

Quiz Pool 1

Rajdeep Jaiswal

Final Grade
Submitted 2/23/22, 9:58 PM (UTC+5:30)

26 / 30

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Assignment Content

Question 1

What is the disadvantage of array data structure?

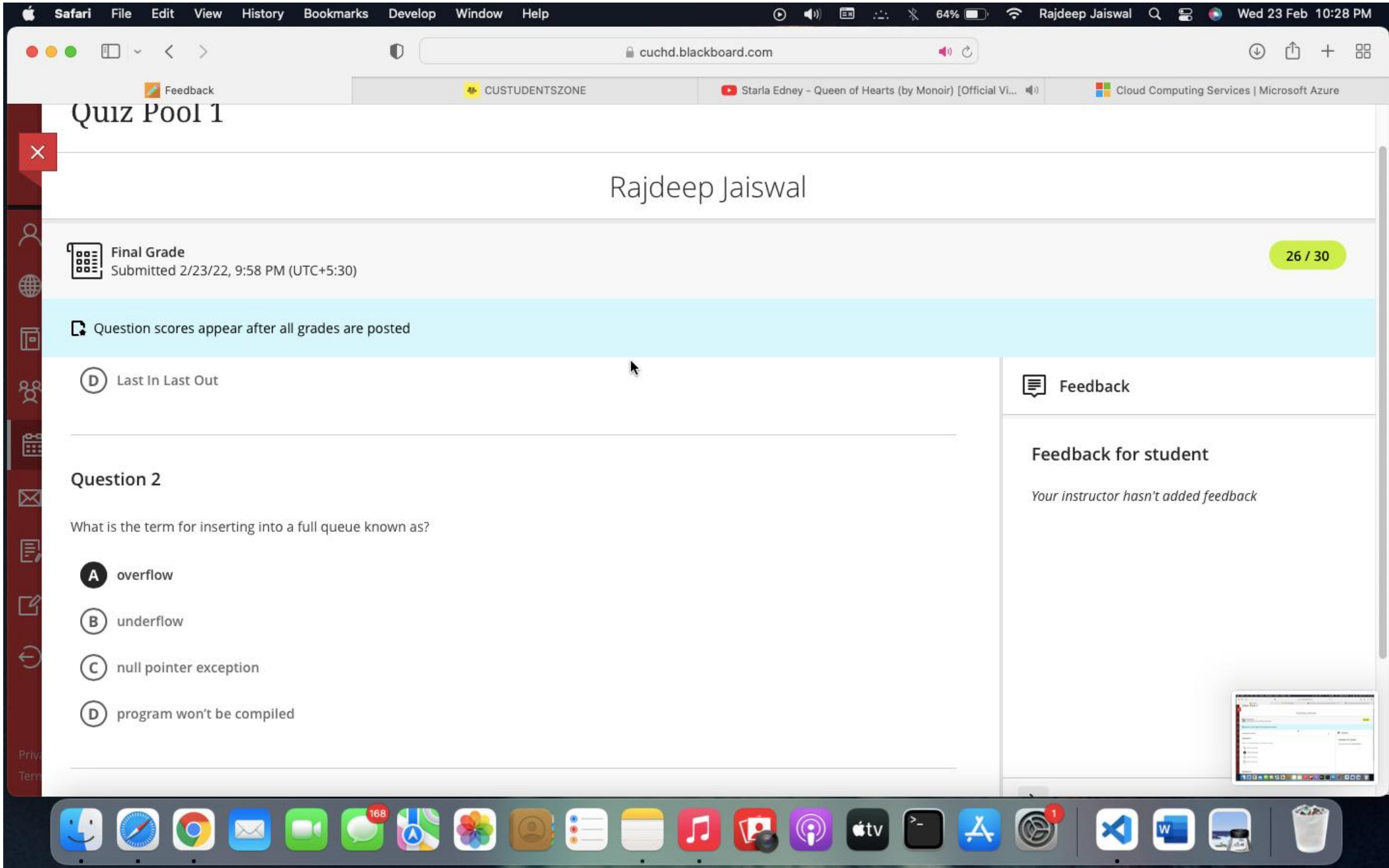
- (A) First In Last Out
- (B) First In First Out
- (C) Last In First Out
- (D) Last In Last Out

Question 2

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(D) Last In Last Out

Question 2

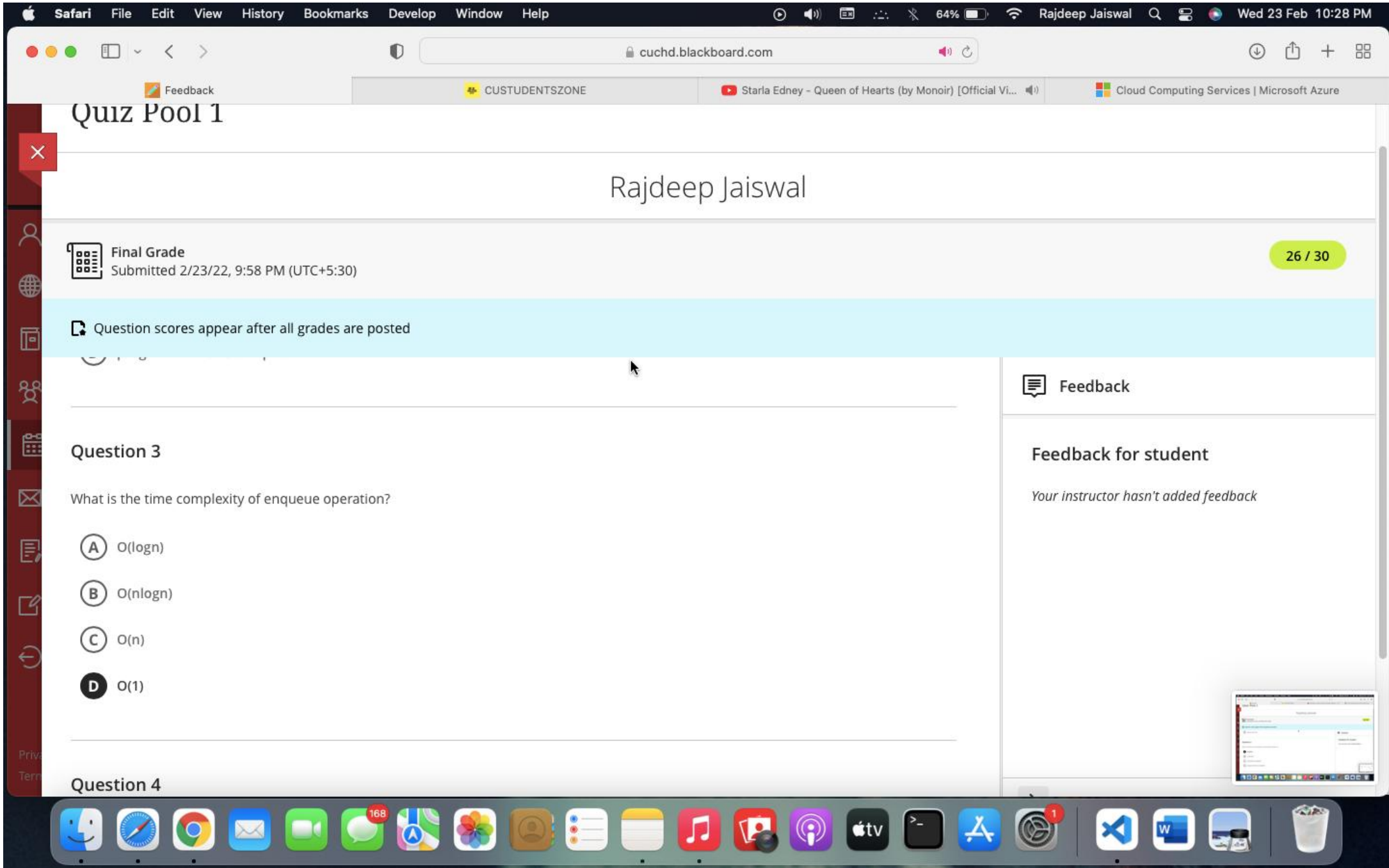
What is the term for inserting into a full queue known as?

- (A) overflow
- (B) underflow
- (C) null pointer exception
- (D) program won't be compiled

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Question 3

What is the time complexity of enqueue operation?

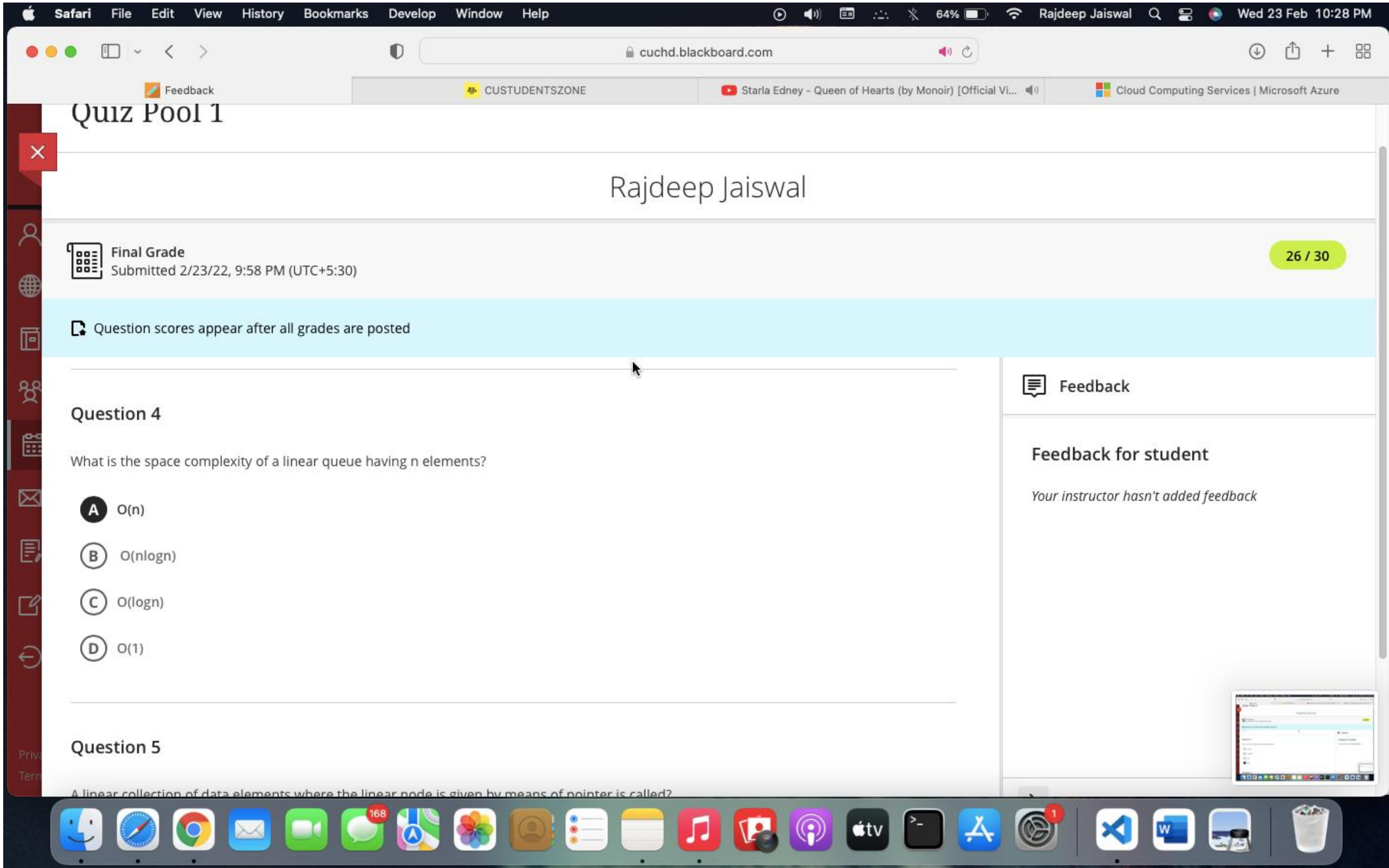
- (A) $O(\log n)$
- (B) $O(n \log n)$
- (C) $O(n)$
- (D) $O(1)$

Question 4

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Question 4

What is the space complexity of a linear queue having n elements?

