# Assessment Brief – 002 Dashboard

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| **Module Code** | **IOT451U** |
| **Module Title** | Fundamentals of Programming |
| **Module Organiser** | Alex Cline |
| **Assessment** | 002 Dashboard Project |
| **Weighting (%)** | 70% |
| **Deadline** | 13th January 2026 at 23:59pm |
| **Duration / Length** | 3000 lines of code and text |

## Assessment Outline

## Island Dashboard

The goal of this assignment is to scope, design, implement and document a data dashboard for an island that addresses the key challenges of said island. The design of the dashboard and its functionality should come from the student; however, you will be introduced to the following tools throughout the course and it is suggested you use one of these: **Gradio, Streamlit, Panel, iPyWidget, Dash**. Other libraries may be used with instructor permission.

Students should use version control for this assignment, both to demonstrate good practice, to demonstrate authorship and to prevent any loss of code or work. You will be provided a repository for your final project on the Queen Mary Enterprise GitHub server. Commit regularly – a branch will be duplicated from the main branch at the deadline above.

If you are unable to submit via GitHub, there will be a backup submission point on QM Plus. If you submit this way, please zip your folder and submit. **Ensure you include the .git subfolder - just downloading from the GitHub page will not have this by default.** Your application must include the code to make the notebook work in either **.py** or **.ipynb** and all requirements, either in a **requirements.txt** file or **pyproject.toml** file. Assets can be included in the ZIP file – it is also possible to use a bash script command to retrieve these.

**Introduction, Scope and Context (30%)**
You should set the scope of the dashboard, discussing any datasets or databases you will be using (provenance - where they came from, how they came to be collected) and any work needed to get the data in a usable format (cleaning) or to store it before analysis (use of databases, application programming interfaces or data stored in various file formats). You may use any responsibly-sourced data for this project; it is also possible to use synthetic (i.e. fake) data if appropriate, though this may affect the following section. It is worth looking for similar projects in your area, both to provide context and to give you ideas for the analysis and implementation. You should discuss and justify your choice of libraries and tools.

**Methodology and Data Analysis (30%)**
You should talk about and demonstrate your analysis methods and approaches to visualisation here. While the quality of data available will depend on your project, you should

be able to demonstrate statistics at the level of collections and subcollections. You should consider what types of visualisations will best convey your insights, and how these will be accessible to your audience. You should also ensure your work is reproducible and that algorithms or formulas used for calculations are documented.

**Design and Implementation (30%)**
You should show how you constructed the dashboard, demonstrating both the visual and code design. A dashboard implies either interactivity or up-to-date data; ideally, you should include both. This means your dashboard should be interactive and responsive, accommodating different types of users. It should also be updatable, should new data be available. Version control should be used to track the development of new features against documented requirements. You should show knowledge of the classes and methods of libraries used, extending functionality where appropriate.

**Recommendation, Reflection and Conclusions (10%)**
While this part alone is worth the least number of marks, this is critical for showing the learning that occurred during your work on the assignment, and effective completion of this section will allow you to get more marks in earlier sections. You should link your work to relevant knowledge, skills and behaviour from the apprenticeship, and ensure the marker has everything they need to use and evaluate your code.

# Academic Integrity

Plagiarism, falsification, or inappropriate use of AI tools will be treated as academic misconduct. Ensure you are familiar with the types of academic misconduct outlined in the QMUL Academic Integrity and Misconduct policy available here. If you are unsure about anything related to academic integrity or misconduct, please reach out to your module organiser.

# Generative AI

Use of Generative AI (e.g., ChatGPT) is permitted for this assessment but must ***not*** be used to generate text which you then submit as your own as this is academic misconduct. If using spelling or grammar assistive tools, ***avoid*** using any Generative AI functionality which rewrites non-trivial portions of your work.

Avoid relying on Generative AI to format your references as these tools can often produce references which do not exist.

For more information, please see https://www.qmul.ac.uk/library/academic-skills/student-guide-to-generative-ai/.

