Announcements

• Project #7 has been posted
• Monday lecture will be review
• No Lab on Monday
• Final Exam Thursday 12/13 from 4:00 to 6:00.
Example: IsPresent

Let’s code this up recursively:

```java
boolean isPresent(String s, char c) {...}
```

What is the running time (be careful!)

We need to avoid making all of these copies!

New approach:

```java
// checks if character is present, starting at a specific position in the String
private boolean isPresentHelper(String s, char c, int position)
```

Now what is the running time?
Example: Sum

Let’s code this up recursively:

```c
int sum(int[] a) {...}
```

We’re going to need a helper again...
Example: Binary Search

Let’s solve this recursively:

```java
// returns the index of the value, if found
int binarySearch(Comparable[] a, Comparable value) {...}
```

Review algorithm

We should use a helper!

Example: BinarySearch.java