

**Gebze Technical University
Computer Engineering**

CSE 222 - 2019 Spring

HOMEWORK X REPORT

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Course Assistant:

1 INTRODUCTION

1.1 Problem Definition

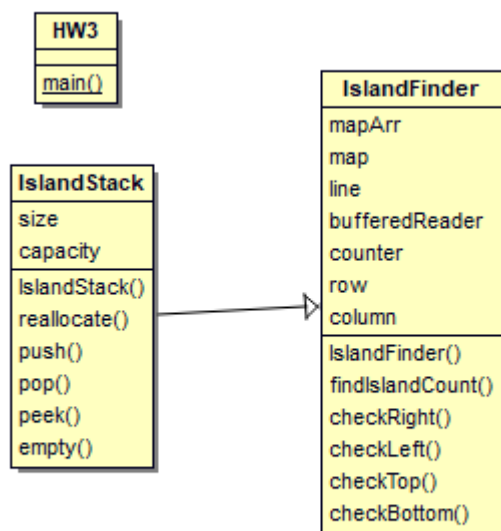
Part1: We have a matrix that consists of ones and zeros . Ones represent the land and we should count the number of islands in this matrix.

1.2 System Requirements

JVM must be installed on the computer to run this program because program is written in java . And small amount of memory like 10 mb and less then 100kb storage is enough to run program. It's a small and basic program and you can run it on windows or linux systems since it's written in java.

2 METHOD

2.1 Class Diagrams



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 to/expected to use your software - with diagrams if necessary.

2.3 Problem Solution Approach

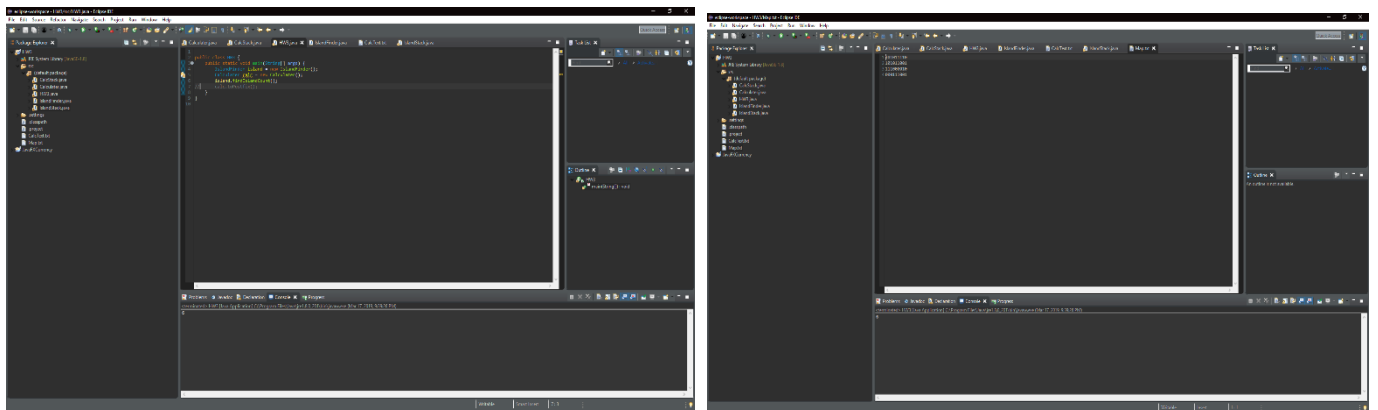
To solve problem I used a stack that is implemented by me. It has a inner class which has two field like i and j which hold coordinates. So this stack's each node holds it's own coordinates in it which represent the coordinates of each land. In my solution I just scan all matrix one by one and when I encounter a 1 value I made it 0 and I push it and it's neighbors which are 1 and I did same thing for them and I hold a counter which is increased by 1 for each island. At the end I did all lands that are connected with each other 0 and increase the counter by 1 and I scan all matrix like that.

3 RESULT

3.1 Test Cases

I just wrote a txt file which's format is proper for homework and tested it with my program.

3.2 Running Results



Class (IslandStack)	Time Complexity	InnerClass (Coor)	Time Complexity
Reallocate()	O(n)	getI()	O(1)
push()	O(1)	getJ()	O(1)
pop()	O(1)	Class (IslandFinder)	
peek()	O(1)	checkRight()	O(1)
empty()	O(1)	checkLeft()	O(1)
		checkTop()	O(1)

		checkBottom()	O(1)
		findIslandCount()	O(n) (It has 3 for loop which are runs n times)