- A) $O(n)$
- B) $O(n \log n)$
- C) $O(\log n)$
- D) $O(1)$

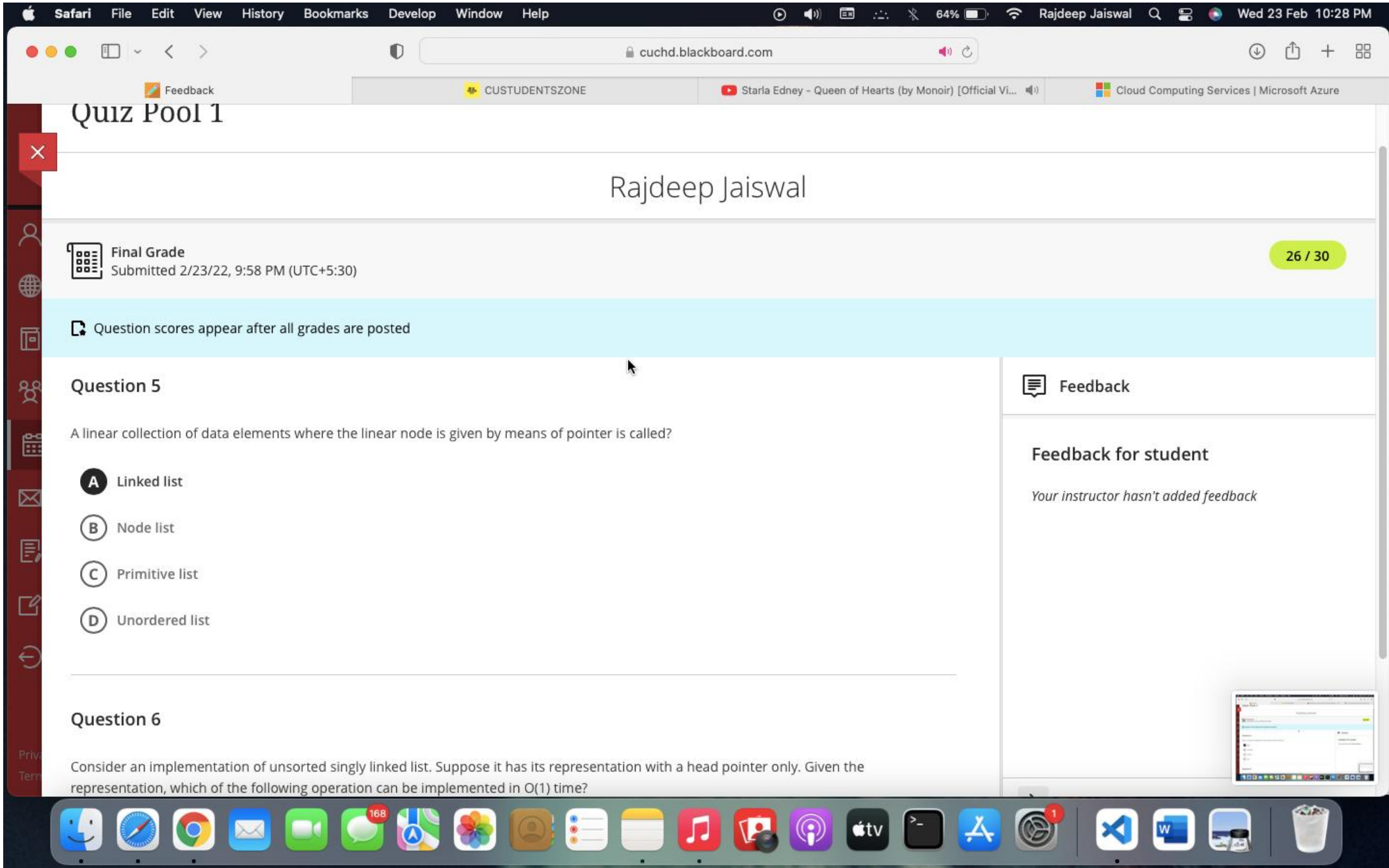
Question 5

A linear collection of data elements where the linear node is given by means of pointer is called?

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Question 5

A linear collection of data elements where the linear node is given by means of pointer is called?

- A) Linked list
- B) Node list
- C) Primitive list
- D) Unordered list

Question 6

Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head pointer only. Given the representation, which of the following operation can be implemented in $O(1)$ time?

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Question 6

Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head pointer only. Given the representation, which of the following operation can be implemented in $O(1)$ time?

- i) Insertion at the front of the linked list
- ii) Insertion at the end of the linked list
- iii) Deletion of the front node of the linked list
- iv) Deletion of the last node of the linked list

A I and II

B I and III


C I, II and III

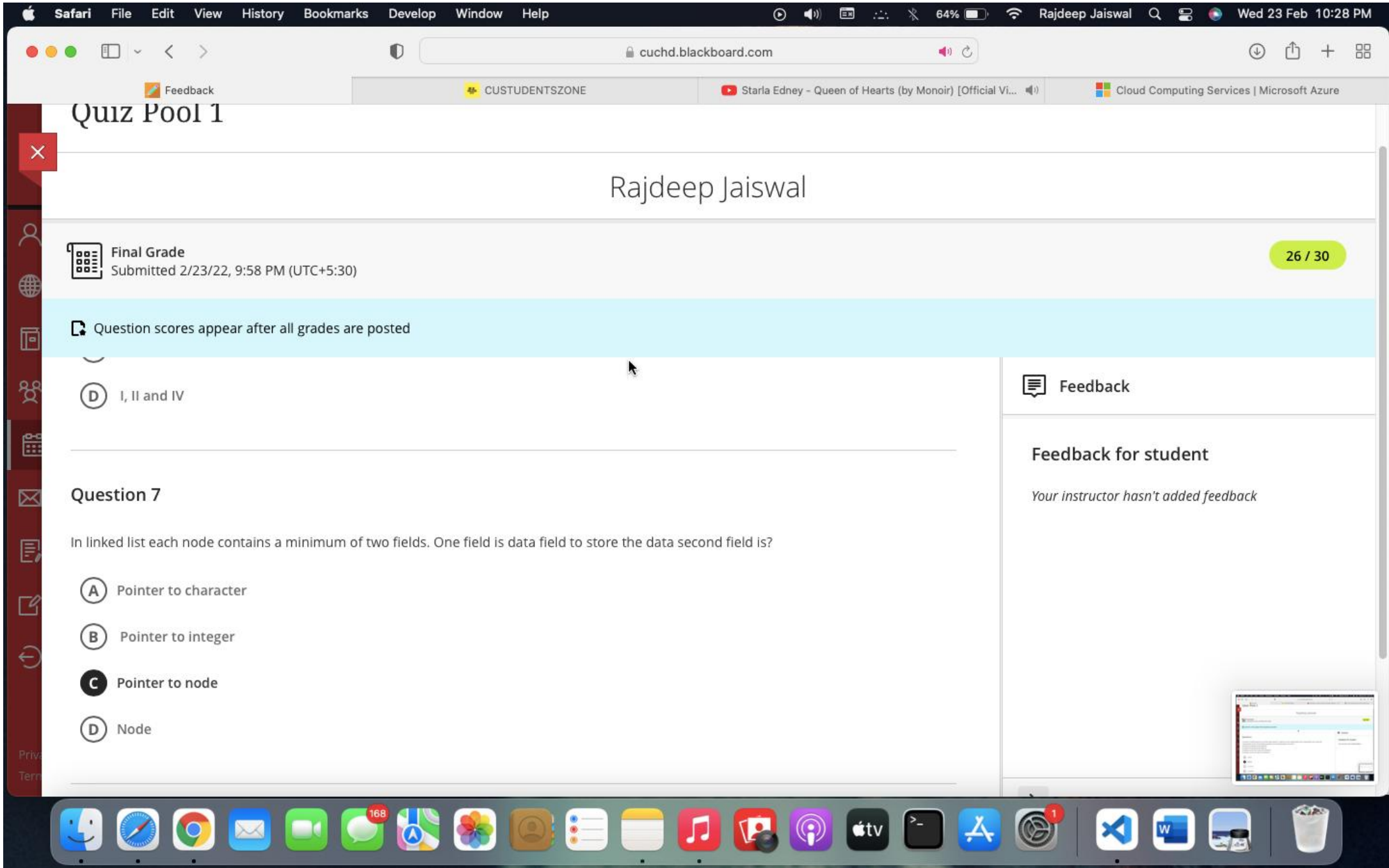
D I, II and IV

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(D) I, II and IV

Question 7

In linked list each node contains a minimum of two fields. One field is data field to store the data second field is?

- (A) Pointer to character
- (B) Pointer to integer
- (C) Pointer to node
- (D) Node

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Question 8

What would be the asymptotic time complexity to add a node at the end of singly linked list, if the pointer is initially pointing to the head of the list?

- A $O(1)$
- B $O(n)$
- C $\theta(n)$**
- D $\theta(1)$


Question 9

What would be the asymptotic time complexity to insert an element at the front of the linked list (head is known)?

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D 0(1)

Question 9

What would be the asymptotic time complexity to insert an element at the front of the linked list (head is known)?

