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TOP 30 GUARDIAN UNIVERSITY GUIDE 2019

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MAGnUS Training Course

University of Derby
UK

July 1st – 4th, 2019

MAGnUS

Co-funded by the Erasmus+ Programme of the European Union

EU Partners

Sensitivity: Internal

Partners - Russia & Azerbaijan

Astrakhan State University

Voronezh State University

Baku Engineering University

Azerbaijan State Oil and Industry University

Sensitivity: Internal

Wider Objective

- To Share best practice of MSc Design
- From QAA Benchmark Statements
- Through Programme Learning Outcome Statements
- To Module Learning Outcome Statements

- Validation Documentation – What is it?
- How is it structured?
- Validation Events

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Strapline:

“I looked through your program MSc Mobile App Development and Computer Games courses. I think it is just a fine example of what we want to develop”.

Yana Demyanenko

Associate professor of

Institute of Mathematics, Mechanics and Computer Science,

Southern Federal University, Russia.

Sensitivity: Internal

Why are we here?

Sensitivity: Internal

Objectives

- To develop double diploma interdisciplinary Master curriculum in Mobile applications and Game Design with regard to labour demands and Bologna provisions at **Russian** and **Azerbaijan** universities.
- To enhance professional skills of teachers
- To embed a comprehensive and crosscutting QA system
- **To set up a joint enterprise-university game lab/studio**

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Magnus at Derby

The role of UoD in Magnus

needs analysis to ensure that new programmes will meet the needs of modern business environment

The EU partners will present trends in mobile and game development.

- best European practices for both programme development and project management.
- study of the practices of modular programme design
- Teaching & Learning Methods

MAGnUS 3 tracks

Mobile applications in education

Mobile application in healthcare

Game development

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Mobile App Development

History

- 2004 Java ME – “it will never catch on!”
- 2007 iPhone – Xcode, Objective-C…. Hmmm.
- 2010 Mobile Device Software Development Degree Designed
- 2011 MSc Mobile Device Software Development Implemented – **146 Enquiries**
- **Sept 2011 – 3 UK students started**
- **2018 – 19 10 students**

2011 - Programme Structure – 7.5 ECTs

Studying at Masters Level & Research Methods	Computer Networks and Architecture	Client-Side Development	Mobile Software Design & Architecture (open platforms)
Entrepreneurial Management	Emerging Architectures	Mobile Device Forensics	Mobile Software Development (Closed Platforms)

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Masters Phase

Independent Scholarship
30 ECTS

Industrial Project (Placement)
30 ECTS

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Entry Requirements

- A Degree with some programming expertise
- The first module would begin with 3 weeks of AppInventor
- Objective-C was very very tough

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Studying at Masters Level and Research Methods

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Studying at Masters Level & Research Methods

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Module Overviews

Mobile & Client-side User Experience

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Mobile & Client-Side User Experience

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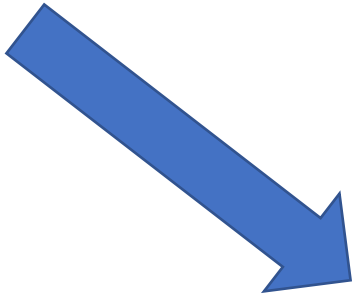
There's a lot of art and science behind creating a lovable user interface

UX Theory



Cross Platform Solutions

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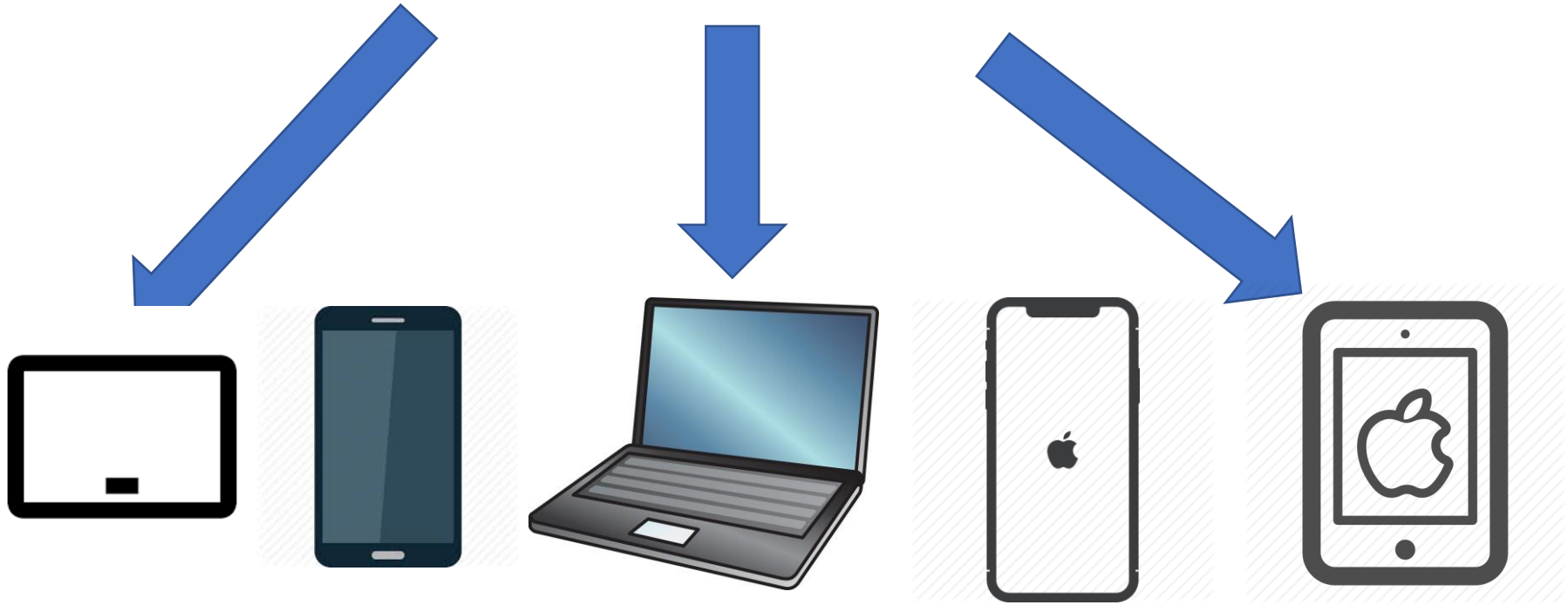
User Experience, Not User Interface

“while I was focused on trying to make the usability of editing data as easy and functional as it could be; Mint was focused on making it so you never had to do that at all”.

