

# Higher Diploma in Computer Science



Waterford Institute *of* Technology

INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

# Higher Diploma is Computer Science

- Context & Objectives
- Online Experience

Guides

- Programme Introduction
- Schedules & Handbooks
- Learning to Learn Online

Semester 1

- Programming Fundamentals
- Web Development
- ICT Skills
- June Onsite

Semester 2

- Computer Systems & Networks
- Databases

Semester 3

Semester 4

Higher Diploma in Computer Science 2018

Department of Computing & Mathematics, WIT

Guides

Programme Introduction

structure · philosophy · materials · module introductions

Schedules & Handbooks

timetables · assessment schedules · programme handbooks

Learning to Learn Online

learning resources · guides · tools · howtos

Semester 1

Programming Fundamentals

algorithms · data structures · processing · java · classes · libraries

10 Credits

Web Development

html · css · layout · web apps · web frameworks · deployment

5 Credits

ICT Skills

javascript · node · express · git · github · glitch

3 Credits

June Onsite

Industry Partners · Computer Systems & Database Introductions · git workshop

# Higher Diploma in Computer Science

## 2013-2017

- Launched in 2013 in Traditional Mode Initial focus on upskilling unemployed candidates
- 12 month Tuition + 6 months work placement
- Specific focus on Modern Software Developer Skill Set
- Approx. 70 graduates over 2012-2018 – majority now working in Technology sector in South East & Nationally.



# Higher Diploma in Computer Science

## 2018

- Programme now completely online – all candidates at work in diverse fields
- All candidates must have level 8 Degree
- 24 months part time, including 6 months full time work placement
- 30 students enrolled in January 2018
- 50 places approved for January 2019



# Highest Quality Online Experience

- Instructional Resources
- Live Webinars
- Recorded Lectures
- Community Interaction
- Assessment & Feedback
- Onsite Sessions



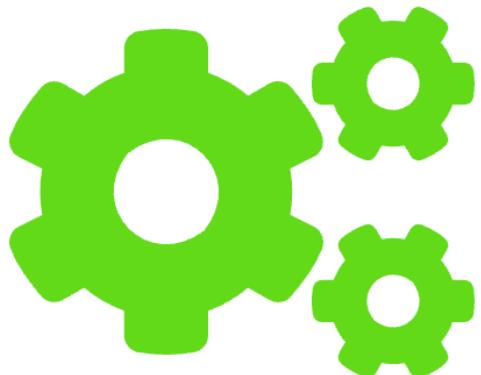
The collage includes:

- A sidebar menu with items like "0: Assignments", "Module Review", "Project 1 Specification", "Project 2 Specification", "1: Introducing HTML", "Module Overview", and "The Nature of the Web".
- A "Web Development" section featuring Eamonn de Leistar, WIT.
- A navigation bar with tabs for "2a: Selection and Events", "Lab-02a", and "01" through "05".
- A "Conditional statements and boolean expressions" section with instructions and a list of tasks.
- A Processing sketch titled "1a: Introduction to Processing" showing code and a video feed of Colm Dunphy.
- A GitHub repository page for "#web-development" with a commit from Eamonn de Leistar.
- A Processing sketch showing a square being drawn, with a note about statement terminators.

# Programme Structure

## Semester 1

**Programming Fundamentals** 



algorithms · data structures · processing · java · classes · libraries

10 Credits

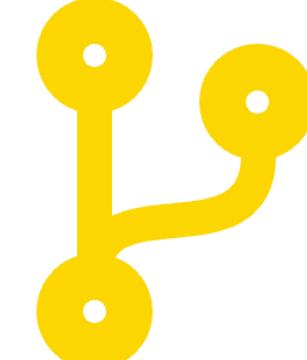
**Web Development** 



html · css · layout · web apps · web frameworks · deployment

5 Credits

**ICT Skills** 

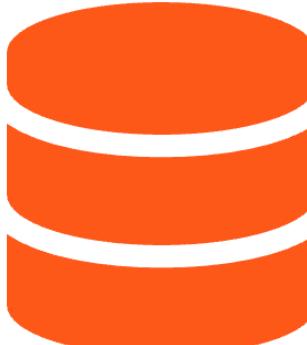


javascript · node · express · git · github · glitch

3 Credits

## Semester 2

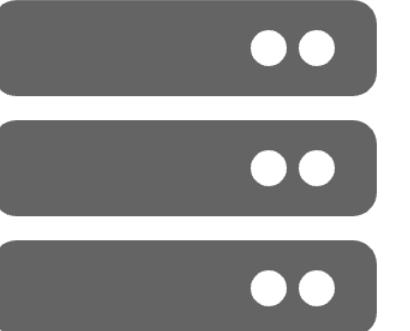
**Databases** 



entities · tables · rows · sql · er · nosql

5 Credits

**Enterprise Web Development** 



mvc · node · security · apis · tdd · frameworks

10 Credits

## Semester 3

**Developer Operations** 



cloud computing · scripting · scaling · automation · monitoring

5 Credits

**Project Proposal** 

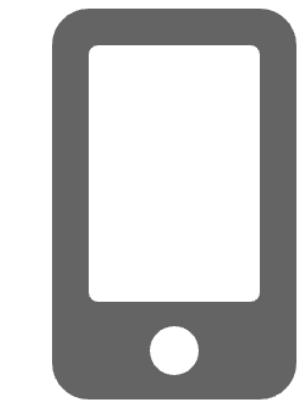


proposal · scope · plan · mock up · prototype

5 Credits

## Semester 4

**Mobile App Development** 



layouts · activities · resources · lifecycle · widgets · ux

10 Credits

**Front End Development** 



frameworks · events · mv\* · responsive · esnext · less/sass

10 Credits

**Work Placement** 



industry partner · mentor · developer · experience · project

25 Credits

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Semester 2

- Computer Systems & Networks
- Databases

Semester 3

Semester 4

Guides

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Programme Introduction

Schedules & Handbooks

Learning to Learn Online

structure · philosophy · materials · module introductions

timetables · assessment schedules · programme handbooks

learning resources · guides · tools · howtos

Semester 1

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- Web Development
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Programming Fundamentals

Web Development

ICT Skills

June Onsite

algorithms · data structures · processing · java · classes · libraries

html · css · layout · web apps · web frameworks · deployment

javascript · node · express · git · github · glitch

Industry Partners · Computer Systems & Database Introductions · git workshop

10 Credits

5 Credits

3 Credits

# Open Course Portal

[wit-hdip-comp-sci.github.io](https://wit-hdip-comp-sci.github.io)

