Introducing Tutors

Setup

Setting up and configuring the tools tutors requires, and tutors itself. These are: git, node.js and the sublime text editor.

Composition

Explore the structure and contents of Labs. Introduce the basics of Markdown and demonstrate the primary features.

Publishing

Publish course to the public Internet using github, and make individual topics available to Moodle.

Portfolios

Aggregating multiple modules into a portfolio.

Git

Explore the fundamentals of git, including basic commands, repository branching and merging.

a small tool for generating instructional material

A collection of recent Modules in Modern Computer Science

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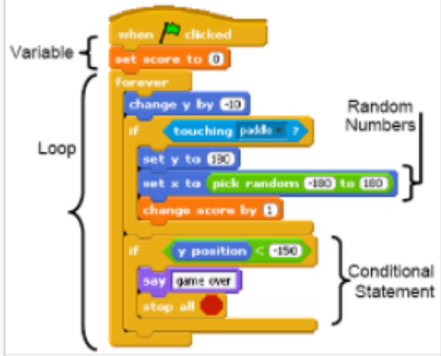
Programming - Introductory

Programming Fundamentals I (Scratch)



This is an introductory Programming module and assumes no prior knowledge of programming. For the first week or two, we will use Scratch to teach some basic programming concepts. We will work through non-complex problems that will introduce you to the basic constructs of programming languages i.e. Sequence, Selection and Loops.

Dr. Siobhan Drohan & Ms. Mairead Meagher

Programming Fundamentals I (Processing)

This is an introductory Programming module and assumes no prior knowledge of programming. We will use the Java programming language through the Processing Development Environment (PDE). We will work through non-complex problems that will introduce you to the basic constructs of programming languages i.e. sequence, selection and loops. You will also learn to use different data types and manipulate the data.

Dr. Siobhan Drohan & Mairead Meagher

Programming Fundamentals (Java)

The objective of this module is to provide a basic introduction to the Java language. The course assumes no prior programming experience, begins at a slow pace with simple concepts but progressively adds more complex topics. It is essential to gain a fundamental understanding of the language as later course modules such as Web and Android development use Java extensively.

John Fitzgerald

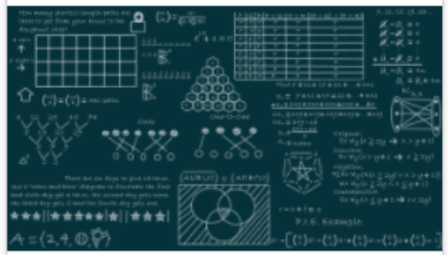
Programming - Intermediate

Data Structures

The objective of this course is to provide a comprehensive introduction to developing modern Java Applications built around Data Structures. Our objective is to provide the student with the skills required to construct efficient and reliable Java applications of moderately complexity.

David Drohan & Peter Carew

Algorithms



An introduction to algorithms in Java

Frank Walsh & Eamonn De Leastar

Web Site Dev

Top Level Topics

Portfolio

Eamonn De Leastar & Dr. Brenda Mullally . Creative Commons License

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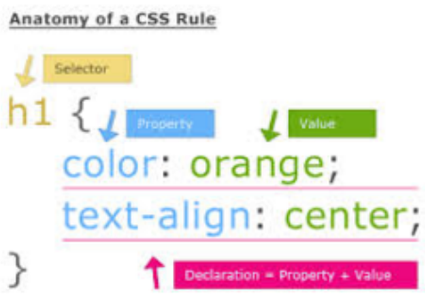
Introducing HTML

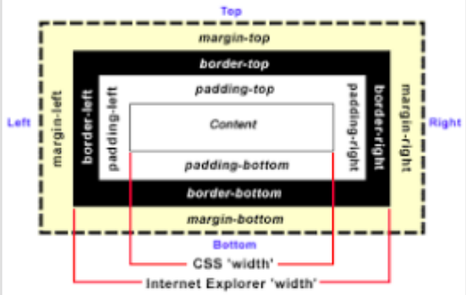
We explore the foundations of web and get to grips with the fundamentals of the HTML language. As you will see, its structure and format is relatively straightforward, and you will be able to understand the basics very quickly. We will be focusing on a small number of 'tags' to get started, and also on the ways in which different html files can be linked together to form a site.