Marc Hedlund, UX Apprentice

Cross Platform Solutions



Mobile & Client-Side User Experience

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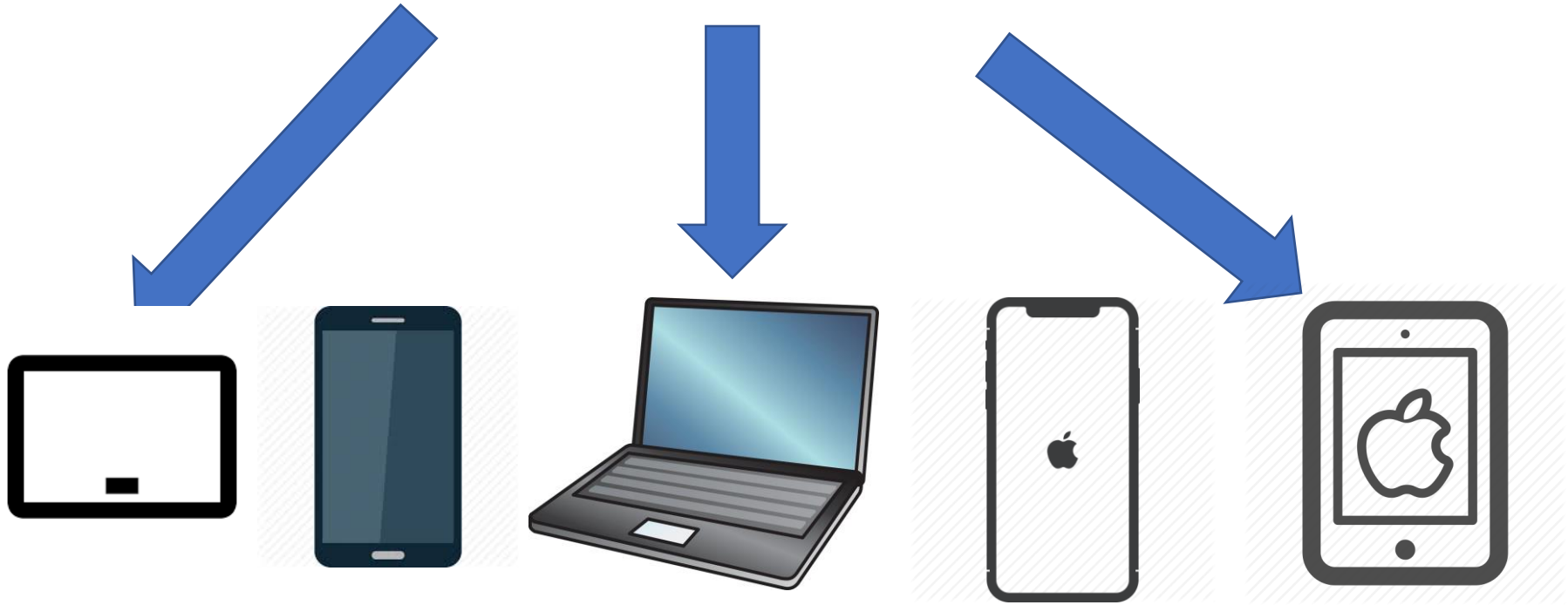
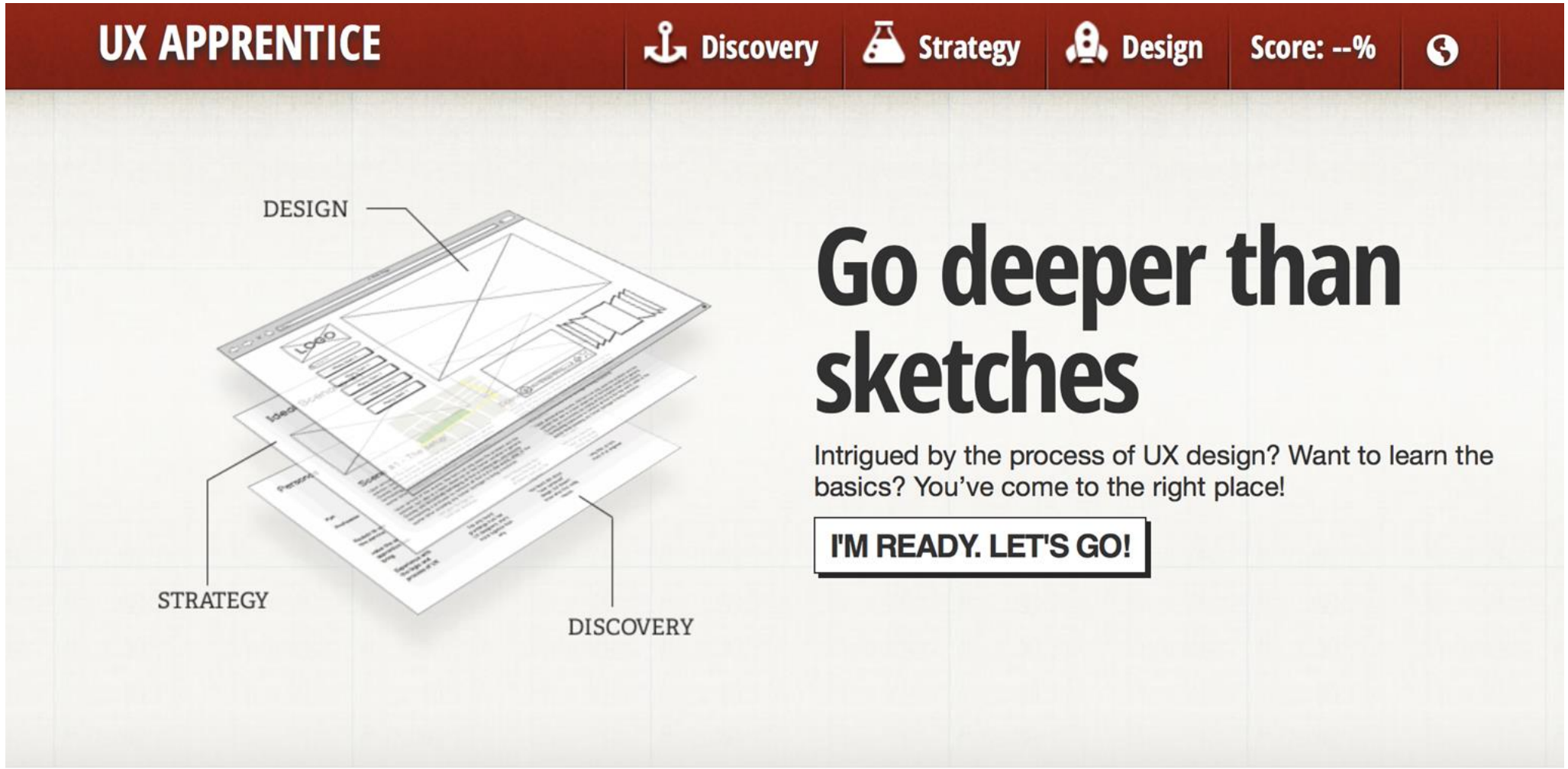
Cross Platform Solutions



Mobile & Client-Side User Experience

UX Apprentice



https://www.uxapprentice.com

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Mobile & Client-Side User Experience

Balsamic:

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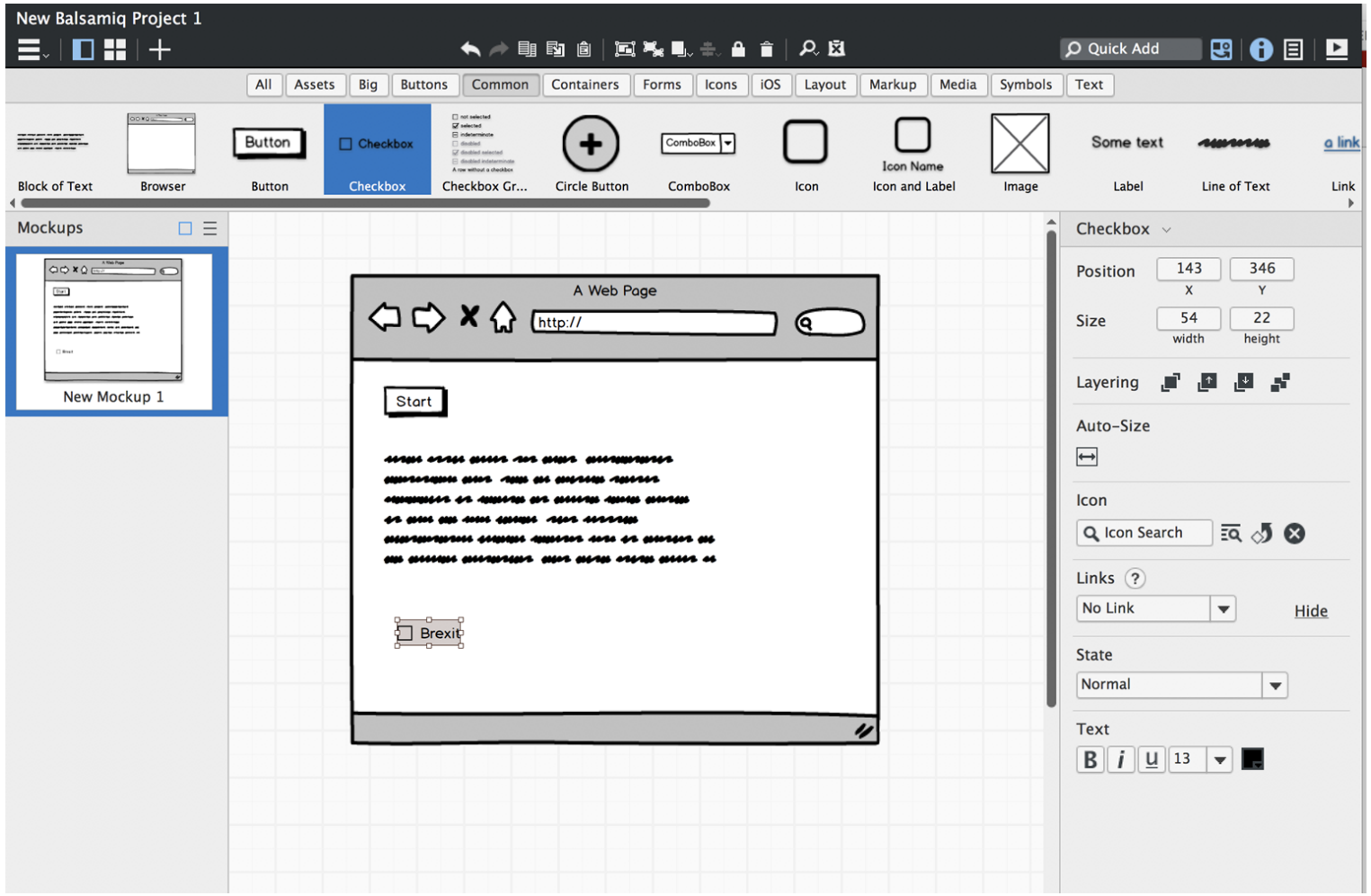
Balsamic - wireframing



https://balsamiq.com/wireframes/

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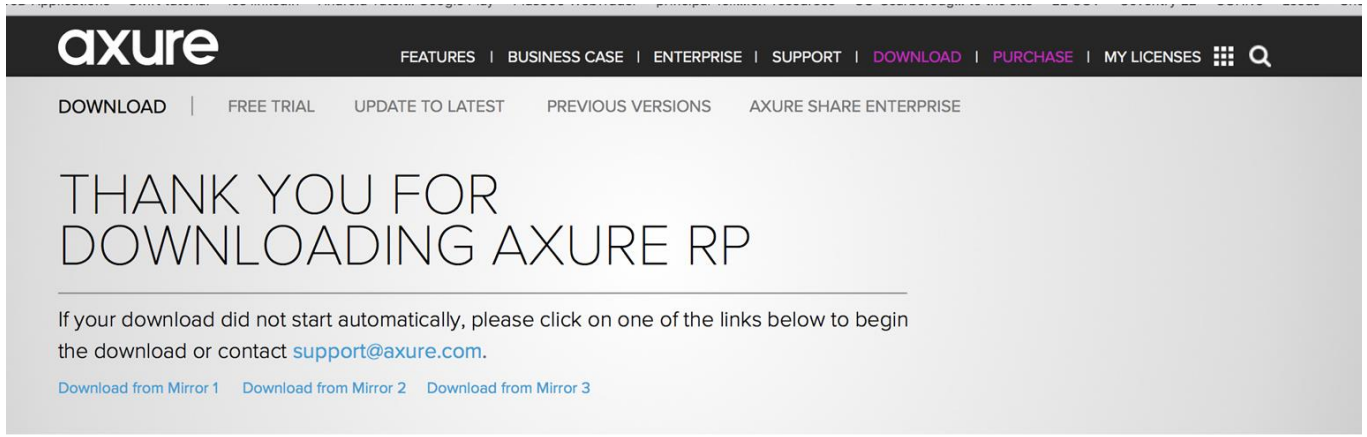
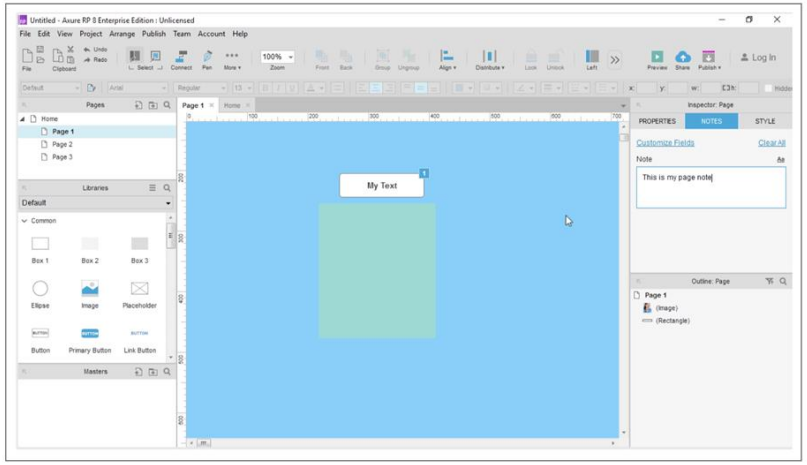
Axure - wireframing



LEARN AXURE RP



AXURE RP: GETTING STARTED

This video will guide you through the basics of Axure RP. Explore the UI, learn how to manage pages, drag widgets to the canvas, style and add interactivity to widgets, add and read notes, and publish to your own computer or Axure Share (our free cloud service).

For a hands-on experience with the core features, follow the in-tool tour: Open Axure RP on your computer and begin the tour from the Welcome Screen or from "Help > Getting Started Tour..." in the main menu.

