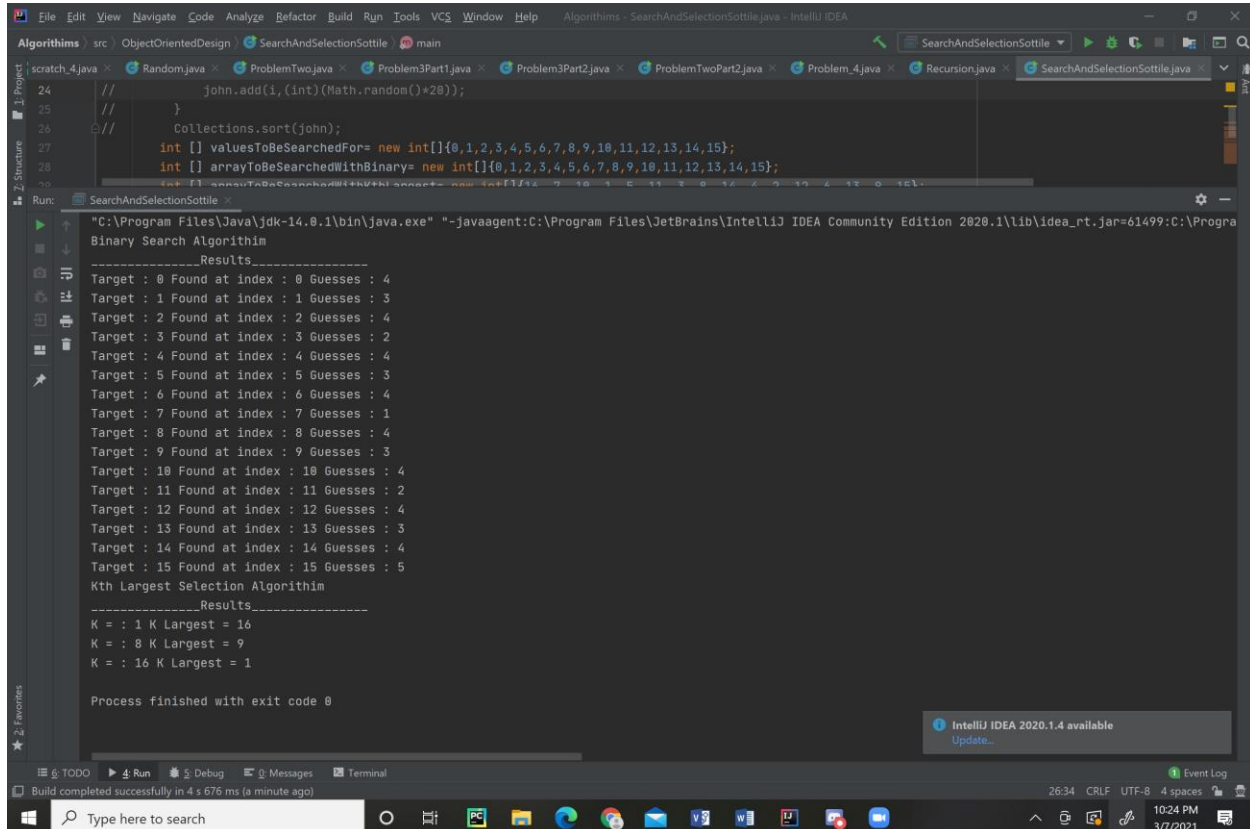


Search and Selection Algorithms

Part 1: Screenshot



The screenshot shows the IntelliJ IDEA IDE with a Java project named "Algorithms". The code editor displays the following Java code:

```
24 // john.add(1, (int) (Math.random() * 20));
25 //
26 // Collections.sort(john);
27 int [] valuesToBeSearchedFor= new int[]{0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15};
28 int [] arrayToBeSearchedWithBinary= new int[]{0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15};
29 int [] arrayToBeSearchedWithKthLargest= new int[]{0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15};
```

The Run window shows the output of the program:

```
Run: SearchAndSelectionSottile
"C:\Program Files\Java\jdk-14.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2020.1\lib\idea_rt.jar=61499:C:\Progra
Binary Search Algorithm
Results
Target : 0 Found at index : 0 Guesses : 4
Target : 1 Found at index : 1 Guesses : 3
Target : 2 Found at index : 2 Guesses : 4
Target : 3 Found at index : 3 Guesses : 2
Target : 4 Found at index : 4 Guesses : 4
Target : 5 Found at index : 5 Guesses : 3
Target : 6 Found at index : 6 Guesses : 4
Target : 7 Found at index : 7 Guesses : 1
Target : 8 Found at index : 8 Guesses : 4
Target : 9 Found at index : 9 Guesses : 3
Target : 10 Found at index : 10 Guesses : 4
Target : 11 Found at index : 11 Guesses : 2
Target : 12 Found at index : 12 Guesses : 4
Target : 13 Found at index : 13 Guesses : 3
Target : 14 Found at index : 14 Guesses : 4
Target : 15 Found at index : 15 Guesses : 5
Kth Largest Selection Algorithm
Results
K = : 1 K Largest = 16
K = : 8 K Largest = 9
K = : 16 K Largest = 1
Process finished with exit code 0
```

Part 2: Report

My process on the binary search part of this assignment was pretty straight forward, I looked at the book, converted it to Java sudo code and pressed away. I knew the code was correct when the correct index was return for each number inputted. However, while the binary search proved simple the Kth Largest algorithm took me some time to conceptually understand. It took me a bit to do the partition algorithm and the debugger proved crucial here. After I got it working with the numbers I tested it with other numbers to find the algorithm did not work. After using the debugger and altering it slightly I got the algorithm to be able to work for other numbers to. After it worked on other numbers I could confirm the algorithms were correct.