# Late Submissions and Extenuating Circumstances

Assessments submitted after the published deadline will be marked as late and will receive a penalty, unless you have approved Extenuating Circumstances (EC).

You may submit up to seven calendar days after the deadline but a penalty of 5% of the total marks available will be applied to the assessment for each 24-hour period (or part of it) that the work is late (e.g. five marks deducted each day from a total of 100). After seven calendar days the assessment will be recorded as a non-submission and given a mark of zero.

For more information, you can find the latest Assessment Handbook and Extenuating Circumstances policy via the QMUL policies page here: https://www.qmul.ac.uk/governance-and-legal-services/policy/policies-by-category/

# Knowledge, Skills, and Behaviours (Apprenticeship)

This assessment is designed to help you evidence the following Knowledge, Skills, and Behaviours (KSBs) from your apprenticeship standard which are mapped to this module:

**K5** A range of digital technology solution development techniques and tools.
**K6** The approaches and techniques used throughout the digital and technology solution lifecycle and their applicability to an organisation's standards and pre-existing tools.
**K12** The role of data management systems within Digital and Technology Solutions.
**K13** Principles of data analysis for digital and technology solutions.
**K17** Reporting techniques, including how to synthesise information and present concisely, as appropriate to the target audience.
**S10**: Initiate, design, implement and debug a data product for a digital and technology solution.
**S13** Report effectively to colleagues and stakeholders using the appropriate language and style, to meet the needs of the audience concerned.
**S15** Apply relevant legal, ethical, social and professional standards to a digital and technology solution.
**B3** Acts with integrity with respect to ethical, legal and regulatory requirements ensuring the protection of personal data, safety and security.
**B5** Interacts professionally with people from technical and non-technical backgrounds. Presents data and conclusions in an evidently truthful, concise and appropriate manner.

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## Assessment Criteria

| | Fail | | Pass | | | | |
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| **Criteria** | **0-29 (F)** | **30-39 (E)** | **40-49 (D)** | **50-59 (C)** | **60-69 (B)** | **70-79 (A)** | **80-100 (A+)** |
| | **Not Successful** | **Below Standard** | **Satisfactory** | **Good** | **Very Good** | **Excellent** | **Outstanding** |
| **Introduction, Scope and Context (30%)**<br>Assesses:<br>*Problem definition*<br>*Background research*<br>*Dataset provenance and cleaning* | **Problem definition** is unclear or absent; **background research** shows little/no awareness of context; **provenance of datasets** is not discussed; aims/objectives are absent or misaligned. | **Problem definition** is not clearly defined; **background research** is superficial with limited awareness of project context; **provenance of datasets** is mentioned superficially; aims/objectives are not presented effectively. | Basic **problem definition** is stated but vague; **background research** is descriptive with limited critique; **provenance of datasets** is described with little analysis of suitability; aims are present but unclear. | **Problem definition** is reasonably defined; **background research** is relevant with some limited criticality; **provenance of datasets** is discussed with justification for their selection; aims/objectives are clear and measurable. | Precise, well-motivated **problem definition**; **background research** is critical and identifies clear gaps; **provenance of datasets** is discussed in detail, including limitations; objectives are well-justified and testable. | Strong conceptual **problem definition**; **background research** provides expert identification of research gaps; **provenance of datasets** is critically analysed for fitness-for-purpose, bias, and ethics; aims are comprehensive and feasible. | Field-leading insight and originality in **problem definition**; **background research** shows a new perspective or rigorous gap analysis; **provenance of datasets** is exemplary, with clear relevance and impact articulated; objectives are actionable. |
| **Methodology, Data Analysis and Visualisation (30%)**<br>Assesses:<br>*Data Analysis*<br>*Visualisation*<br>*Methodology* | **Data analysis** methods are missing or completely inappropriate for the dataset. **Data visualisations** are absent or misleading. No discussion of **approach**; replication is impossible. | Choice of **data analysis** methods is poorly documented or inappropriate. **Data visualisations** are poorly chosen, confusing, or do not accurately represent the data. Unclear **methods.** | Standard **data analysis** methods are applied but with limited justification. Basic **data visualisations** (e.g., default charts) are used but provide limited insight. **Methods** are only loosely connected to aims. | Sound, baseline d**ata analysis** methods are chosen and justified. **Data visualisations** are appropriate, clearly labelled, and effectively support the analytical results. **Partial reproducibility –** methods can be followed with some effort. | Rigorous and well-justified **data analysis** methods are correctly applied. A thoughtful selection of **data visualisations** is used to effectively explore the data, communicating **methodology** and complex findings clearly. | Methodological sophistication shown in the choice and justification of **data analysis** techniques; trade-offs are discussed. Advanced or highly effective **data visualisations** reveal new patterns. High **reproducibility –** methods can be easily followed. | Exemplary and innovative **data analysis** methods are applied; results are robustly validated. **Data visualisations** are insightful and tell a compelling, accurate story, serving as a **model** for communicating such data. |

