

CoderDojo

11 November 2017

HTML, CSS, Javascript and Github


11 - November

- Goal: To learn how to use the Javascript programming language in web page game programming.
- Today, we'll
 - Download code
 - Look at the code
 - Sign up with github
 - Form teams

11 - November

- Do you have VSCode installed?
 - If not, install from: <https://code.visualstudio.com/download>
- Navigate to <https://github.com/tralee-coder-dojo/AdvancedNinjas>
- Download NinjaFiles.zip by clicking the “Download” button.
- Create a folder on the Desktop called Samples
- Click on NinjaFiles.zip
- Copy the files from NinjaFiles.zip to the folder called Samples.

11-November

- Launch VSCode by clicking the icon in your taskbar that looks like 
- In VSCode, select File->Open Folder->Desktop\Samples
- In the Explorer sidebar of VSCode, right-click on SimpleClicker.html and select “Reveal in Explorer”
- Double-click on SimpleClicker.html

11-November

- There are two ways to use Javascript in game programming
 - **Embedded Javascript.** Embedded Javascript is a section of Javascript that is part of a web page. Simpleclicker.html is an example of embedded Javascript.
 - **External Javascript files.** TurkeyClicker.html is an example of a web page that calls external Javascript files.

The SimpleClicker program

- Simpleclicker.html contains **embedded Javascript**.
- Embedded Javascript is always placed between the HTML tags `<script>` and `</script>`.
- Single-file web pages with embedded Javascript are useful for small, simple web programs.
- More complex web programs use a set of files. The TurkeyClicker folder contains a web page with external Javascript.

The TurkeyClicker program

- The TurkeyClicker folder contains the code for a “click on the turkey” game.
- Click on the TurkeyClicker folder in VSCode.
- Reveal ‘index.html’ and run the clicker game.
- The folder contains:
 - Index.html – the web page
 - Style.css – the CSS for the web page
 - Game.js – the javascript code for the game
 - Turkey.jpg – a turkey image

TurkeyClicker

- Index.html :
 - Index.html contains 'links' to other files – CSS and external Javascript files
- The CSS file style.css describes the turkey image and behavior of the cursor
- The external Javascript file Game.js contains the turkey clicker logic

TurkeyClicker – Game.js

- Game.js is an external Javascript file.
- Game.js contains the code to respond to the turkey's being clicked
 - Increment a counter
 - Show a score string in coins

Random Number Demo

- Navigate to the RandomNumberDemo folder in VSCode
- Reveal Numbers.html and double click it. Press 'press me' a few times
- Numbers.html shows 3 randomly chosen numbers and the smallest of those 3
- Numbers.html also shows a randomly chosen number between 0 and 10

Random Number Demo

- The RandomNumberDemo folder in VSCode contains 4 files:
 - Numbers.html, containing the links to Numbers.js and Numbers.css
 - Numbers.js, which contains the Javascript for the web page
 - Numbers.css, which contains the web page background image
 - Smaug.jpg, the image used for the page background

Numbers.js

- Numbers.js contains Javascript that:
 - Creates an array of random numbers
 - Finds the smallest number in the array
 - Finds a random number between 0 and 10

Numbers.js – What's an array?

- Data in Javascript are either individual items like counters or scores, that are stored in variables, or groups of data called arrays
- Variables are shown as:
 - `var id`
 - `let i = 3`
- An array is a group of data
 - It might be scores in a game, a set of monsters, a set of weapons, ...

Numbers.js – what are random numbers

- Random numbers are used heavily in computer games
 - For timers – so the monsters don't show up at predictable times
 - For prizes – so you don't earn the same amount of coins each time from killing the monster
- Random numbers are returned by the function `Math.random()`
- In Javascript they are between 0 and 1

Numbers.js -Creating an array of Random Numbers

- The statement:

```
Arr[3] = [Math.random(), Math.random(), Math.random()]
```

Creates an array 'Arr' and calls the Math.random function 3 times.

- Arr has 3 elements – Arr[0], Arr[1], Arr[2].
- Each of them has a random number in it.
- This could have been written as:

```
var arr = [];  
arr[0] = Math.random();  
arr[1] = Math.random();  
arr[2] = Math.random();
```

Finding the smallest number in an array

- Finding the smallest is like looking for the largest bill in a pile:
 - Start at the top, choosing the largest as you go through each, till done
- In Numbers.js, we start out by guessing that the first element of the array, `arr[0]` is smallest and set the variable `smallest` to `arr[0]`;
- We then use a for loop to look at each element in the array after the 1st one
- If it's smaller, we replace `smallest` with it and continue until we've looked at each entry in the array
- At the end, '`smallest`' is the smallest number of the 3

Finding a random number between 0 and 10

- `Math.random()` returns a number between 0 and 1 (it never returns 1)
- To generate a random number between 0 and 10, simply multiply the result of `Math.random()` by 11
- To turn that into an integer, use `Math.floor()` to round to the nearest integer
 - Code is: `Math.floor(11*Math.Random());`

11-November

- Teams – each team creates a game that involves shooting turkeys
- Best game, chosen by voting, wins. Volunteers break the tie
- Teams should be 2-4 Ninjas

Github

- Install git software from <https://git-scm.com/download/win>
- Install, take all the defaults.
- In GIT Bash shell, navigate to the directory you created with the samples, and run 'git init .'
- Sign up with github.com – you'll need to supply a valid e-mail address

Connecting to Github

- Create an empty folder on the Desktop, name it Gitwork, navigate to it
- Right-click 'git bash here'. This will launch a funny-looking command window
- Type the following commands in the window
 - `git init .`
 - `git config --global user.email "your-email"`
 - `git clone https://github.com/tralee-coder-dojo/AdvancedNinjas`
- Launch VSCode, open the Gitwork folder, you should see a bunch of files

Teams

- Form teams to work together
 - No more than 4 per team
 - Your choice of code and tools
 - Javascript
 - Unity
 - W.H.Y
- Teams will create a game
- We will vote for the best game
- The team with the best game, at the end of the dojo, will win a prize

Putting files into github

- Once you have files to put into github
 - Create a repo on github
 - One of the volunteers might have to do this for you.
 - For example, lets assume it's called "CoolNinjas"
 - Navigate to the folder containing your files. For example, assume it's called MyWork
 - Launch git bash, type
 - `git add .`
 - `git commit -m "commit message"` – stages the files for submission
 - `git remote add origin https://github.com/tralee-coder-dojo/CoolNinjas`
 - `git push` – puts changes into github
- You can now run vscode using the MyWork folder.
- Git will track any changes to your files and others on your team can share the files as well from github