**WRAV202: Practical 4**

Write a separate program for each of the following questions. Each program must read an input file and write to an output file.

Make use of C#’s built-in Queue and Stack classes. For this practical, you will write programs to evaluate basic expressions using postfix notation. In Question 1, your program will convert expressions to postfix notation. For Question 2, your program will process the postfix notation.

# Question 1

The input file consists of multiple equations, one on each line. The tokens per line are delimited by the space character. The equations contain positive numbers, negative numbers, \* operators and + operators. **There are no subtraction or division operators.** For example:

A picture containing chart

Description automatically generated

Your program must read the input file and convert it to postfix notation using the algorithm discussed during the lecture. Save each postfix output on a separate line in an output file called “Outputs.txt”. Tokens are once again delimited with the space character:

A picture containing text

Description automatically generated

Test Inputs and the Expected Test Outputs are provided in the question folder.

# Question 2

The input file consists of multiple equations represented in postfix notation on each line, for example:

A picture containing text

Description automatically generated

Your program must evaluate these expressions using the algorithm that was discussed in class. Use **doubles** when performing calculations, and round your final answer to two decimal places. Write the output values to an “Outputs.txt” file. For example:

Graphical user interface, text

Description automatically generated with medium confidence

Test Inputs and the Expected Test Outputs are provided in the question folder.

# SUBMISSION

Upload you code in two files with the extension .cs on the learn.mandela.ac.za site.