Introducing CSS



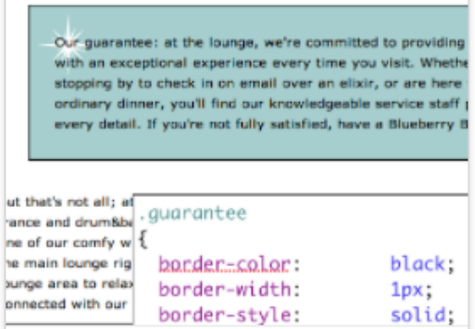
CSS is the language we use the style HTML. This language looks simple at first, but as we will see in the next few weeks, it is considerably more complex than HTML and will require a very careful approach to get right

The Box Model



In order to style the same html elements in different ways we need to use classes. This allows us to target specific occurences of an html element for styling purposes. At the heart of the layout engine in web browsers is a concept called the 'box model'. This defines a general layout structure for all HTML elements, providing a language for specifying important dimensions and relationships to other elements.

Layout

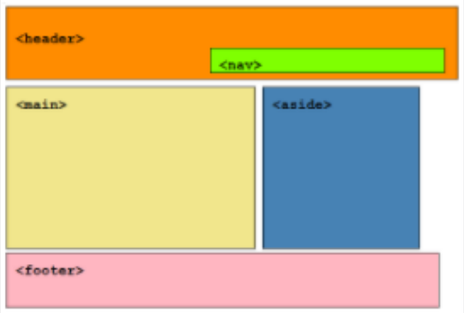


Using an understanding of the fundamental features of the box model we can start to produce more interesting page layouts. Specifically, we can break a page down into sections and use box model properties to dimension and position these sections in a flexible manner. This will allow is to grow multi-column pages that can vary according to the size of the browser windows used to view them.

Navigation

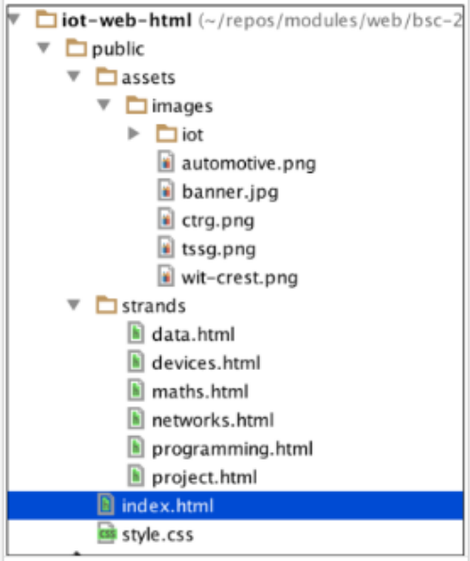
Central to a well design site is a clear and understandably navigation structure. This must easily allow the user to explore the site, provide sufficient context such that the user knows where they are at any stage, and do this in a visually pleasing and efficient manner.

Semantic HTML + More Layout



HTML5, the latest version of the standard, introduced a range of new elements. Among the most interesting are the so-called 'semantic' elements. These attempt to re-examine the proliferation of DIVs in html, and proposed an alternative vocabulary that would better reflect the purpose of many of these DIVs