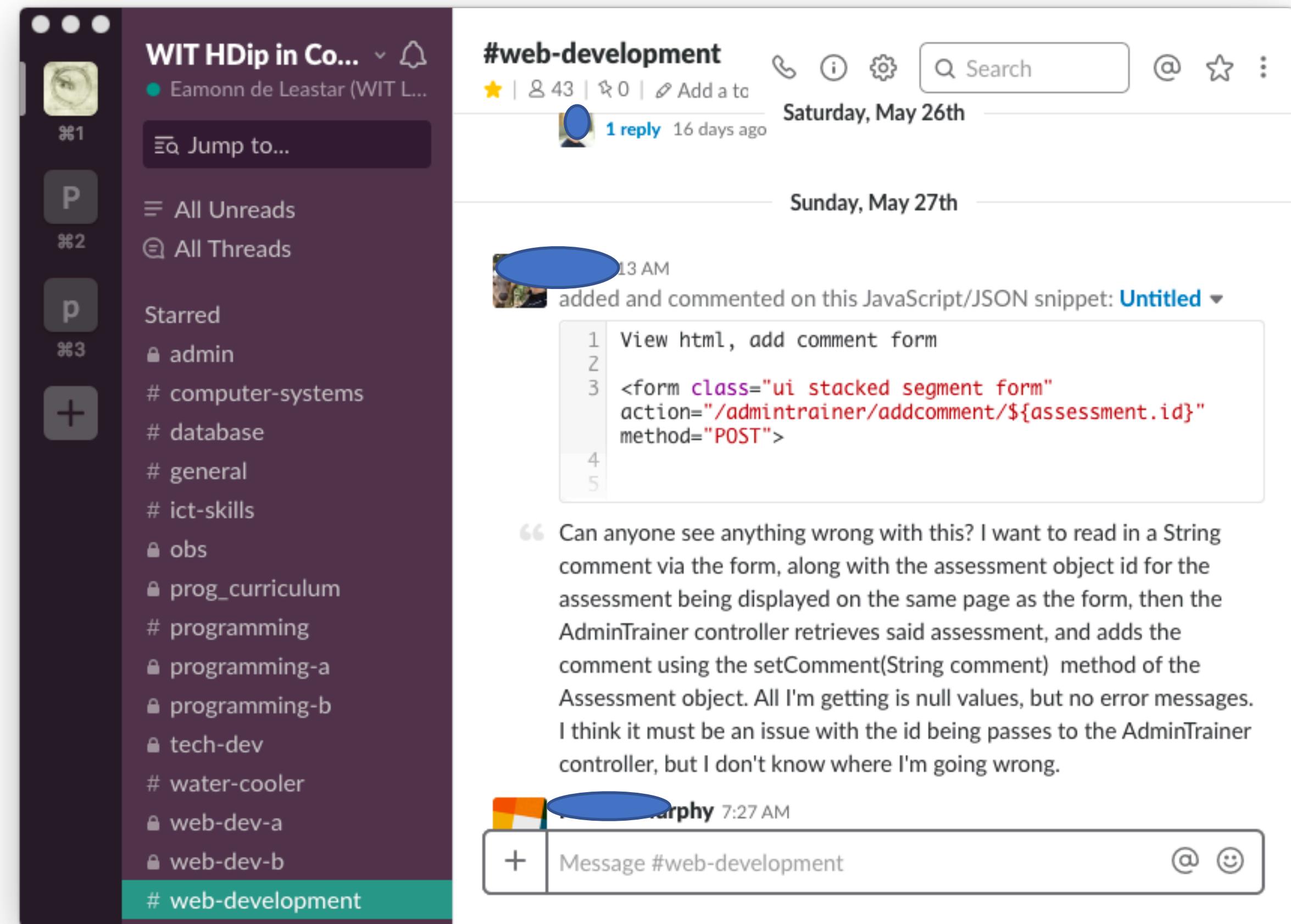
[wit-hdip-comp-sci-2018.github.io](https://wit-hdip-comp-sci-2018.github.io)

# Weekly Timetable

MONDAY	TUESDAY	WEDNESDAY	THURSDAY
10:45			
12:15	Programming <i>Webinar</i> 12:15-2:00 A&B	Programming <i>Webinar</i> 12:15-2:00 A&B	Web Development <i>Webinar</i> 12:15-2:00 A&B
2:00			

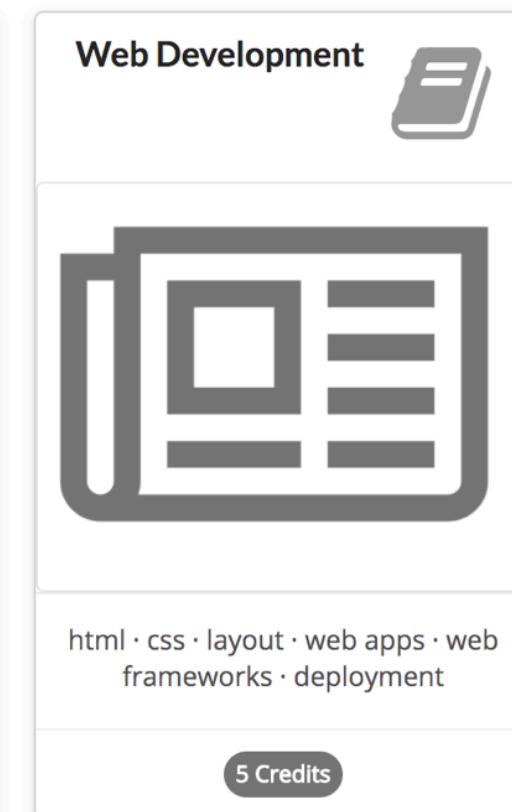
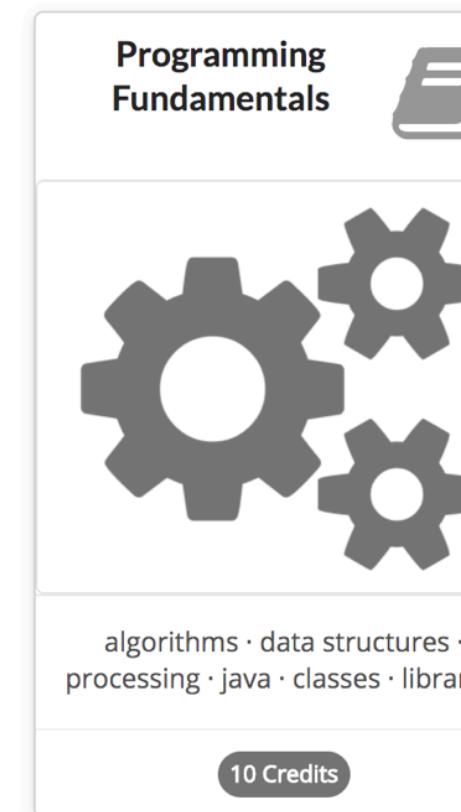
Weekly  
Webinars

+ Self Directed Labs  
+ Slack Channels



Semester 1		S	M	T	W	T	F	S	Modules	
January	Week	0	14	15	16	17	18	19	20	prog & web
	1	21	22	23	24	25	26	27	28	prog & web
February	2	28	29	30	31	1	2	3	4	prog & web
	3	4	5	6	7	8	9	10	11	prog & web
	4	11	12	13	14	15	16	17	18	prog & web
	reading-week	18	19	20	21	22	23	24	25	
March	5	25	26	27	28	1	2	3	4	prog & web
	6	4	5	6	7	8	9	10	11	prog & web
	7	11	12	13	14	15	16	17	18	prog & web
	8	18	19	20	21	22	23	24	25	prog & web
	easter-break	25	26	27	28	29	30	31	32	
April	1	2	3	4	5	6	7	8	9	
	9	8	9	10	11	12	13	14	15	prog & web
	10	15	16	17	18	19	20	21	22	prog & web
	11	22	23	24	25	26	27	28	29	prog & web
May	12	29	30	1	2	3	4	5	6	prog & web
	reading-weeks	6	7	8	9	10	11	12	13	
		13	14	15	16	17	18	19	20	
June	1	20	21	22	23	24	25	26	27	ict skills
	2	27	28	29	30	31	1	2	3	ict skills
	3	3	4	5	6	7	8	9	10	ict skills
	4	10	11	12	13	14	15	16	17	ict skills
	5	17	18	19	20	21	22	23	24	ict skills
	6	24	25	26	27	28	29	30	31	ict skills