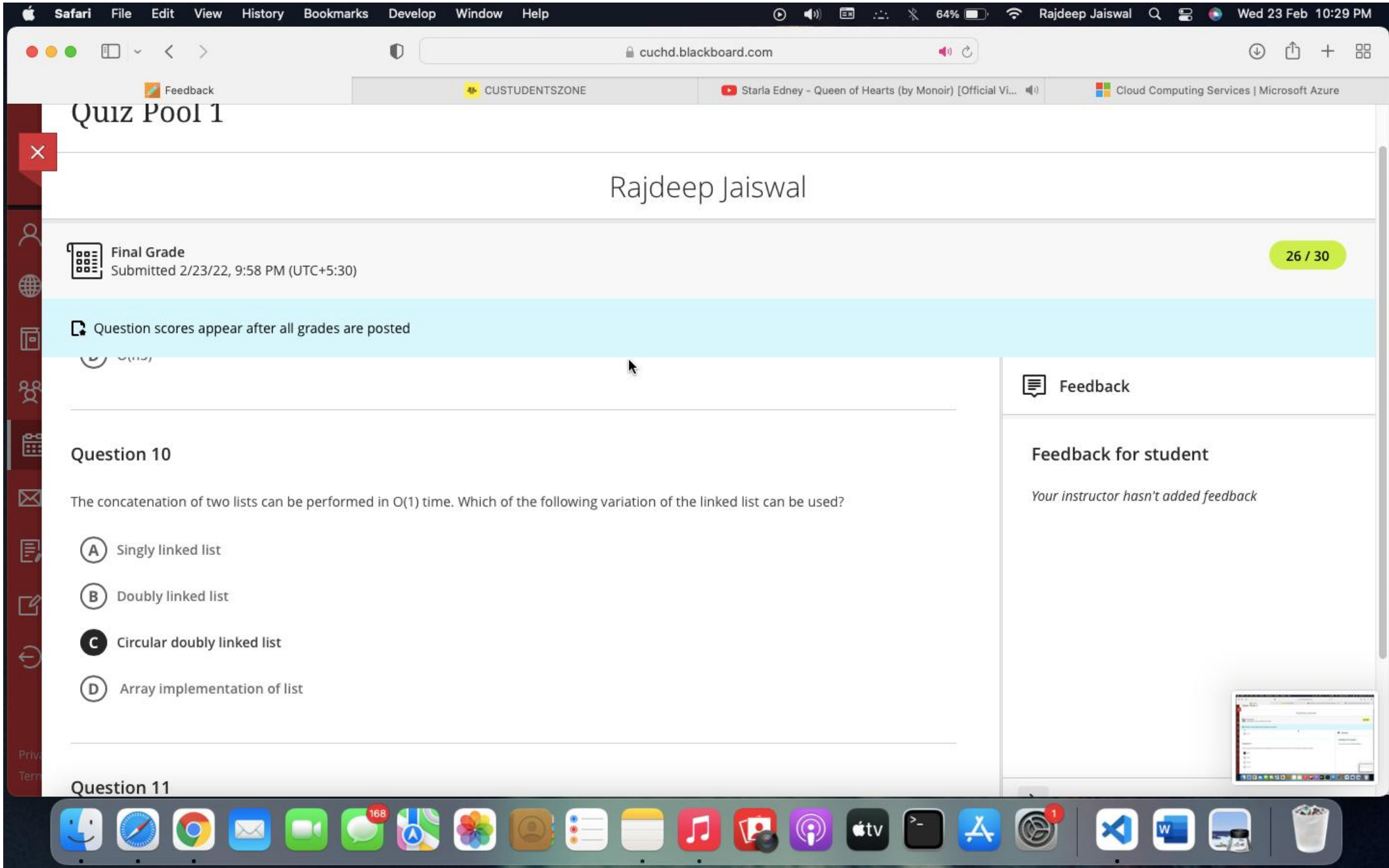
- A $O(1)$
- B $O(n)$
- C $O(n^2)$
- D $O(n^3)$

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Question 10

The concatenation of two lists can be performed in $O(1)$ time. Which of the following variation of the linked list can be used?

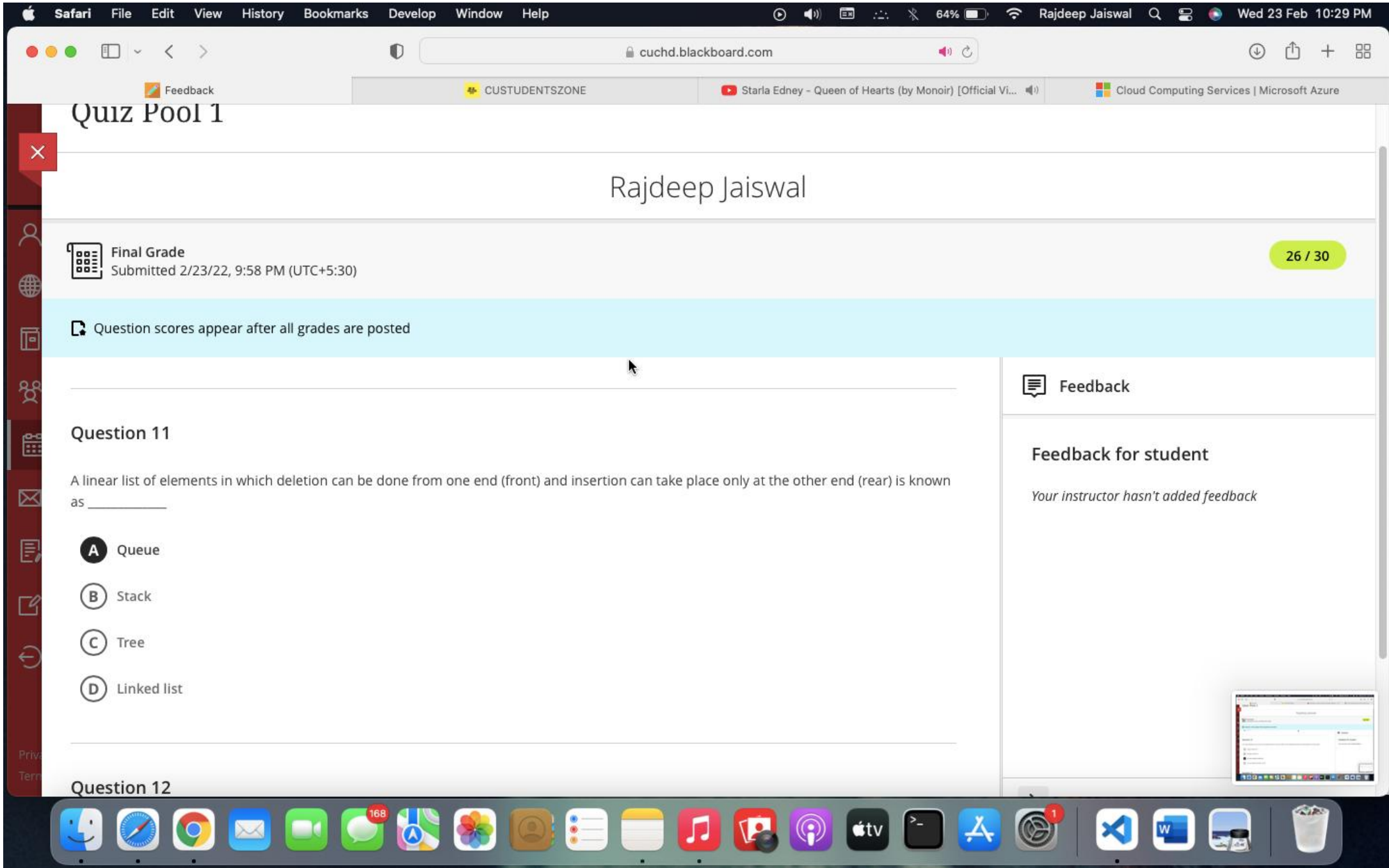
- (A) Singly linked list
- (B) Doubly linked list
- (C) Circular doubly linked list
- (D) Array implementation of list

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Question 11



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Question 11

A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as _____

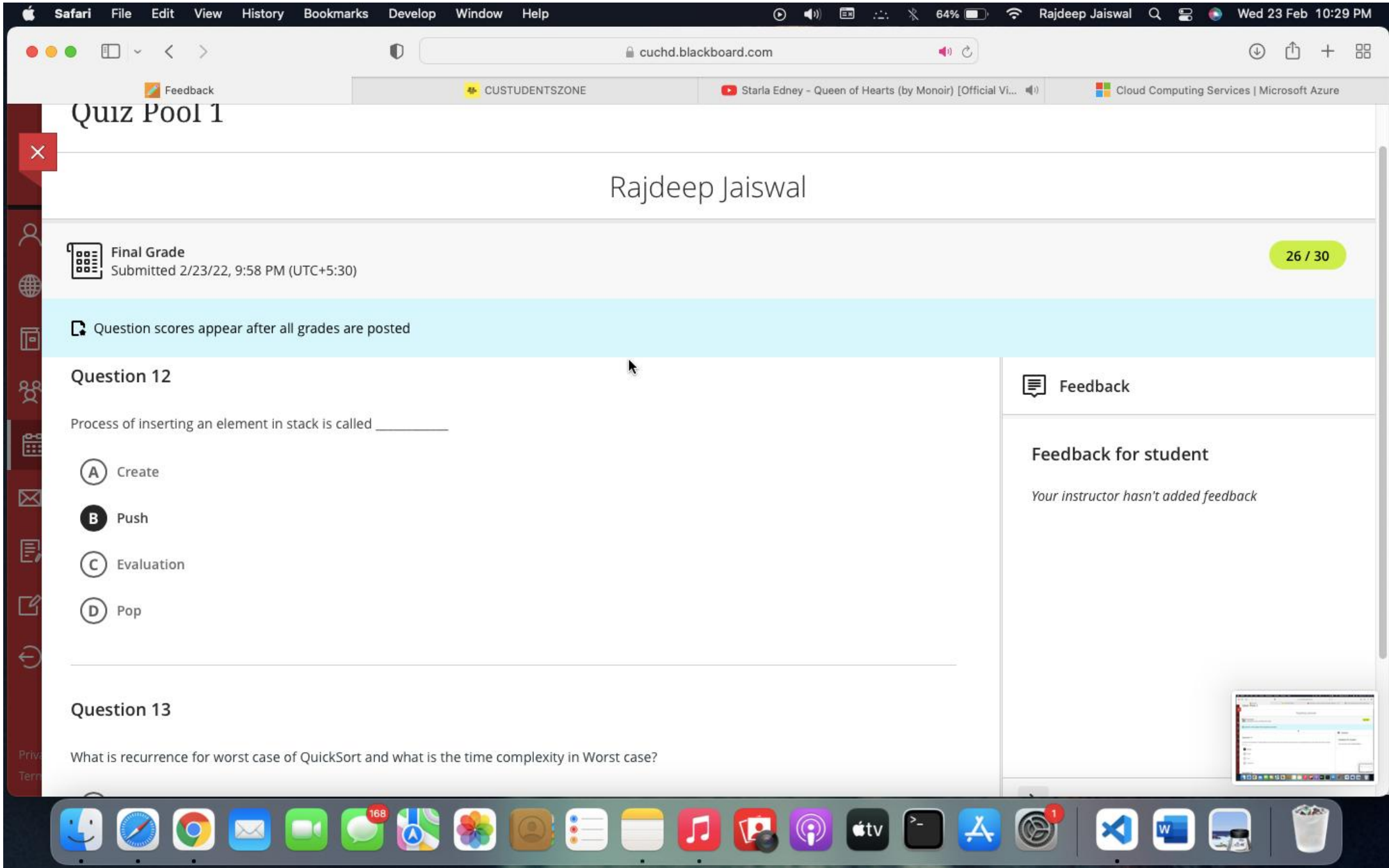
- A Queue
- B Stack
- C Tree
- D Linked list

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Question 12



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Question 12

Process of inserting an element in stack is called _____

- (A) Create
- (B) Push
- (C) Evaluation
- (D) Pop

Question 13

What is recurrence for worst case of QuickSort and what is the time complexity in Worst case?