Layout + Review



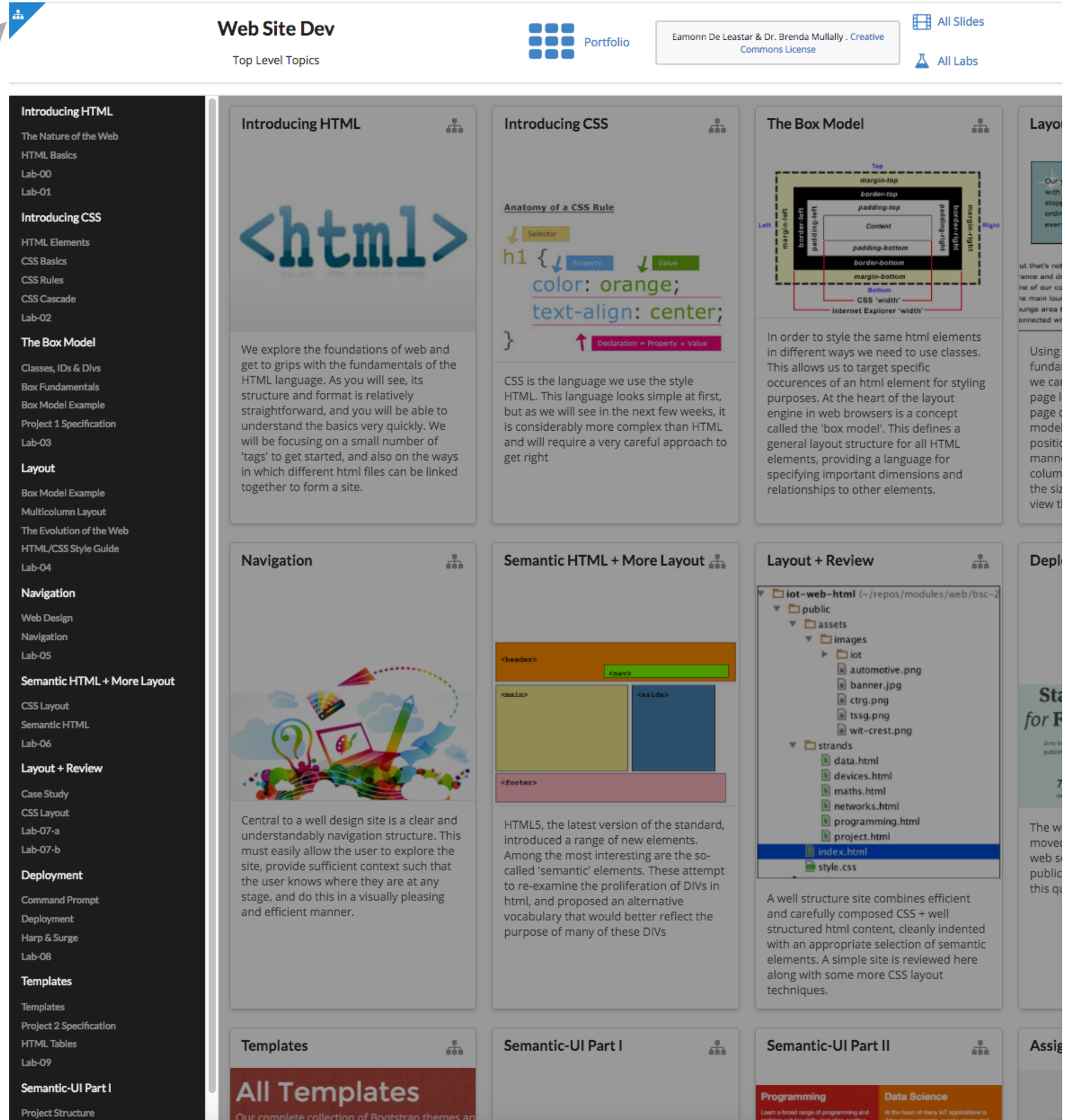
A well structure site combines efficient and carefully composed CSS + well structured html content, cleanly indented with an appropriate selection of semantic elements. A simple site is reviewed here along with some more CSS layout techniques.

Deployment

The web site will ultimately have to be moved from your local folders to a public web server where it can be accessed via a public domain. Modern tools can make this quite seamless and convenient.

