Gebze Technical University
Computer Engineering

CSE 222 - 2019 Spring

HOMEWORK 3 REPORT

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Course Assistant:

1 INTRODUCTION

1.1 Problem Definition

Part1 : Problem is calculate the White components of given mxn matrix. In the matrix, 0 means Black and 1 means White.If there is 1 of the up,down,right and left around and element, it means this elemenst are a group. This homework we were have to calculate this group. Also, we were have to read input like file on commenline argument path. Result printed on the screen.

Part2 : This part, we were have to calculate an infix expression. We were have to read this expression and variables from file. This file contain variables (more than one) and space, after space, there is an expression. Also, there are functions (sin, cos, abs). We were have to calculate this infix expression and print it on the screen.

1.2 System Requirements

Part1 : This program run on intelliJ IDE. I mean, Project file will be intelliJ file. So, for run this program there must be intelliJ IDE. So, you can just run this program on computer or laptop. Also you have enter a text file path via command line (it must be full path from root). This file should have contaion 0s and 1s with space between them. There shouldnt be anything except 0s and 1s.

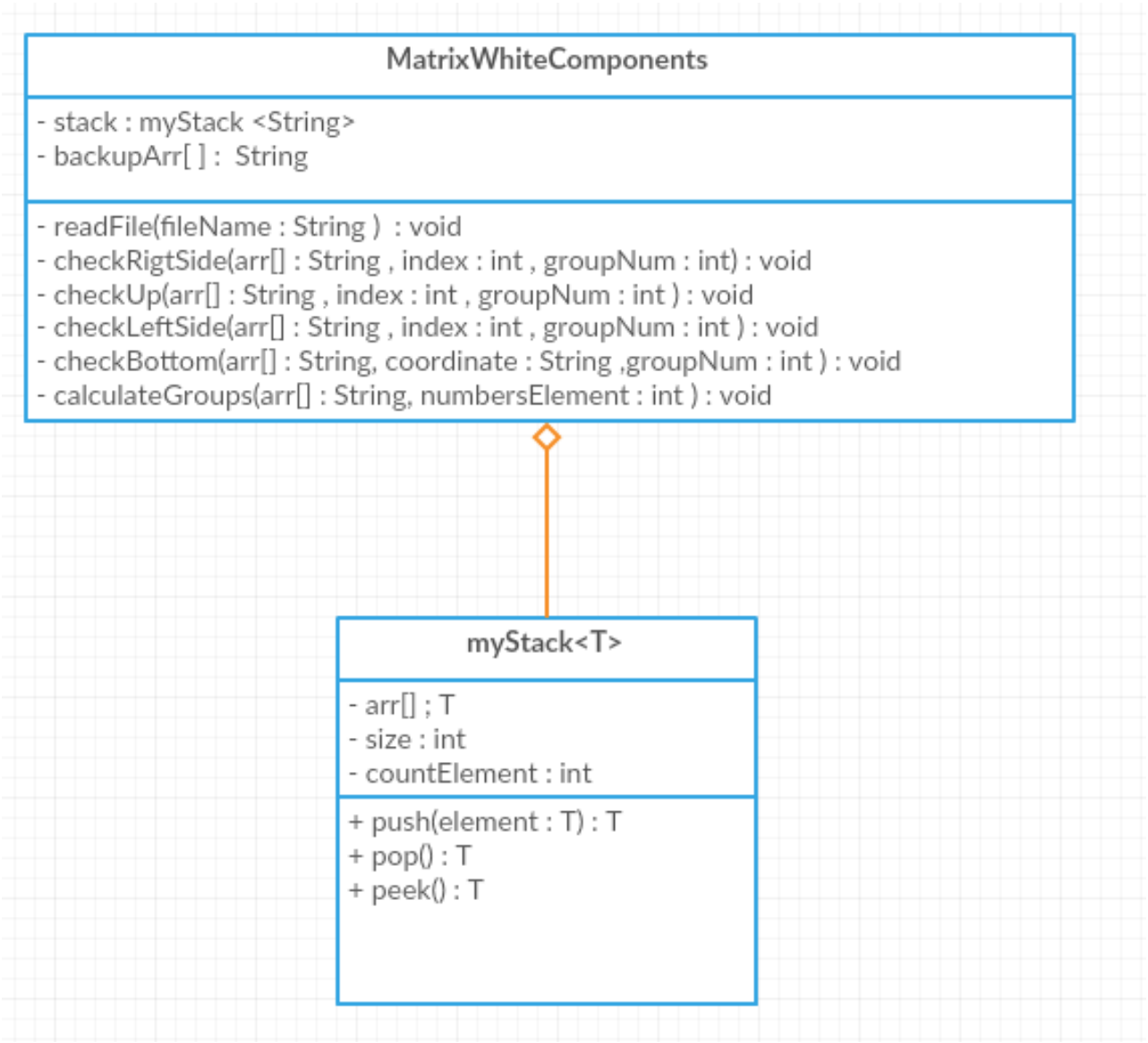
Part2 : Like Part1 this program also run on intelliJ IDE. You should enter a full path via commenline for text this program. Test file should include one or more variables with values and after that it should contain a space. Finally, it should have an expresiion. There should’nt be anything except this. Also, expression should have space between tokens.

