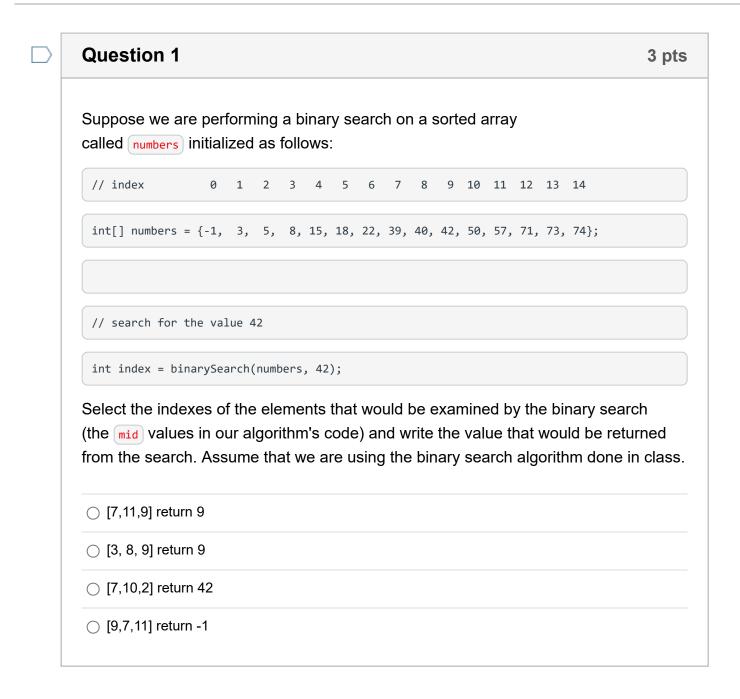
Exam 4

(!) This is a preview of the published version of the quiz

Started: Apr 18 at 5:30pm

Quiz Instructions



Question 2

3 pts

Write the state of the elements of the list below after each of the first 3 passes of the outermost loop of the selection sort algorithm.

```
// index
                   1 2
// values {29, 17, 3, 94, 46, 8, -4, 12}
ArrayList<Integer> numbers =
    new ArrayList<Integer>(Arrays.asList(29, 17, 3, 94, 46, 8, -4, 12));
selectionSort(numbers);
Write your answers in three lines in the following format where each
line represents the new state of the array list.
after pass 1
after pass 2
after pass 3
Edit View Insert Format Tools Table
                               \mathsf{B} \quad I \quad \underline{\cup} \quad \underline{\mathsf{A}} \vee \ \underline{\mathscr{D}} \vee \ \mathsf{T}^2 \vee \ | \quad \vdots
 12pt ∨
           Paragraph ~
                                                       p
```

Question 3

2 pts

Approximate the runtime of the following code fragment, in terms of *n*:

Select the answer in the form of O(N) etc.

```
a)
int total = 0;
int n; // input data size

for (int i = 1; i <= n * 2; i++) {
    for (int j = 1; j <= n; j++) {
        total++;
    }
}

for (int k = 1; k < 100; j++) {
    for (int j = 1; j <= n; j++) {
        total++;
        total++;
}</pre>
```

- O(Log N)
- \bigcirc O(N² + N)
- O(N^2)
- O(200N+ N^2)

Question 4

2 pts

b) int sum =0;

int max=100;

```
for (int j = 1; j <= max; j++)

sum+=100;

O(N Log N)

O(c) where c is a constant

O(N^2)

O(N)
```

	eturns a string consisting of <i>n</i> copies of <i>s</i> . For example:
Call	Value Returned
repeat("hello", 3)	"hellohello"
repeat("this is fun", 1	
<pre>repeat("wow", 0)</pre>	
repeat("hi ho! ", 5)	"hi ho! hi ho! hi ho! hi ho! "
12pt ∨ Paragraph ∨	\vee B I \cup \triangle \vee \mathscr{L} \vee \top^2 \vee \vdots

p





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Question 6 2 pts The following code will accurately perform a binary search on a sorted array of integers: public static int binarySearch(int[] numbers, int value){ if (numbers.length<=0) return -1; else return binarySearch(numbers, value, 0, numbers.length-1); } public static int binarySearch(int[] numbers, int value, int first, int last){ if (first>last) return -1; int middle = (first+last)/2; if (value == numbers[middle]) return middle; else if (value > numbers[middle]) return binarySearch(numbers,value,first, middle-1); else return binarySearch(numbers,value,middle+1,last); } ○ True ○ False

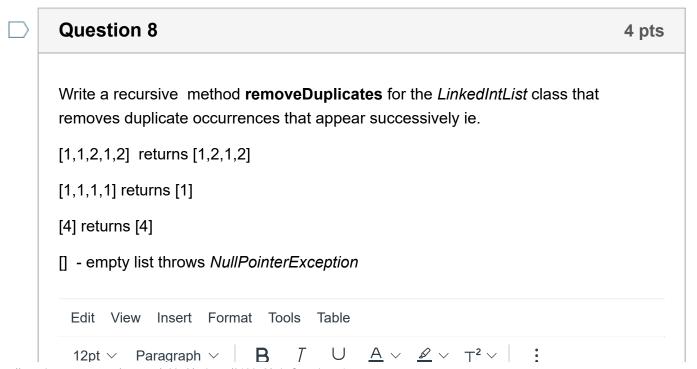
Question 7

1 pts

4/18/2021

Quiz: Exam 4 Describe two major differences between empirical analysis and algorithm analysis in the context of determining program complexity Edit View Insert Format Tools Table $\mathsf{B} \quad I \quad \underline{\cup} \quad \underline{\mathsf{A}} \vee \,\, \underline{\mathscr{D}} \vee \,\, \mathsf{T}^2 \vee \,\, | \quad \vdots$ 12pt ∨ Paragraph ∨

★ 0 words </> ✓ **★**



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