Strings

# TODO

# Relationship between characters and numbers

* Strings
  + Introduce string value, for representing text
  + Sequence of characters
  + String is a reference value, like object
  + Diagram for it
  + How to write it
* Characters
  + Each keystroke is a character, right?
  + Computers can store numbers, why not just have a different number (a character code) or for each character? Of course, we need a standard for what each character means
* ASCII
  + One early standard was ASCII (first version in 1963).
  + It only had 128 different characters
  + <http://ascii.co.uk/table>
  + (take a look, type “my name is <your name>”)
  + <http://ascii.co.uk/interactive>
  + Show a picture of the web site (my name is puma)
  + Notice that space has a number as well (32)
* CONTROL CODES
  + In word or google docs, you might press [enter]. This finishes the paragraph or line.
  + Is that a character as well? Try it
  + <http://ascii.co.uk/interactive>
  + And now backspace
  + (side note for tab)
* OTHER LANGUAGES?
  + Many alphabets, right? What about Greek? Or Kanji?
  + One approach was to use “code page”, meaning whenever you wrote something you also had to say what language it was in (there was a different table for different languages).
  + What happens when a single document has multiple languages in it?
* UNICODE
  + The UNICODE standard (1991) fixed many of these problems. It allowed for a single standard for modern languages (up to 65535 different characters).
  + <http://www.ftrain.com/unicode/#9100>
  + (instructions on how to use)
  + (take a look)
    - Brail
    - Kanji
    - Symbols
* Turning a number into a string
  + Find the numbers for your name
* Length
  + Number of characters in your name
* Position of a character in a string
  + Zero based
  + Comes back as a number
* Concatenate

## The string data type

* We talked about this before
* Cant update it
* Learn word “immutable”

## String syntax

* Multiple syntaxes (“” and ‘’)
* We will use one of them
* Show syntax
* Show examples

## Escaping

* What happens when a string has a quote in it?
* Show an example
* Term: escape
* Have to escape it
* Show escaping syntax

## Escaping escaping

* What happens when a string has a backslash in it?
* Have to escape the backslash
* Show some examples

## Exercise

* Write some strings
* Decide what to escape or not
* See them in the debugger

## Combining strings

* Combine strings using the “+” operator
* Unfortunately, this is also what adds numbers
* Make sure you have two numbers, or two strings
* Can use this to write longer strings. (show example)

## Exercise

* Write a string that spans two lines
* See it in the debugger