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| | **Not Successful** | **Below Standard** | **Satisfactory** | **Good** | **Very Good** | **Excellent** | **Outstanding** |
| **Design and Implementation (30%)**<br>Assesses:<br>*Implementation, Interactivity, Responsiveness, Structure, Version Control* | Dashboard is non-functional or missing. No **interactivity** or **responsiveness**. Poor quality code with no **structure** or **version control**. | Dashboard has major functionality missing; **interactivity** is broken. Poor **responsiveness**. Code is poorly **structured**; effective use of object orientation or libraries is not demonstrated. | Partially working dashboard with basic **interactivity**. Inconsistent **responsiveness**. Code is functional but inefficient or poorly **structured**. **Version control** is limited. | Working dashboard with reasonable **interactivity** and basic **responsiveness**. Code shows effective use of library imports and functions. Basic version **control**. | High-quality implementation with good interactivity and a responsive layout. Demonstrates good coding practices and logical structure. Uses **versioning** and reproducible environments. | Polished, highly interactive dashboard that is fully responsive. Thoughtful architecture, effectively using object-oriented classes or functional components. Exemplary version control. | Exceptional craft and innovation. Interactivity is intuitive and powerful. Professional implementations exemplary use of OOP or functional principles. Exemplary version control. |
| **Recommendation, Reflections and Conclusions (10%)**<br>Assesses:<br>*Documentation, Reflection, Links to KSBs* | **Documentation** is absent or incomplete, providing no clear evidence of the work undertaken. There is little to no **reflection** on the process or outcomes. No attempt is made to link the work to the apprenticeship's **Knowledge, Skills, and Behaviours** (KSBs) or **relevant ethical frameworks**. | **Documentation** consists of a superficial log of activities. The **reflection** is purely descriptive, stating *what* was done rather than analysing the process. There is a weak or limited attempt to identify relevant **KSBs or frameworks**, with no clear explanation of how they were applied. | **Documentation** clearly outlines the process and results, providing sufficient evidence of the work. The **reflection** explains *how* tasks were performed and considers what went well and what could be improved. Specific **KSBs or ethical frameworks** are correctly identified. | **Documentation** is detailed and structured. The **reflection** effectively, suggests how decisions were made about tasks to perform. A broad range of **KSBs and ethical frameworks** are aligned with evidence, showing how these were applied and developed. | **Documentation** is detailed and well-structured. The **reflection** is thoughtful, analysing *why* certain decisions were made and considering the impact of the outcomes. A broad range of **KSBs and ethical frameworks** are aligned with strong evidence, showing how they were effectively applied and developed. | **Documentation** is thorough and could serve as an example for others. The **reflection** is insightful and critical, evaluating the effectiveness of different approaches and identifying significant lessons. There is a masterful synthesis of **KSBs and ethical frameworks**, showing how they were integrated. | **Documentation** is of a professional standard suitable for wider dissemination. The **reflection** demonstrates strategic thinking, providing key insights and showing foresight. The work evidences mastery of the required **KSBs and frameworks**, showing clear potential for leadership. |