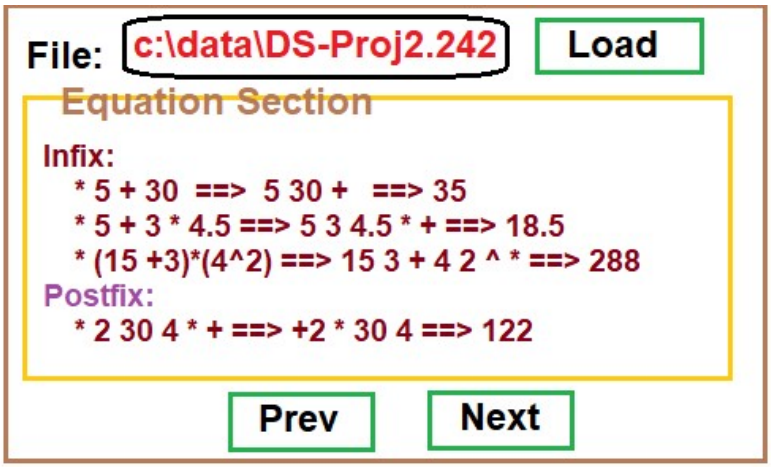
BIRZEIT UNIVERSITY

COMP242-Project II

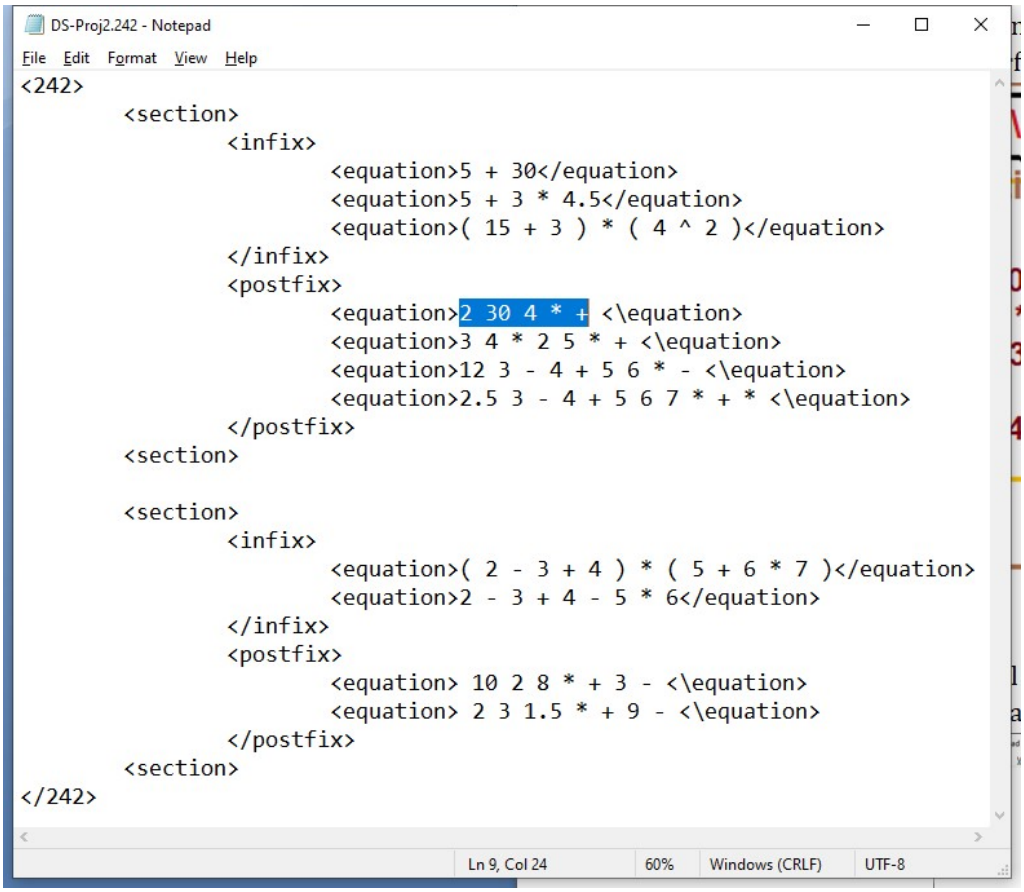
In this project, you will implement an equation processor application using **linked stack** and **cursor array implementations** of a linked list. The equation processor interface will look like the following:



The equation file is a special text file that has a **.242** extension. The equations in this file are in **infix** and/or **postfix** format. A typical equation file looks like the following:

The equations file has to start with the tag **<242>** and ends with the tag **</242>**. Within the start and end tags there are 1 or more sections. **Section** starts with **<section>** tag and ends with **</section>** tag. Within a section there are an optional **infix** and/or **postfix** sections. **Infix** starts with **<infix>** tag and ends with **</infix>** tag. **Postfix** starts with **<postfix>** tag and ends with **</postfix>** tag.

Inside the infix/postfix sections you find 1 or more equations. **Equation** starts with **<equation>** tag and ends with **</equation>** tag.



At start, the user has to click the **Load** button. The load button will open a **file chooser** to select an equation file. The selected file will be displayed in the label next to the load button (e.g. **c:\data\DS-Proj2.242**) and then the file contents will be loaded as shown in **previous figure** **if the file is valid**(e.g. tags are balanced) .

- **Valid file**: you need to check and indicate whether the file tags are **balanced** or not. Meaning that each **start tag** has an **end tag** and they are closed in order.

  Note: This can be done using a stack similar to the balanced delimiters in equations.

- In the **Equation Section** you need to load equations from the 1st section from the file.
  - For **Infix** equations: do convert the infix to postfix and then evaluate it.
  - For **postfix** equations: do convert the postfix to **prefix** and then evaluate it. As shown in the previous figure.

  Note: we didn't cover prefix in lectures. You need to study it by yourself.

- At last, the **Prev** and **Next** buttons will navigate through equation section. If you click the **Next** button, it will display the equations from the 2nd section in the file if exists and so on. If you click the **Prev** button, it will display the equations from the previous section in the file if exists.

To make the project more interesting:

- **We need you to implement the linked stack using a cursor array.**
- **You have to define 1 course array and within this cursor array you can create as many stacks as needed.**

Yahoooo!

Good Luck!