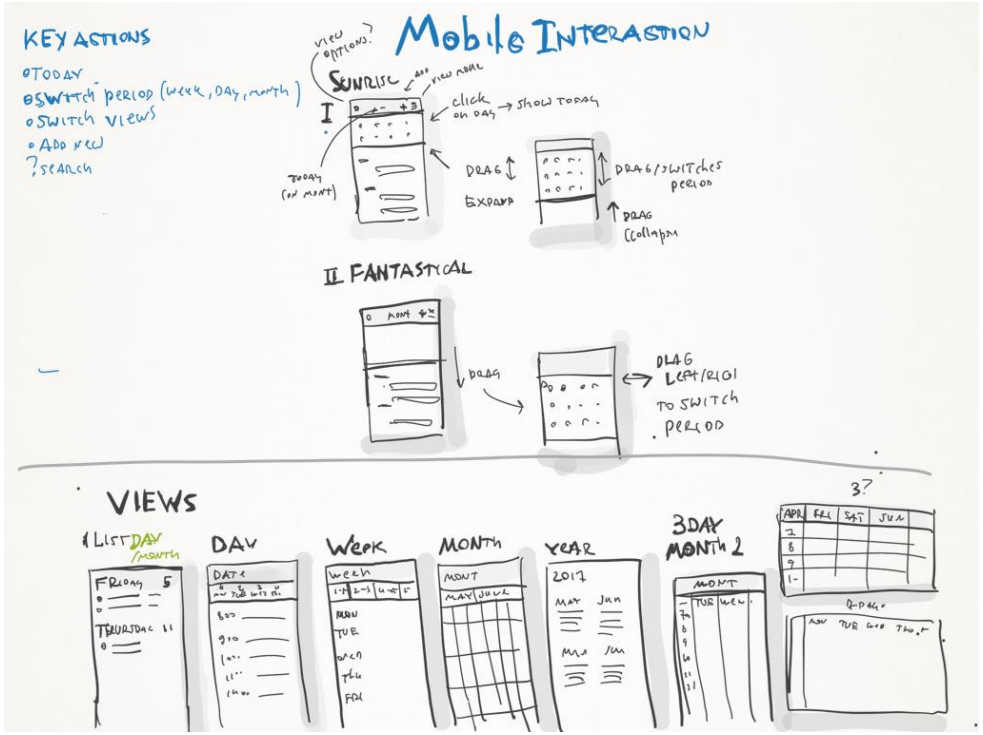
For additional RP training, documentation, and contact information for our support team, go to:

TRAINING AND SUPPORT

https://www.axure.com/downloadthanks?dl=80mac

Robust Academic Discussion

You must design UI on paper first… by hand!



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Essential Text

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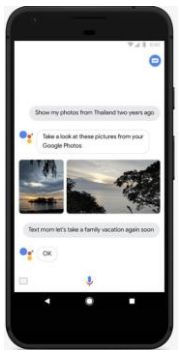

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Assessment

Was 70% Coursework, **30% Examination**

Modified this year.

International Students particularly fared badly despite getting Distinctions everywhere else.

Not enough emphasis on application

Now 70% Design, **30% Implementation**

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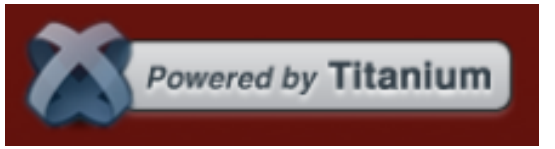
Cross Platform Solution

- Appcelerator – generate native code from HTML 5 Webapps
- Great Frameworks: Titanium & Alloy
- Great Libraries – Kitchen Sink App
- Required customization
- Ok for first 3 years then problems
- Didn’t keep up with Apple Updates after Swift
- Didn’t keep up with Android Updates either
- Looking for another



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Module Overviews

Mobile Software Design & Architecture

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Mobile Software Design & Architecture

2011 Open Architecture Mobile Software

All Advantages of Java

Any device

Any IDE

Similar to C++ and C# (Originally J++)

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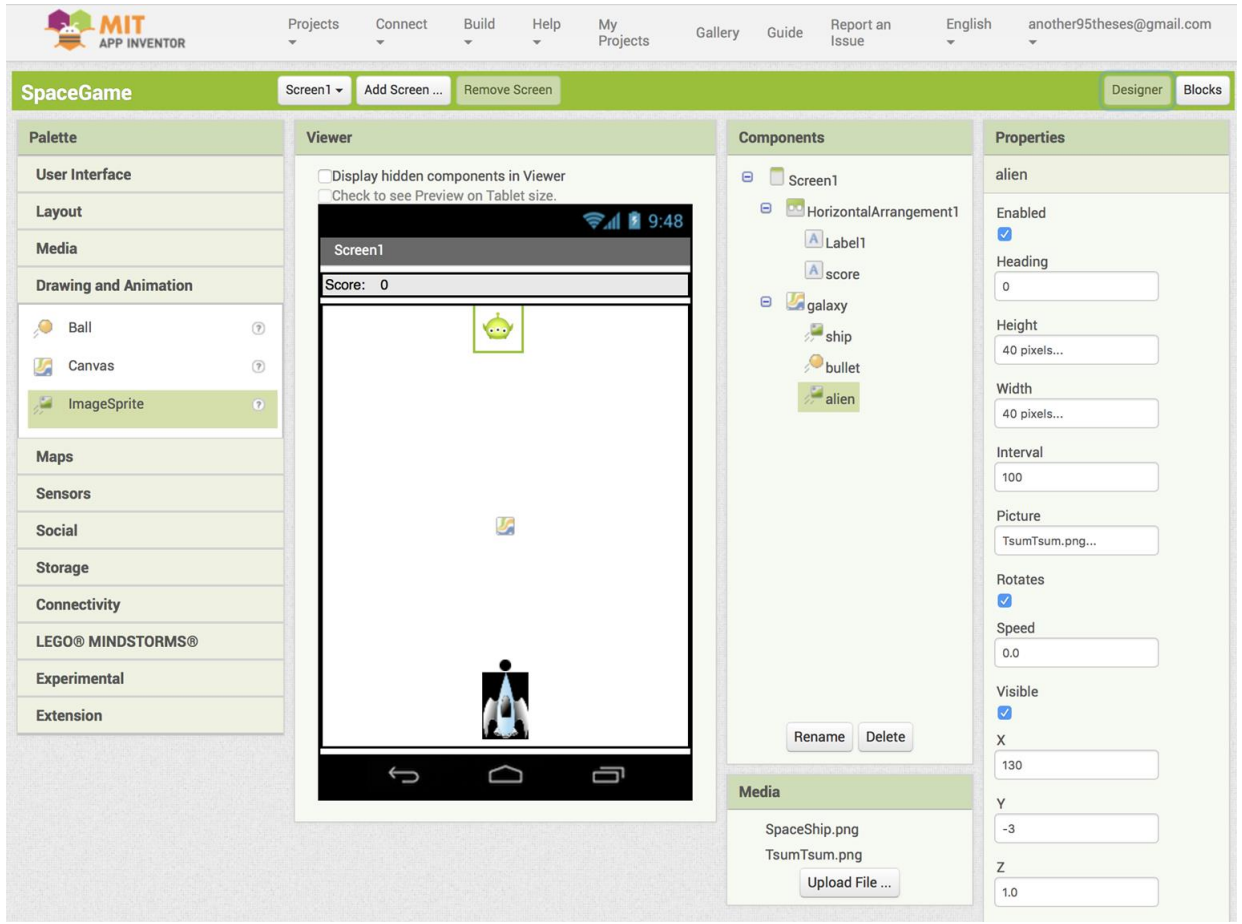
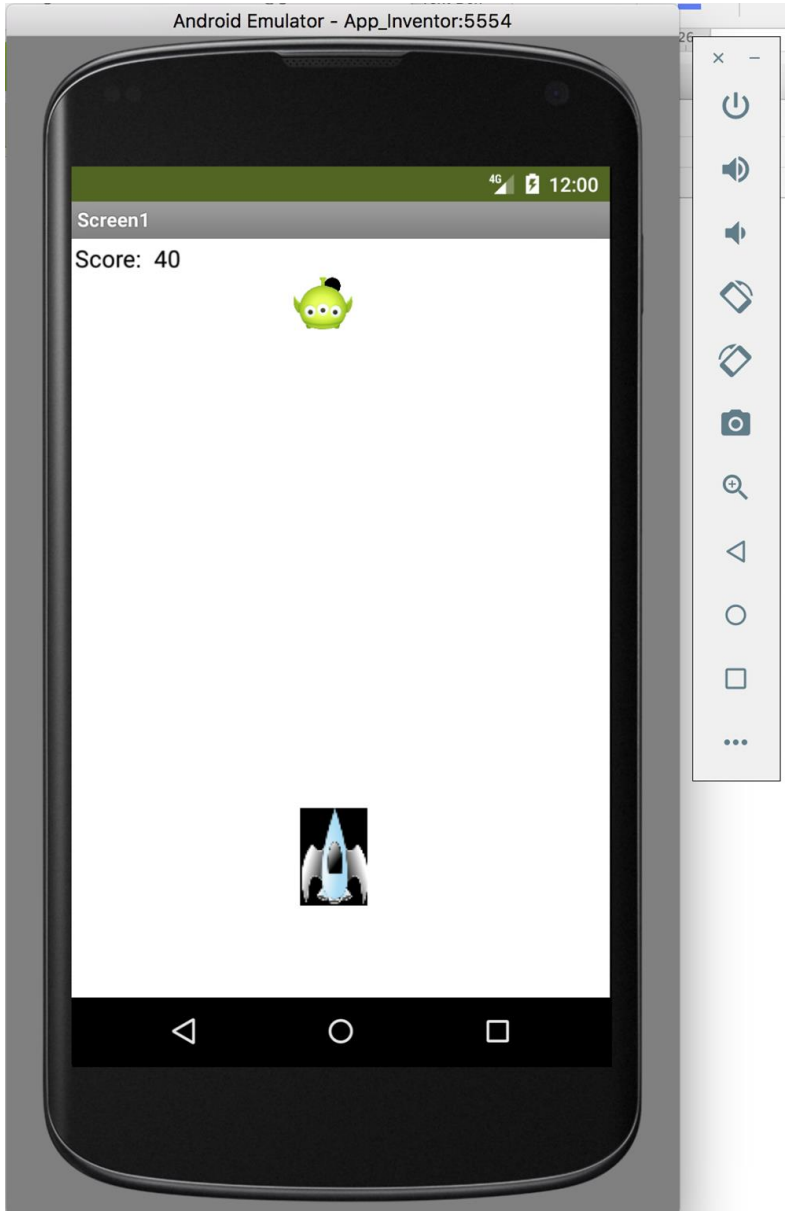
AppInventor





