

Termination 2 Topic 7: A Quotes Loader

Topics covered in this class:

- Arrays - **new topic!**
- Strings
- Reading files - **new topic!**
- Random

New: Arrays

[Arrays] are a new type of variable.

An array is like a list of variables of a certain type. If a variable is a named bucket with data in it - an Array is a load of connected buckets of the same type. So an **[Arrays]** of **ints** will only have **ints** in it. You can't put a **boolean** in an **int** array.

For example an **[Array]** of strings is a like a list of strings.

Example:

```
//make a new string variable
String myStringArray[] = {"Hello", "This is", "a new", "fancy",
"array"};
```

How many strings do you think are in this **[Array]**? (how many items in the array?)

Ans: 4.

How do we use arrays?

To use an item in an **[Array]** we need to tell it what number item in the **[Array]** we want.

WARNING: for arrays the “item numbers” always start from **zero**, not one. So in the above example “Hello” is item number **zero** not one, and “array” is number four, not five.

[Array] variables also tell us the number of items in them using the `.length` function (you'll see how this works below).

Example:

```
size(400,200);
background(0);
//make new string array variable and fill it with 5 strings
String myStringArray[] = {"Hello", "This is", "a new", "fancy",
"array"};
//show string length
text( myStringArray.length, 50, 10);
//show individual strings in the string array
text( myStringArray[0], 50, 30);
text( myStringArray[1], 50, 50);
text( myStringArray[2], 50, 70);
```

Output:

```
5
Hello
This is
a new
```

Description of how items in an array are numbered:

```
// new string array           item 0      item 1      item 2      item 3      item 4
String myStringArray[]={ "Hello", "This is", "a
new", "fancy", "array"};
```

Exercise:

1. Using the above example, print the last item in myStringArray.
2. Make a new program with a new array, put 10 items in it. Print the length and items number 1,2,5,7,8 and 9.
3. Make a new program, and create an array variable with 20 random words/phrases in it. Every time you start the program write a random item from that array to the screen using `text()`; You need to use the code below, but where!?

```
(int)random(0, yourArrayName.length)
```

New: Files

We have already used image files.

We are going to load all of the lines of a text file into an array.

First we need a file! Make sure the quotes.txt file given to you is in the new project folder (see right).

Name	Type	Size
quotes.txt	Text Document	22 KB
quotes_loader.pde	Processing Source...	1 KB

We load this file using the `loadStrings()` method.

Example:

```
//make string array variable named quotes
//It's currently empty - we haven't put anything in it
String quotes[];

void setup() {
  //load all of the lines from quotes.txt file, each line onto a
  //different array item
  quotes = loadStrings("quotes.txt");
  //rest of code
}
```

The contents of the text file is now in the `[Array]` variable `quotes`!

Task:

1. Use the above code to load in each line from `quotes.txt`.
2. Print out the length of the array - it should be very long, as `quotes.txt` is quite big.
 - a. Look at `quotes.txt` to check that this is right!
3. Show the first line from the `quotes.txt` file on the screen.
 - a. Make sure you are right by looking at `quotes.txt`!
4. Print out the 10th, 60th, 120th and the last items of the array.
5. Make it so you show a random line from the file. (Random item in the array)
6. Make it so the item shown changes to another random item every time you click the mouse. HINT: You need an int variable that stores the item number, use that to get the string from the array, and then change that when you click the mouse.

Extra improvements:

1. Add a button that you click to get another quote.
2. Change this so that instead of getting a random quote you start at quote one, and every time you click the button you get the next quote, till you get to the last quote, then go back to quote 0.
3. Add another quote. So you show two quotes at one time. Make them both random quotes. Have two buttons each controlling one of the quotes.