Middlesex University London

Information Technology (IT) BSc Honours and Computer Science (CS)

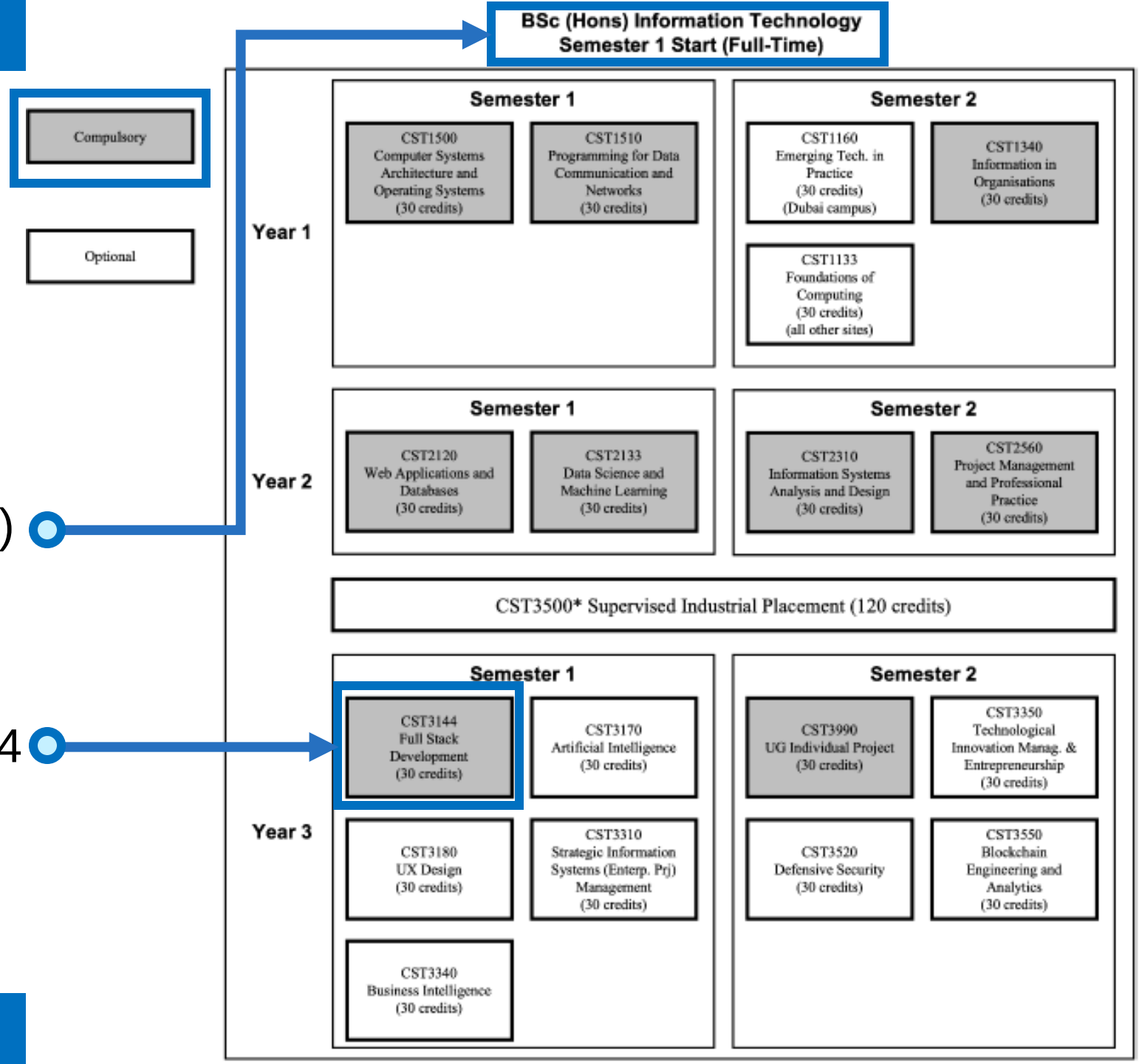
Dr Luca Piras (Senior Lecturer and IT Programme Leader)

Why Choose Middlesex University for Information Technology or Computer Science?

https://www.youtube.com/watch?v=fVUzqOGI534

Who am I?

- Dr Luca Piras
- Programme Leader of Information Technology (IT) BSc Honours
- Module Leader of CST3144 Full Stack Development



Computer Science and Informatics Courses

Computer science and informatics courses

Undergraduate courses

- Business Computing and Data Analytics BSc
- Computer Science BSc - January 2025 start date available
- Computer Networks and Security BSc
- Computer Systems Engineering BEng
- Cyber Security and Digital Forensics BSc
- Foundation Year in Computing and Engineering
- Information Systems (Top-up) (Online Distance Learning) BSc Honours
- Information Technology and Business Information Systems (Top-up) BSc Honours - January 2025 start date available
- Information Technology BSc Honours
- Mathematics and Data Science BSc Honours