2018	Onsite Sessions
18	January
14-15	June



# Module Calendar

	Jan	February				March				April				May				June						September
week no.	1	2	3	4	rd.	5	6	7	8	easter	9	10	11	12	rd.	1	2	3	4	5				
Programming								A1			A2				A3									
Web Development									A1										A2					
ICT Skills																								A

Programming	A1	spec:	18-Feb
		submit:	10-Mar
	A2	spec:	18 Mar
		submit:	8 Apr
	A3	spec:	18 Apr
		submit:	21 May
Web Development	A1	spec:	9-Feb
		submit:	11 Mar
	A2	spec:	18 Apr
		submit:	21 May
ICT Skills	A	spec:	11-Jun
		submit:	2-Sep

# Assessment Calendar

0: Assignments
Module Review
Project 1 Specification
Project 2 Specification
1: Introducing HTML
Module Overview
The Nature of the Web
HTML Basics
Lab-1.1: Editing HTML
Lab-1.2: HTML Structure
1: Introducing HTML
2: Introducing CSS
HTML Elements
CSS Basics
CSS Rules
CSS Cascade
Lab-2 CSS Intro
2: Introducing CSS
3: The Box Model
Web Standards Evolution
Box Model Fundamentals
Box Model Example
Multicolumn Layout
Lab-3a Layout
Lab-3b Multicolumn
3: Box Model
4: Navigation, Semantics & Style Guides
HTML Style Guide
Navigation
Semantic HTML
CSS Style Guide
Lab-4a Navigation
Lab-4b Case Study
4: Navigation, Semantics & Style Guides
5: HTML Templates & Deployment
Deployment

Web Development

Eamonn de Leistar, WIT

Links to:

- Live Webinar
- Assessment
- Slack
- Youtube Channel

Module Structure

Weekly Topics

1: Introducing HTML

2: Introducing CSS

3: The Box Model

5: HTML Templates & Deployment

6: CSS Frameworks

7: Applications

- Weekly Video Recording
- Slides
- Labs

**Topic Structure**

```

graph LR
    A[Playlist Sessions] --> B[Playlist Models]
    B --> C[Lab-11a Playlist Review]
    C --> D[Lab-11b Playlist 5]
  
```

**Playlist Sessions**  
Introduce session management into the Playlist 4 Application

**Playlist Models**  
Review the structure and manipulation of the Playlist Model

**Lab-11a Playlist Review**  
Review the Playlist Application

**Lab-11b Playlist 5**  
Incorporate Sessions into the latest Playlist Application

## Conditional statements and boolean expressions

In this step, we will implement an example from your lecture.

If the x coordinate of the mouse pointer is on the:

- left half of the display window, draw a rectangle on the left hand side.
- right half of the display window, draw a rectangle on the right hand side.

### Conditional Example 2.1

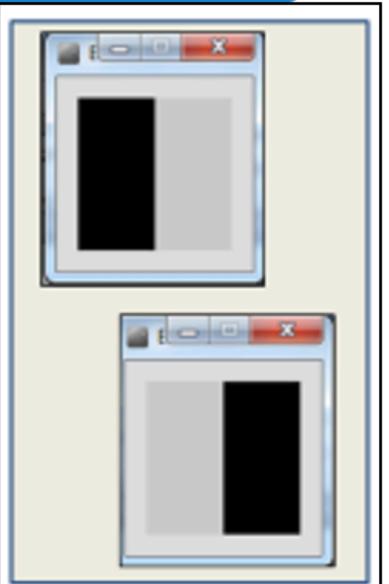
Create a new Processing sketch in your workspace and call it `Example_2_1`.

Enter the following code into your sketchbook (avoid the temptation to copy and paste it...you learn more by writing the code out):

```
void setup() {  
    size(100, 100);  
    noStroke();  
    fill(0);  
}  
  
void draw() {  
    background(204);  
    if (mouseX < 50)  
    {  
        rect(0, 0, 50, 100);  
    }  
    else  
    {  
        rect(50, 0, 50, 100);  
    }  
}
```

- Run your code. Does it work as you would expect?

#### Expected output



- Self-paced lab steps

- Clear, simple instructions

- Syntax highlighted code fragments

- Illustrations

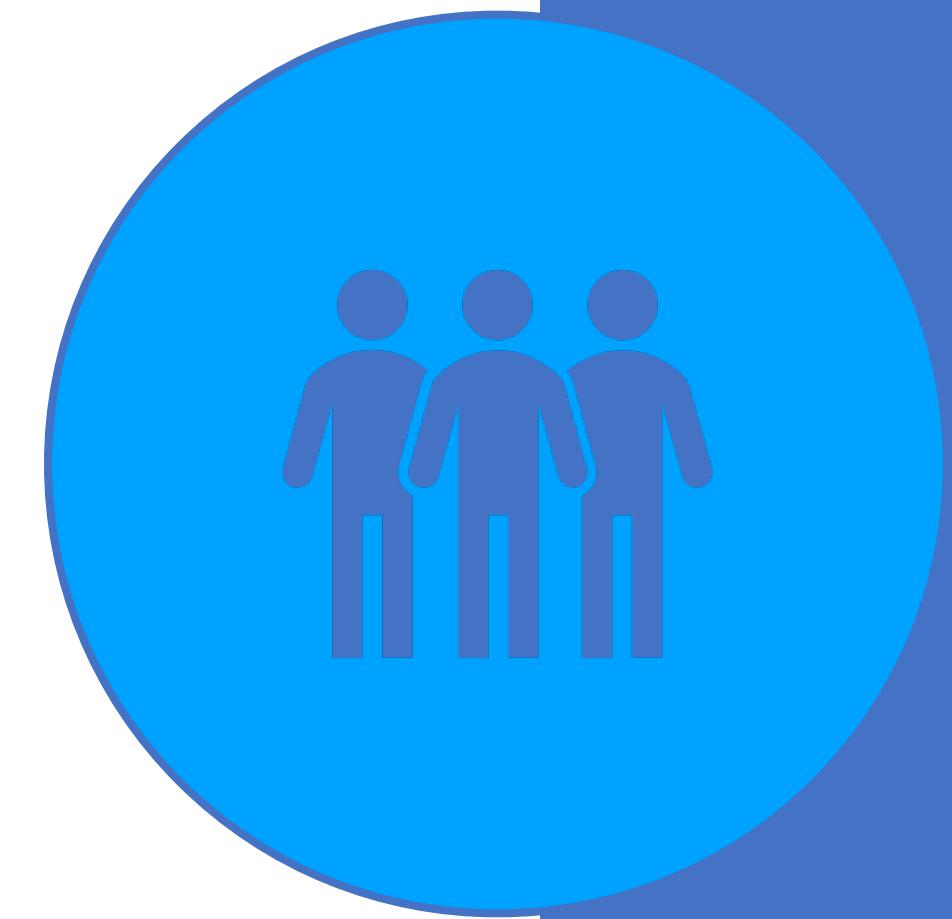
# Lab Structure

# Lab Support via



**“Leading Messaging & Communication Application for Teams”**

- **ALL** communications in one place
  - One Stop Shop
- Fully **SEARCHable**
  - Including within documents
- **Integrates** with existing tools
  - E.g. Google, DropBox, Git
- **Fosters Collaboration**
- **No More Emails!**



# WORKSPACES

## CHANNELS

## DIRECT MESSAGES (DM)

The screenshot shows the Slack workspace interface. On the left, there's a sidebar with a red border around the channels and direct messages sections. The channels section lists several channels: #admin, #general, #hdip-programming, #hdip-webdev, #prog\_curriculum, and #programming\_test, with #programming\_test being the active channel (highlighted in green). The direct messages section lists various users: slackbot, Colm Dunphy (WIT Lecturer), Des O'Donovan, Diarmuid (WIT Lecturer), Eamonn de Leastar (WIT Lecturer), Ken McCarthy, Martina Mullally, Pete (WIT Support), and Siobhán Drohan, along with an option to invite people.

