



**FOUNDATION TRACK 2**

**EXAM MATERIAL RELEASE**

THEORY QUESTIONS

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| **SECTION** | **MARK** |
| **Theory Questions** | 24 |
| **Multiple Choice Questions** | 10 |
| **Code/Query Evaluation** | 15 |
| **Coding Challenge** | 25 |
| **TOTAL** | **74** |

**Important notes:**

* This document shares the first section of the Foundation Exam which is composed of 8 Theory Questions
* It is worth just over a third of your exam mark
* You have 24 hours before the exam to prepare.
* If any plagiarism is found in how you choose to answer a question you will receive a 0 and the instance will be recorded. Consequences will occur if this is a repeated offence. You can remind yourself of the plagiarism policy [here](https://drive.google.com/file/d/1k9UaGOR7hx54QRZ8jvp2jtC4P-8_Rs4F/view?usp=sharing).

**Section 1: Theory Questions [24 marks]**

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| * 1. **Explain the difference between a primary key and a foreign key.**   A primary key is a field in a table that uniquely identifies each record in that table; it must contain unique values and can’t be NULL. A foreign key is a field in a table that refers to the primary key in another table. It establishes a relationship between the two tables and ensures referential integrity. | **2 marks** |

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| * 1. **Explain the difference between undefined and null in JavaScript**   Undefined is a variable that has been declared but not assigned a value. It is a type and value in JS.Null is an assignment value that represents no value or no object. It is an intentional absence of any object value. | **2 marks** |

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| * 1. **Explain the difference between a commit and a push in Git.**   Commit is a commend that saves changes to the local repository. It creates a snapshot of the project at a specific point in time.  Push is a command that uploads local repository content to a remote repository – it updates the remote repository with local commits. | **2 marks** |

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| * 1. **Provide examples of two web APIs and describe their functionalities**   Google maps API allows developers to embed Google Maps on webpages using a JS or Flash interface. It enables features like displaying maps, adding markets and providing directions  Twitter API enables developers to interact with twitter data. It allows functionalities such as reading tweets. | **4 marks** |

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| * 1. **Describe four tasks in the role of the Product Owner in Agile development**  1. Defining product backlog – creating and prioritsing list of tasks, features and requirements for dev team 2. Stakeholder communication – line of communication between stakeholders and dev team 3. Spring planning – collaboration with team to plan and define goals for each sprint 4. Acceptance criteria – defining and confirming acceptance criteria for each user story to ensure final product meets required standards | **4 marks** |

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| * 1. **Name two types of SQL joins and provide an example scenario for each.**  1. INNER JOIN selects records that have matching values in both tables   Example - retrieving a list of customers and their orders where both customer and order exist e.g.  SELECT Customers.CustomerID, Orders.OrderID  FROM Customers  INNER JOIN Orders ON Customers.CustomerID = Orders.CustomerID;   1. **LEFT JOIN** selects all records from the left table and the matched records from the right table. Records from the left table with no match in the right table will still be included.   **Example -**  Retrieving all customers and their orders, including customers who have not placed any orders.  SELECT Customers.CustomerID, Orders.OrderID  FROM Customers  LEFT JOIN Orders ON Customers.CustomerID = Orders.CustomerID; | **4 marks** |

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| * 1. **What is the difference between synchronous and asynchronous functions?**   **Synchronous Functions** execute tasks sequentially. Each task waits for the previous one to complete before starting.  **Asynchronous Functions** allow tasks to run concurrently. A task can start before the previous one completes, enabling non-blocking behaviour. | **2 marks** |

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| * 1. **Explain both Agile and Waterfall approaches to Software Development, and at least 2 differences between them**   **Agile is a**n iterative and incremental approach to software development. It emphasizes flexibility, customer collaboration, and small, rapid releases.   * Development is divided into small sprints or iterations. * Continuous feedback and adaptation.   **Waterfall** is a linear and sequential approach to software development. Each phase must be completed before the next begins.   * Development flows through distinct phases like requirement analysis, design, implementation, testing, deployment, and maintenance. * Emphasises comprehensive documentation and planning.   Agile is flexible and allows changes throughout the development process, while Waterfall is rigid and does not accommodate changes easily once a phase is completed. It also involves continuous customer feedback, whereas Waterfall gathers feedback typically after the project is completed or at the end of each phase. | **4 marks** |