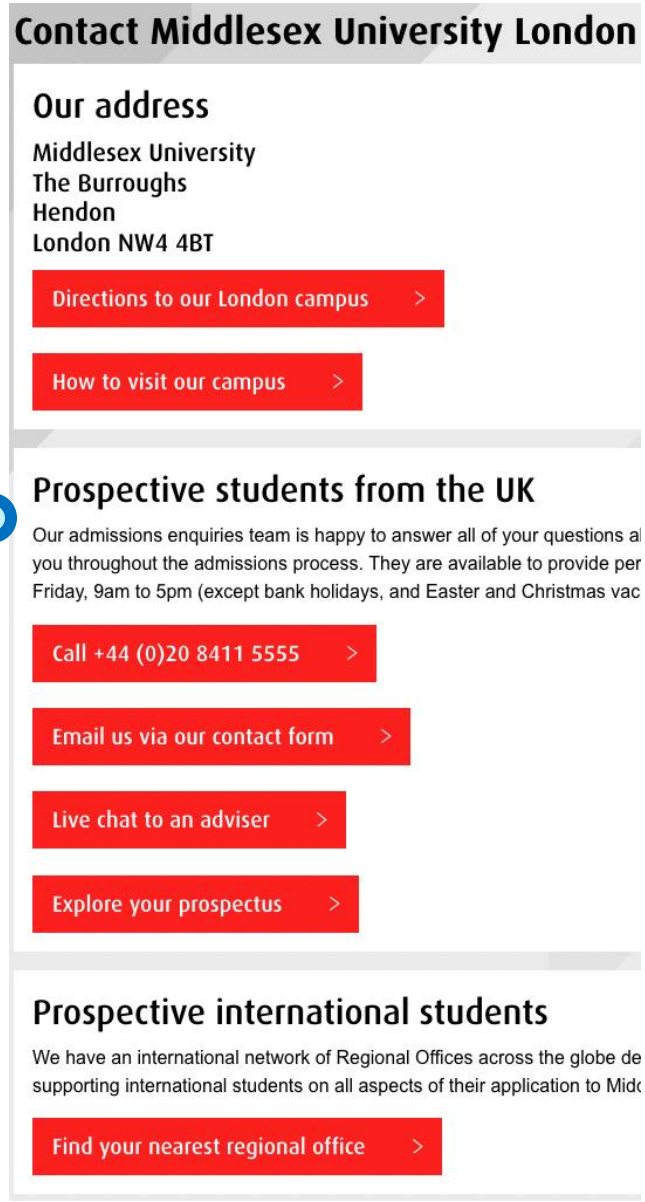
https://www.mdx.ac.uk/study/subjects/computer-science-engineering-and-maths/computer-science-and-informatics/

Information Technology BSc Honours and Computer Science BSc

- More Detailed Questions for **Information Technology (IT) BSc Honours**
  - Full details on Information Technology (IT) BSc Honours: link
  - **Dr Luca Piras** (Programme Leader) l.piras@mdx.ac.uk
  - Admissions: link

- More Detailed Questions for **Computer Science (CS) BSc**
  - Full details on Computer Science BSc: link
  - **Dr Clifford De Raffaele** (Programme Leader) c.deraffaele@mdx.ac.uk
  - Admissions: link

- Main differences between **Information Technology (IT) BSc Honours** and **Computer Science (CS) BSc** in the following.
  - **IT** is **more practical** and **oriented towards the industry**, while
  - **CS** includes **more theoretical aspects of computer science**, making it suitable for both **academia** (e.g., research, teaching, etc.) and **industry**.
  - Then, **some modules are in common, and some differs**, for example:
    - **IT** has **more analysis, design, project management**, and **cybersecurity** (e.g., Defensive Security, Blockchain Engineering and Analytics), and **CS** has **more networking, testing and verification**



- These slides (and material presented today, e.g. source code) are available at: https://github.com/PirasLuca/OpenDays-PetStoreApp