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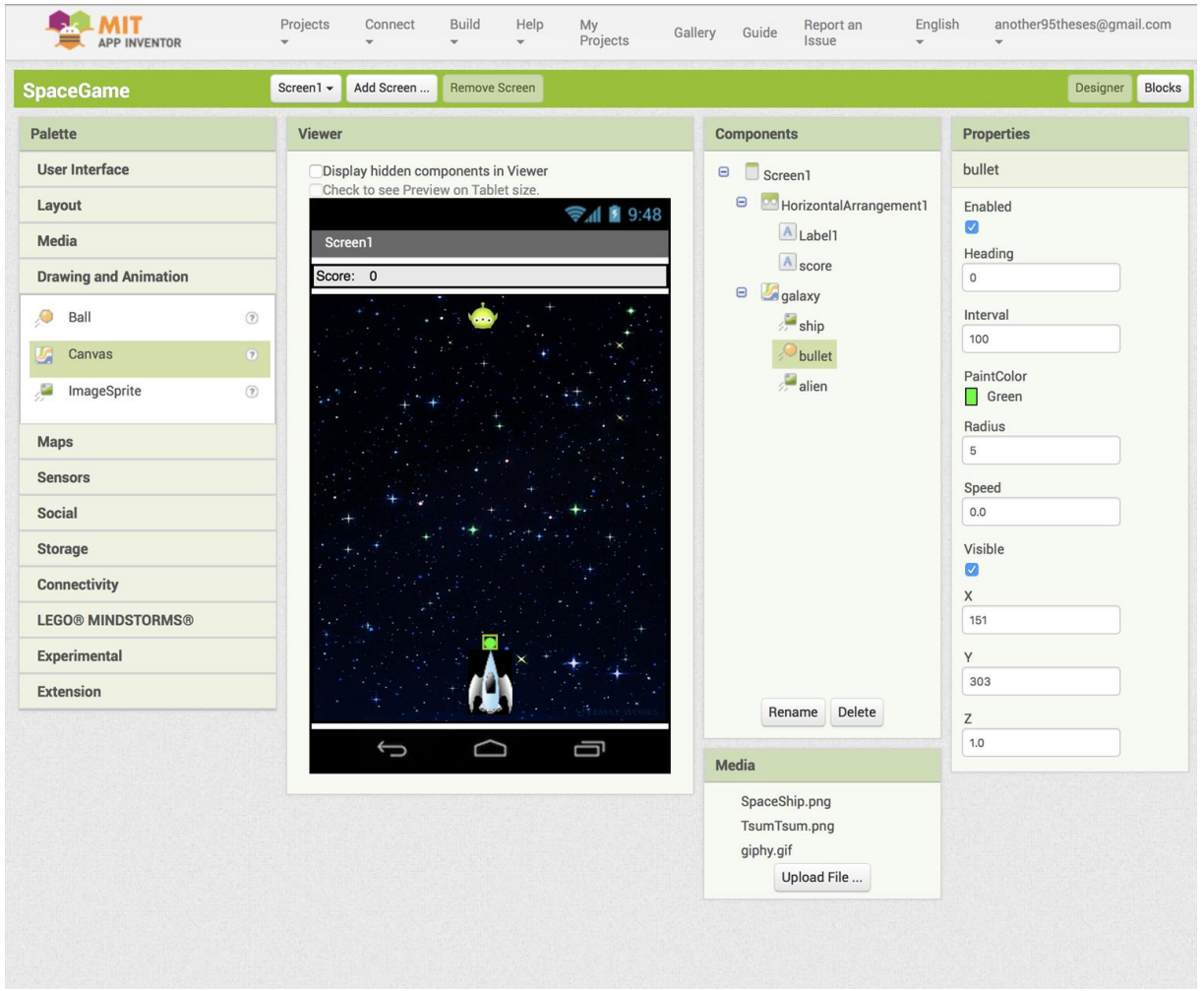
Prototyping - RAD



