**Due: (End of Module 3)**

**Brief for Level 5 Data Engineer - Formative Piece 2**

**"Problem solving and continuous improvement"**

**Word count:** up to 1,000 words (+/- 10%)

**Objective:** *Demonstrate problem solving and a reflection on continuous improvement by applying core concepts and practical skills learned so far.*

**Deliverables:** *Submit at least* ***two items of evidence****to support your work, including* ***screenshots****and brief explanations for each. Submit via the Hub by the deadline at the top of the document.*

**Task Breakdown:**

Reflect on a time when you encountered a challenge as a data engineer. This could relate to a technical failure, an operational inefficiency, a risk or security issue, a need for optimisation, or the adoption of a new tool or technology. This need not be something you have completed but could be a proposal of an idea you have. Note that this needs to be original work i.e. you cannot outline a project undertaken by someone else. You may have completed this work as part of a team.

Your reflection should analyse the problem-solving process you followed, how you applied continuous improvement principles, and the lessons learned from the experience.

The final submission should be structured, covering technical, strategic, and best-practice considerations, and should demonstrate your role in driving improvement within data engineering processes.

Your reflection should demonstrate how you:

1. **Identified and Managed Risks & Incidents**
   * Describe the issue or risk that arose, how it was identified, and any early warning signs.
   * Explain how you assessed its potential operational impact and followed escalation and communication procedures to ensure business continuity.
   * Reflect on any monitoring tools or policies that supported your response.
2. **Investigated Root Causes & Provided Resolutions**
   * Outline how you analysed the root cause of the issue, and the methods/tools used for investigation.
   * Describe the troubleshooting process and how you collaborated with stakeholders to implement a solution.
   * Evaluate how effective your response and resolution were, and any feedback received.
3. **Applied Continuous Improvement Principles**
   * Explain how this experience helped you identify inefficiencies, technical debt, or areas for enhancement.
   * Discuss any process or system improvements you recommended and the rationale behind them.
   * Reflect on how you used peer review, best practices, or automation to ensure quality and innovation.
4. **Evaluated Data Value, Sustainability & New Technologies**
   * Consider how the issue prompted a review of data value extraction (e.g., optimising existing data products).
   * If applicable, reflect on whether the challenge led to exploring cost reduction, environmental impact, or system efficiency improvements.
   * Discuss any new technologies, frameworks, or methodologies you considered implementing as a result.
5. **Advocated for Best Practices in Technology & Development**
   * Reflect on how the experience reinforced the importance of software development principles in data engineering.
   * Describe any lessons learned about adopting best practices in data pipeline management, system architecture, or tooling.
   * Consider how this influenced your approach to collaborating with data scientists, analysts, or developers.

**Guidelines for Writing the Reflection**

* **Introduction:** Provide context about the challenge or opportunity you faced.
* **Main Body:** Address the checklist items in a structured manner, ensuring clarity and depth of analysis.
* **Conclusion:** Summarise key learnings, changes in approach, and recommendations for future improvements.

**Assessment Criteria:**

* Clear articulation of problem-solving methods.
* Evidence of best-practice application.
* Use of unique examples and critical reflection.
* Consideration of continuous improvement and innovation.

**Submission Requirements:**

* Submit your work in a single PDF or Word document.
* Caption and number each screenshot (For example: Fig. 1 - My important image) and then refer to your numbered screenshots to explain the actions taken (for example "As seen in Fig. 1, I have...").
* Save this document both in your learning journal and on the Hub.