**SpiderRock FIX and Data Structures Challenge**

FIX, Financial Information eXchange, is a human-readable Key/Value protocol used by securities exchanges for Order Entry. The format is key=value with separators.

FIX has a set of rules for validation. Some examples:

- Tags cannot be repeated within a section

- Repeating groups start with a count field that must match the number of repeating groups

FIX has set of standard messages. Below are common order messages.

- 35=D, New Order Single messages can notify the exchange of a new order request.

- 35=8, Execution reports notify the client that an order has been accepted or filled.

Here is an example of a login message (35=A):

8=FIX.4.2|9=0020|35=A|49=INCA|56=BATS|34=000000001|50=0028|57=PROD|108=30|10=084|

For a more information please reference:

[Financial Information eXchange - Wikipedia](https://en.wikipedia.org/wiki/Financial_Information_eXchange)

Included is a text file with a set of fix messages using “|” as a separator.

In your language of choice, please write a sample program that reads these FIX messages and:

* Lists error notifications for messages that have the same field twice
* Lists the highest and lowest price of valid New Order Single messages by Account

Feel free to ask questions.

Questions for further discussion in interview:

How would you validate the field values?

Explain how FIX repeating groups work.

How would you validate the tags of repeating groups?

We cannot receive your code via email through our firewall, so it is best to post your solution on github and send us and email with the link.