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Question 13

What is recurrence for worst case of QuickSort and what is the time complexity in Worst case?

- A Recurrence is $T(n) = T(n-2) + O(n)$ and time complexity is $O(n^2)$
- B Recurrence is $T(n) = T(n-1) + O(n)$ and time complexity is $O(n^2)$
- C Recurrence is $T(n) = 2T(n/2) + O(n)$ and time complexity is $O(n \log n)$
- D Recurrence is $T(n) = T(n/10) + T(9n/10) + O(n)$ and time complexity is $O(n \log n)$

Question 14

Given an unsorted array. The array has this property that every element in array is at most k distance from its position in sorted array where

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recurrence is $T(n) = T(n/10) + T(9n/10) + O(n)$ and time complexity is $O(n \log n)$

Question 14


Given an unsorted array. The array has this property that every element in array is at most k distance from its position in sorted array where k is a positive integer smaller than size of array. Which sorting algorithm can be easily modified for sorting this array and what is the obtainable time complexity?

- (A) Insertion Sort with time complexity $O(kn)$
- (B) Heap Sort with time complexity $O(n \log k)$
- (C) Quick Sort with time complexity $O(k \log k)$
- (D) Merge Sort with time complexity $O(k \log k)$

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D Merge Sort with time complexity $O(k \log k)$

Question 15


Which of the following is not true about comparison based sorting algorithms?

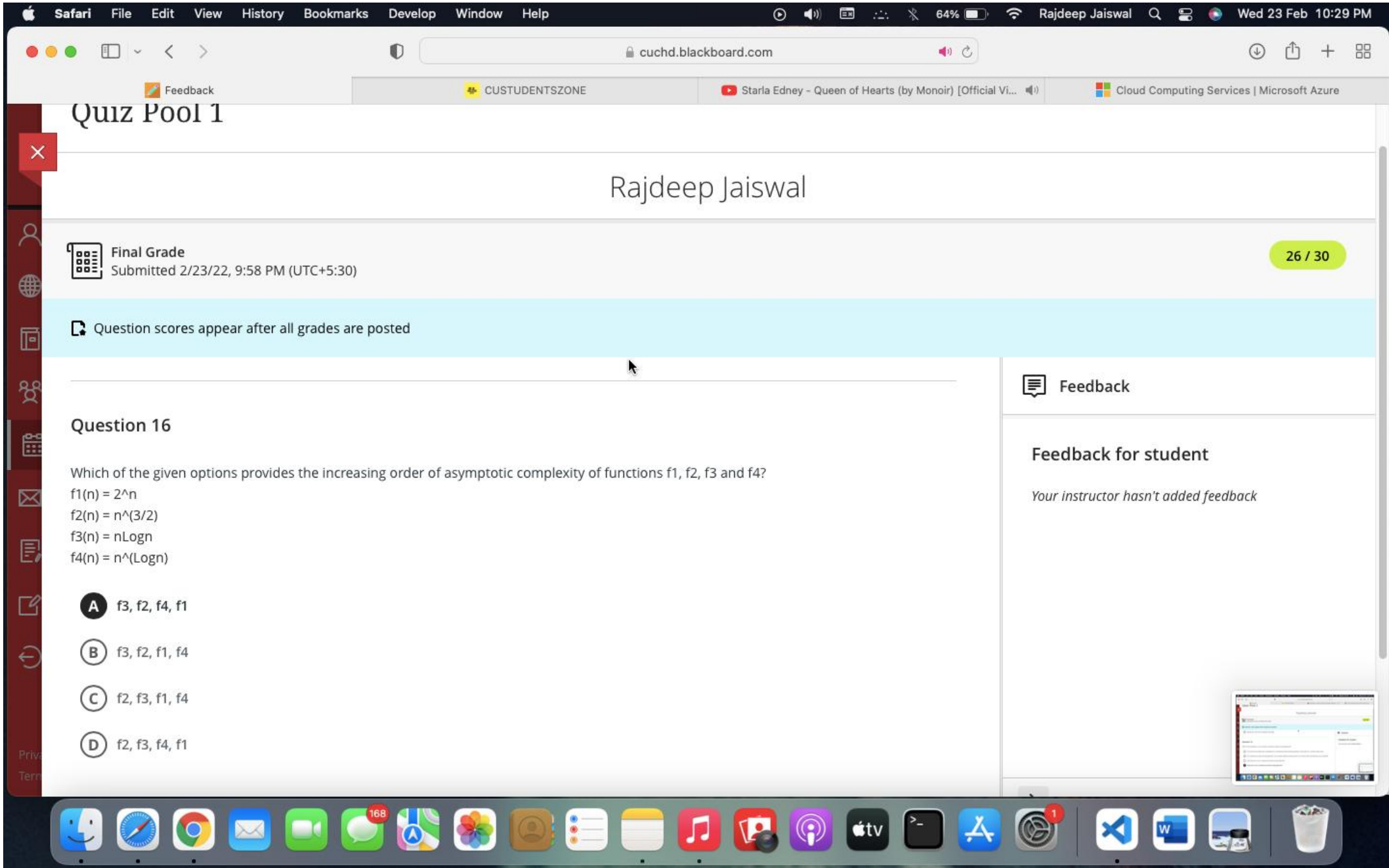
- A** The minimum possible time complexity of a comparison based sorting algorithm is $O(n \log n)$ for a random input array
- B** Any comparison based sorting algorithm can be made stable by using position as a criteria when two elements are compared
- C** Counting Sort is not a comparison based sorting algorithm
- D** Heap Sort is not a comparison based sorting algorithm.

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Question 16

Which of the given options provides the increasing order of asymptotic complexity of functions f1, f2, f3 and f4?

$$f1(n) = 2^n$$

$$f2(n) = n^{3/2}$$

$$f3(n) = n \log n$$

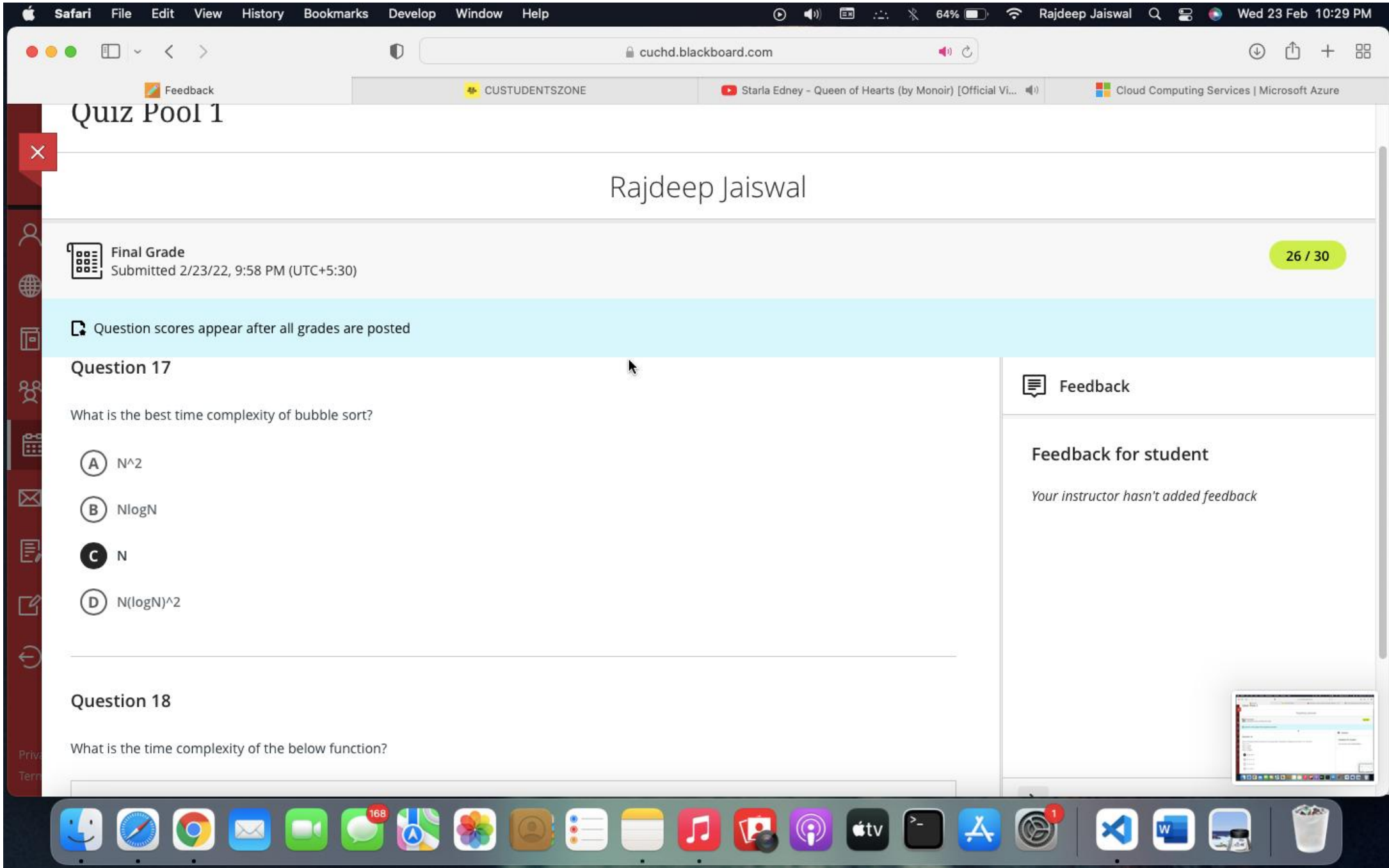
$$f4(n) = n^{\log n}$$

- A f3, f2, f4, f1
- B f3, f2, f1, f4
- C f2, f3, f1, f4
- D f2, f3, f4, f1

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Question 17

What is the best time complexity of bubble sort?

