GIT Department of Computer Engineering
CSE 222/505 - Spring 2020
Homework #5 Report

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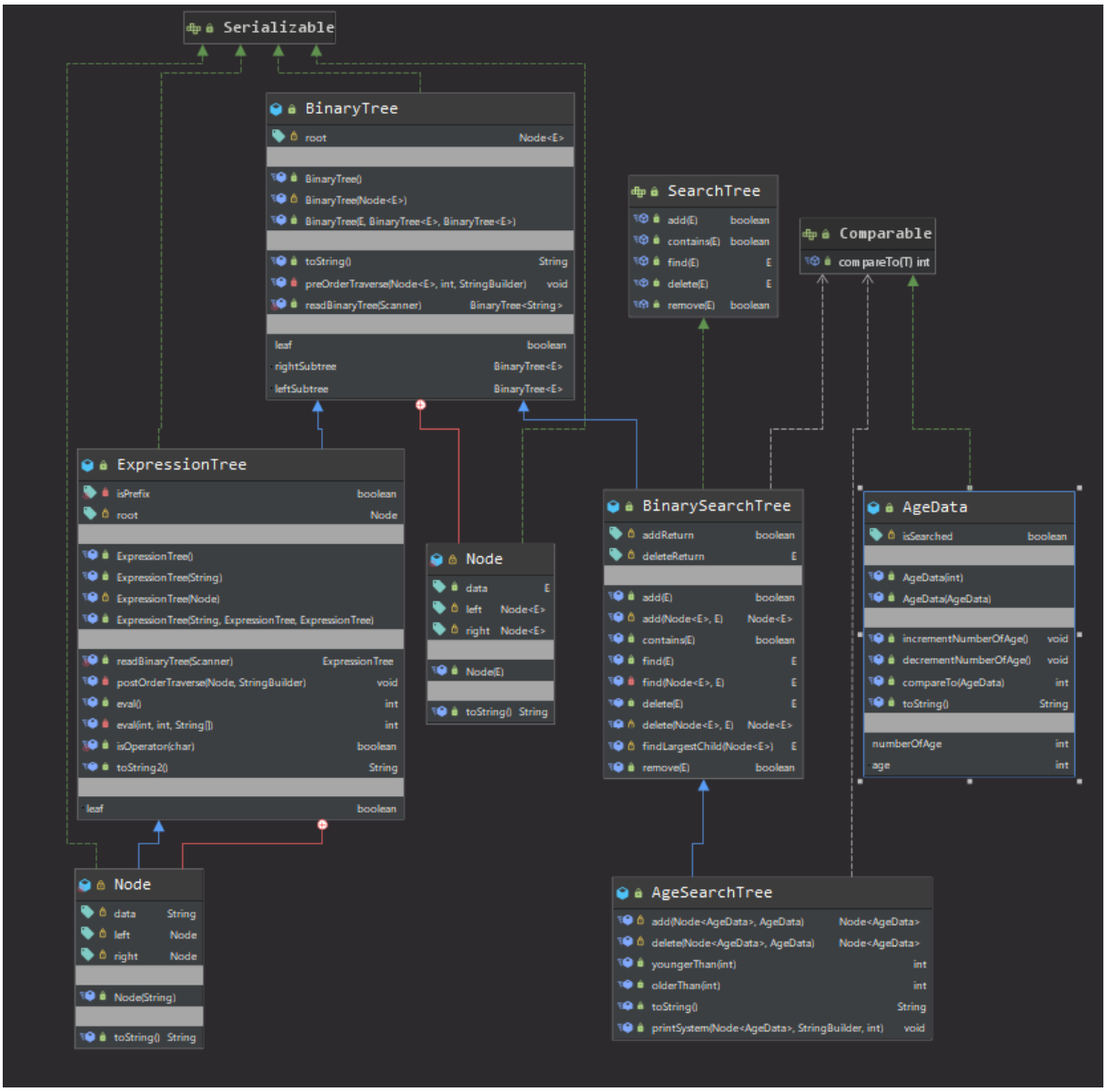
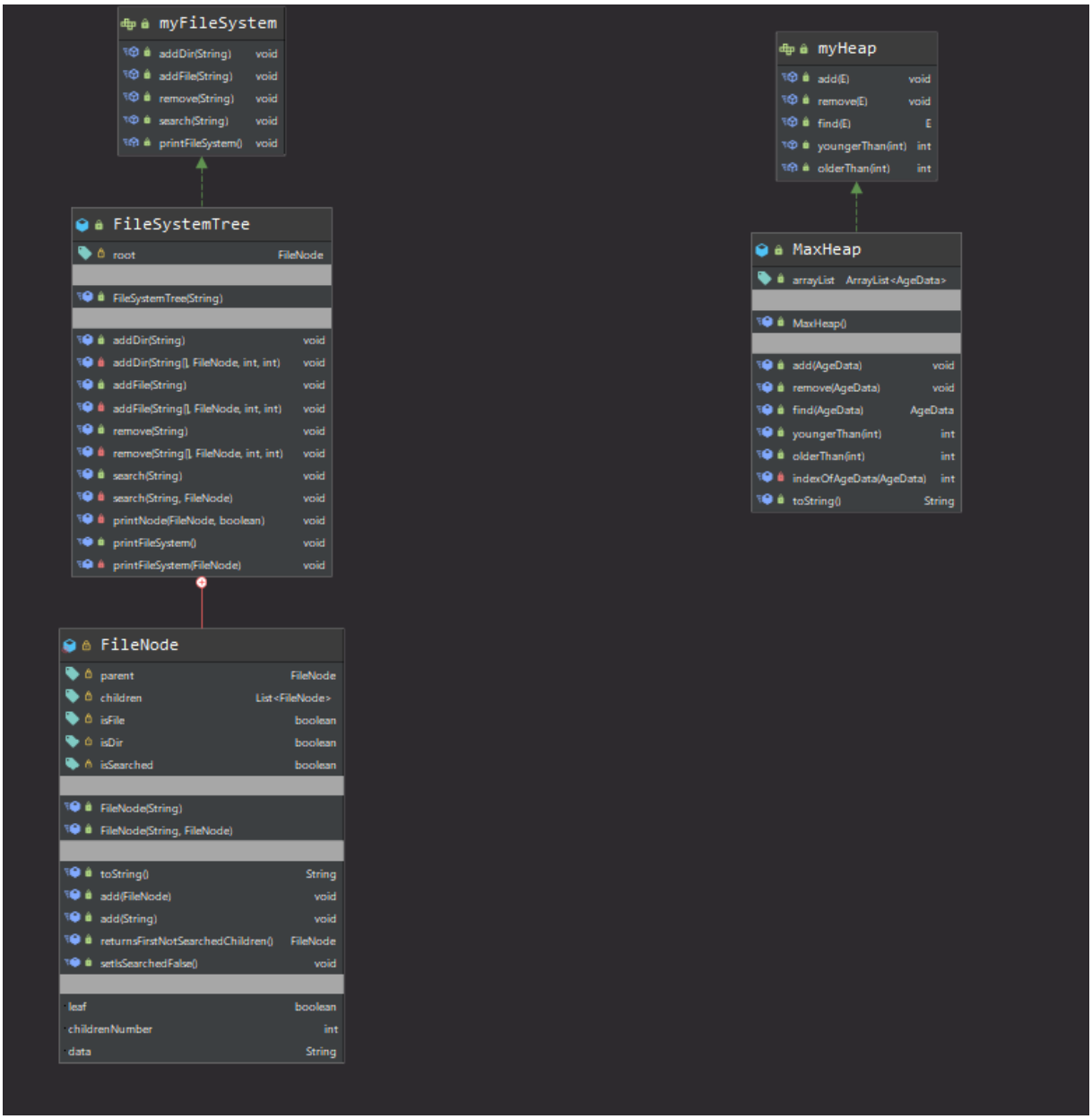
1 – Class diagrams