The main workspace shows a channel named #programming\_test. The messages tab is selected, showing a conversation between Diarmuid (WIT Lecturer) and Colm Dunphy (WIT Lecturer). A syntax error was identified in a code snippet:

```
//Drawing an circle
ellipse(250,130,25,25);
```

Diarmuid suggested fixing it by adding a semicolon. Colm responded with a thumbs up. A file named `image.png` was uploaded and commented on, showing a simple drawing of a rectangle with a circle inside and a small triangle at the top.

Colm then asked if the program should produce this output. Diarmuid responded that they would continue the discussion via DM.

A red box highlights the message input field at the bottom, which contains the placeholder "Message programming\_test".

On the right, a workspace directory is open for Colm Dunphy (WIT Lecturer), showing his profile picture, status (Lecturer), and workspace details.

TYPE HERE

CLICK TO UPLOAD – files / content





Slack needs your permission to enable desktop notifications.

**#programming**

Pete (WIT Support) | 44 members | 16 messages | Add a topic

Wednesday, May 9th

3:42 PM this is my implementation, less code and works 😊

3:43 PM added this Plain Text snippet: Untitled ▾

```
1 public Member searchMembersByEmail(String emailEntered) {  
2     for (Member m : members) {  
3         if (emailEntered.equals(m.getEmail())) return m;  
4     }  
5     return null;  
6 }
```

1 thumbs up

4:21 PM commented on Untitled snippet Untitled

“ Spot on, almost identical to mine only I used a for each loop

9:29 PM added and commented on this Plain Text snippet: Untitled ▾

```
1 public int numberOfMembers() {  
2     if (members.size() == 0) {  
3         System.out.println("No Members");  
4         return 0;  
5     } else {  
6 }
```

“ Hi guys - I'm failing the unit test for when there is members - it says that even when there is that it is returning 0... any ideas? probably really straight forward but just

Channels

- admin
- # general
- # obs
- # prog\_curriculum
- # programming
- # programming-a
- # programming-b
- # tech-dev
- # water-cooler
- # web-dev-a
- # web-dev-b
- # web-development

Direct Messages

# Peer Support

Slack needs your permission to enable desktop notifications.

**#programming**

44 members | 16 messages | Add a topic

Tuesday, May 8th

but it does seem odd that in the method returns a member object!

Diarmuid (WIT Lecturer) 3:02 PM uploaded and commented on this image: searchByName.png

Assignments Assignment 3 Data Model Gym API Utility Class MenuController Unit Tests Grading Spectrum

index for the member's array list.  
• public boolean isValidTrainerIndex(int index) - Dots for trainers array list.  
• public Member searchMembersByEmail(String emailEntered) - Returns the member object that matches the email entered. If no member matches, return null.  
• public ArrayList<String> searchMembersByName(String nameEntered) - Returns a list of member names that partially or entirely matches the entered name. An empty array is returned when there are no matches.  
• public Trainer searchTrainerByEmail(String emailEntered) - Returns the trainer object that matches the email entered. If no

Hi @Joe, is this the method you are referencing? The return type is an array of Strings.

5:15 PM Hi the assignment mentions this : see Assessment object later- can anyone point me to where this is ?? thanks

2 replies

2 replies View thread

Wednesday, May 9th

7:08 AM commented on Diarmuid (WIT Lecturer)'s file searchByName.png

Well I'm an idiot, for some reason I kept misreading it as returning a member object like the searchByEmail() method! Thanks Diarmuid

9:45 AM Message #programming

2 replies

6 days ago It is the last line on the same page "Data Model": The last model class is Assessment. It stores weight, thigh, waist, comment and a Trainer that entered the member's assessment (i.e. personal trainer). This class just has the standard constructor, accessor and mutator method with no validation on any fields.

Thanks

Thread

Silvia Williams May 8th at 5:15 PM in #programming

Hi the assignment mentions this : see Assessment object later- can anyone point me to where this is ?? thanks

Peter 6 days ago It is the last line on the same page "Data Model": The last model class is Assessment. It stores weight, thigh, waist, comment and a Trainer that entered the member's assessment (i.e. personal trainer). This class just has the standard constructor, accessor and mutator method with no validation on any fields.