Outline

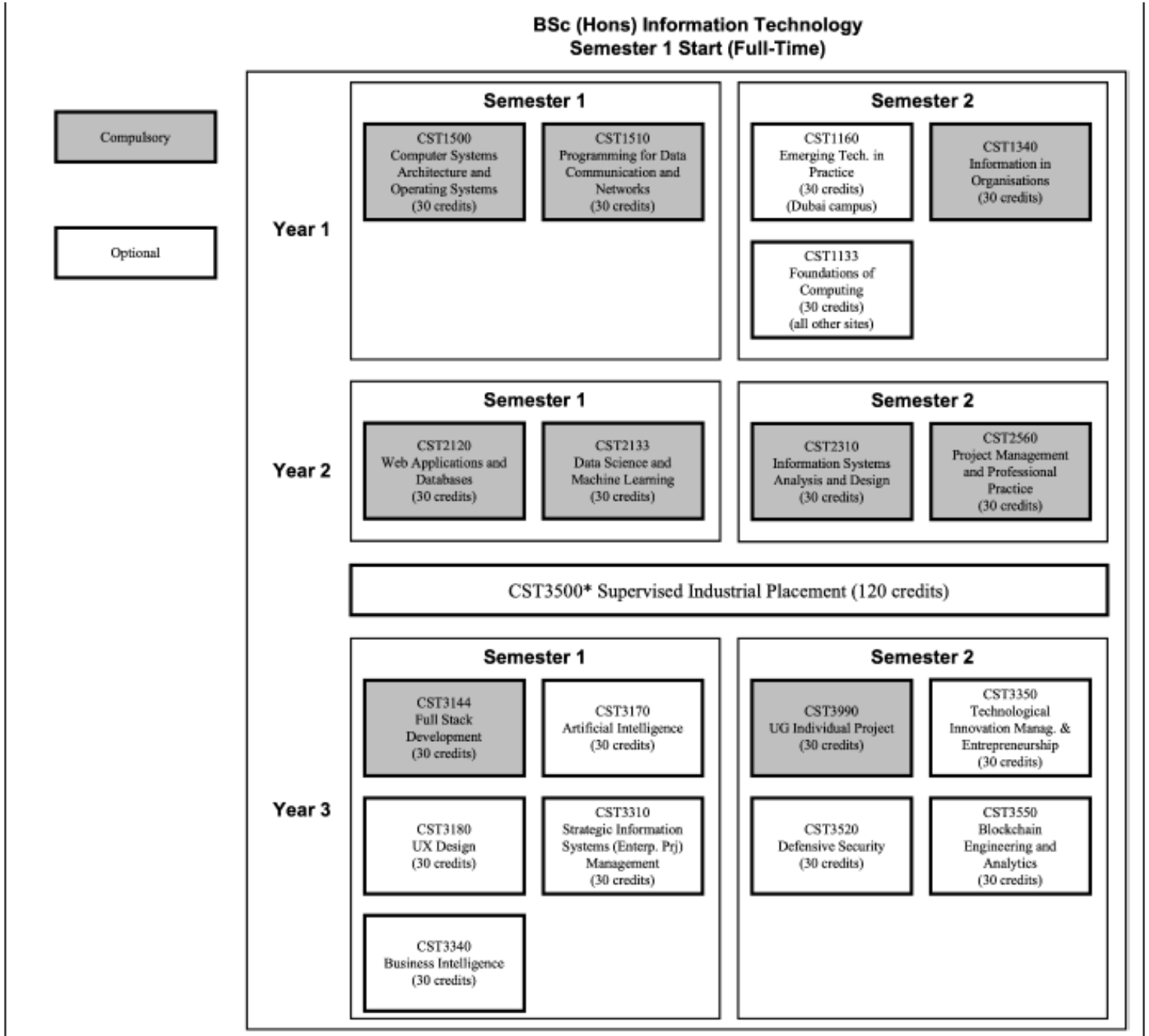
- **Overview** of **Information Technology (IT) BSc Honours**
  - Placement Year (or Studying abroad)
  - Project-Based Approach
  - Overview of Resources and Labs
  - Careers

- **“Full Stack Development”** and **“Web-Based Full Stack Development”**
  - Example (Demo) from “Full Stack Development” 3rd Year Module
  - (Optional) practical experience based on the example

- **Q&A** (at the end but also during the session)

Information Technology (IT) BSc Honours: Overview

- 3 years
- Full-Time (or Part-time)
- 4 years with placement
- Many **Project-Based** Modules
- **Wide range of topics** (e.g., from software development to systems engineering)
- Right **IT Skills for Industry**: previous graduates from this course have gained employment with **Yahoo, Microsoft, The Metropolitan Police, IBM, Apple** and other prestigious companies
- Software Engineer/Developer
- Web Developer or Full Stack Developer
- IT Project Manager or IT Consultant
- Database Administrator
- …