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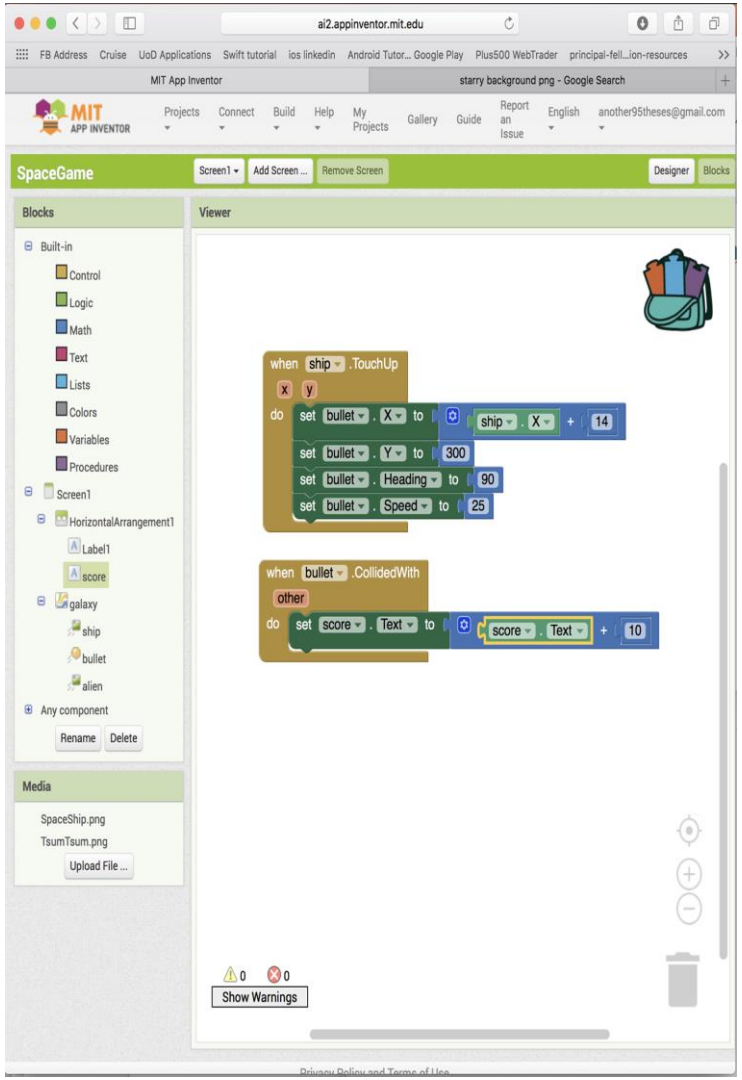
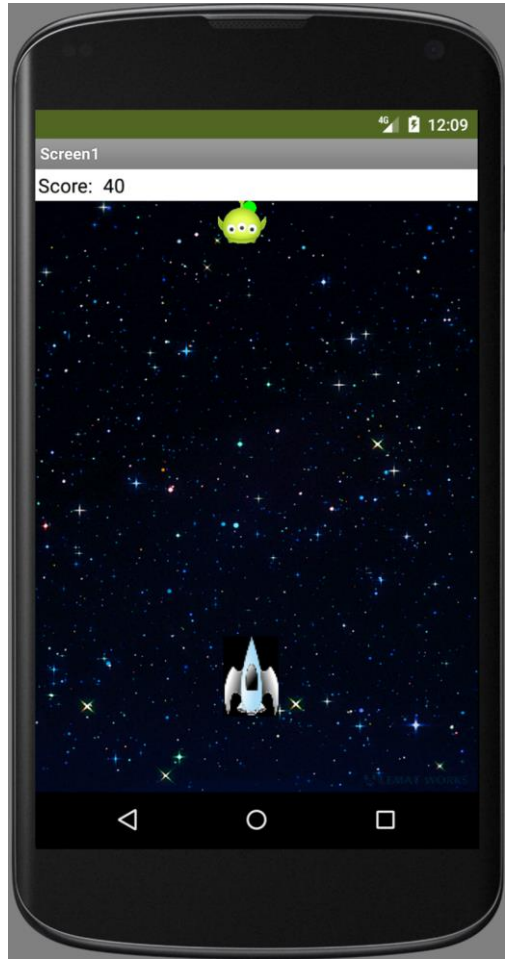
AppInventor





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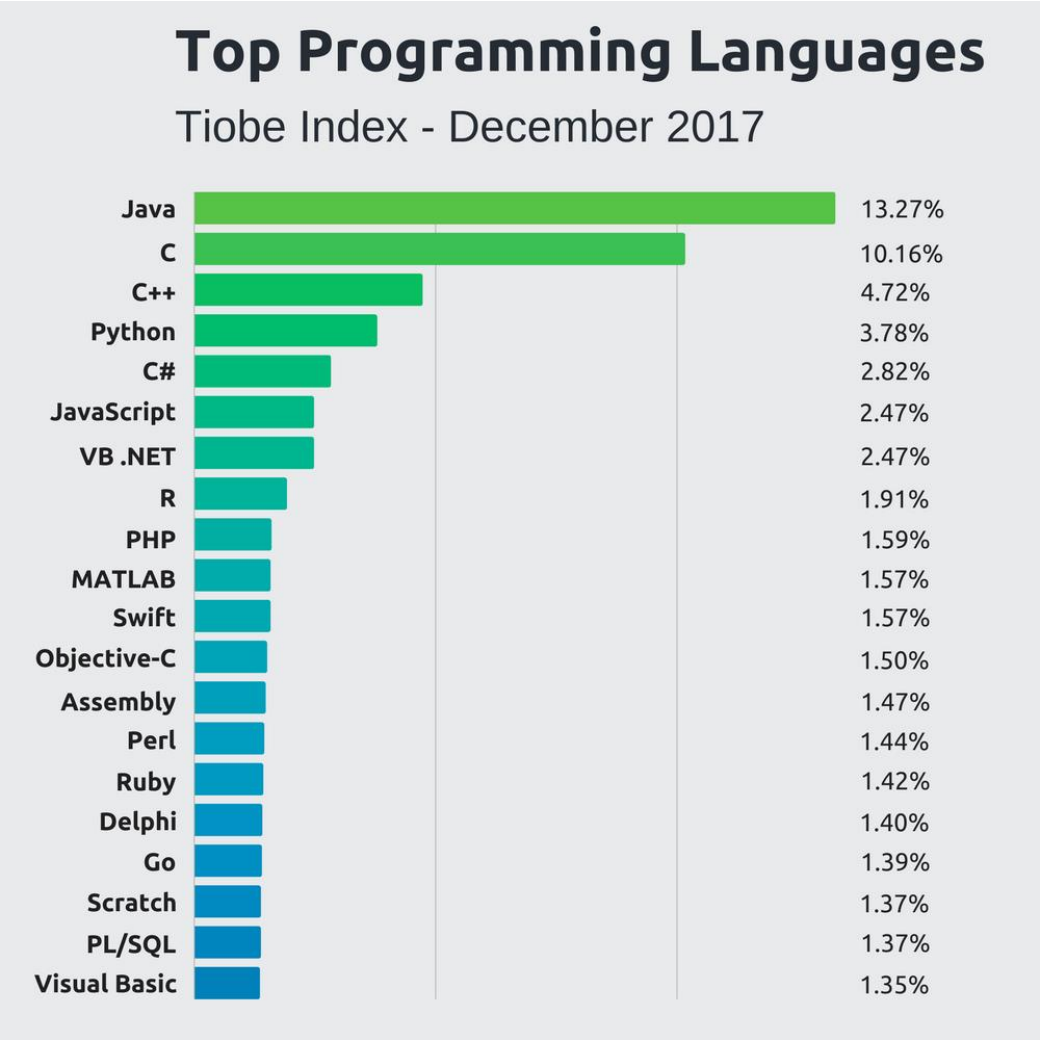
Java

Currently, Java has one of the most important and largest communities in the world.

Prepare a list of Java features that are missing or annoying.