2 – Problem solution approach

Q1) I first designed a 'myFileSystem' interface. Then I created the 'FileSystemTree' class. This class implements the interface. The interface contains the following methods: addDir (String), addFile (String), remove (String), search (String), printFileSystem (). There is also a 'FileNode' class inside this class and the data is stored here.

Q2) First of all, I created an 'ExpressionTree' class, which extends the 'BinaryTree' class in the book. This class contains a static 'readBinaryTree' method and this method creates a tree using prefix or postfix expression.

This class also includes postOrderTraverse (), toString2 () and eval () methods. These methods are similar in the book, but they perform postfix operations instead of prefix.

Q3) First, I created an 'AgeSearchTree' class. This class extends 'BinarySearchTree' in the book. I also created the 'AgeData' class for this class. The 'AgeData' class implements the 'Comparable <AgeData>' interface. This class holds the age data and how many people are at that age. The 'AgeSearchTree' class uses a normal 'BinarySearchTree' system, so the top number added at the top is added to the left if it is small and to the right if it is large. This class override add (), delete (), toString () methods. And apart from these, youngerThan () contains olderThan (), printSystem () methods.

Q4) First, I designed an Interface called 'myHeap'. Then I created the 'MaxHeap' class. This class implements the 'myHeap' interface. The 'myHeap' interface includes the add (), remove (), find (), youngerThan (), olderThan () methods. In addition, the 'MaxHeap' class holds an arrayList, the data is stored in this list.

3 – Test cases

Q1)

Test Scenario	Expected Results	Actual Results	Pass/Fail
Adds a directory or file	Adds correctly	It has added correctly	Pass
Removes a directory or file	Removes correctly	It has removed correctly	Pass
Searches a keyword	Searches correctly	It has searched correctly	Pass
Prints all file system	Prints correctly	It has printed correctly	Pass

Q2)

Test Scenario	Expected Results	Actual Results	Pass/Fail
Build tree from prefix or postfix expression	Build correctly	It has builded correctly	Pass
Prints post order	Prints correctly	It has printed correctly	Pass
Evaluate the expression	Evaluate correctly	It has evaluated correctly	Pass

Q3)

Test Scenario	Expected Results	Actual Results	Pass/Fail
Adds a AgeData data	Adds correctly	It has added correctly	Pass
Deletes a AgeData data	Deletes correctly	It has deleted correctly	Pass
Find a AgeData data	Find correctly	It has found correctly	Pass
Checks Youngerthan, olderThan method	Checks correctly	It has checked correctly	Pass
Prints the system	Prints correctly	It has printed correctly	Pass

Q4)

Test Scenario	Expected Results	Actual Results	Pass/Fail
Adds a AgeData data	Adds correctly	It has added correctly	Pass
Deletes a AgeData data	Deletes correctly	It has deleted correctly	Pass
Find a AgeData data	Find correctly	It has found correctly	Pass
Checks Youngerthan, olderThan method	Checks correctly	It has checked correctly	Pass
Prints the system	Prints correctly	It has printed correctly	Pass

4 – Running command and results

Q1)

```
Printing file system
The root file - root
dir - root/first_directory/
file - root/first_directory/new.file.txt
dir - root/first_directory2
dir - root/second_directory/
dir - root/second_directory/new_directory/
file - root/second_directory/new_directory/new_file.doc
-----------------------------------
Removing 2 element
Are you sure? If you delete this folder, the contents of this folder will be deleted.(Y/N)
N
Printing file system
The root file - root
dir - root/first_directory
dir - root/first_directory2
dir - root/second_directory/
dir - root/second_directory/new_directory/
file - root/second_directory/new_directory/new_file.doc
-----------------------------------
Searching keyword 'new'
dir - root/second_directory/new_directory/
file - root/second_directory/new_directory/new_file.doc
```

Q2)

```
1. expression(prefix): '+ + 10 * 5 15 20'
2. expression(postfix): '10 5 15 * + 20 +'
3. expression(prefix): '- / * 20 * 50 + 3 6 300 2'

toString2 Method (For first)
10 5 15 * + 20 +
----------------------------
toString2 Method (For second)
10 5 15 * + 20 +
----------------------------
toString2 Method (For third)
20 50 3 6 + * * 300 / 2 -
----------------------------
Evaluate Method (For first)
Evaluate : 105
----------------------------
Evaluate Method (For second)
Evaluate : 105
----------------------------
Evaluate Method (For third)
Evaluate : 28
----------------------------
```

Q3)

```
10 - 3
5 - 2
null
null
20 - 2
15 - 2
null
null
30 - 1
null
null

---------------------------------
Find method: 30 - 1
---------------------------------
Younger than 15: 5
---------------------------------
Older than 12: 4
---------------------------------
Remove Method (30,15,5)
10 - 3
5 - 1
null
null
20 - 2
15 - 1
null
null
null
```

Q4)

```
10 - 4
5 - 3
70 - 2
50 - 2
15 - 1

--------------------------------------
Find method: 70 - 2
--------------------------------------
Younger than 69: 10
--------------------------------------
Older than 69: 2
--------------------------------------
Remove Method (10,5)
10 - 3
50 - 2
70 - 2
5 - 1
15 - 1
```