Assignment Specification

IoT Standards and Protocols

Y2

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Context

- 100% of your overall mark!
  - Project ethos (1 overall project)
  - Several Deliverables
- 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 it technical (e.g., features) content, complexity, applicability to domain and project communication/execution

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

Feb 25 (Week 5)

Proposal document

- One page markdown doc in Git repo with general concept.
- Doesn't need to be exact!
- Sections: Introduction, Proposed technologies (protocols/devices/prog lang)
- Proposed Tools (IDEs, cloud platforms)

Mar 26 (Week 9)

Project Graphics

- Pictorial (block level) representation of project
- Flow chart of potential algorithm/logic
- Informational flow diagram
- Deliverable: Slides addressing the above

April 30(Week12)

Submission:

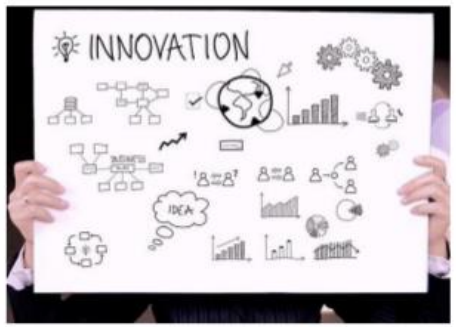
- Git Repository submission(all code/resources)
- Include a 10 min video showing your work. (perhaps YouTube video)
- Present your work

May (Week 13)

15 mins Presentation of final project.

Grade Spectrum

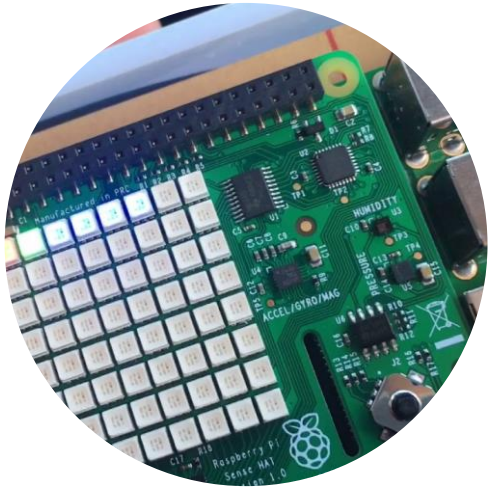
	Combined knowledge (15)	IoT Technologies (35)	Solution (35)	Communication (15)
Base (40-49)	2 programme strands present in output. Basic knowledge of each exhibited. (e.g. programming, database, computer systems)	Physical/Data link layer solution. Minimal devices	Basic solution that may form basis of 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 incl udes 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 communicati on resources (e.g. instruction video, learning resources)
Outstand ing (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)



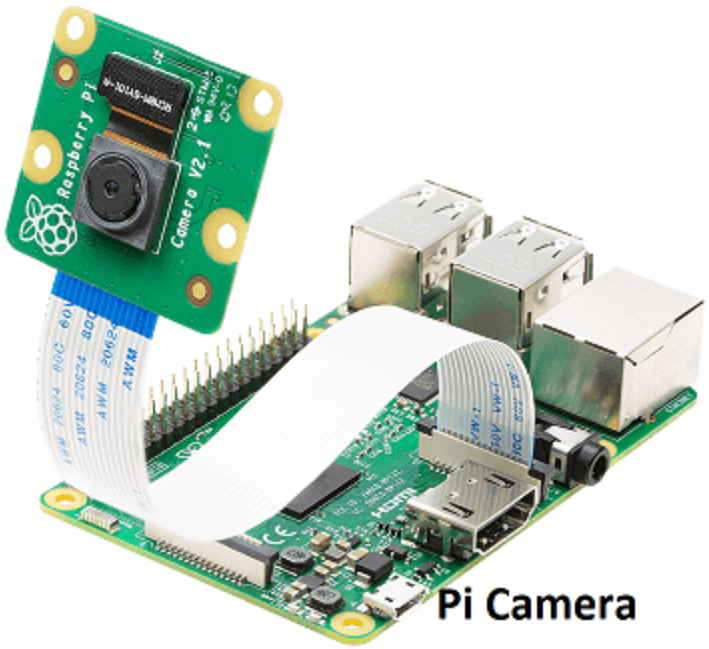
Other Considerations

- "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 Theme: Automotive



Possible Concept:
Home Monitoiring/Ambient/Assisted Living



Pi Camera

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Face Recognised

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Device unlocked