Strings and Variables
• Do you have any questions about the quiz?
• Let's look at solutions to the interclass problem.
• What did we talk about last class?
• How should you write decimal numbers? How do you indicate the base of numbers?
Hexadecimal

- Binary is unwieldy for humans because of the large number of digits.
- Hexadecimal (base 16) is commonly used because it converts nicely to binary, but has few digits.
- Four bits is a hex digit. Start at the right and group bits by 4.
- Use letters A-F for numbers 10-15.
- Hex literals start with 0x
- toHexString
Octal

- Octal (base 8) is less common than hex, but not uncommon.
- Group bits into groups of three.
- Octal literals and toOctalString().
The math Object

- For other math functions use methods on the math object.
- For example, use `math.sqrt()` to take the square root of a number.
The Char type represents a single character in Scala.

The literal for Char has the letter that you want in single quotes.

The Char is stored in the computer as a 16-bit unsigned integer encoded in Unicode.

Unicode has the alphabet of every written language in it.

You can convert to an Int to see the numeric values of characters.
Not all characters can be easily entered. For things you can't nicely type, use escape characters.

- \n – for a new line
- \t – for a tab
- \” - to get a double quote
- \' - to get a single quote
- \\ - to get a backslash
Strings

- We have seen the String type and that represent String literals by putting characters in double quotes.
- Escape characters can also go inside of normal strings.
- Strings have many methods. We can see the basics using tab completion. (If we put in some extra parentheses.)
There are some situations when using escape characters is a pain.

For this, use triple double quotes to make a raw string.

Anything you type between the triple double quotes will go into the string.

They can span multiple lines even.
You can concatenate strings with +.
You can duplicate a string multiple times with *.
In just a second we can use this to right align a string or zero pad a number.
Variables

- It is very common to want to represent values with names.
- A variable is a name that we use to represent a value.
- In Scala we can declare variables using `val` or `var`.
  - `val name: Type = expression`
  - `val name: Type = expression`
- A `val` can't change its value, a `var` can.
- The colon and type generally optional.
Another type in Scala is the Tuple type.

A tuple has comma separated values in parentheses.

They give us a way to handle a fixed set of associated values.

Assignment into a tuple does pattern matching.
What questions do you have about the topics we have been working on?

Interclass problem: Use Scala to figure out what hourly wage you have to make to bring home $100,000/year assuming 50, 40-hour work weeks and a 35% tax rate.