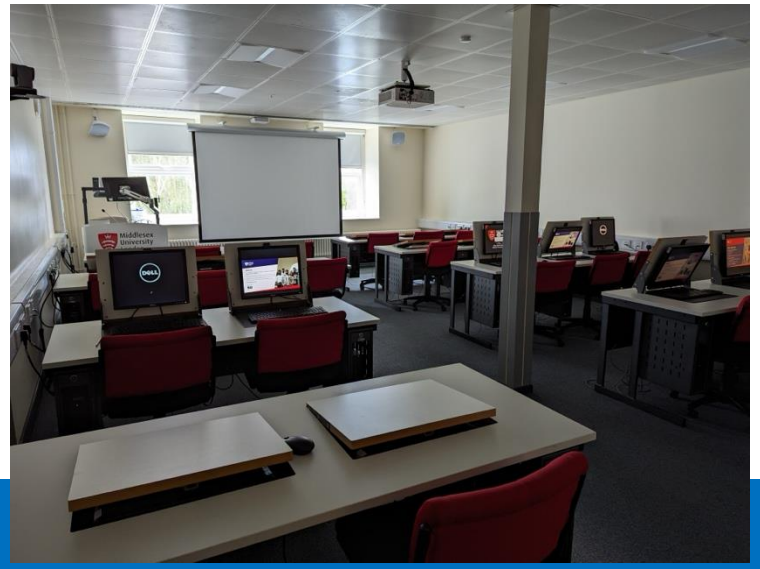


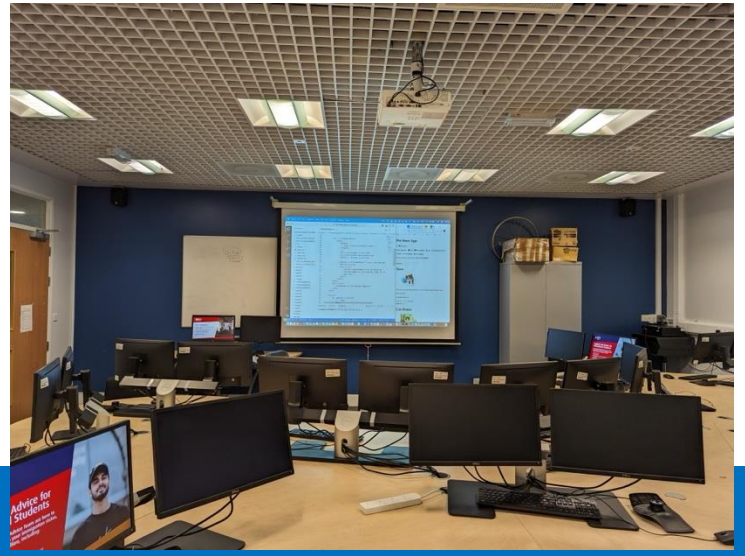
IT: Labs and Resources

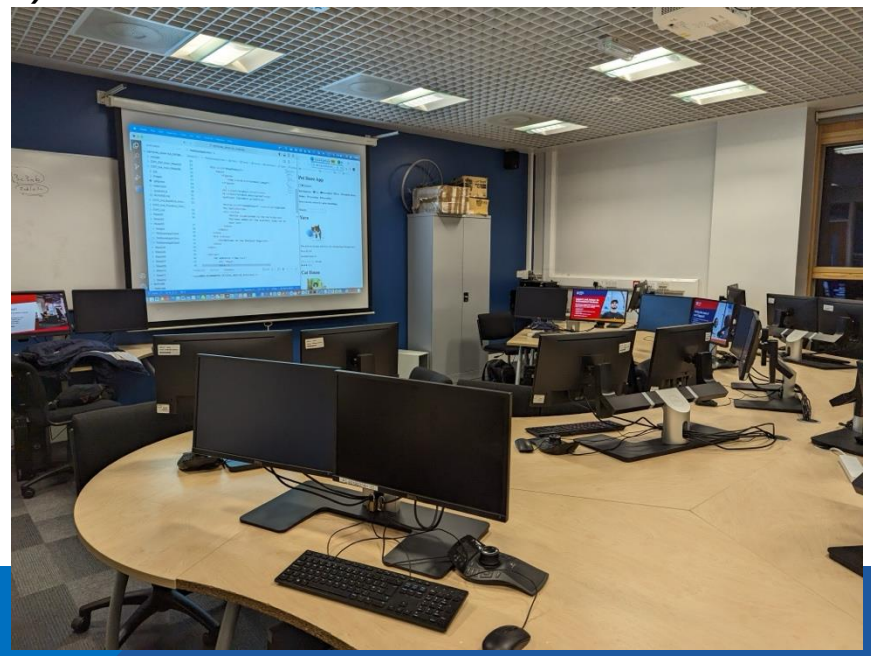
BSc (Hons) Information Technology
Semester 1 Start (Full-Time)

	Semester 1		Semester 2	
Year 1	CST1500 Computer Systems Architecture and Operating Systems (30 credits)	CST1510 Programming for Data Communication and Networks (30 credits)	CST1160 Emerging Tech. in Practice (30 credits) (Dubai campus)	CST1340 Information in Organisations (30 credits)
			CST1133 Foundations of Computing (30 credits) (all other sites)	

- Project-Based approach
- Practical Labs
- Hands on the code and devices (software and hardware)







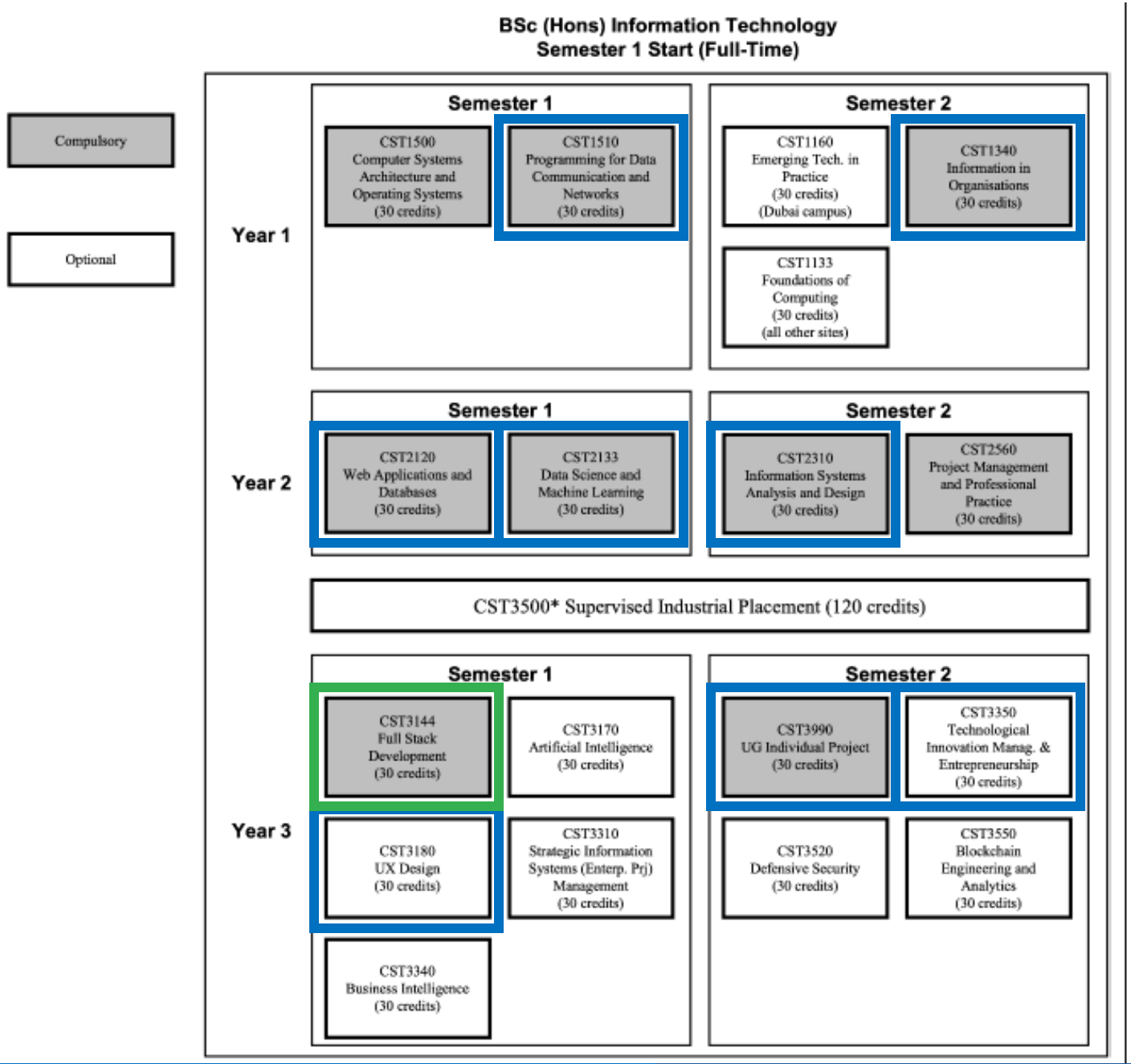
Where to next (after this session)?