Silvia Williams 6 days ago Thanks Peter

Reply... 😊

# Threads

# Replicating Social & Community Interactions

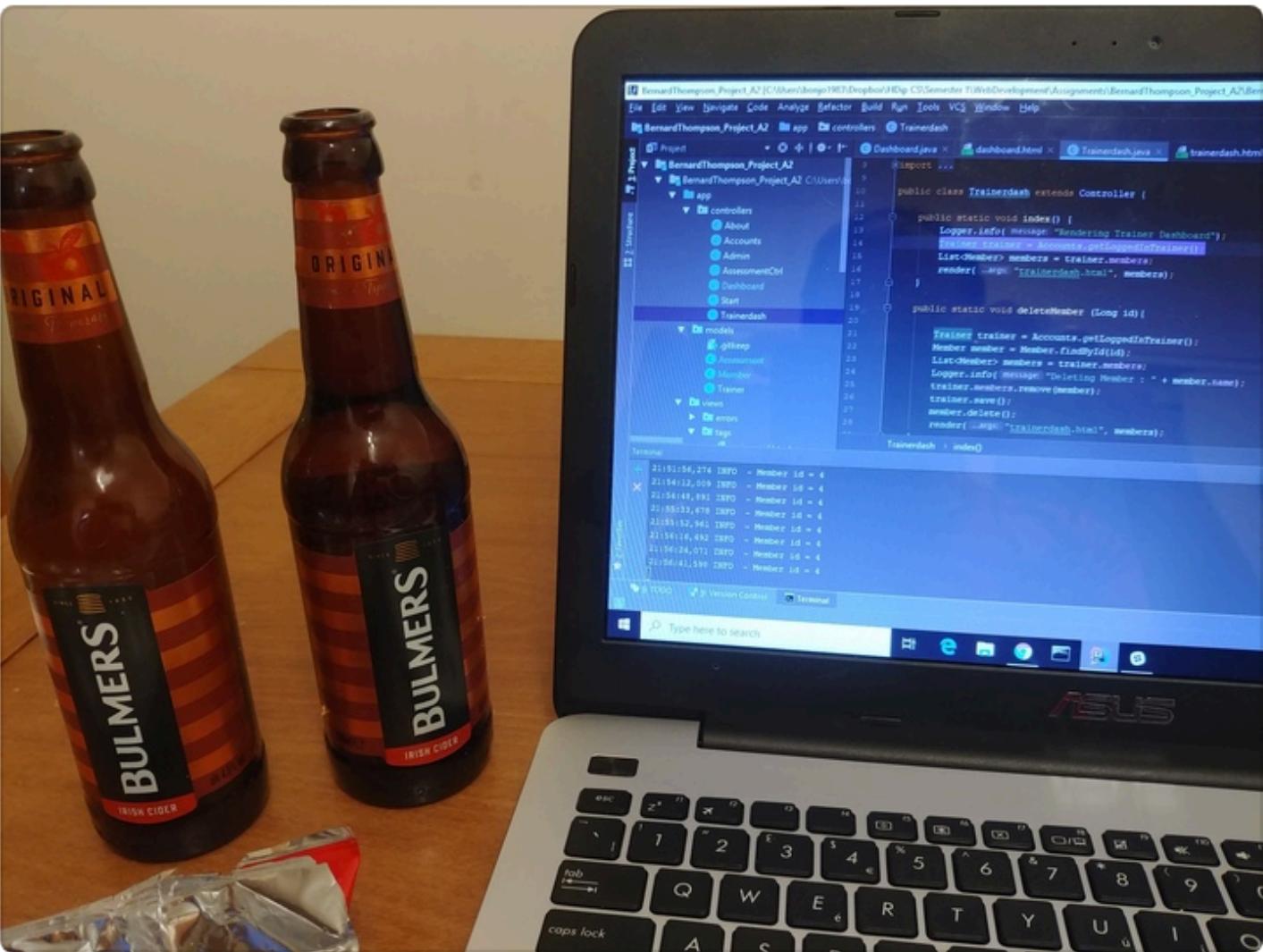
## Water Cooler

#water-cooler

☆ | ♀ 37 | ⚡ 0 | Add a topic

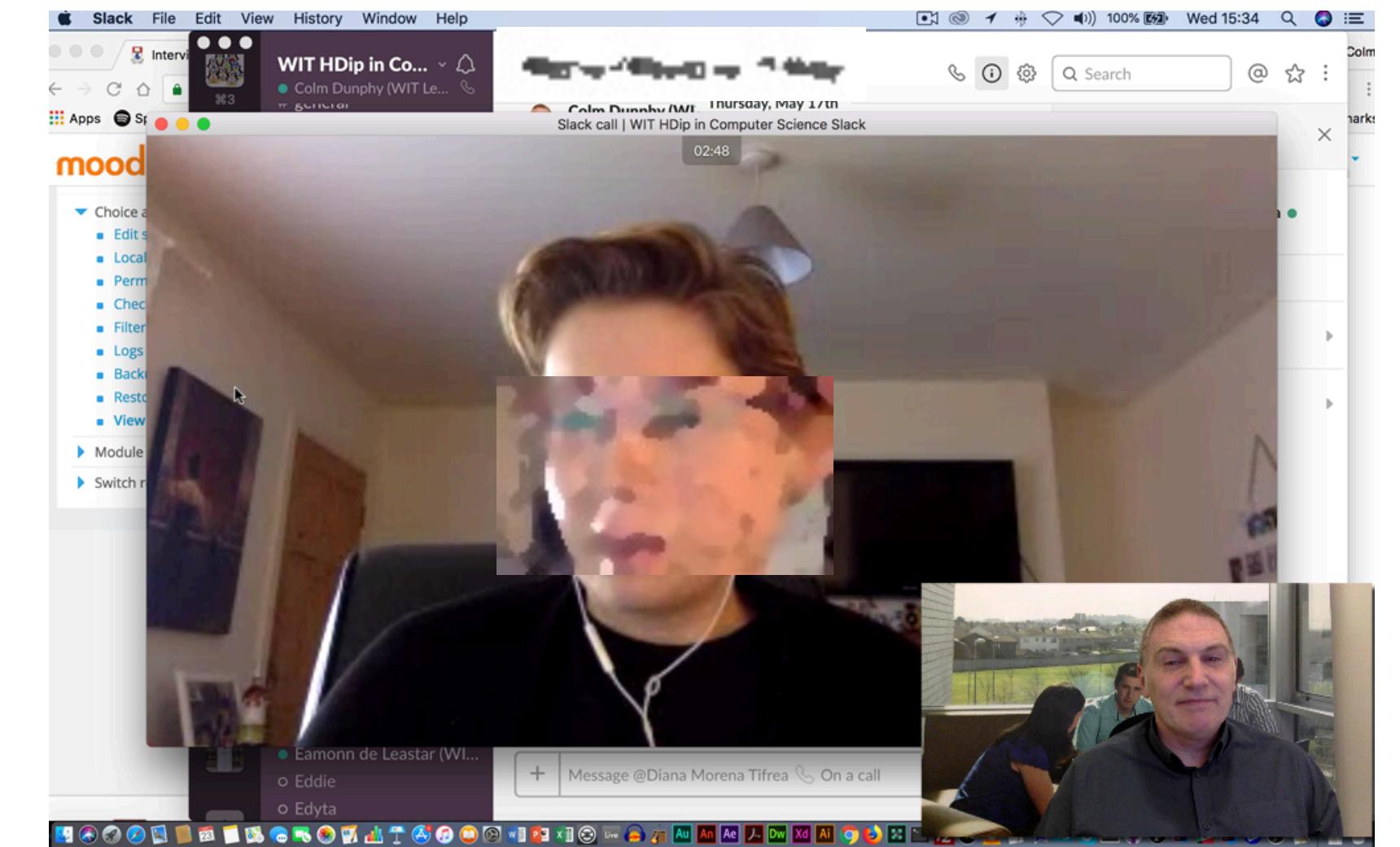


:01 PM  
uploaded and commented on this image: [IMG\\_20180523\\_220048.jpg](#)



🤣 3 🥺 1

“ Things are getting bad with these assessments! I've hit the bottle!



## Reactions



👍 1 ❤️ 1 💯 1 🔥 1 😥 1 🏳️ 1 🤗 1



Mic  
(on by default)

Video  
Webcam

Share  
Screen

(desktop client only)

Enable others to  
draw on your screen

Give others **Full Control**  
of your computer

Stop  
Sharing

*“For me this course captures  
the Essence and Ethos  
of what adult education should be”*

*“Everything is easily accessible (great website),  
everyone is so helpful  
and generous with their knowledge,  
it is very refreshing”*

*“The course is clear, precise,  
exceptionally well laid out  
and so professionally run”*

*“Everything is easily accessible (great website),  
everyone is so helpful  
and generous with their knowledge,  
it is very refreshing”*

*“All the options available to play back, notes etc.  
really have enhanced my learning experience...”*

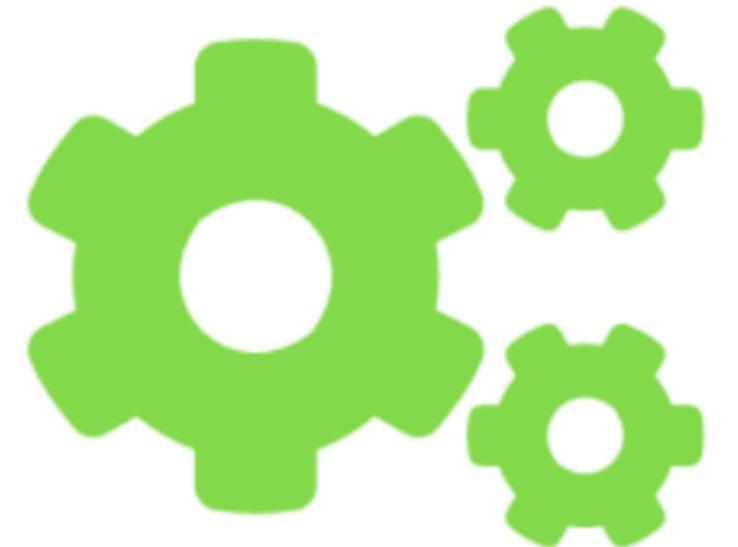
Sample a few lessons ...