topics

topic navigation



12: APIs

Single Topic

Module

Eamonn de Leastar. Creative Commons License

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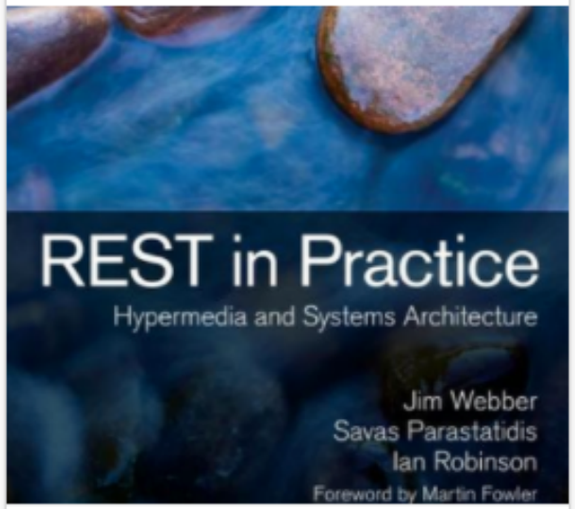
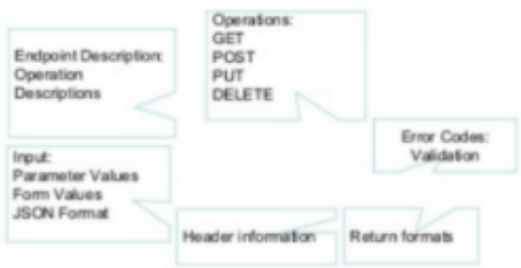
APIs



An Application Programmer Interface is the published set of http endpoints and messages that a service can support. API design and implementation is a rich field of study - here we take a general overview.

Endpoints



Expose access to the Candidates model as a REST endpoint. This involved defining new routes and handlers, which respond simple JSON representations.

Testing Endpoints

Tools like Postman and Insomnia usefully exercise endpoints. However, we can also exercise them problematically, which offers some significant advantages.

Lab-12 Apis

Start the development of an API for the donation service, focusing initially on providing access to the Candidates model. Implement the API using simple REST principles.

topic contents - talks & labs

Using Asserts

- You could use this assert to check all sorts of things, including whether numbers are equal to each other.

```
int a = 2;
//...
assertTrue (a == 2);
```

- To check that two integers are equal, a method that takes two integer parameters might be more useful.

```
public void assertEquals (int a, int b)
{
  assertTrue(a == b);
}
```

- We can now write the first test a little more expressively:

```
int a = 2;

assertEquals (2, a);
```

labs

steps
formatted text
images
syntax-highlighted
source code

Get Candidate Endpoint

The first endpoint we have just implemented retrieves all candidates. We can also introduce a route to retrieve a single candidate:

