What did we talk about last class?
Another XML Example

- I want to do another example of a program that uses XML.
- I was thinking of using planetary data since that is something I find interesting and which I think works well.
- XML is best for data is that a bit more complex than a simple table.
We have used three types of patterns previously:

- Value literals
- Tuples
- Type matches

The last two start to show the power of pattern matching. In particular, they show that part of a pattern can be a variable name that binds to part of the pattern.
Variable Binding

- When a pattern is matched, any words that start lower case are assumed to be variable names you want bound.
- Use an underscore for anything you want to match stuff, but ignore the value.
- Use @ to bind a name to a match you are also further specifying.
- To match the value of an outside variable put the variable name in backticks.
You can use patterns to pull out parts of XML or match on different types of nodes.

Simply put the variable names you want inside of curly braces.

```
val <a>{s}</a> = node
```
- The real power of case classes in Scala comes from the fact they can be used in matches.
  - stu match {
    - case Student(n,q,t,a) => ...
  }

- You can do this type of matching on events to pull out the fields you care about if you don't want the full event.
  - case MouseMoved(source,point,mod) => ...
You can also make patterns with collections.
- case Array(a,b,c) => // use a, b, and c

Even more cool is what you can do with Lists.
- case h::t => // h is head and t is tail
- case a::b::Nil => // two element List

This can be ideal for recursive methods on lists.
- def len(lst:List[Int]) = lst match {
  case Nil => 0
  case h::t => 1+len(t)
}
Patterns Everywhere

- Patterns are used in a lot of places in Scala, not just cases and matches.
- The initial declaration of variables is a pattern match. That is why we could assign from tuples.
- The “variable name” in a for loop is actually a pattern. If the pattern isn't matched by an element, that element is skipped.
Minute Essay

- What questions do you have about patterns?
- No class on Monday or Wednesday of next week.