## Web Development



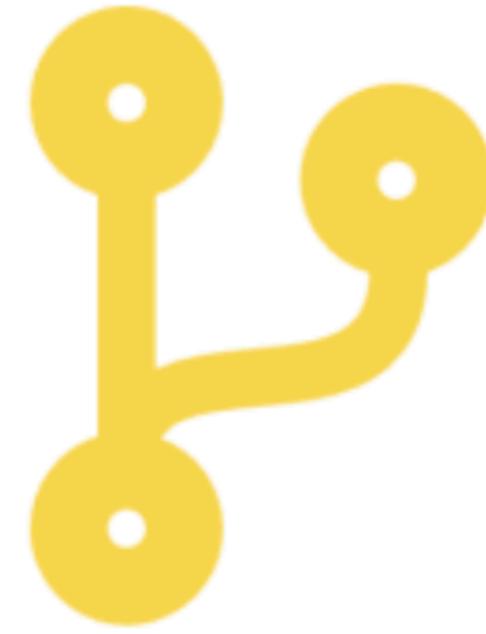
Introduce the fundamentals  
of web development in  
HTML, CSS and Java

## Programming Fundamentals



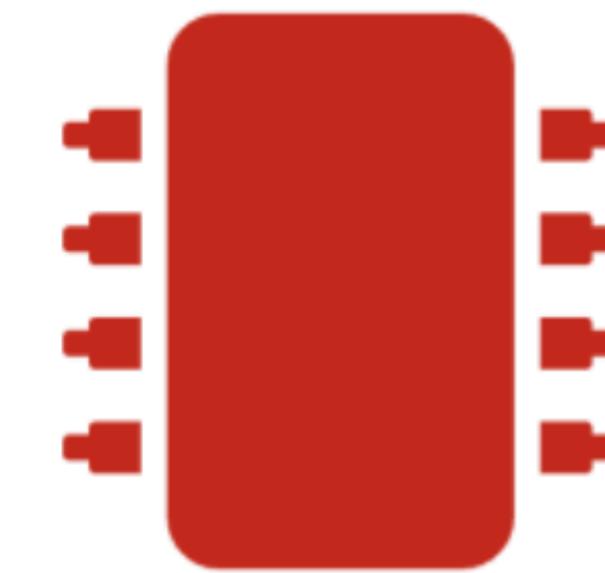
Introduction to the  
fundamentals of  
programming in the Java.