routesapi.js

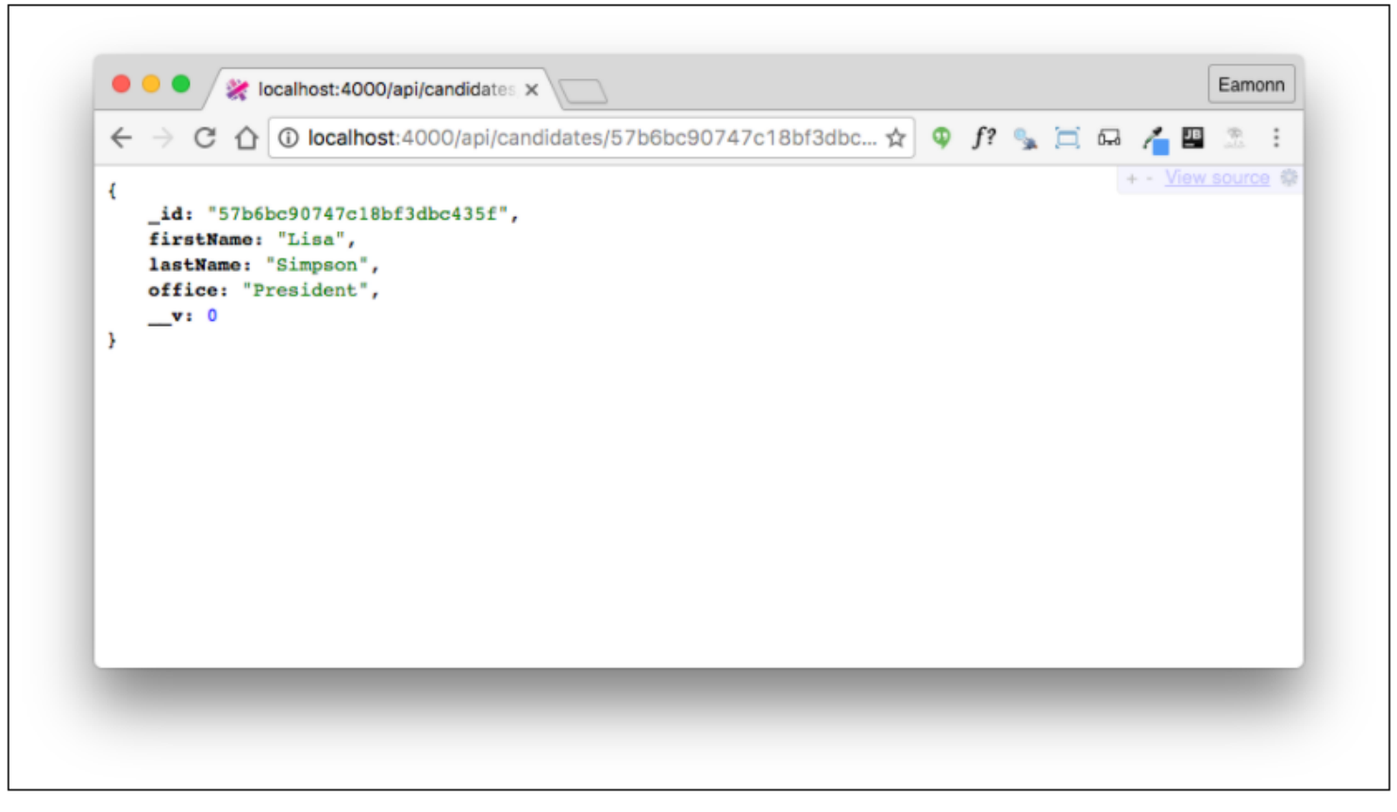
```
{ method: 'GET', path: '/api/candidates/{id}', config: CandidatesApi.findOne },
```

app/api/candidatesapi.js

```
exports.findOne = {

  auth: false,

  handler: function (request, reply) {
    Candidate.findOne({ _id: request.params.id }).then(candidate => {
      reply(candidate);
    }).catch(err => {
      reply(Boom.notFound('id not found'));
    });
  },

}
```

In order to retrieve the candidate, we will need the ID for the candidate of interest:

- http://localhost:4000/api/candidates/57b6bbd3a11377b03d31da0a



The Id changes every time we launch the application, as our database seeder clears all collections each time.

If we specify an unknown id, Boom will generate the appropriate error:

Programming Fundamentals I (Processing)

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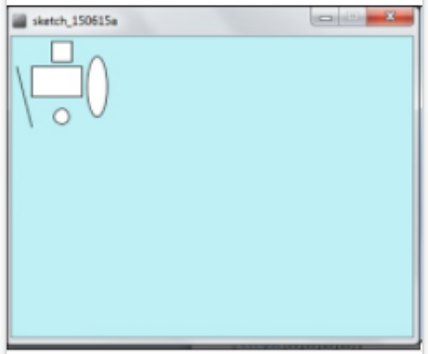
Introduction to the PDE

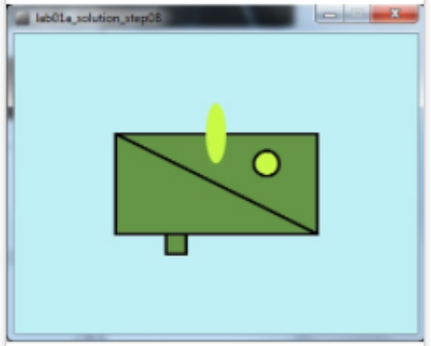
We start by exploring Processing and then looking into the Processing Development Environment (PDE).

