### **Question 1 [15 Points]**

The Brac University Library is prioritizing books for purchase based on their **demand** and **ratings** by students. Two arrays are provided:

* **arr1**: Demand for books (number of requests).
* **arr2**: Average student ratings for the books (scale of 1 to 5).

Books with **higher priority scores** should be **purchased first**. The **purchase priority score** for each book is calculated as:

priority\_score = demand × rating

**Your task is to:**

1. Create the **purchase priority scores array** using the above formula.
2. Determine the **appropriate type of heap** required to prioritize books for purchase.
3. **Construct the heap** using the priority scores.
4. Extract the **top 3 books** to be purchased first based on their priority scores.

| **Sample Input:** | **Expected Output:** |
| --- | --- |
| arr1 = [50, 80, 40, 60, 52]  arr2 = [4.5, 4.8, 4.0, 4.2, 4.7] | Priority Scores: [225, 384, 160, 252, 245]  Top Books: 384, 252, 245 |

**Note:** Assume the **extract()** and **sink()** 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()**.