## Programming in Javascript



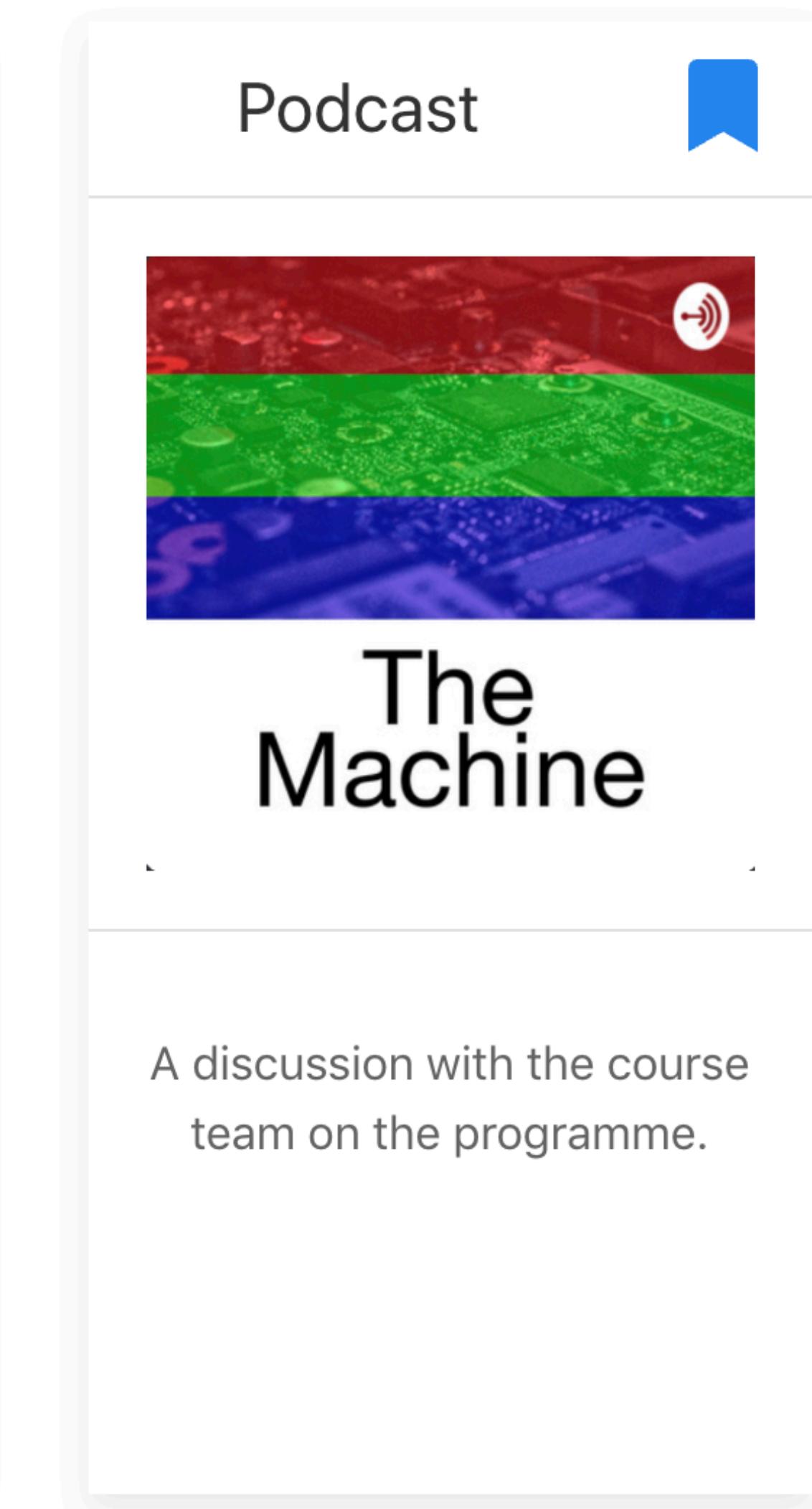
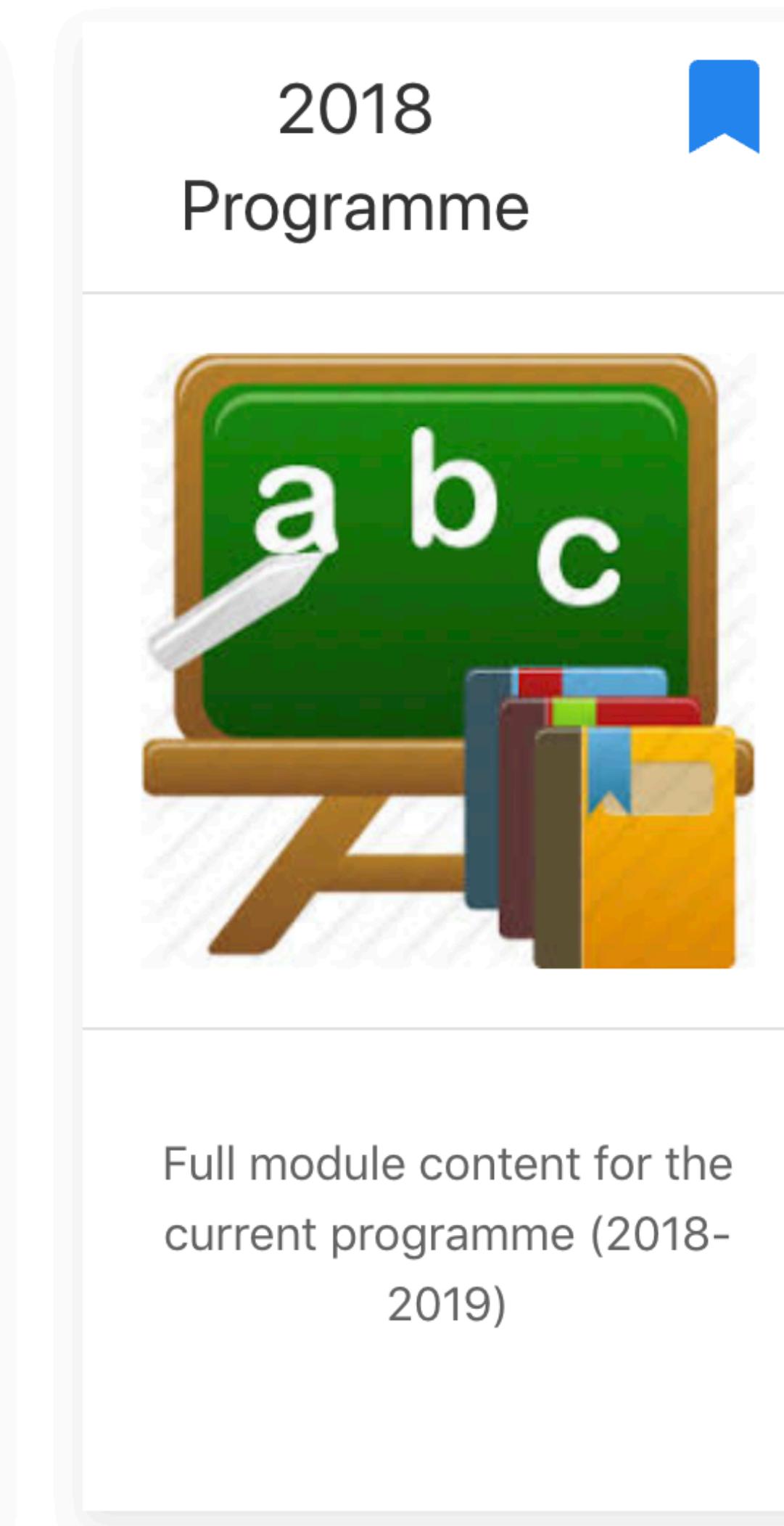
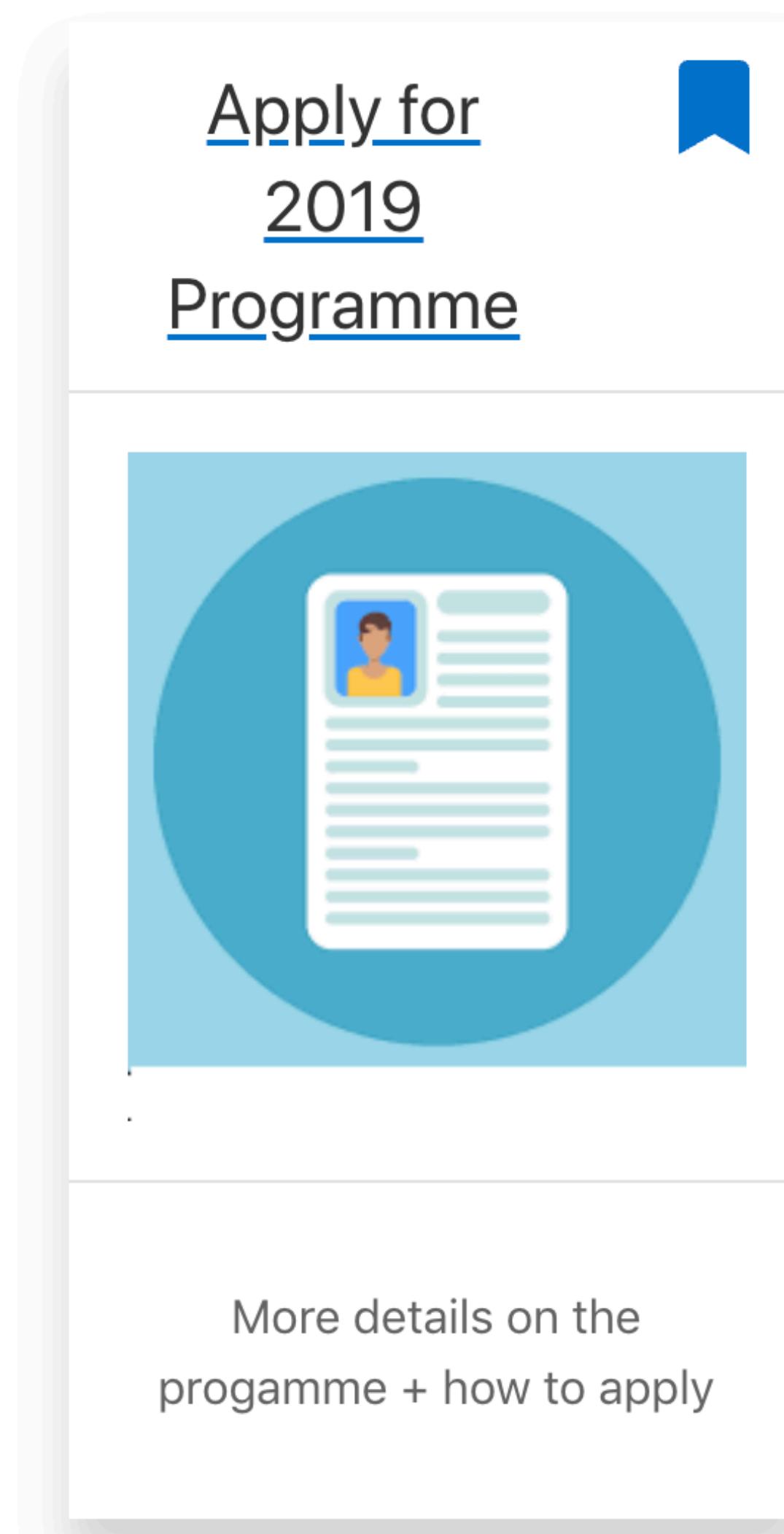
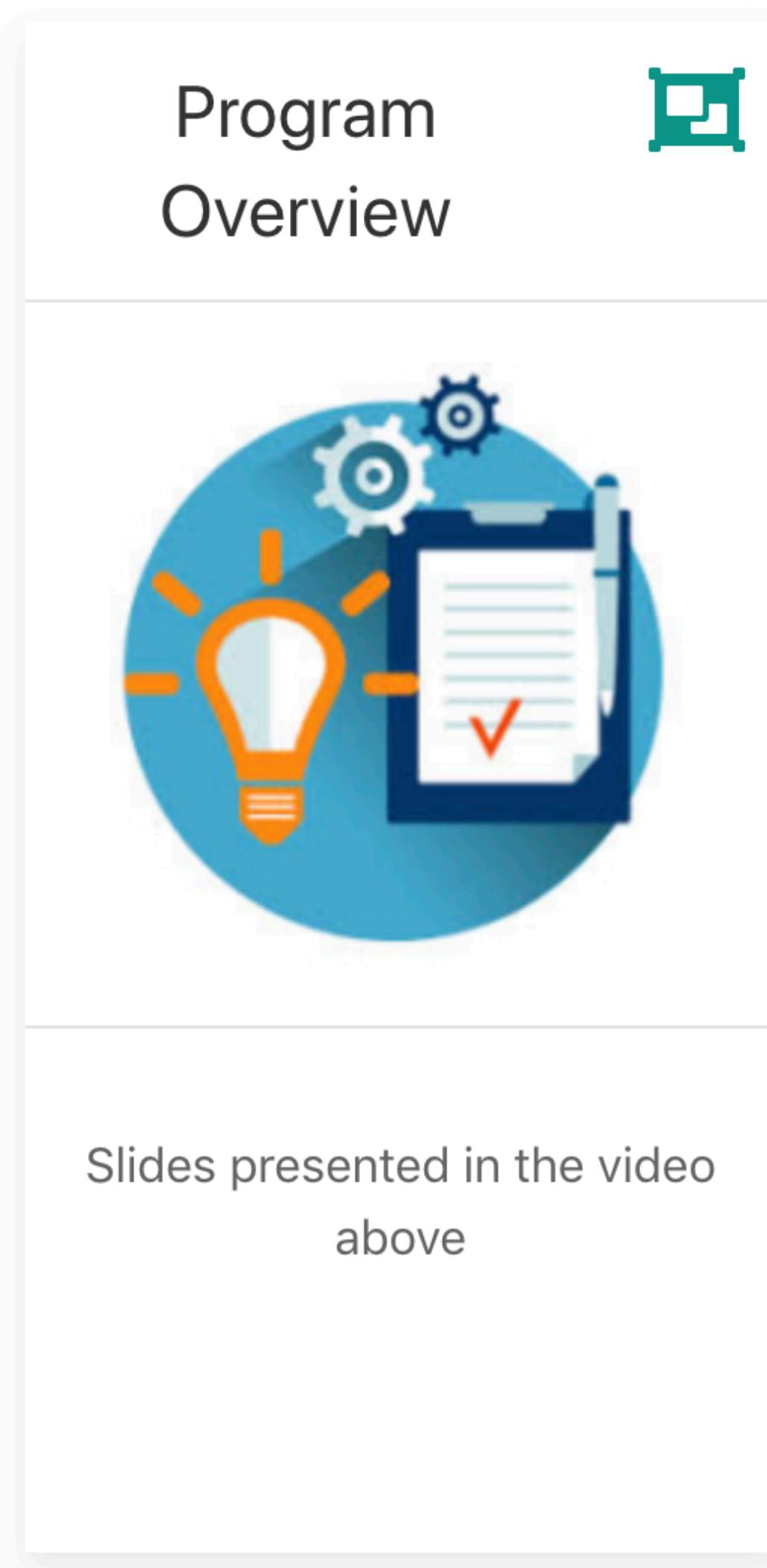
Using javascript to build web  
applications