- (A) N^2
- (B) $N \log N$
- (C) N
- (D) $N(\log N)^2$

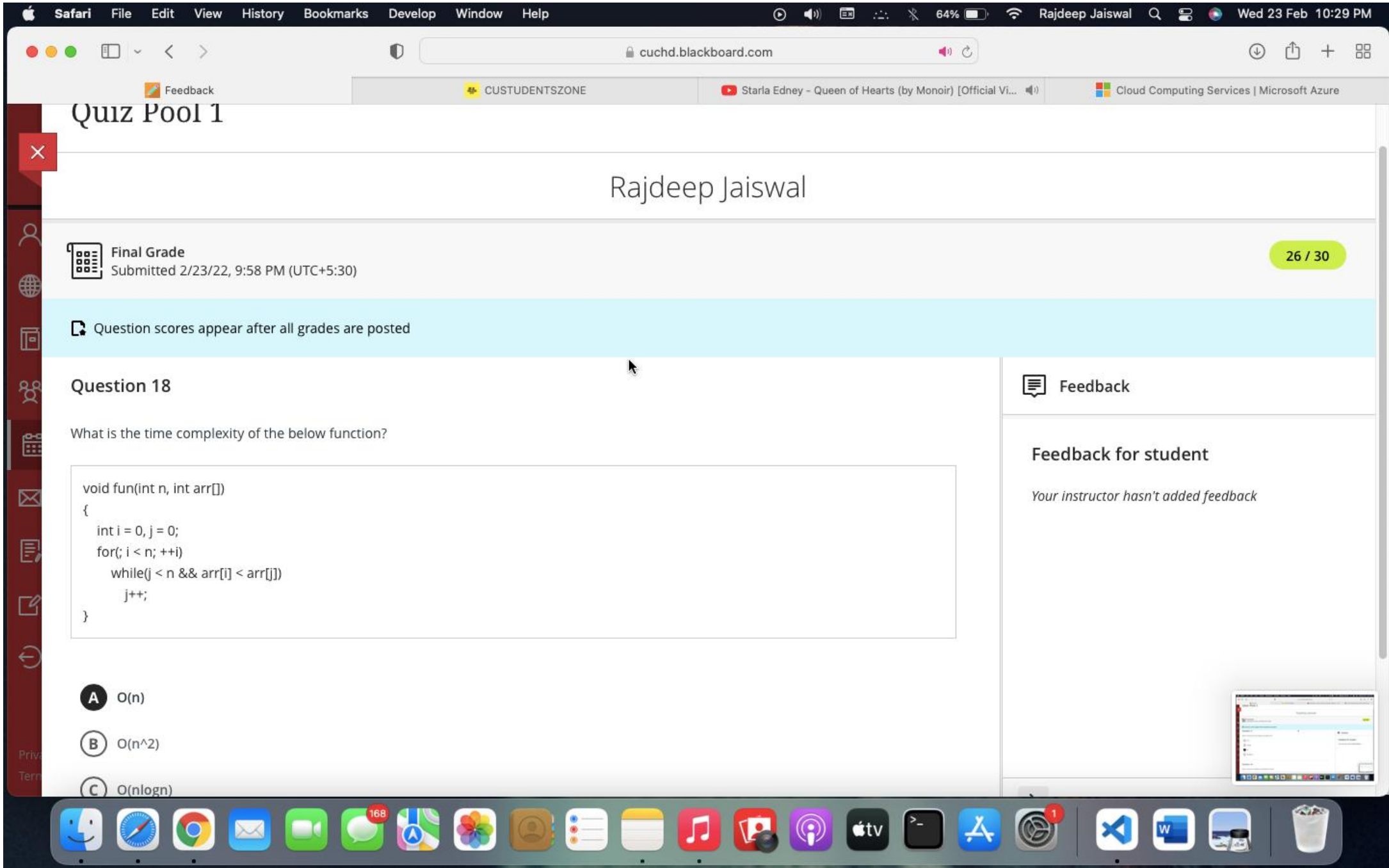
Question 18

What is the time complexity of the below function?

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Question 18

What is the time complexity of the below function?

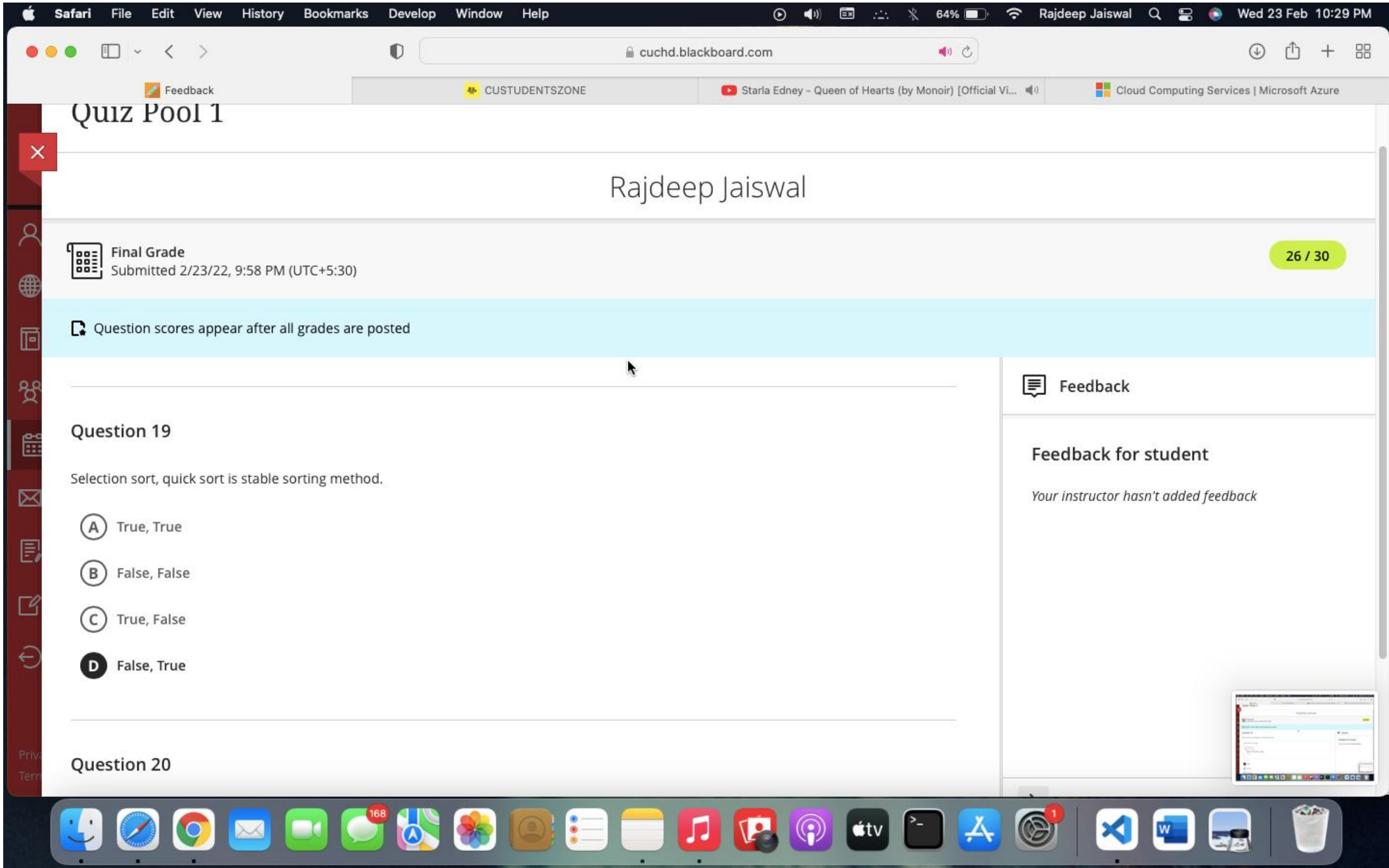
```
void fun(int n, int arr[])
{
  int i = 0, j = 0;
  for(; i < n; ++i)
    while(j < n && arr[i] < arr[j])
      j++;
}
```

- A) $O(n)$
- B) $O(n^2)$
- C) $O(n \log n)$

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Question 19

Selection sort, quick sort is stable sorting method.

- (A) True, True
- (B) False, False
- (C) True, False
- (D) False, True

Question 20

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D False, True

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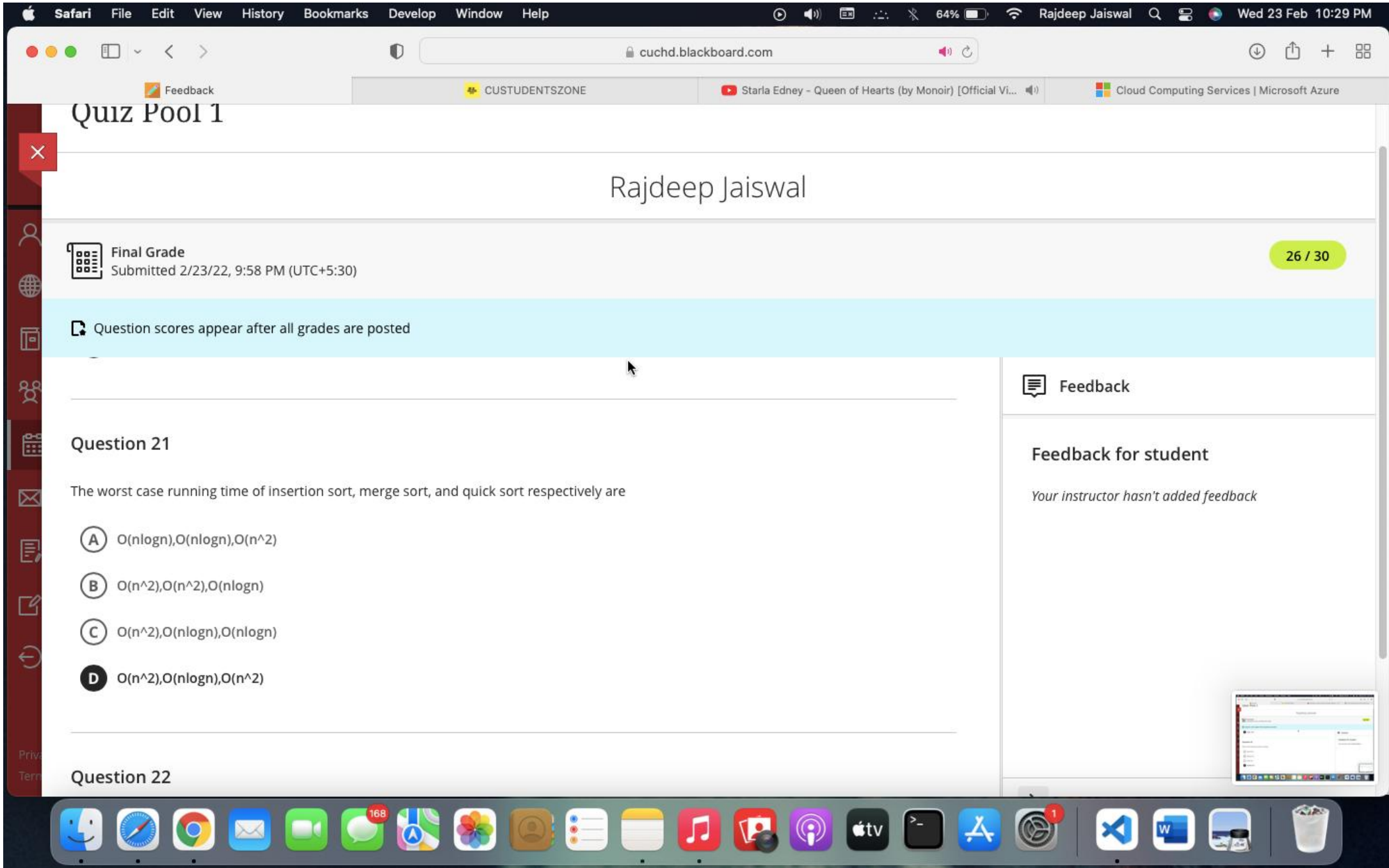
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Question 20

Which of the following method is slowest?

