Functional Programming Using Haskell

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1 Exercises

Let us consider the following functions:

- length (size),
- (++) (merge),
- reverse (reverse),
- nub (removal of repeats),
- words (words of a phrase),
- unwords (inverse of previous),
- sort (sort),
- (==) (equality),
- lines (lines of a text),
- unlines (inverse of previous),
- take (get prefix),
- drop (get sufix).

Now run these commands in GHCi:

```
:m Data.Ratio
:m Data.Char
:m Data.List
```

Words

Solve these problems by passing these words as inputs to the correct functions in GHCi. (Do not forget the " ")

Problem 1.1. How many letters does "Rainbow" contain?

Problem 1.2. How can we merge "Has" with "kell"?

Problem 1.3. How can we reverse “anilina” and “direito”?

Problem 1.4. Run the following instructions:

```
nub “direito”
nub “anilina”
```

What do you think “nub” does?

Sentences

Run this command:

```
sentence = “Jean Michel Powerly Sawyer”
```

Problem 1.5. What do these intructions do?

```
words sentence
unwords (words sentence)
```

Problem 1.6. What's the difference between these instructions?

```
words (reverse sentence)
reverse (words sentence)
```

Problem 1.7. What happens when we run the following instruction? What can we conclude?

```
words (unwords sentence)
```

Problem 1.8. Call back to Problem 1.5.
What if the input was “ Help Drowned in Spaces”
This is a very important effect if we want to re-use it, we use:

```
effect x = unwords (words x)
```

Run effect with that input and with sentence.

Problem 1.9. Run these commands:

```
take 1 (words sentence)
take 2 (words sentence)
take 3 (words sentence)
```

What does take do?

Problem 1.10. Run these commands:

```
drop 1 (words sentence)
drop 2 (words sentence)
drop 3 (words sentence)
```

What does drop do?

Problem 1.11. Consider the following commands:

```
unwords (take 2 (words sentence))
unwords (drop 2 (words sentence))
```

How can we make these commands work for any sentence?
Try your solution for any sentence.

Texts

Run this command:

text = [“Hello I am studying”,“No you are not”,“I am from Ancient Greece”]

Problem 1.12. What do you think this instruction does? Run it and see if it matches your expectations?

sort text

Problem 1.13. How can we count the number of phrases using haskell?

Problem 1.14. Run:

unlines text

Interpret the result.
What about the command:

lines (unlines text)

2 Summary

Using and interpreting Pre-Defined functions in the GHC haskell interpreter