Static Drawings



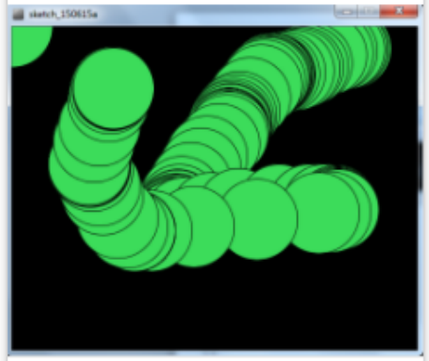
Here we will start to code. In particular, we will step through the creation of static drawings using basic shapes. You will also cover Grayscale and RGB colour schemes.

Formatting Shapes



Here we will format basic shapes with colour and outline. We will also look at commenting your code.

Basic Animation

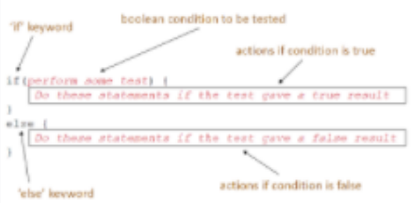


We start by exploring the setup() and draw() functions that animate our drawings. We will also look at system variables that come with Processing.

Data Types

We will investigate Java's primitive data types and learn about some arithmetic operators that we can use with them.

Conditional Statements

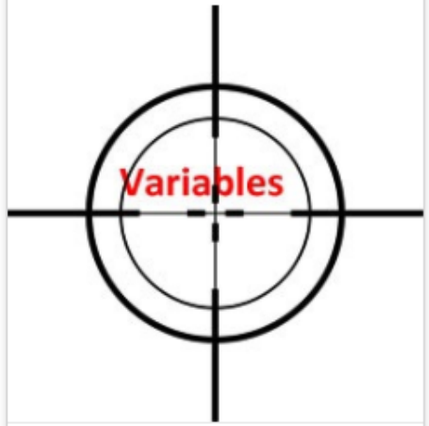


We will learn how to write conditional statements (if statements) and boolean expressions in Java. We will also learn about logical operators.

Mouse Events

We will learn how to handle mouse events. We will also do a recap on Arithmetic Operators but this time, we will look at the order of evalation of these operators.

Scope of Variables



We will look at the principles behind where a where a variable is availble for use. Also we look at some nice new assignment statements.

Slide Wall

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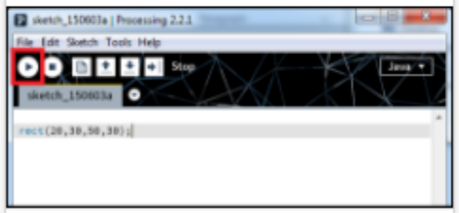
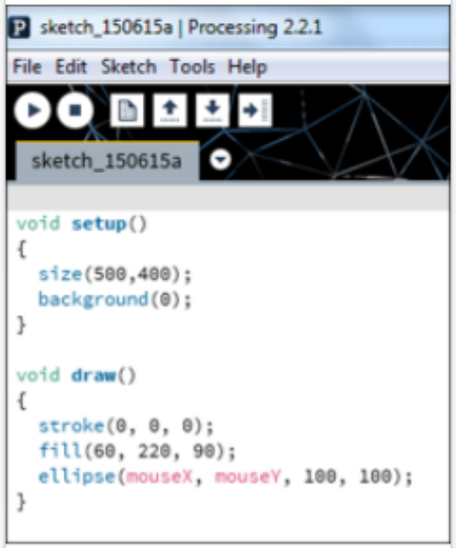
Lab-01



On completion of this lab you should:

Lab-02

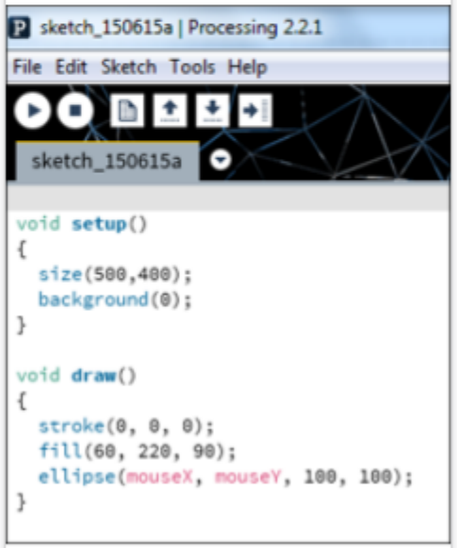


On completion of this lab you should:

