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| Pearson  Higher Nationals in | | |
| Computing | | |
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| Unit 43: | | Internet of Things | |
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Higher National Certificate/Diploma in

Computing

Assignment Brief

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| Student Name/ID Number |  |
| **Unit Number and Title** | **43: Internet of Things** |
| Academic Year | 2022 |
| Unit Tutor | K. Mohamed Ishraque |
| **Assignment Title** | **Impact of the IOT experience in the Transportation Industry.** |
| **Issue Date** | **20.10.2022** |
| Submission Date | 20.11.2022 |
| IV Name & Date | Mr. AR. Mohamed Nizzad 25.10.2022 |

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| **Submission Format** |
| Submission for this assignment should be a document and project work.  **Part 1:** Internet Survey Report  **Part 2 & 4:** Report with appropriate references, using Harvard Referencing format.  **Part 3:** Presentation - Information’s should be added to the slide to the point and not more than 12 slides  **Part 5:**   * Document – Outline a plan for an appropriate IoT application using common architecture, frameworks, tools, hardware and APIs. For the plan you are expected to make use of appropriate structure – including headings, paragraphs, subsections and illustrations as appropriate and all work must be supported with research and referenced using the Harvard referencing system. * Project work – Develop an IoT application using any combination of hardware, software, data, platforms and services. For your application you will be expected to utilise any appropriate tools and material you think are necessary to complete your assignment tasks. |
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| **Unit Learning Outcomes** |
| **LO1** Analyse what aspects of IoT are necessary and appropriate when designing software applications  **LO2** Outline a plan for an appropriate IoT application using common architecture, frameworks, tools, hardware and APIs’.  **LO3** Develop an IoT application using any combination of hardware, software, data, platforms and services.  **LO4** Evaluate your IoT application and the problems it might encounter when integrating into the wider IoT ecosystem |
| **Assignment Brief and Guidance** |
| IoT development projects are everywhere, and affordable, advanced technology is the driving force behind this fast-growing phenomenon. Smaller, more accessible hardware and the flexibility to use common programming languages make it easier than ever before to develop these embedded IoT systems. From hobbyists programming their own single-board computers to companies developing devices we can control from our mobile devices, the IoT is rapidly expanding.  Nowadays most of the vehicles are actually equipped with GPS (Global Positioning System) and ADAS (Advanced Driver Assistance System) where all the information is captured from the vehicle and then analyzed accordingly and decisions are taken.  For example,  The application of emergency break based on the sensor data, ability to provide help for the user while parking the car and assisting him during this process. All of this application has made a spotless change in terms of how the internet of things can help an individual and also the companies to do research and development to enhance their unique offerings to the customers to attract to their businesses. |

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| **Part 1- Explore** various form of IOT functionality and **Review** and List down in a chart about Standard architecture, Frameworks, Tools, Hardware and APIs available for use in IOT developments through an internet survey. **(Report)**  **Part 2-** As an internet survey report, **Analyse** the impact of common IoT architecture, frameworks, tools, hardware and APIs in the software development life cycle. **(Report)**  **Part 3-** Select any other IOT based two specific latest projects which should belongs under transportation industry (except above scenario) and **Review** and compare those projects IOT architecture, frameworks, hardware and APIs used to **Problem Solving**. **(Presentation)**  **Part 4**- Make some researches to **evaluate** above example scenario’s (ADAS – emergency break) **IOT architecture and justify** their use when designing software applications. **(Report)**  **Part 5-** You currently work as a product developer for a new start up where you design IoT products for Transportation Industries. As part of your role your Project Manager has tasked you to plan and develop a new IoT product for potential client. You are required to identify a target user and conduct tests with this user and include this feedback into multiple iterative versions of your product. You can make testing using any toy vehicles.  As part of this process you must:   1. Plan an IoT application for a specific target end user and the tests you intend to conduct with this user. This plan will be in the form of a document and will include supporting evidence and material, such as user personas and customer journey maps. 2. Create multiple iterations of your application and modify each iteration with enhancements gathered from user feedback and experimentation. This will follow the pathway outlined in your plan. |

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| Learning Outcomes and Assessment Criteria | | |
| Pass | Merit | Distinction |
| **LO1** Analyse what aspects of IoT are necessary and  appropriate when designing software applications | |  |
| **P1** Explore various forms  of IoT functionality.  **P2** Review standard  architecture, frameworks,  tools, hardware and APIs  available for use in IoT development. | **M1** Analyse the impact of  common IoT architecture,  frameworks, tools, hardware  and APIs in the software  development life cycle.  **M2** Review specific forms of  IoT architecture, frameworks,  tools, hardware and APIs for  different problem-solving requirements. | **D1** Evaluate specific forms of  IoT architecture and justify  their use when designing software applications. |
| **LO2** Outline a plan for an appropriate IoT application using common architecture, frameworks, tools, hardware and APIs | | **D2** Make multiple iterations of your IoT application and modify each iteration with enhancements gathered from user feedback and experimentation. |
| **P3** Investigate architecture, frameworks, tools, hardware and API techniques available to develop IoT applications.  **P4** Determine a specific problem to solve using IoT. | **M3** Select the most appropriate IoT architecture, frameworks, tools, hardware and API techniques to include in an application to solve this problem.  **M4** Apply your selected techniques to create an IoT application development plan. |
| **LO3** Develop an IoT application using any combination of hardware, software, data, platforms and services. | |
| **P5** Employ an appropriate set of tools to develop your plan into an IoT application.  **P6** Run end user experiments and examine feedback. | **M5** Reconcile and evaluate end user feedback and determine advantages and disadvantages of your chosen IoT techniques. |
| **LO4** Evaluate your IoT application and the problems it  might encounter when integrating into the wider IoT ecosystem | |  |
| **P7** Review your IoT  application detailing the  problems it solves.  **P8** Assess the potential  impacts of your IoT  application on people,  business and society and  the end user.  **P9** Investigate the  potential problems your  IoT application might  encounter when  integrating into the wider system. | **M6** Undertake a critical  review and compare your  final application with the original plan. | **D3** Critically evaluate the  overall success of your application. |