- (A) Quick Sort
- (B) Merge Sort
- (C) Shell Sort
- (D) Bubble Sort





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Question 21

The worst case running time of insertion sort, merge sort, and quick sort respectively are

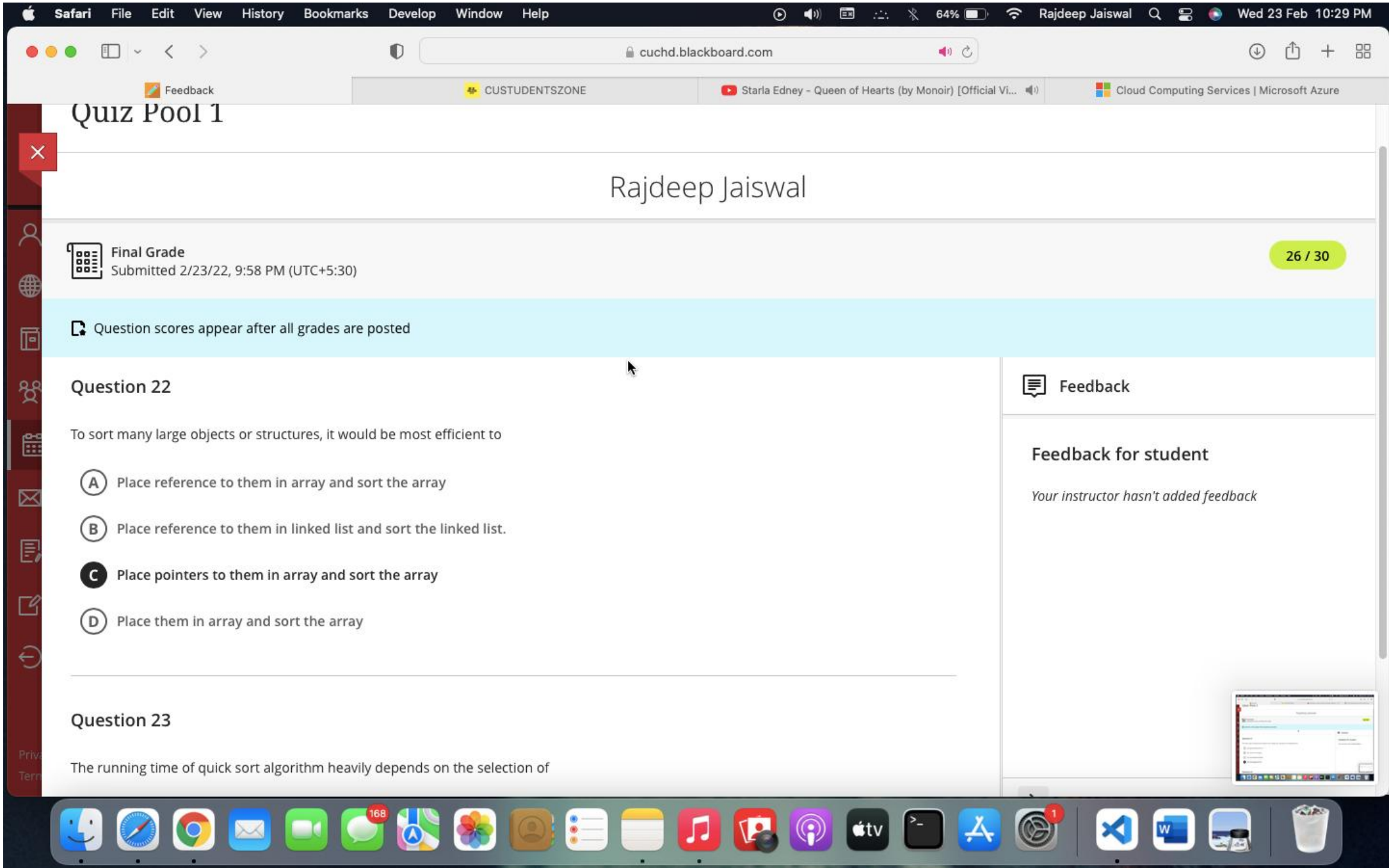
- (A) $O(n \log n), O(n \log n), O(n^2)$
- (B) $O(n^2), O(n^2), O(n \log n)$
- (C) $O(n^2), O(n \log n), O(n \log n)$
- (D) $O(n^2), O(n \log n), O(n^2)$

Question 22

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Question 22

To sort many large objects or structures, it would be most efficient to

- (A) Place reference to them in array and sort the array
- (B) Place reference to them in linked list and sort the linked list.
- (C) Place pointers to them in array and sort the array
- (D) Place them in array and sort the array

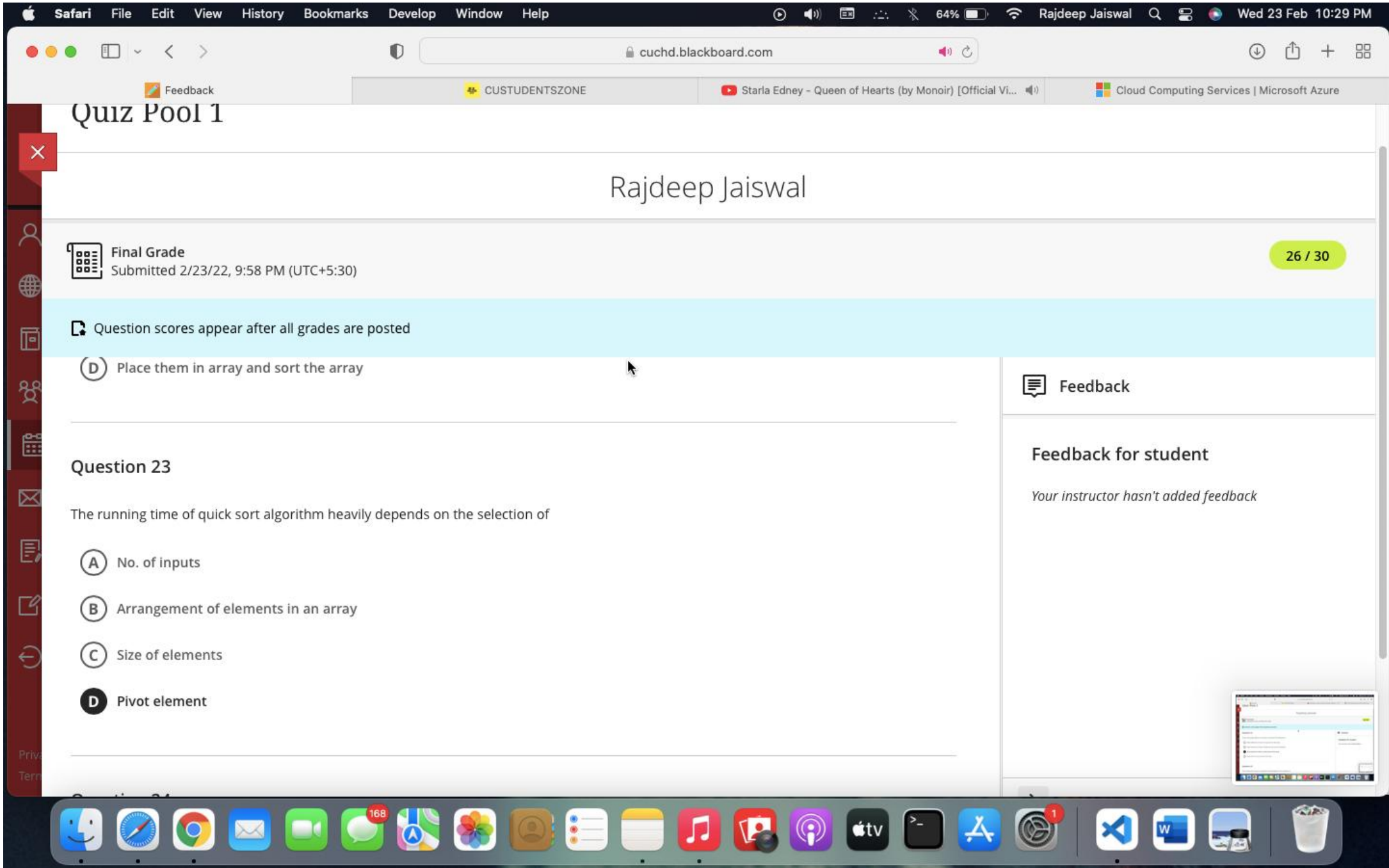
Question 23

The running time of quick sort algorithm heavily depends on the selection of

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(D) Place them in array and sort the array

Question 23

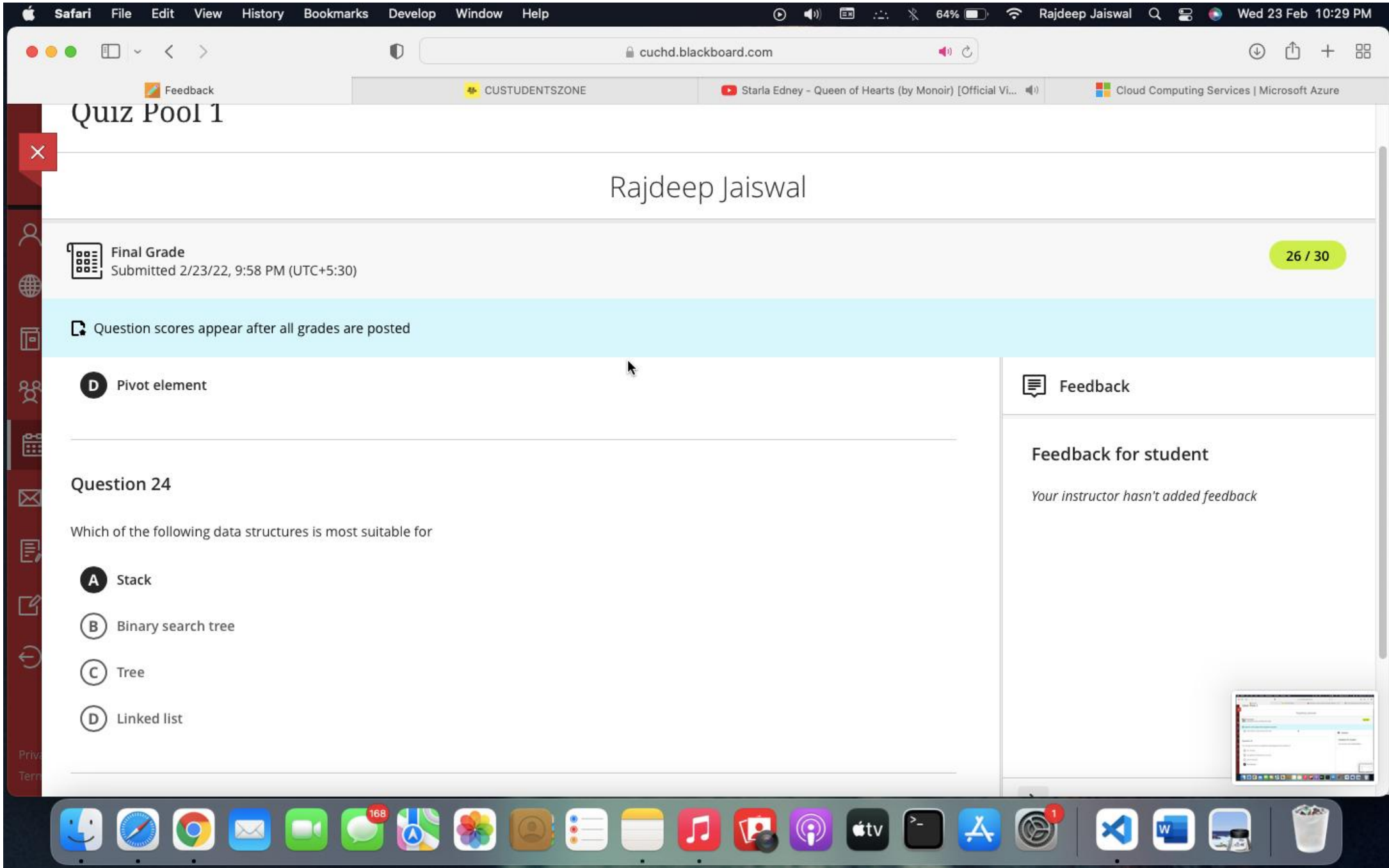
The running time of quick sort algorithm heavily depends on the selection of