Code to Download

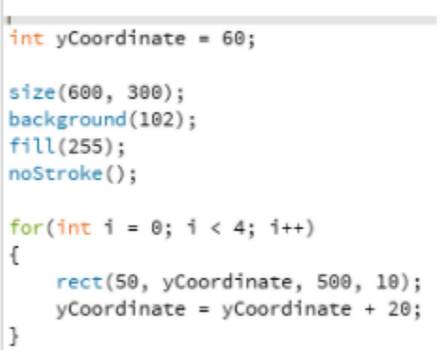
On completion of this lab you should:

Lab-03



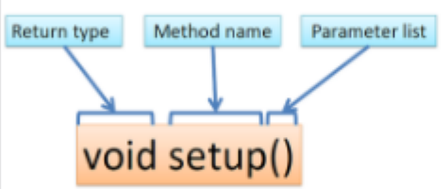
On completion of this lab you should be able to code animated drawings using the following constructs:

Lab-04



On completion of this lab you should understand variable scope and be able to code static drawings using for and while loops.

Lab-05

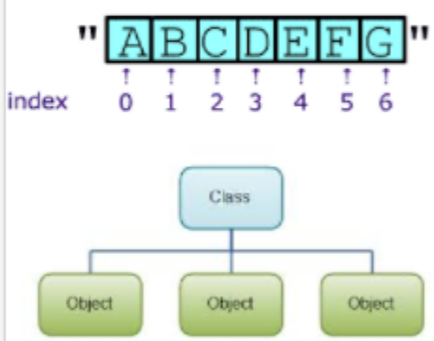


- On completion of this lab you should be able to use methods to handle mouse events and also be able to write your own methods.

Lab-06

- On completion of this lab you should be able to write more sophisticated methods, particularly using parameters and returning data. You will also learn how to use the String methods.

Lab-07



On completion of this lab you should:

Lab Wall

lab navigation

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- Lab-02
- Code to Download
- Lab-03
- Lab-04
- Lab-05
- Lab-06
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- Lab-08
- Lab-9a
- Lab-9b
- Lab-9c
- Lab-10a
- Lab-10b
- Lab-10c
- Formative Assessment
- Assignment-1
- Assignment-2

Lab-01

On completion of this lab you should:

Lab-02

```
sketch_150615a | Processing 2.2.1
File Edit Sketch Tools Help
sketch_150615a

void setup()
{
  size(500,400);
  background(0);
}

void draw()
{
  stroke(0, 0, 0);
  fill(60, 220, 90);
  ellipse(mouseX, mouseY, 100, 100);
}
```

On completion of this lab you should:

Code to Download

On completion of this lab you should:

Lab-04

```
int yCoordinate = 60;

size(600, 300);
background(102);
fill(255);
noStroke();

for(int i = 0; i < 4; i++)
{
    rect(50, yCoordinate, 500, 10);
    yCoordinate = yCoordinate + 20;
}
```

Lab-05

Return type | Method name | Parameter list

void setup()

- On completion of this lab you should be able to use

Lab-06

- On completion of this lab you should be able to write more sophisticated

slide navigation

Programming Fundamentals I (Processing)

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Introduction to the PDE
Static Drawings
Formatting Shapes
Basic Animation
Data Types
Conditional Statements
Mouse Events
Scope of Variables
While loops
For loops
Mouse event methods
Bespoke methods
More on methods
Strings
More on Strings
Classes and Objects
Behaviour in Classes
Classes and Objects
Using Swing
Using Arrays
Game of Pong

Introduction to the PDE

We start by exploring Processing and then looking into the Processing Development Environment (PDE).

