

CS-141 Java programming II

ASSIGNMENT 2 worth 5 point

Deadline: Saturday 5/03/2016 at 11:59 pm

Submission has to be made via the submission folder on Blackboard.

No Email Submission will be accepted.

Late submission will result in ZERO marks.

Identical submission will result in ZERO marks.

Short Answer Questions

Q1. (0.5 point) (a) Write the java code for doing a Linear Search on the array given below.

Write your code in the space below, (no need to submit .java file)

(b) What would your search method return if we asked to search for the number 2 and return it's index position?

[24][2][45][20]56][75][2][56][99][53][12]

Q2. (0.5 points) Calculate the Big Oh performance for the following:

Given that an Array of size $n=10$ takes 3 seconds to search,

how long does it take a search Array of size $n=100$?

(a) Linear Search of an array of size $n=100$ Given $O(n)$

(b) Merge Sort performance of an array is $O(n \log(n))$,

given that an Array of size $n=10$ takes 3 seconds to sort,

how long does it take to sort an Array of size $n=100$?

Q3. (2 points)

(a) Convert the following iterative method to recursive method.

(b) What is the advantage and disadvantage of using recursion?

Write your code in the space below, (no need to submit .java file)

```
public static int factorialIterative(int n) {  
    int res = 1;  
    while (n > 0) {  
        res = res * n;  
        n--;  
    }  
    return res;  
}
```

Q4. (2 points) Write a program where you use Selection Sort to sort the following array in ascending order.

24,2,45,20,56,75,2,56,99,53,12

a) Declare an array of integers called `unsortedarr` and load it with the integers above. Notice we have 11 numbers, and the number 2 is repeated which is fine.

Display the array as it is by printing it before the sort.

b) Sort the array using the insertion sort technique and display the array after you sort it.

Here is the beginning of the code, complete it, run it, test it, submit it.

```
import java.util.*;  
  
public class MySelectSort {  
  
    public static void main(String[] args) {  
  
        int arr[] = {24,2,45,20,56,75,2,56,99,53,12};  
  
        System.out.println("-----  
- unsorted");  
  
        System.out.println(arr);  
  
        // continue ... write your code
```