- (A) No. of inputs
- (B) Arrangement of elements in an array
- (C) Size of elements
- (D) Pivot element

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D Pivot element

Question 24

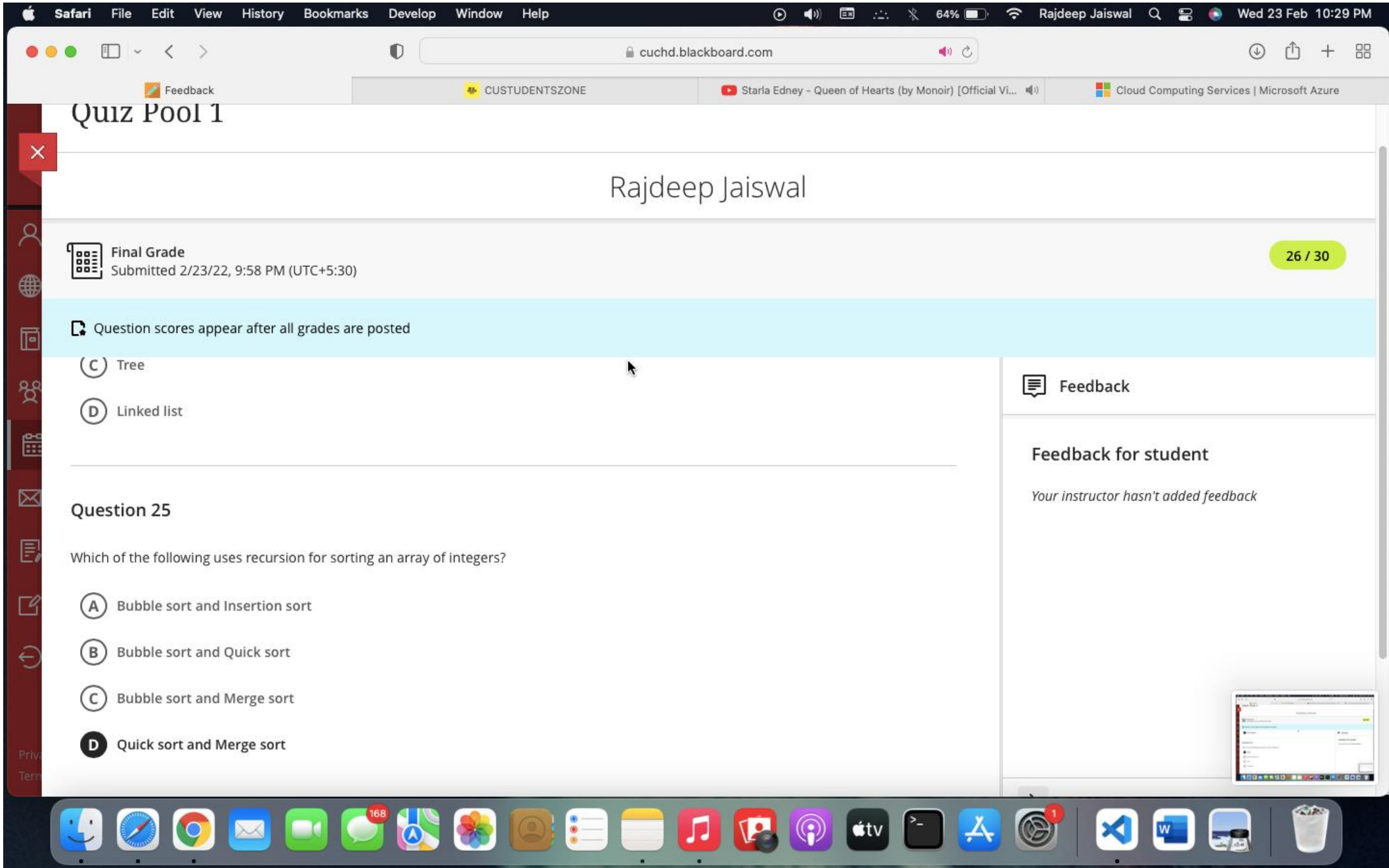
Which of the following data structures is most suitable for

- A** Stack
- B** Binary search tree
- C** Tree
- D** Linked list

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- (C) Tree
- (D) Linked list

Question 25

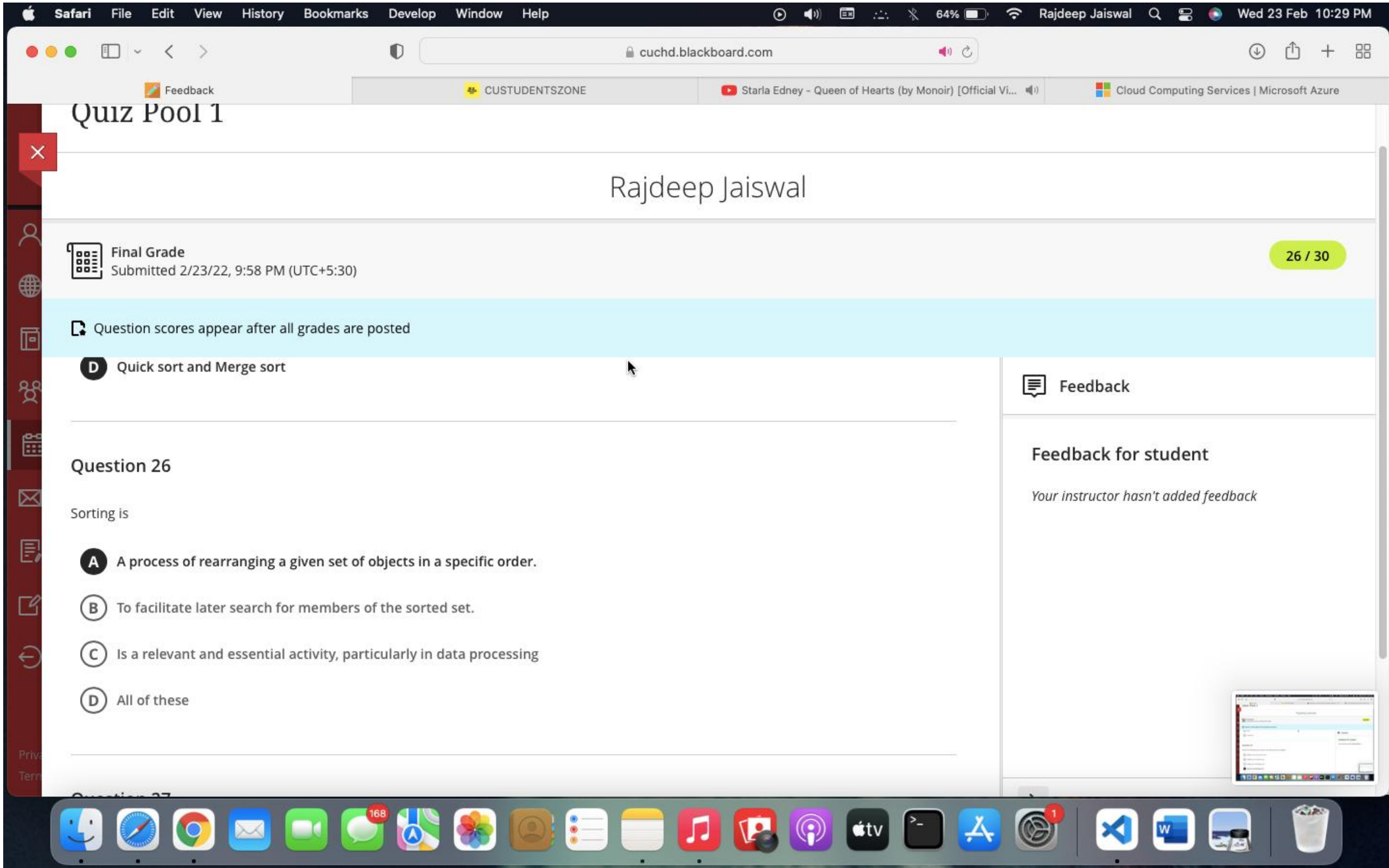
Which of the following uses recursion for sorting an array of integers?