IntelliJ IDE Reguirements : Minimum 2GB Ram, At least 2 GB harddisk space,Windows operating System.

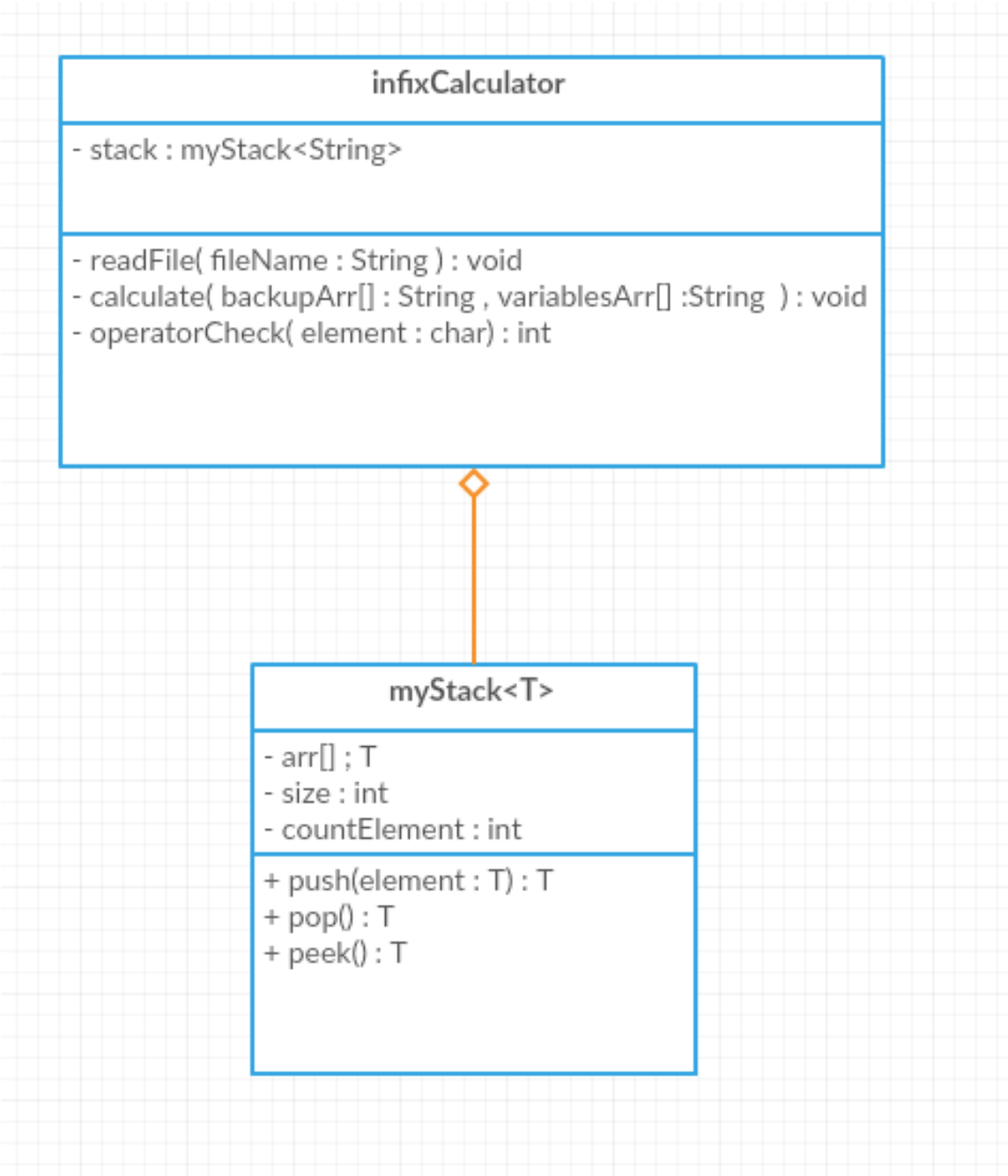
2 METHOD

2.1 Class Diagrams

PART1 UML :



Part2 UML :



2.2 Use Case Diagrams

How is this software supposed to be used? What is expected of the user? What is that button for? Is the user supposed to press it, click it, punch it? Explain step by step how the user(s) are supposed to/expected to use your software - with diagrams if necessary.

2.3 Problem Solution Approach

PART1: Firstly, I try to hold short memory. So, I read file and pushed coordinates 1s into myStack. I hold stack string, because of I pushed coordinates like (1,23). İf I didnt hold string, I should use another class like point for hold X and Y coordinate. In this solution, you dont have to hold another class objects. You should just split stack element with **“,”** and you will catch X and Y coordinate. After I saved coordinate into stack, I poped stack for save this coordinate into backupArr. I did it because of I should seach coordinate which one is be up, left,bottom or up. So, I detect first coordinate and I search all coordinate bottom, right, left, up relevant with this coordinate and if I find one of them, I assign this coordinate with minus number for determine groups. Finally, I pushed first elements and minus numbers groups into stack for count group numbers. The last, I pop stack and count group numbers.