Explain each one in no more than 60 words.



https://medium.com/sfl-newsroom/java-javascript-kotlin-and-more-2018-stats-for-development-languages-de1a961e4c38

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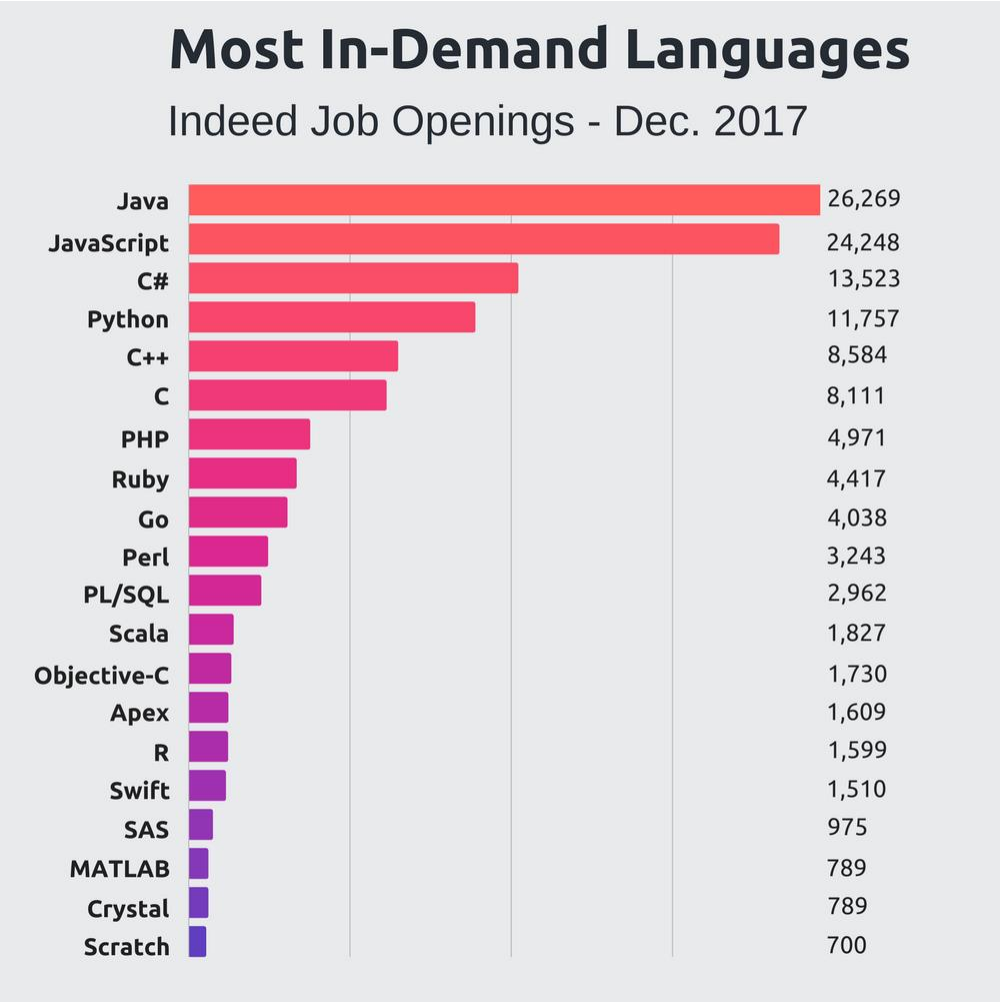
Most In-Demand Languages

Java
Top language – **Why**?

JavaScript
2nd Top – **Why??**

Kotlin??
Never heard of it!



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Java ->Kotlin Sept 2017

By Dec 2018 all new Android software is expected to be written in Kotlin.

https://dzone.com/articles/kotlin-will-overtake-java-in-december-2018

https://www.bacancytechnology.com/blog/kotlin-vs-java-which-is-the-best

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Kotlin

The Emulator only solution is not adequate

Must have actual devices

Students asked what they wanted to learn?

All selected Kotlin, knowing there might be gaps in the tutorial notes.

Students: All delighted in 2017

Many angry in 2018!

“If you are an Android developer, you should start using Kotlin immediately”.

https://dev.to/erajasekar/java-is-too-old-what-should-you-learn-in-2018-45p9

Some Kotlin Developments were released prematurely, others discontinued.

Assessment

Produce an App and incorporate at least 3 Advanced API's, e.g.

- Network
- Bluetooth
- Gestures

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AppInventor

Android Development Only

Students with Web Development Experience

could use AppInventor for their Assignment

OR

Android Development with Java

ALL selected Java

Why?

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Mobile Software Development

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Mobile Software Development

- Objective-C Tough 1st Language
- Not a language to learn if you are not a good programmer
- Prone to software error - major errors!!
- Memory Leaks!!!

Objective-C to Swift

Swift Adopted in 2016

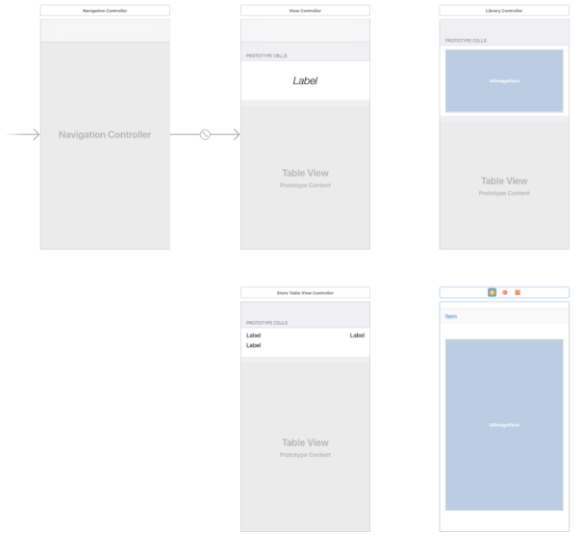
Swift is much more accessible!

No explicit pointers

Storyboard for rapid design of UI Screens, and to some extent the UX, is really good.

Note:

App Screens are a good way to capture app IO (consider Jackson Structured Diagrams)



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Assessment

Same as Mobile Software Design & Architecture.

Not allowed to do the same project

Helps generate a portfolio of apps

Has to be approved!

Formative Feedback

Week 3	Title
Week 6	Plan & UI
Week 9	Progress against Plan
Week 12	Demo in class – last week

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Many Apps…

Apps

- Track parcels from delivery company
- Social Event Manager
- Video security detection
- Purchase “Likes” and App “Ratings”
- Education exercises, tests, results…
- Interactive Web Apps – quite a few
- Find a bus in Derby.

Games

- Badminton
- Camel jump
- Snakes & Ladders
- Exercise app providing time on game
- Star Trek – Augmented reality

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Entrepreneurial Management

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Why research?

Educational content, Mobile App…..

+

Entrepreneurial Ethos

+

Organisational requirements

= Enterprising Graduates and impact

But what does that look like? What could we be searching for……..