## Computer Systems



Fundamentals of computer  
networks and computer  
systems

Further information ....



Overview of the Programme

A screenshot of a YouTube video player. The video title is "Higher Diploma in Computer Science". The channel logo is the Waterford Institute of Technology crest. The video content shows a presentation slide with the text "Waterford Institute of Technology" and "INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE". The video has standard YouTube controls: "draft-promotion", "Watch later", and "Share".

[edeleastar@wit.ie](mailto:edeleastar@wit.ie)

[jmangan@wit.ie](mailto:jmangan@wit.ie)

Sample a few lessons ...

Web Development



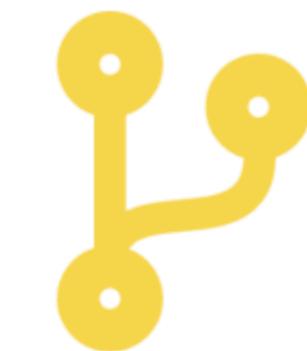
Introduce the fundamentals of web development in HTML, CSS and Java

Programming Fundamentals



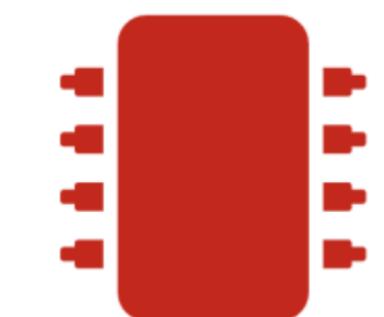
Introduction to the fundamentals of programming in the Java.

Programming in Javascript



Using javascript to build web applications

Computer Systems



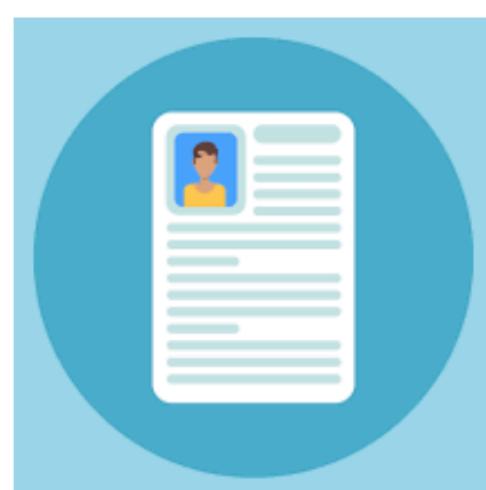
Fundamentals of computer networks and computer systems

Program Overview



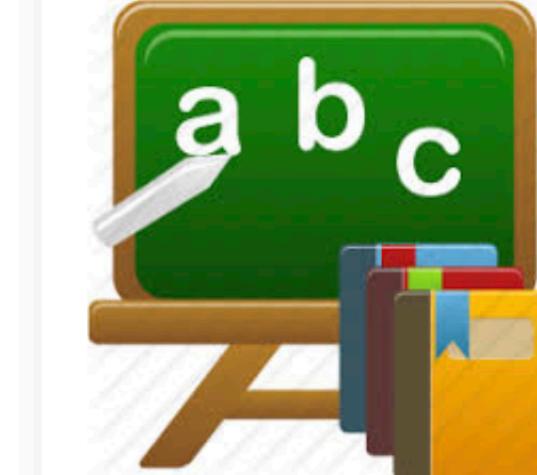
Slides presented in the video above

Apply for 2019 Programme



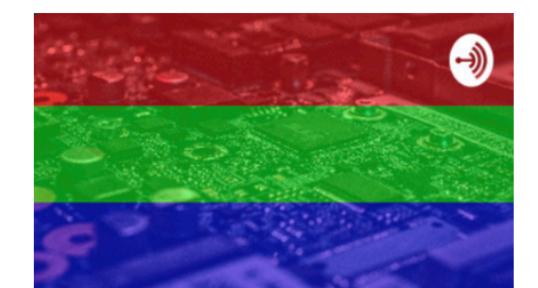
More details on the programme + how to apply

2018 Programme



Full module content for the current programme (2018-2019)

Podcast



The Machine

A discussion with the course team on the programme.

<https://wit-hdip-comp-sci.github.io>