Make sure to drop by your **Faculty Lounge** in the **Quad (main building)** or Grove for Arts and Creative Industries, after your session. **Meet senior members of the faculty** and speak to some of our **course ambassadors** to **find out more about studying at MDX**. You'll find out more about what it's like to be part of the **MDX community**, get more information about what your learning will look like and it's your chance to **ask any questions you may still have**.

Full Stack Development and Web-Based Full Stack Development

Programming Modules

- Software Developer Career
- Software Modules ranging from **basic programming** to **Advanced Web Development with Big Data** and **Full Stack Development**
- Today we will explore:
  - **Full Stack Development**
  - **Web-Based Full Stack Development**
- Today just very basic aspects



Background:
Full Stack Development
and
Web-Based Full Stack Development

Full Stack Web Development

- Would you like to explore what there is **behind the creation of a web page**?

- There is a **complex world made of**:
  - Programming languages
  - Tools
  - Programming Environments
  - Heterogeneous Technologies Integrated Together

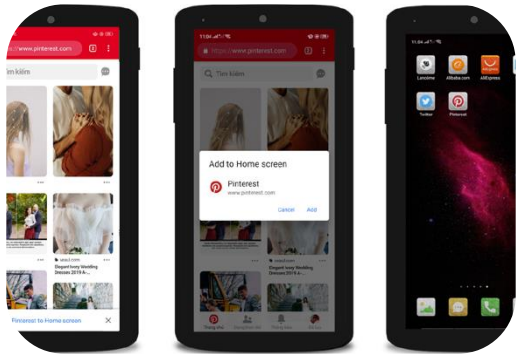
- **Nowadays Full Stack Web Development is becoming even more important**, because your application should run in **multiple platforms** (e.g., web, mobile, smart tv, …)

- **Good news**: if you develop your app **once, with the techniques we teach at MDX**, you will be able to make the app **to run in multiple platforms**

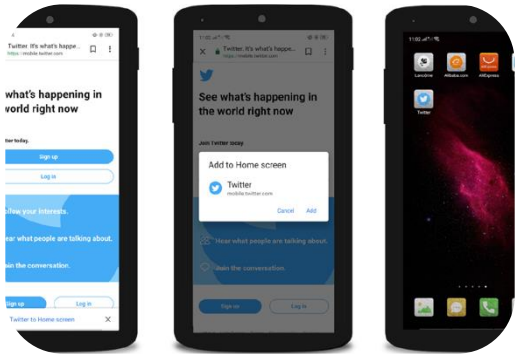
CST3144 Module covers Web-Based Full Stack Development

- Web-Based Full Stack App Development is:
  - **mature** and **well-established**
  - **widely used**

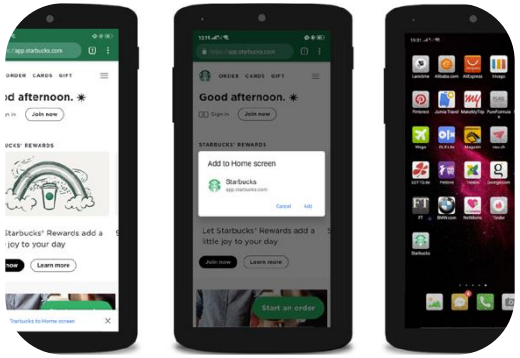
- Many of the **most used apps are created in a Web-Based way**:
  - Facebook
  - Instagram
  - AirBnB
  - Uber
  - Discord
  - Skype
  - Pinterest
  - Twitter Lite
  - Starbucks
  - ...