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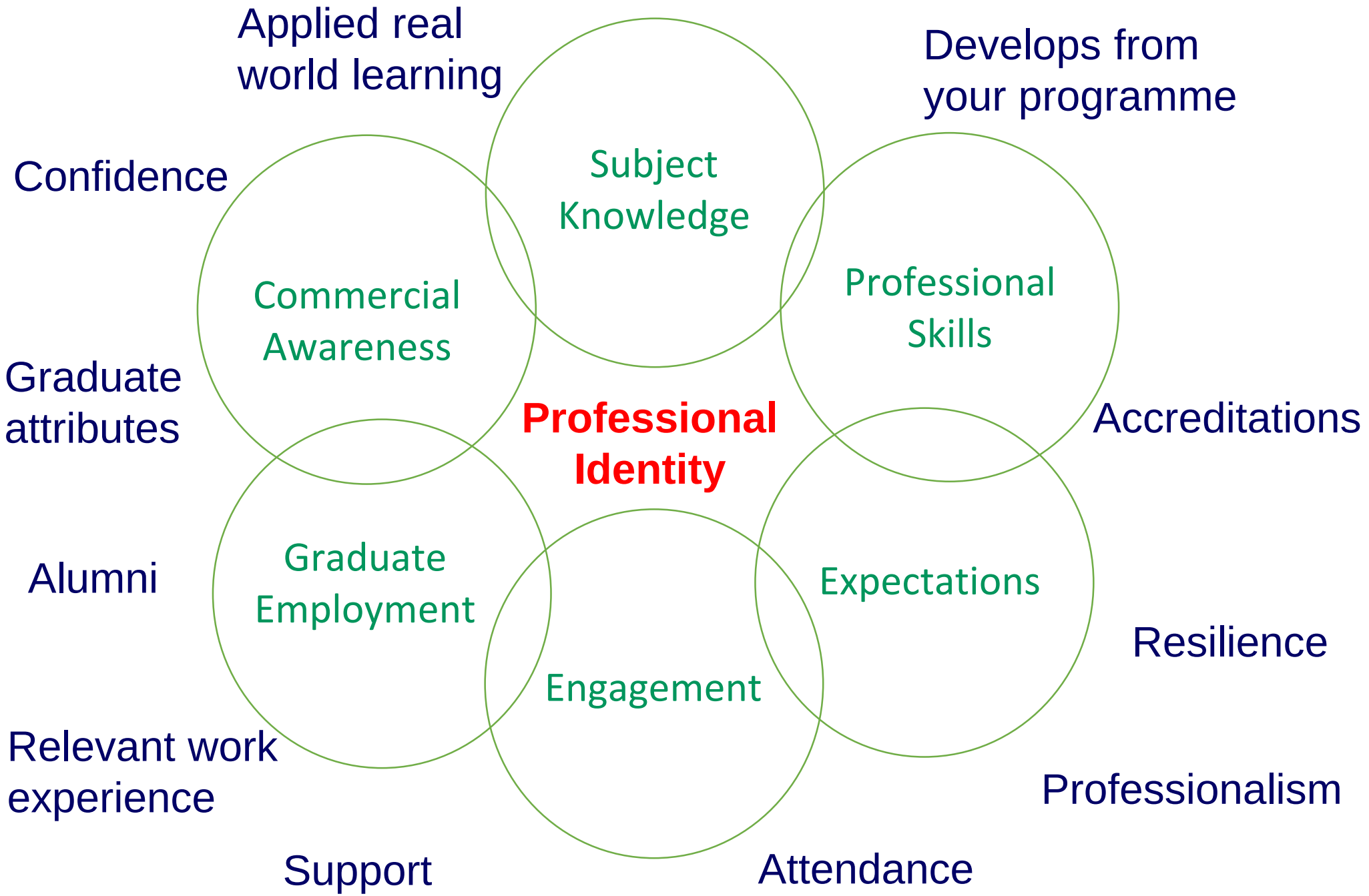

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Entrepreneurial Management…

Entrepreneurship – the pursuit of opportunity

From new / small business – to large organisations

"A primary driver of economic growth"

Gordon Brown, former UK Prime Minister

A blend of strategic Management and Entrepreneurial theory

Sensitivity: Internal

Entrepreneurial Management Module

The Module explores:

- the importance of entrepreneurial activity within the economy
- the opportunity it creates
- the value and impact of entrepreneurs and intrepreneurs

Sensitivity: Internal

Assessment

Students will investigate an opportunity for

- a new venture either within an organization or stand-alone,
- develop a strategy for exploiting it,
- supported by theoretical models of entrepreneurship and growth
- present this as a **business proposal** to **potential investors**

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Emerging Architectures

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Emerging Architectures

Client/Server Programming

Network Programming

Distributed Computing

Cloud Computing

Machine Learning

Virtual Machines

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Assessment

Amazon Web Server – Check (AWS)

Research Area of tutor:

Video object detection – many students struggled

More flexible now:

Implement and apply something learnt on the module

Has to be approved

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Independent Scholarship

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30 ECTs – Project or Scholarship

Loosely Supervised

Proposal Agreed

Product Encouraged

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Industrial Placement

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30 ECTs

Students encouraged to find a placement

They have to:

Agree a project with company with objectives

Write a reflective account of the placement:

- Tools
- Techniques
- Processes
- Results Were the objectives met?
- Impact

Sensitivity: Internal

Flexible Course Design – Small Credits Best

Studying at Masters Level & Research Methods	Computer Networks and Architecture	Client-Side and Mobile User Experience	Mobile Software Design & Architecture (open platforms)
Entrepreneurial Management	Emerging Architectures	Mobile Device Forensics and Security	Mobile Software Development (Closed Platforms)

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MAGnUS - 2 Years – 120 ECTs

Year 1 60 ECTs

- Studying at Masters Level & Research Methods
- Computer Networks and Architecture
- Client-Side and Mobile User Experience
- Mobile Software Design & Architecture (open platforms)
- Entrepreneurial Management
- Emerging Architectures
- Mobile Device Forensics and Security
- Mobile Software Development (Closed Platforms)

Year 2 60 ECTs

- Education
- Games
- Industrial
- Health

- Master Project Or Placement

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MAGnUS - 2 Years – 240 UK Credits

Year 1 120 Credits

- Studying at Masters Level & Research Methods
- Computer Networks and Architecture
- Client-Side and Mobile User Experience
- Mobile Software Design & Architecture (open platforms)
- Entrepreneurial Management
- Emerging Architectures
- Mobile Device Forensics and Security
- Mobile Software Development (Closed Platforms)

Year 2 120 Credits

- Education
- Games
- Industrial
- Health

- Master Project Or Placement

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MAGnUS Design - modules

- Employers want?
- Students want?
- Lecturers want?

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Education Optional Modules

Timetable

Calendar / reminders

Animation – Sciences & UX

touch, tooltips,

compression

graphic and video

hierarchical structure

Modelling

Clock related skills apps

- Teaching Mobile Development in School
- Mobile Programming: Thunkable, AppInventor
- HTML-5 & JavaScript

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Health Module Overview

Integrating Sensor APIs

Accelerometer

motion, movement. perform, location

Gyroscope – posture, position

GPS – Where are you?
Directions/ Locations

Proximity Sensor – accessibility

Microphone – breathing

Touchscreen – interface

Clock & reminders

- Fingerprint – security
- Pedometer
- QR Code – auto links
- Barometer – air pressure, some weather
- Heart rate Sensor
- Thermometer
- Humidity
- Geiger Counter
- Others?

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Mental Health Module Overview

- **Social – web apps**
- **Networking - community group updates**
- **Advice**
- **Memory Games**

- **Medical Records**
- GP – Appointments
- Hospital Appointment
- Booking a consultation
- Viewing Medical records
- 2nd Opinion
- Drug info & Side Effects

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Internet of Things

Car Play Apps

Car monitor Apps

Automation

Home Automation

- Security
- Efficiency (Lighting, Heating)
- Entertainment

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Games Development

Sensors

Accelerometer

Gyroscope – Augmented reality

Treasure Hunt

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Education and Games Modules

Explore more this afternoon

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Mobile Themes

Term	Lifelong Learning			
4	Dissertation	**OR**	Placement	
3	Options: Health Options: Health & Sensor Development	Education	AI	Internship
2	Entrepreneurial Management	iOS Development	Cloud & Distributed	Security & Forensics
1	Studying at Masters Level	Android Development	Client & Mobile UX	Network

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Games Themes

Term	Lifelong Learning	Development	Nets & Security	UI & Web
4		Dissertation	Placement	
3	Options: Health & Sensor Development	Education (Serious Games)	AI	Internship
2	Entrepreneurial Management	Cross Reality (XR)	Interaction Methodologies	Advanced Proggramming Tech
1	Studying at Masters Level	Mobile game Engine Devt.	User Interaction	Prototyping

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Health & Education

Term	Lifelong Learning	Development	Nets & Security	UI & Web
Health	Sensor Interaction	High Risk	Integrating Devices	Health (Serious Games)
Education	Options: Health & Sensor Development	Internship	AI	Education (Serious Games)
Games	Studying at Masters Level	Mobile game Engine Devt.	User Interaction	Prototyping

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LUNCH

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