

Assignment 2 Specification

Networking for Connected Devices

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Computer Systems and Networks

HDip Computer Science 2019

Context

- 100% of your overall mark
 - Project ethos (1 overall project)
- For this assignment you are required to:
 - Propose a project.
 - Create a working project using networking/IoT standards & protocols.
 - Requires a "physical" aspect – sensors/devices
 - Present and communicate your work in a clear, correct manner.
- The project should incorporate the different layers (sensor, processing node, gateway, application) of an IoT/connected device architecture.
- Project will be assessed on its technical (e.g., features) content, complexity, applicability to domain and execution.

Theme: Marine

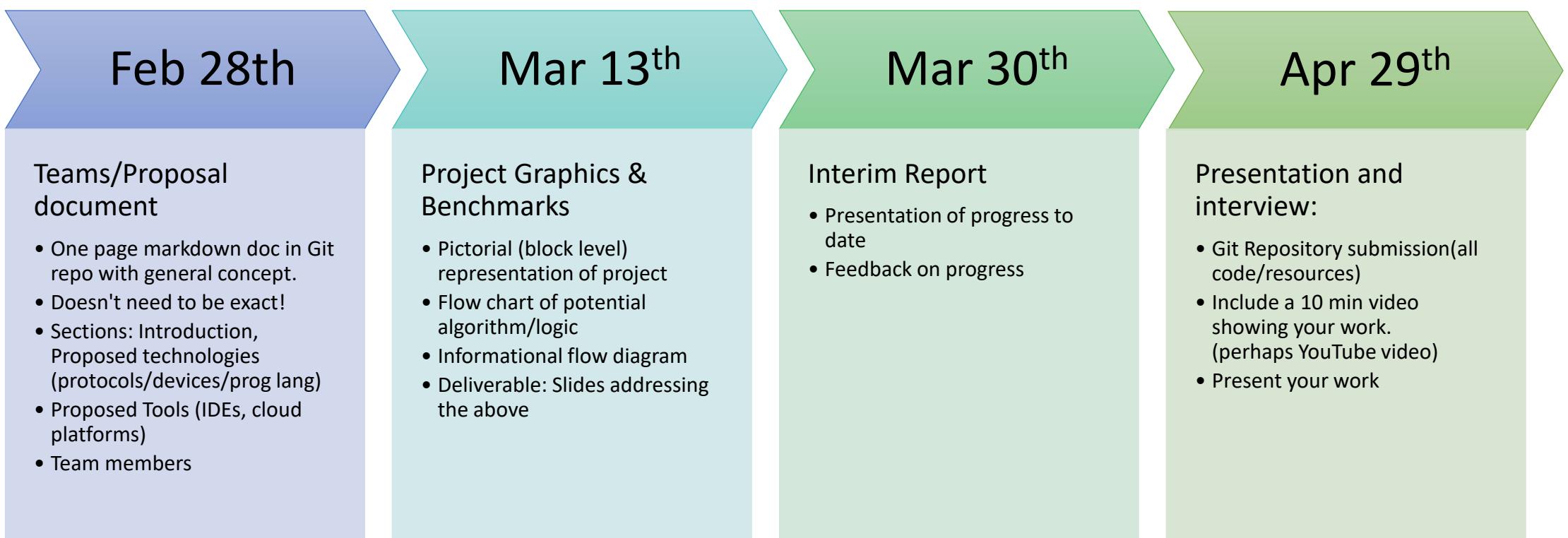


Requirements

"Include the different layers (sensor, processing , gateway, application) in an IoT Project.

Design	Propose and design solutions (e.g. See attached work packages)
Apply	Apply suitable IoT protocols and standards.
Model/ implement	Model/implement a solution to your proposal Use the knowledge, skills and practices from other modules Should be scoped correctly – can't build a production standard solution in a few weeks!
Present/ curate	Present/curate your project Create a short video that demonstrates the project.