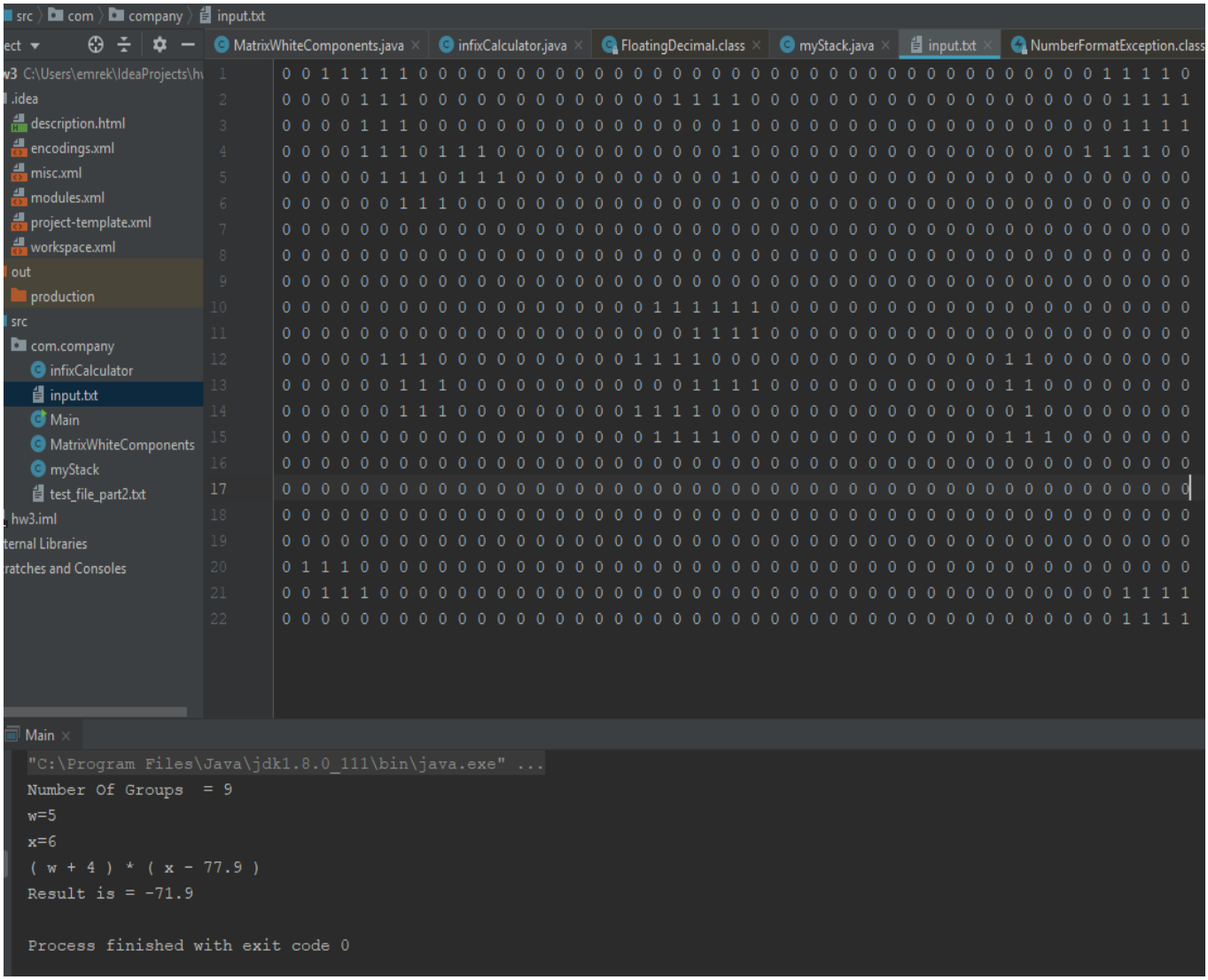
PART2 : I read file until space for save variables and their values. After space, I started to push expression tokens into the stack until firs “)”. When I determine “)”, I started pop stack for calculate variables result. I poped stack 3 times because of determine values or variables. Also, I check if a determine variable or just number. For check it, I seach my variables array. This array holds variables and their values. When I search on it, I split this array with **“=”** and I determine variable and its value. When I finished calculate, I continue until determine another “)”. When array element finish, calculate will end and result will be printed on the screen.