- (A) Bubble sort and Insertion sort
- (B) Bubble sort and Quick sort
- (C) Bubble sort and Merge sort
- (D) Quick sort and Merge sort

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D Quick sort and Merge sort

Question 26

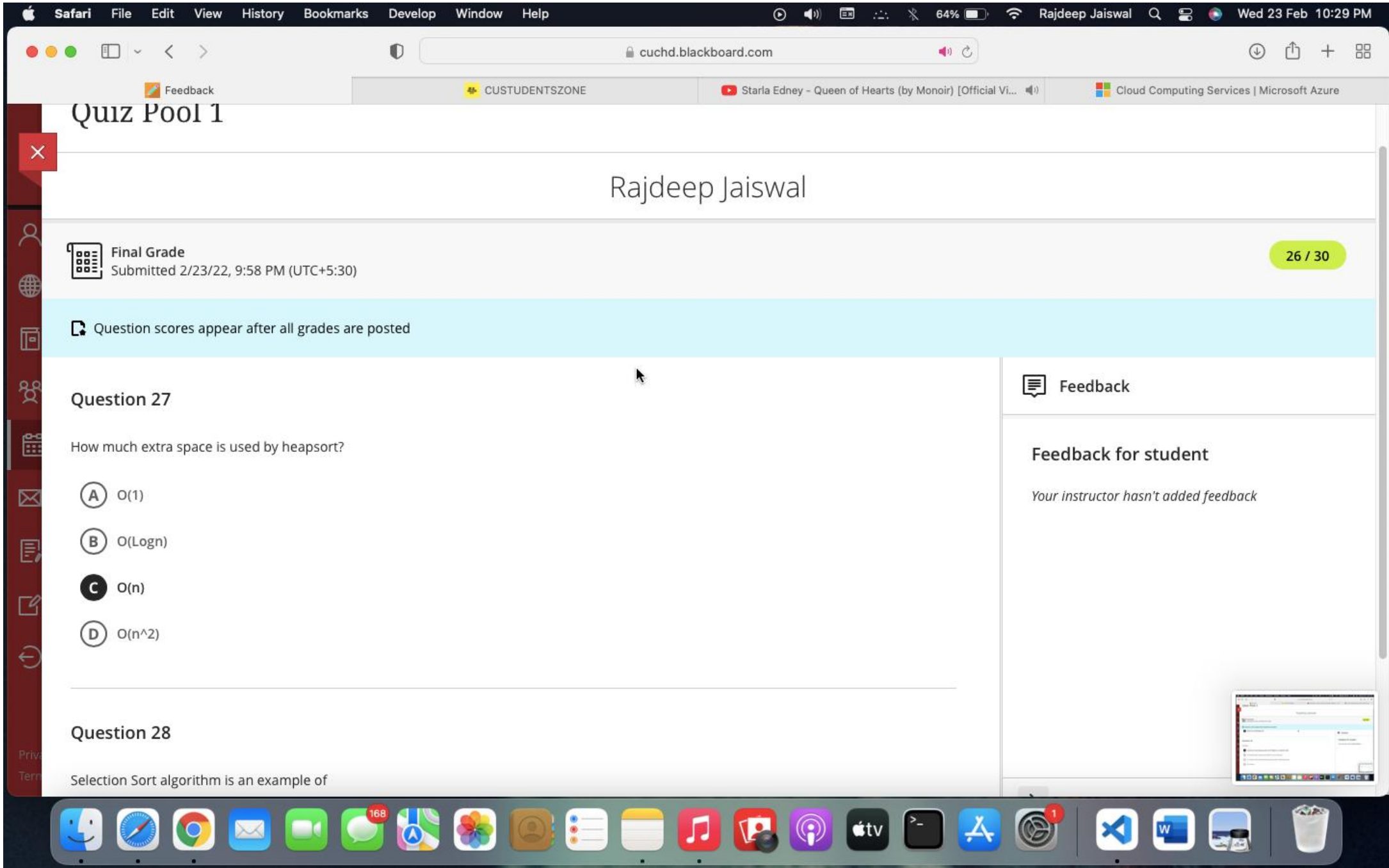
Sorting is

- A** A process of rearranging a given set of objects in a specific order.
- B** To facilitate later search for members of the sorted set.
- C** Is a relevant and essential activity, particularly in data processing
- D** All of these

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Question 27

How much extra space is used by heapsort?

- (A) $O(1)$
- (B) $O(\text{Log}n)$
- (C) $O(n)$
- (D) $O(n^2)$

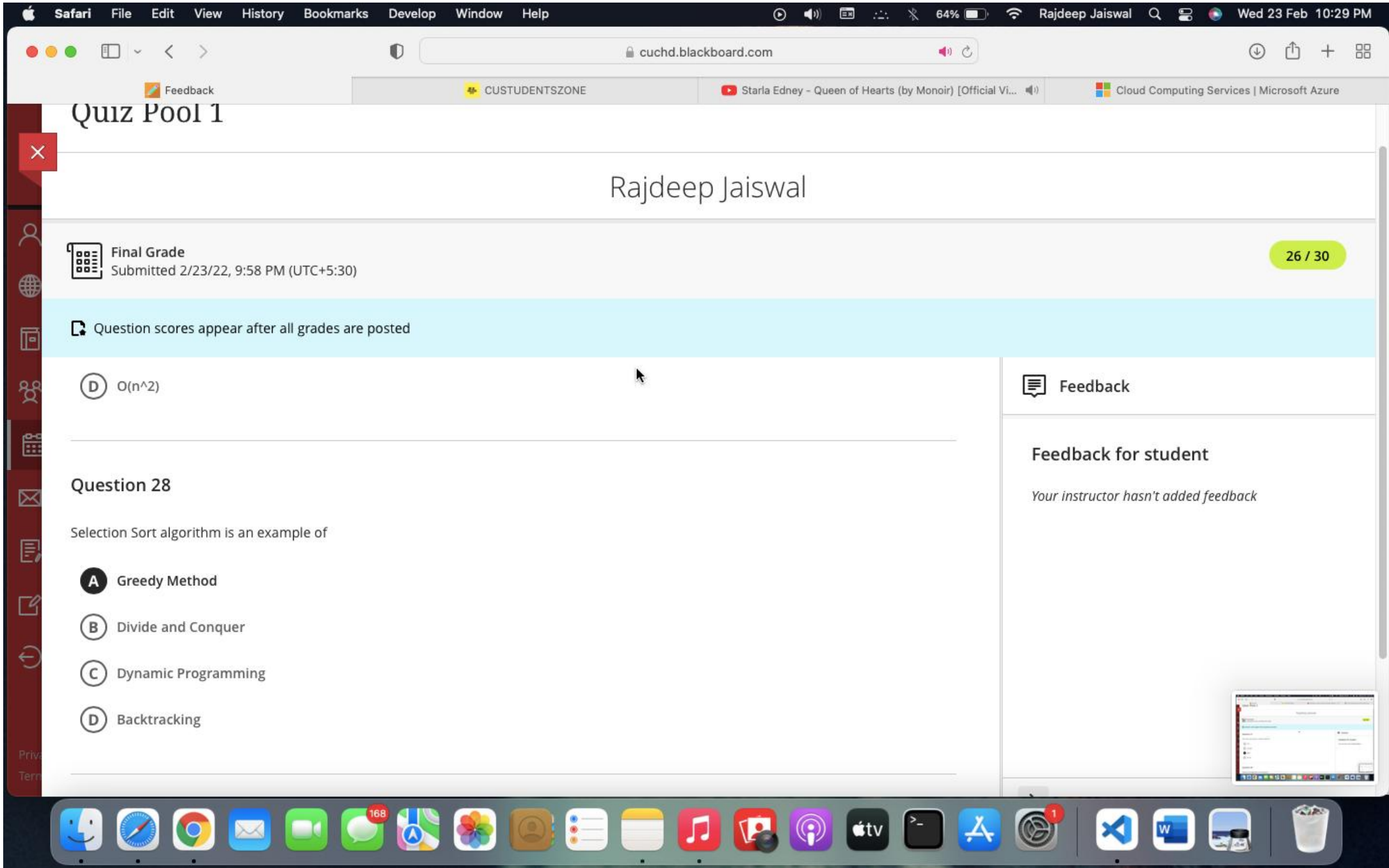
Question 28

Selection Sort algorithm is an example of

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D $O(n^2)$

Question 28

Selection Sort algorithm is an example of

- A** Greedy Method
- B** Divide and Conquer
- C** Dynamic Programming
- D** Backtracking

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Question 29

The no. of swapping needed to sort numbers 8,22,7,9,31,5,13 in ascending order, using bubble sort is

- (A) 11
- (B) 12
- (C) 13
- (D) 10

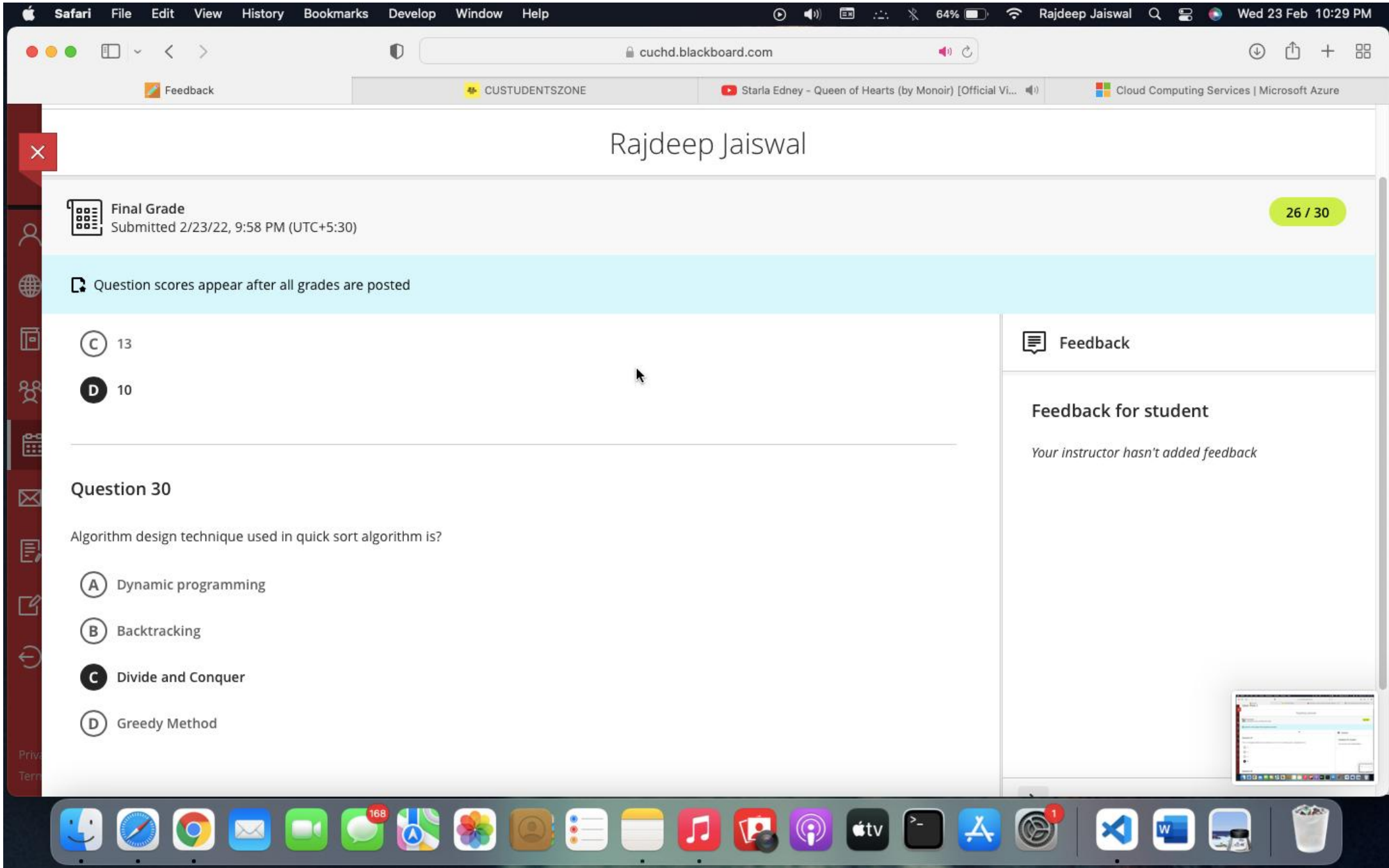
Question 30

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C 13

D 10

Question 30

Algorithm design technique used in quick sort algorithm is?

- (A) Dynamic programming
- (B) Backtracking
- (C) Divide and Conquer
- (D) Greedy Method

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