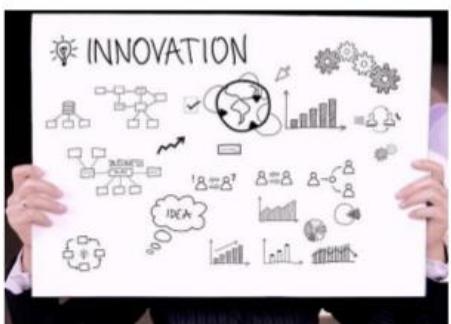
Timeline



Grade Spectrum

	Combined knowledge (15)	IoT Technologies (35)	Solution (35)	Communication (15)
Base (40-49)	2 programme strands present in output. Basic knowledge of each exhibited. (e.g. programming, database, computer systems)	Physical/Data link layer solution. Minimal devices	Basic solution that may form basis of overall application. Sensor focused.	Minimal (1) communication resource used (simple read me) and video.
Good (50-64)	apply concepts from more than two modules/strands..	Wireless protocols. >1 protocol. Interconnected devices.	Solution with clear IoT and domain application. Includes processing/gateway function	Portfolio/repository includes clear presentation, documentation.
Excellent (65-80)	>2 strands as above and including more advanced knowledge and concepts.	Lightweight messaging. Architecture that mediates between high and low level devices.	IoT Application of good prototypical standard. Used to evaluate overall suitability for a production system.	Additional communication resources (e.g. instruction video, learning resources)
Outstanding (80-100)	All above, including self-acquired knowledge over and above module content.	All previous to excellent level. Excellent Use of Cloud/IoT specific platforms	Novel solution of clear applicability to specific domain. Could result in employment offer.	All the above, accessible project platform (e.g. web site)

Other Considerations



- "Permissionless Innovation"!
 - You don't have to limit yourself to module technologies. You can integrate other devices/ systems
 - We used Python but you can use any other programming languages/ frameworks if you want. (Remember, the RPi can run Node/Java/JavaScript)
- Have a look at other IoT project examples for inspiration.
- It's OK to "simulate sensors"
 - You can simulate data (e.g. GPS location.)

Possible Concept: Conditions Dashboard for TBay

Tuesday, February 11, 2020
14:56⁵⁴

WHAT'S ON

online meeting	Tomorrow at 09:15
Van Tom Murphy	Tomorrow at 14:00
Junior Tour - Tramore	In 2 months
Junior Tour - Lahinch	In 2 months
Junior Tour - Bundoran	In 3 months
Junior Tour - Strandhill	In 5 months
Junior Tour - Easkey	In 5 months
Junior Tour - Rossnaulagh	In 6 months

TRAMORE - STRAND

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Gear: undefined% in

Tue 12:00 PM	Tue 03:00 PM	Tue 06:00 PM	Tue 09:00 PM
10.5' @ 10s	10' @ 9s	10' @ 9s	9' @ 9s
Swell: WSW	Swell: WSW	Swell: WSW	Swell: WSW
Wind: W	Wind: W	Wind: W	Wind: W
Steady: 26mph	Steady: 25mph	Steady: 19mph	Steady: 15mph
Gusts: 42mph	Gusts: 41mph	Gusts: 37mph	Gusts: 33mph

Wed 03:00 AM	Thu 09:00 PM	Fri 12:00 AM	Sat 12:00 AM
7.5' @ 9s	7' @ 14s	6' @ 14s	7.5' @ 9s
Swell: WSW	Swell: SW	Swell: SW	Swell: SSW
Wind: WSW	Wind: WNW	Wind: S	Wind: SSW
Steady: 14mph	Steady: 2mph	Steady: 9mph	Steady: 15mph
Gusts: 32mph	Gusts: 2mph	Gusts: 18mph	Gusts: 32mph

last updated at: 2020-02-11 >> 14:52:24.562+0000

You look nice!

Irish Times, 6 hours ago:
Road conditions slippery amid snow and ice warning

5 WNW 17:32
 5.0° Feels like 0°

WEATHER FORECAST TRAMORE, IE

Tue		6.6°	5.5°
Wed		8.1°	5.4°
Thu		8.5°	7.2°
Fri		9.9°	7.6°
Sat		10.8°	9.0°
Sun		9.0°	7.2°

Possible Concept: Safety Sense Buoy

- Safety Buoys becoming more popular for open water swimmers
- Create a device that:
 - Attaches/integral to buoy
 - Transmits location, heading every 2 mins
 - Emergency button (notifies nok, then emergency services)