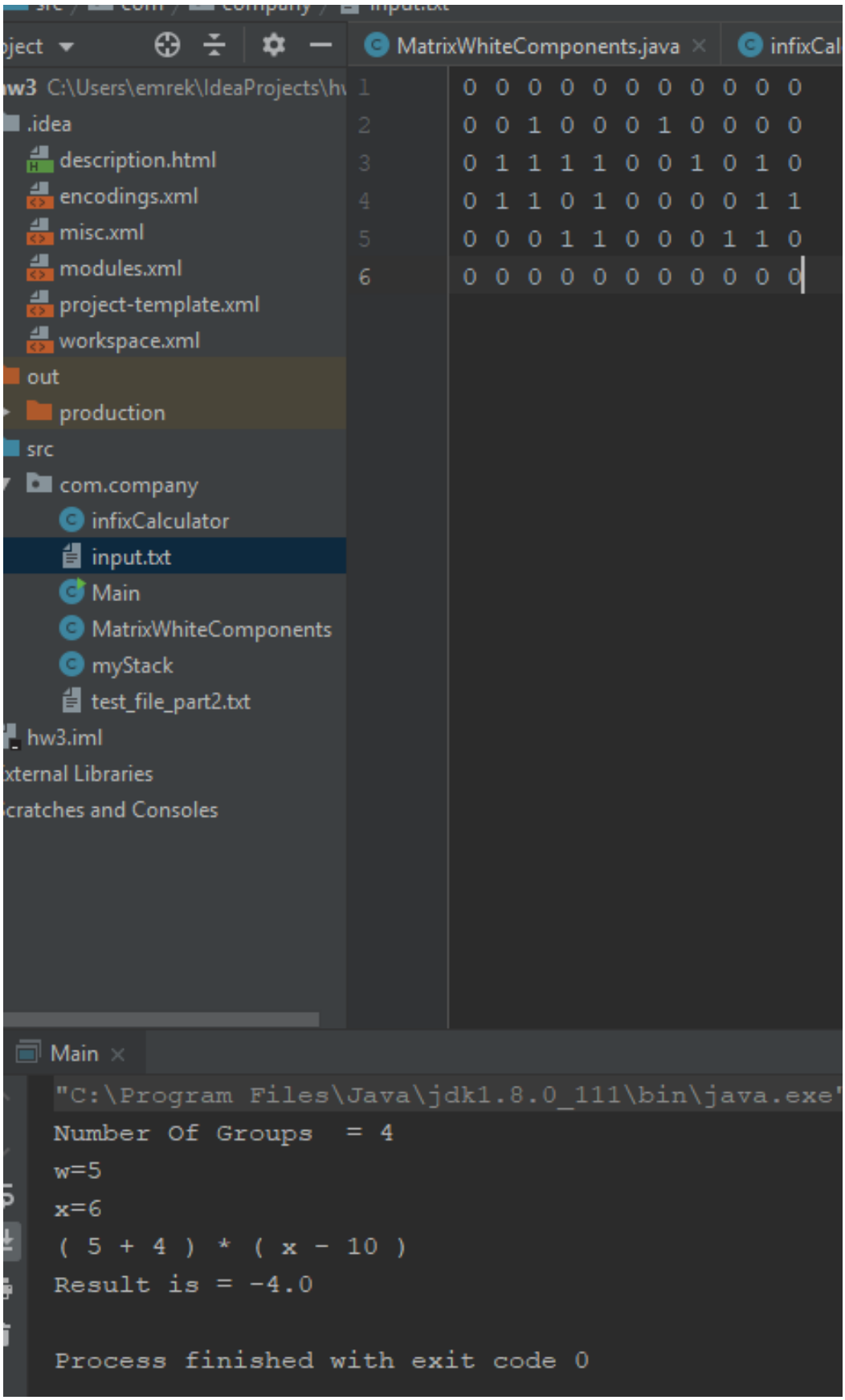
3 RESULT

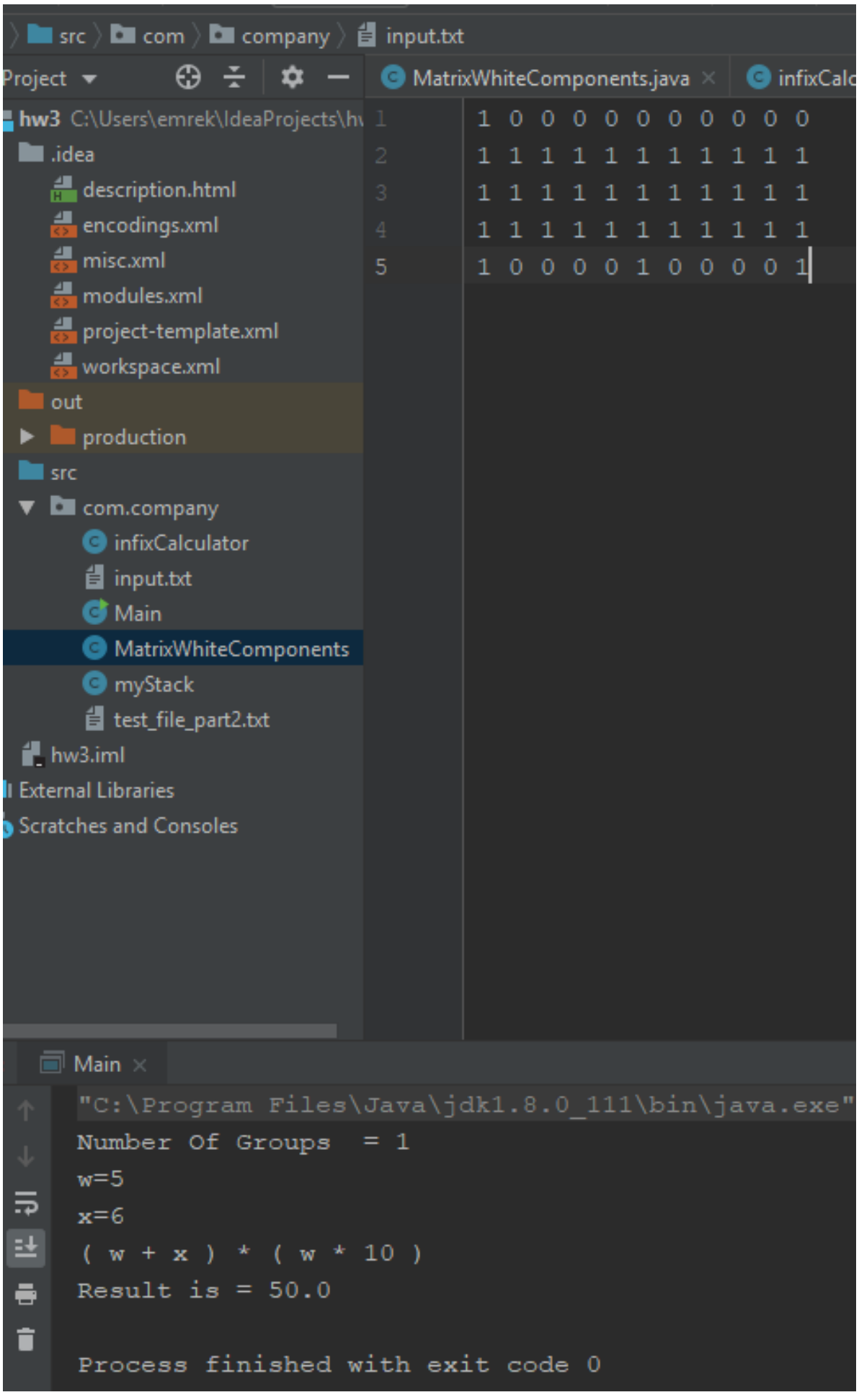
3.1 Test Cases

3.2 Running Results

PART 1 AND PART2 TESTS




MatrixWhiteComponents.java
infixCal
hw3 C:\Users\emrek\IdeaProjects\hw
.idea
description.html
encodings.xml
misc.xml
modules.xml
project-template.xml
workspace.xml
out
production
src
com.company
infixCalculator
input.txt
Main
MatrixWhiteComponents
myStack
test_file_part2.txt
hw3.iml
External Libraries
Scratches and Consoles
1 0 0 0 0 0 0 0 0 0 0 0
2 0 0 1 0 0 0 1 0 0 0 0
3 0 1 1 1 1 0 0 1 0 1 0
4 0 1 1 0 1 0 0 0 0 1 1
5 0 0 0 1 1 0 0 0 1 1 0
6 0 0 0 0 0 0 0 0 0 0 0
Main
"C:\Program Files\Java\jdk1.8.0_111\bin\java.exe"
Number Of Groups = 4
w=5
x=6
(5 + 4) * (x - 10)
Result is = -4.0
Process finished with exit code 0