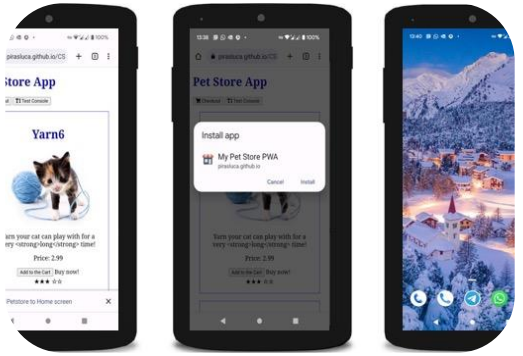
Pinterest



Twitter Lite



Starbucks



Our Final App (Project-Based Approach)

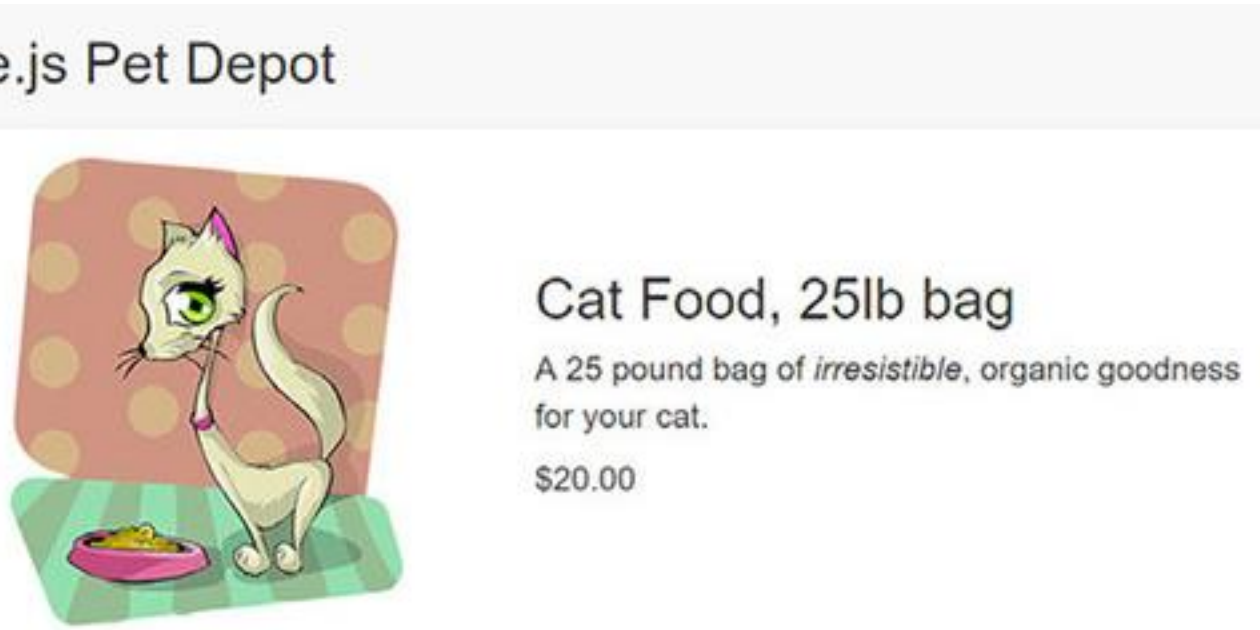
Approach

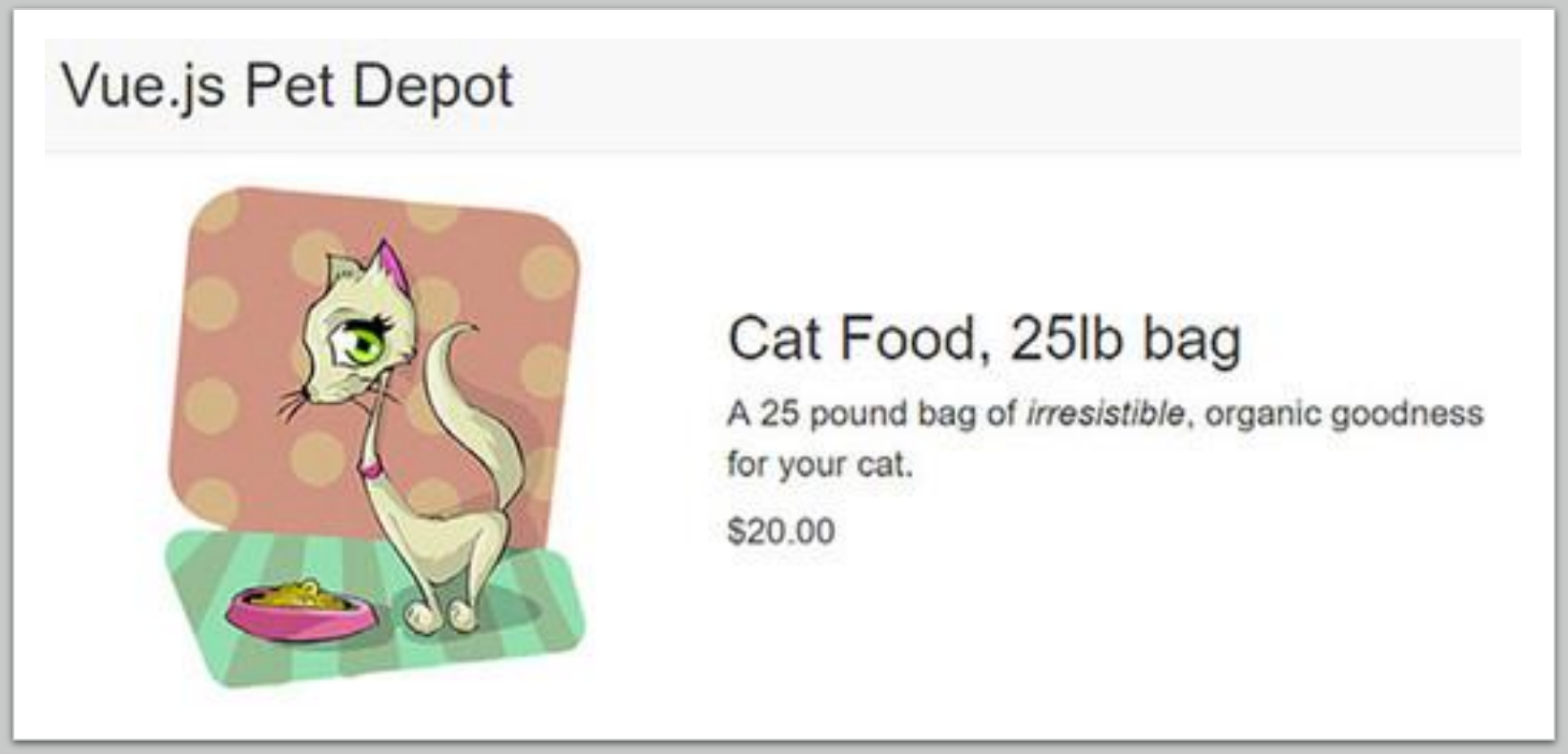
- **Today** we will be able to see the **very initial basics of Full Stack Web Development** with an **example** -> similar also to the **project-based approach** we use at Middlesex University
- From my CST3144 Full Stack Development Module, we will build an **online pet accessory shop 'Pet Depot'**
- The source code and these slides are available at: https://github.com/PirasLuca/OpenDays-PetStoreApp

