|  |  |  |  |
| --- | --- | --- | --- |
|  |  | | |
| Pearson  Higher Nationals in | | | |
| Computing | | | |
|  | | | |
| Unit 8: | | Computer Systems Architecture | | |
|  | | | |
| Assignment Brief Number: | | | 2 |
|  | | | |
|  |  | | |



Higher National Certificate/Diploma in

Computing

Assignment Brief

|  |  |
| --- | --- |
| Student Name/ID Number |  |
| **Unit Number and Title** | **8: Computer Systems Architecture** |
| Academic Year |  |
| Unit Tutor |  |
| **Assignment Title** | **2 – Network Design for Fire Department** |
| **Issue Date** |  |
| Submission Date |  |
| IV Name & Date |  |

|  |
| --- |
| **Submission Format** |
| The submission is in the form of two documents/files:  Training PackageA (contains three documents):  Part 1: A Microsoft® PowerPoint® style presentation, including additional or extended information as notes and presentation handout.  Part 2 : Complete handout about the operating systems and functions  Part 3: A Microsoft® PowerPoint® style presentation, including additional or extended information as notes and presentation handout.  You are required to make use of headings, paragraphs, subsections and illustrations as appropriate, and all work must be supported with research and referenced using the Harvard referencing system. |

|  |
| --- |
| **Unit Learning Outcomes** |
| LO3 Use Network Communication technology and the associated services to connect computer System  LO4 Demonstrate diagnostic and troubleshooting skills to solve hardware, software and networking related issues |
| **Assignment Brief and Guidance** |
| **Scenario**    The Fire Department in Newtown has been restructured and is shortly opening a new headquarters building. The headquarters will house all the communications and computer systems for the Fire Department.  Newtown Fire Department covers an area of 70 square kilometres and has a Chief Fire Officer who is responsible for firefighting, rescue operations and fire prevention in that area. The Chief Fire Officer is assisted by three Watch Officers who also carry out senior duties and take responsibility for the operational duties of the Fire Department when their watch is on duty. The Fire Department has 3 watches and each is on duty for 8 hours per day.  Each watch is made up of 20 firefighters and there are 3 fire engines plus one car for the Watch Officer.  All vehicles require two-way communications with the control centre. The control centre has three Controllers on duty at any time who receive calls from the public, liaise with other emergency services when required and maintain contact with firefighters when they are at an incident.  When fire engines are required for an emergency, the control centre sends details to a printer in the fire engine bay to provide written details of the incident. This print-out is taken by the Watch Officer as the watch leaves the building to attend the incident. The call centre also updates the firefighting staff via two way voice communication.  The Fire Department also has ten civilian staff, responsible for schools liaison, press releases, personnel functions, cleaning and general administration duties. The civilians are in a separate office from the fire staff and their office includes the headquarters reception area.  Newtown Department is renewing all of its networks for the new headquarters including the computer network, telephone communications and two-way communications with firefighters when they are out in the department’s vehicles.  You are working as an Assistant Network Designer at Fire Department. Your manager has asked you to design the network for the headquarters.   * **Part 1: Create a report to produce the necessary information to the senior management regarding the new network implementation.**   The report should include the following   * Relationship between Hardware and Network addresses including their use * Comparison between Physical and Logical Network Topologies (Include the necessary Diagram) * Difference and purposes between different network topologies * When building up the network of fire department what types of conceptual models & standards you may consider? (Hint : OSI, TCP/IP model, IEEEE) * **Part 2: Research about the different technical hardware, software and networking issues and create a presentation to present to your superior. Presentation should include the following areas and the speaker notes.**  1. Different Hardware, Software and Network issues can occurred 2. Range of maintenance activities with computer hardware and software 3. Information gathering methods and techniques (System Document, user information, error codes…etc.)  * **Part 3: Create a report to evaluate suitability of software behavioural design techniques and assess the future improvement required to ensure the effectiveness of a computer system.** * **Part 4: Create system documentation to the given scenario including clear stepwise information and include the relevant diagrams.** |
|  |

|  |  |  |
| --- | --- | --- |
| Learning Outcomes and Assessment Criteria | | |
| Pass | Merit | Distinction |
| **LO3** Use Network communication technology and the associated services to connect computer systems | | **D2**. Evaluate the OSI and TCP/IP models with regards to hierarchy, layers and services including information on the associated protocols and hardware.  **D3** Assess any future improvements that may be required to ensure the continued effectiveness of a computer system. |
| **P5** Explain the relationships between hardware and network addresses including their use with regards to networking devices and components.  **P6** Setup, configure and document appropriate hardware and software systems to establish computer based network connectivity. | **M3** Compare common physical and logical networking topologies and explain the differences and purposes of each. |
| **LO4** Demonstrate diagnostic and troubleshooting skills to solve hardware, software and networking related issues. | |
| **P7** Use information gathering methods to assess, troubleshoot and document solutions to a number of different technical hardware, software and networking issues.  **P8** Conduct and document a range of maintenance activities with regards to computer hardware and software. | **M4** Review different diagnostic and troubleshooting skills including data gathering methods and techniques. |