Static Drawings

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Formatting S

Here we will for
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We will also look
commenting you

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We will investigate Java's primitive data types and learn

Conditional Statements

We will learn how to write conditional statements (if statements) and boolean

Mouse Event

MouseOut
MouseUp
MouseDrag

We will learn ho
mouse events. W
recap on Arithm

Enterprise Web Development

Dashboard / HDip In Computer Science 2016 / ent-web-dev / Database Seeding

Turn editi

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5 Node Applications

6 Views

7 Sessions

8 Models

9 Validation

10 Deployment

11 Database Seeding

12 APIs

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14 Rest

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17 Aurelia 1

18 Aurelia 2

19 Aurelia 3

20 Aurelia 4

21 JWT

22 Aurelia 5

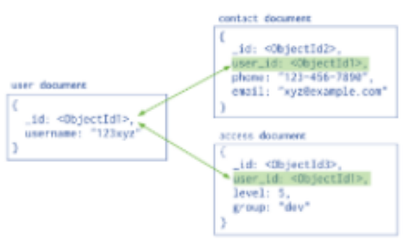
23 Secure Rest Android Client

24 Security Section

Database Seeding

Jump to...

Relationships between Mongo Documents

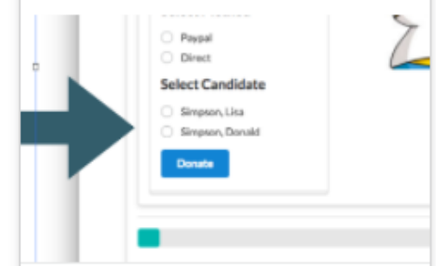


Creating and maintaining relatopnships between mongo documents enable powerful models to be constructed and queried.

Mongoose Seeding

Seeding the database can simplify exploratory development, prepopulating the database with simple test data during development.

Candidate Model



Users should be able to donate to different candidates. We extend the model to include Candidates, incorporating candidate references into donations.

Lab-11 Seeding

Include a mongoose seeder component in the application. Use this to validate a new Candidate model, preloading it with a json specified object graph.

topics ‘imported’ into moodle

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Jekyll

jekyllrb.com

28752 | 6406 | 138
0 | 0 | 0

A simple, blog-aware, static site generator.

Language: Ruby
Templates: Liquid
License: MIT

Deploy to netlify

Hugo

gohugo.io/

15095 | 2228 | 398
0 | 0 | 0

A Fast and Flexible Static Site Generator.

Language: Go
Templates: Go Templates
License: APL 2.0

Deploy to netlify

Hexo

hexo.io/

14809 | 2268 | 365
0 | 0 | 0

Hexo is a fast, simple and powerful blog framework.

Language: JavaScript
Templates: EJS, Swig
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14343 | 1789 | 676

Octopress

octopress.org

9542 | 3043 | 278

Gatsby

github.com/gatsbyjs/gatsby

7987 | 409 | 107

Pelican

blog.getpelican.com/

6588 | 1346 | 137

static web site generators

no database

can be hosted on
Github Pages, Bitbucket,
Netlify or S3

SMASHING MAGAZINE

MENU

Why Static Website Generators Are The Next Big Thing

By Mathias Biilmann Christensen

At StaticGen, our open-source directory of **static website generators**, we've kept track of more than a hundred generators for more than a year now, and we've seen both the volume and popularity of these projects take off incredibly on GitHub during that time, going from just 50 to more than 100 generators and a total of more than 100,000 stars for static website generator repositories.

Influential design-focused companies such as Nest and MailChimp now use static website generators for their primary websites. Vox Media has built a whole publishing system around Middleman. Carrot, a large New York agency and part of the Vice empire, builds websites for some of the world's largest brands with its own open-source generator, Roots. And several of Google's properties, such as "A Year In Search" and Web Fundamentals, are static.

When Static Was It

The first ever website, Tim Berners-Lee's original home page for the World Wide Web, was static. A website back then was a folder of HTML documents that consisted of just 18 tags. Browsers were simple document navigators that would fetch HTML from a server and allow the end user to navigate them by following hyperlinks. The web was fundamentally static.

As browsers evolved, so did HTML, and gradually the limitations of purely static websites started to show.

Initially, websites were just plain unstyled documents, but soon they grew into carefully designed objects, with graphical headers and complex navigation. By making sense, and templating languages entered the picture.

https://www.smashingmagazine.com/2015/11/modern-static-website-generators-next-big-thing/