src com company input.txt
Project
MatrixWhiteComponents.java
infixCalc
hw3 C:\Users\emrek\IdeaProjects\hw
.idea
description.html
encodings.xml
misc.xml
modules.xml
project-template.xml
workspace.xml
out
production
src
com.company
infixCalculator
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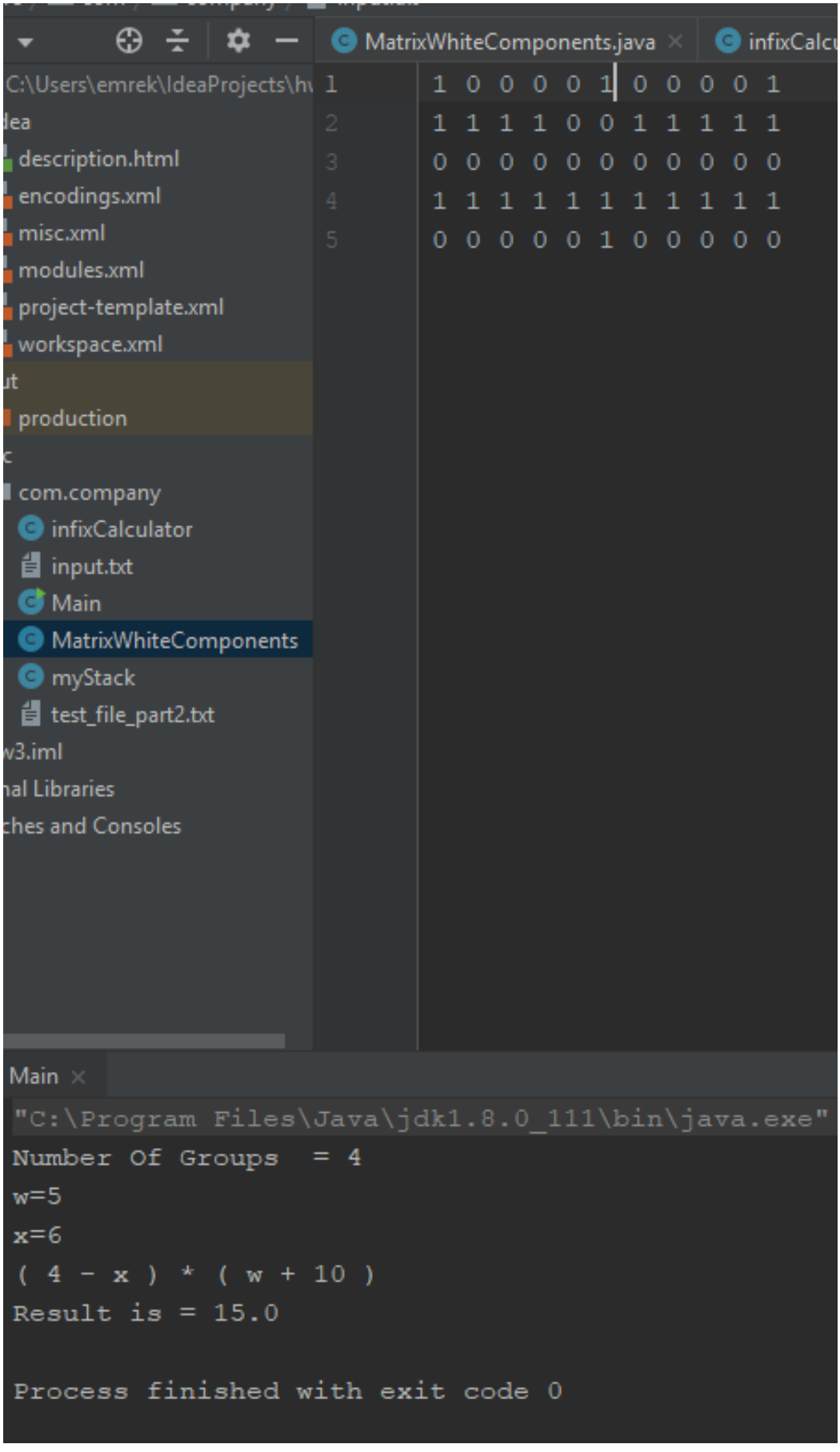
Main
MatrixWhiteComponents
myStack
test_file_part2.txt
hw3.iml
External Libraries
Scratches and Consoles
1 0 0 0 0 0 0 0 0 0 0
1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1
1 0 0 0 0 1 0 0 0 0 1
Main
"C:\Program Files\Java\jdk1.8.0_111\bin\java.exe"
Number Of Groups = 1
w=5
x=6
(w + x) * (w * 10)
Result is = 50.0
Process finished with exit code 0


MatrixWhiteComponents.java
infixCalcu
C:\Users\emrek\IdeaProjects\hv
1 1 0 0 0 0 1 0 0 0 0 1
2 1 1 1 1 0 0 1 1 1 1 1
3 0 0 0 0 0 0 0 0 0 0 0
4 1 1 1 1 1 1 1 1 1 1 1
5 0 0 0 0 0 1 0 0 0 0 0
description.html
encodings.xml
misc.xml
modules.xml
project-template.xml
workspace.xml
production
com.company
infixCalculator
input.txt
Main
MatrixWhiteComponents
myStack
test_file_part2.txt
Main
"C:\Program Files\Java\jdk1.8.0_111\bin\java.exe"
Number Of Groups = 4
w=5
x=6
(4 - x) * (w + 10)
Result is = 15.0
Process finished with exit code 0