

## Exercises

This is the class `Entry` that is mentioned in the exercises below. (But note that all the exercises call for static methods—not instance methods of this class.)

```
class Entry {
    Comparable key;
    Object value;
    Entry(Comparable key, Object value) {
        this.key = key;
        this.value = value;
    }
}
```

Write the following methods. Method names are up to you. Parameter and return types can be deduced from the descriptions.

1. Write a static method that takes an array of integers and returns the maximum element in the array. You may assume the array contains at least one element.
2. Write a static method that takes an array of `Comparable` objects and returns the maximum element in the array. You may assume the array contains at least one element.
3. Write a static method that takes an array of `Entry` objects, and a single key to search for, which you may assume is not null. Using a linear search, determine whether an `Entry` with that key occurs in the array. If so, return the value from that `Entry`. If not, return null.
4. Write a static method that takes an array of `Entry` objects, and a single key to search for. You may assume the array is in nondecreasing key order. Using a binary search, determine whether an `Entry` with that key occurs in the array. If so, return the value from that `Entry`. If not, return null.
5. Write a static method that takes an array of chars to search, and a single char to search for. You may assume the array is in nondecreasing order. Using a binary search, determine whether the char occurs in the array, and return true if so, false if not.
6. Write a static method that takes an array of `Comparable` objects to search, and a single `Comparable` object to search for. You may assume the array is in *nonincreasing* order (that is, from largest to smallest). Using a binary search, determine whether the target object occurs in the array, and return true if so, false if not.

Bring your solutions in hard copy (printed or handwritten) to class on Friday, April 28.