CSE220: Data Structures (Lab)
Fall 2024
Lab Quiz - 06
Duration: 30 Minutes

B

Name:	ID:	Section:

Question 1 [15 Points]

Brac University's course rating system needs to prioritize courses based on **difficulty** and **student satisfaction**. Two arrays are provided:

- **`arr1`**: Difficulty levels (1 to 10, higher values = more difficult).
- **`arr2`**: Student satisfaction scores (1 to 10, higher values = more satisfied).

Courses with **lower overall ratings** should be **prioritized first** for improvement. The **overall rating** for each course is calculated as:

```
overall_rating = difficulty level × satisfaction score
```

Your task is to:

1. Create the **overall ratings array** using the above formula.
2. Determine the **appropriate type of heap** needed to prioritize courses based on the task description.
3. **Construct the heap** using the overall ratings.
4. Extract the **top 3 courses for improvement** based on their overall ratings.

Sample Input:	**Expected Output:**
arr1 = [7, 6, 5, 9, 8] arr2 = [6, 8, 7, 5, 4]	Overall Ratings: [42, 48, 35, 45, 32] Top Courses: 32, 35, 42

Note: Assume the **`insert()`** and **`swim()`** methods are already implemented and can be used directly. You need to **implement other required methods** and **make the necessary method calls** to complete the task. You are not allowed to use any built-in functions except **len()**.