: + is also a polymorphic function.

f) State another example (except +) of infix function.

g) State another example (except +) of polymorphic function.

Task 2: Functions and their types

```
csci2100> my_function x y z = 2 * (x + y) - z

csci2100> :t my_function

my_function :: Num a => a -> a -> a -> a
```

We may interpret the output like the following:

my_function takes three parameters (hint: a -> a -> a) of some type a and produces a result of type a (the last a in the sequence), where a must be something from the Num typeclass.

Now, complete the followings:

Interpret the output of the last instruction/expression.

```
csci2100> test x y =[head x] ++ [head y]


csci2100> test "prep" "food"
"pf"

csci2100> :t test
```

Task 3: .hs file and Haskell functions

Open the Haskell_Files_Tutorial.pdf and go through the questions.

Submission:

Submit `csci2100_2_17_22.hs` along with the **worksheet_2_17_2022.(pdf/txt/doc)** file.

- **Don't forget to include your name at the beginning of both of the files.**
- **For the .hs file, your name must be added as a comment.**

Point Chart:

Task 1: 14 points
Task 2: 3 points
Task 3: 8 points