**JAVA PROGRAMMING LANGUAGE**
**Assignment 14**

1. Implement a priority queue capable of holding objects of an arbitrary type, *T*, by defining a *PriorityQueue* class that implements the queue with an *ArrayList*. A priority queue is a type of list where every item added to the queue also has an associated priority. Define priority in your application so that those items with the largest numerical value have the highest priority. Your class should support the following methods:

   - *Add(item, priority)* —Adds a new item to the queue with the associated priority.

   - *Remove()* —Returns the item with the highest priority and removes it from the queue. If the user attempts to remove from an empty queue, return null.

   For example, if *q* is a priority queue defined to take *String*s

```
q.add("X", 10);
q.add("Y", 1);
q.add("Z", 3);
System.out.println(q.remove());          // Returns X
System.out.println(q.remove());          // Returns Z
System.out.println(q.remove());          // Returns Y
```

   Test your queue on data with priorities in various orders (e.g., ascending, descending, mixed). You can implement the priority queue by performing a linear search through the ArrayList.