

CSCE146 - Practice Exam (Midterm 1)

CSCE146 F2017 SI | Midterm #1 | For JJ Sheppherd's Class

Java Review

1. What does this Java Code Print out?

```
public static void main() {
    int a = 6;
    String s = "";
    for (int i = 0; i < a; i++) {
        for (int j = 0; j <= i; j++) {
            if (j == 0 || j == i) {
                s += "*";
            } else {
                s += " ";
            }
        }
        System.out.print(s + "\n");
        s = "";
    }
}
```

2. What error if any will this code segment give? What will it print out if there's no error?

```
int[] a = {1,2,3,4,5,6,7,8,9,10};
for (int i = 0; i < a.length / 2; i++) {
    System.out.println((a[i + 2] + a[i]));
}
```

3. Write a Method that finds the Minimum integer in an array.

```
public static int findMin(int[] a) {
```

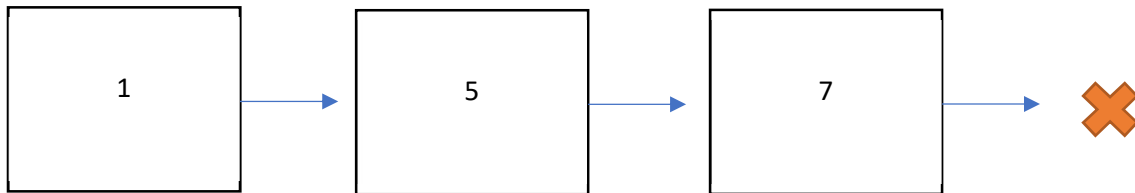
Data Structures

Linked Lists

Know how to write code to find, delete, and insert Nodes

4. List a few Advantages and Disadvantages of using a Linked List over an Array.

5. Draw the Insertion Procedure for adding a node after the node containing 5



6. Draw the Removal Procedure for the node after 5.



7. Write a Function to find if a value is in the LinkedList using a linear search.

```
public boolean linearSearch(int toFind) {
```

Queues

Know how to write code to Enqueue, Dequeue and Peek in a Queue

8. Draw the Queue after each Operation

Head						
5	4	8				

Enqueue 3

Head						

Dequeue 3 times

Head						

Enqueue 6 and 24

Head						

Dequeue 2 times

Head						

9. What will the code snippet print out?

```
Queue<Integer> q = new
LinkedList<Integer>();
//Assume that this Queue uses
enqueue(), dequeue(), and peek()

for (int i = 5; i >= -5; i--) {
    q.enqueue(i);
}
for (int i = 3; i < 6; i++) {
    System.out.println(q.dequeue());
}
for (int i : q) {
    System.out.println(q);
}
```

Stacks

Know how to code Push, Pop, and Peek

10. What will the Code Snippet Print out?

<pre>Stack<Integer> s = new LinkedList<Integer>(); //Assume that this Stack uses pop(), push(), and peek() for (int i = 5; i >= -5; i--) { s.enqueue(i); } for (int i = 3; i < 6; i++) { System.out.println(s.dequeue()); } for (int i : s) { System.out.println(s); }</pre>	
--	--

11. Draw the Stack after each Operation.

Head						
5	4	8				

Push 3

Head						

Pop 3 times

Head						

Push 6 and 24

Head						

Pop 2 times

Head						

Recursion

12. What data Structure can be used to illustrate Recursion?

13. What does this code do?

<pre>public static int f(int a) { if (a <= 1) return 1;</pre>	
--	--

<pre>return f(a - 1) + a; }</pre>	
---------------------------------------	--

Searching and Sorting

Array: {45,23,12,79,36,42,10}

14. Perform Mergesort on the Given Array

15. Perform Quicksort on the Given Array

16. Perform a Binary Search for 45 for the given array (After it has been sorted)

Asymptotics

Know how to sort them

Know what Complexity the Algorithms in class have