- Project: E-Commerce App related to selling Pet Items/Food

- We will implement a simple page
- A simple extract of the overall App

- This simple extract represents 1 product



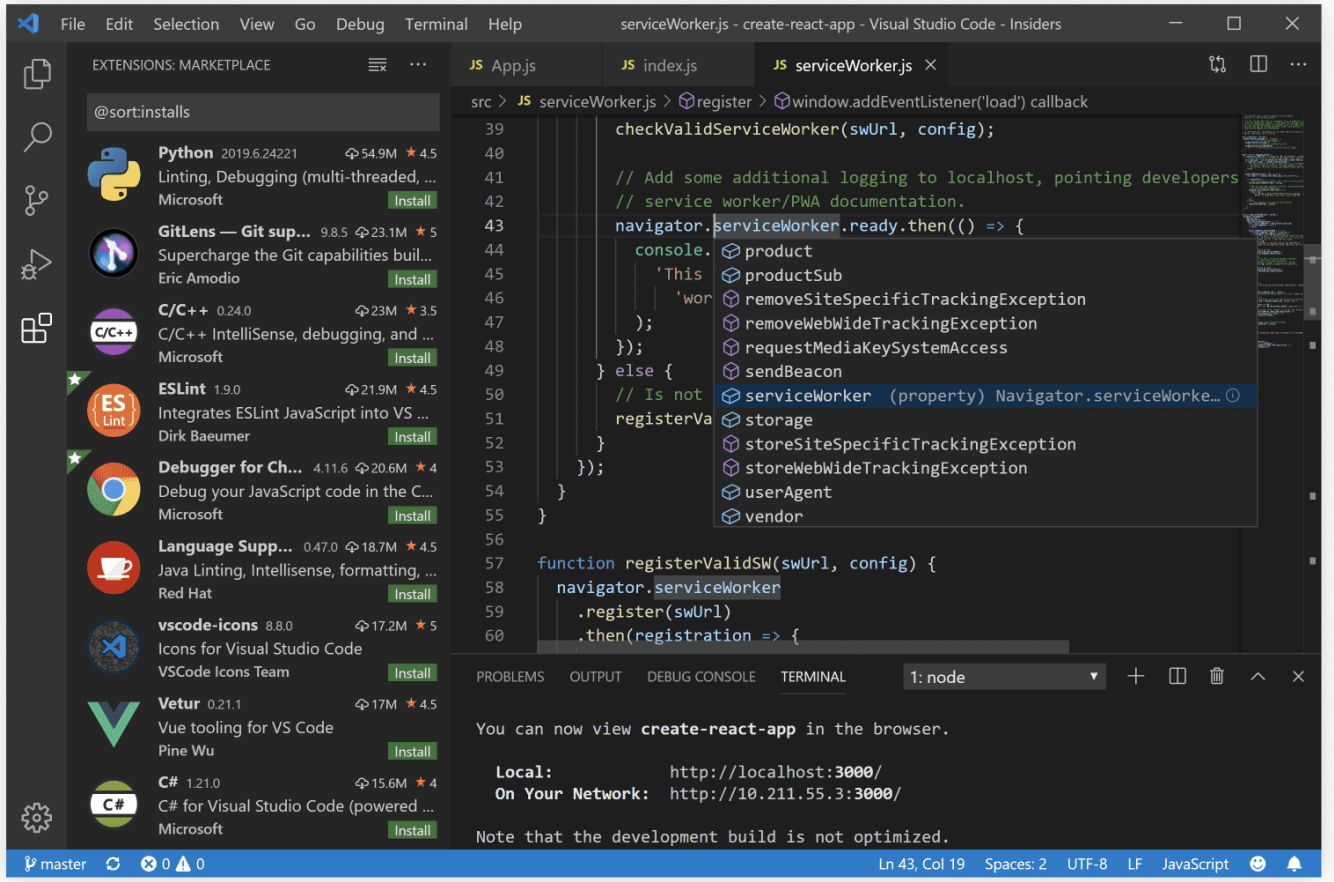


Pet App Project

Let's Start

Integrated Development Environment (IDE): Visual Studio Code

- Used in professional settings by developers
- Ready-to-use functionalities and tools that support the developer in complex projects:
  - To speed up the coding
  - Visual Aids
  - Code Formatting
  - Debugging
  - …
- Visual Studio Code:
  - Free and Open-Source
  - Made by Microsoft
- First Step:
- Download and Install it from Official Link



Let's Start Using Visual Studio Code (VSC) and Some Extensions

- Extensions for Visual Studio Code
  - **Live Server by Ritwick Dey**: (Extension ID: **ritwickdey.LiveServer**) this is very good, mature but not lightweight, so we do not use this, but the next one;
  - **Live Preview by Microsoft**: (Extension ID: **ms-vscode.live-server**) this is less mature, but lightweight, we will use this in some cases

- Emmet (and its docs) is already integrated in VSC; in a html file let's try for instance:
  - type **!** and press enter
  - **input+button+ul>li*3** and press enter; or the following and press enter
  - **div#App>h1{My TodoList}+input#newTask+button#addButton{add}+ul#tasklist>li{Task}*3**

- HTML for our App: **div#App>h1{site name}+main>figure{img}+h1{title}+p{description}+p{Price: }**

Further Guidelines for VSC and Extensions Usage

- **Command Palette**, from the top menu bar "View -> Command Palette" (or "**ctrl shift p**") depending on the system you are using (mac, linux, windows)
- from command palette, if we write **live preview** we can start it
- In the extension settings of "live preview" you can set if to update what you are viewing continuously or only when saving changes

Creating Simple Web Pages with Vue.js

Our Desired Result

Vue.js Pet Depot

Cat Food, 25lb bag

A 25 pound bag of irresistible organic goodness for your cat.

Price: 2000

Adding and Managing Data in the Vue Instance

```
<html>
	<head>
		<title>Vue.js Pet Depot</title>
		<script src="https://unpkg.com/vue@2.7.8/dist/vue.js"></script>
	</head>
	<body>
		<div id="app">
			<header>
				<h1 v-text="sitename"></h1>
			</header>
		</div>
		<script type="text/javascript">
			var webstore = new Vue({
				el: '#app', // <=== Don't forget this comma
				data: { // the 'data' option
					// the key 'sitename' matches the value of 'v-text' earlier
					sitename: 'Vue.js Pet Depot’
				}
			});
		</script>
	</body>
</html>
```

Adding Data to Vue.js for a Product

Add all the information of our product into **data**:

```
data: {
        sitename: "Vue.js Pet Depot",
        product: {
        id: 1001,
        title: "Cat Food, 25lb bag",
        description: "A 25 pound bag of <em>irresistible</em>," + "organic goodness for your
cat.",
        price: 2000,
        image: "images/product-fullsize.png"
        }
}
```

How to Display the Information in our App

- **Binding** the **image** with its URL from the data
- **Binding** the **other information** to be displayed
- Notice the usage of the "Mustache" syntax {{ property-name }}

```
<div id="app">
        <header>
                <h1 v-text="sitename"></h1>
        </header>
        <main>
                <figure>
                        <!-- bind the 'src' attribute to the 'product.image' in 'data' -->
                        <img v-bind:src="product.image">
                </figure>
                <h2 v-text="product.title"></h2>
                <p v-text="product.description"></p>

                <!-- The double curly brackets is the shorter version of 'v-text' -->
                <p>Price: {{product.price}}</p>
        </main>
</div>
```

The Result

We are now displaying the image and all the other information of our product

Vue.js Pet Depot

Cat Food, 25lb bag

A 25 pound bag of irresistible organic goodness for your cat.

Price: 2000

Further Activities

- Change the **data** variable and see what happens in the web page
- Inspect **webstore** variable from the console (right click -> “Inspect” -> Console) and change the **data** variable and see what happens in the web page
- Add style to part of the html, for instance:
  - `<p v-html="product.description" style="color:rgb(9, 255, 0);"></p>`
- Play with it as you prefer, ask to the Lecturer and Tutors for support/suggestions

Questions?