UNIVERSITY OF SUNDERLAND
SCHOOL OF COMPUTER SCIENCE & ENGINEERING

MODULE CODE:	CET333
MODULE TITLE:	Product Development
MODULE ASSESSOR:	Dr Barnali Das
ASSESSMENT:	1 of 1
TITLE OF ASSESSMENT:	Portfolio Report
ASSESSMENT VALUE:	100%

PLEASE READ ALL INSTRUCTIONS AND INFORMATION CAREFULLY.

This assignment contributes 100% to your final module mark. Please make sure to keep a copy of your assignment as a backup in case your work is lost or corrupted online.

THE FOLLOWING LEARNING OUTCOMES WILL BE ASSESSED:

Knowledge

- Have a critical awareness of a range of practitioner methods and techniques appropriate to developing a product in a specific computing context.
- Understand the business and technological context in which product development and evaluation take place.

Skills

- Apply appropriate techniques to determine, specify, design, build and test a solution to a problem.
- Critically evaluate the process and the product of development activity.

IMPORTANT INFORMATION

You are required to submit your work within the bounds of the University Infringement of Assessment Regulations (see your Programme Guide). Plagiarism, paraphrasing and downloading large amounts of information from external sources will not be tolerated and will be dealt with severely. The coursework submission for this module is largely based on your practice. Still, this should be duly referenced when you use material from other sources, such as an occasional short quote. It is important to note that your work WILL BE SUBJECT TO CHECKS FOR ORIGINALITY, which WILL include using an electronic plagiarism detection service.

Where you are asked to submit an individual piece of work, the work must be entirely your own. The safety of your assessments is your responsibility. You must not permit another student access to your work at any time during the inception, design or development of your coursework submission and must take great care in this respect. Where referencing is required, unless otherwise stated, the Harvard referencing system must be used (see your Programme Guide or university library website).

You must complete the Assignment Cover Sheet and attach it to the Portfolio Report.

Tasks:	• **Task 1:** Portfolio Report (PDF file) • **Task 2:** Prototype Product and Demonstration
Submission Date and Time:	**Week 13**, at 23:59. Detailed in the CANVAS assignment area
Submission Location:	Electronic submission link to the CANVAS assignment area

Assessment (Portfolio Report– 100%)

Assessment Scenario

AI-Solution is a fictitious start-up company based in Sunderland. AI-Solutions leverages AI to assist various industries with software solutions to rapidly and proactively address issues that can impact the digital employee experience, thus speeding up design, engineering, and innovation. AI-Solutions has distinguished itself by integrating an AI-powered virtual assistant that responds to users' inquiries and provides AI-based, affordable prototyping solutions. This unique selling point sets them apart from their competitors and is sure to pique customer's interest. The company's mission is to innovate, promote, and deliver the future of the digital employee experience, with a strong focus on supporting people at work. This commitment is at the core of the global expansion and aims to make a worldwide impact.

Analysis, Design and Development Task

During client meetings, you will receive additional information to help you complete the design and development task. These meetings will demonstrate the knowledge and skills relevant to your program of study. You will not need to present the entire solution – more details are provided below:

Each top-up degree program has its own specific requirements. You only need to fulfil the requirements for your program.

- ## Applied Business Computing

The company requires an online web system or presence to showcase their expertise globally, and you will assist them in this case. You need to develop a short form for **Scheduled Demo** where customers can fill out the form with their name, email address, phone number, company name, country, and the information they are interested in for an AI-powered virtual assistant or to schedule a personalised solution demo. There should be additional options for participating in promotional events (**Join our Events**), where customers can view technical solutions demonstrated to promote and advertise the company's product solutions. The company needs a password-protected admin area to access data on the number of customer inquiries. The company requires accurate analysis of customer information to understand customer satisfaction and predict company success, including the number of interested customers for scheduled demos or joining promotional events and the number of jobs placed for virtual assistance and prototyping solutions.

- ## Computer Systems Engineering

The website will provide details of the software solutions offered to customers, highlights of past solutions provided to industries, customer feedback with ratings, articles promoting the company, photo galleries of promotional events and upcoming events. In order to gauge the demand for the services, the company need a system that promotes its software solutions and allows potential

customers to reach out to them with their specific job requirements. Customers will be asked to provide their name, email address, phone number, company name, country, job title, and job details using a **Contact Us** form. They won't need to create accounts or provide passwords. Additionally, we need a password-protected admin area that allows them to access data on the number of customer inquiries.

- ## Network Systems Engineering

You have been assigned to develop appropriate network design methodologies and use them to create and implement a **Secured Network Solution** for the new office building.

Please take note of the following information:

The building is planned to have four floors, with two departments on each floor, as follows:

- 1st floor: Sales and Marketing Department (100 users), HR Department (100 users)
- 2nd floor: Finance and Accounts Department (100 users), Administration Department (100 users)
- 3rd floor: Technical Communication Department (100 users), Server Room (10 devices)
- Ground floor: Design and Development Department (200 users)

Please remember the following: It is important to develop a network simulation along with documentation of the addressing scheme. You will need to evaluate different methodologies, justify your choice, and use them to implement a secure network solution. It's crucial to use a hierarchical model that provides redundancy at every layer to ensure network reliability. Each department is required to have a wireless network for the users. All devices in the network are expected to obtain an IP address dynamically from the dedicated DHCP servers located in the server room. Devices in the server room are to be allocated IP addresses statically. You should evaluate the design, implementation, and security.

- ## Mobile and Web Technologies

The company aim to develop a **Mobile App** that will enable industry customers to interact easily with an AI-powered virtual assistant. The app will be smart enough to recognise when a conversation needs to be transferred to a human staff member, ensuring a seamless and efficient user experience. Customers will need to provide their name, email address, phone number, company name, country, and the type of information they are interested in, such as software assistance, scheduling a demo, inquiring about events, or chatting with a sales representative.

- ## Business Intelligence and Data Analytics & Information and communication technology

You are responsible for Product Sales Data Analysis as a sales team member. In general, you will need to **develop tools** that allow the company to analyse the effectiveness of its software solutions. The company aims to use the analysis tools to assist in marketing and advertising the proposed software

solutions on the website. The company needs you to create test data for web server logs. Assume the web server is Internet Information Server, and the log format is as follows. Save the web server log file in an Excel file (CSV or similar format). Then, develop tools using R or Python to analyse the web server logs and report information such as country, number of jobs placed, types of jobs requested, requests for schedule demos or promotional events, and requests for AI-powered virtual assistant, etc. The company expects a comprehensive analysis, including diagrams such as bar charts, scatterplots, or pie charts, to represent the best results. You can also use basic statistics to provide summaries, such as means and standard deviations. This analysis will help you assess your sales team's performance and evaluate the overall effectiveness of the company's sales strategy.

Web server log file example:

02:49:36 128.1.0.0 GET /index.html 200

03:01:07 155.55.0.24 GET /images/events.jpg 304

01:20:04 157.20.5.0 GET /event.php 200

03:54:36 157.20.20.10 GET /scheduledemo.php 200

04:17:04 157.20.30.10 GET /prototype.php 200

Assessment Tasks

Your role is to act as a consultant, analyse your client's needs, develop and test a prototype solution, and deliver and evaluate this solution with your client. In parallel, you must document the project professionally and ethically, just as you would if you were an analyst working for a software house or service provider.

You must consult with your client to determine and agree on the exact requirements. Your module tutor (or someone appointed for this by the module tutor) will act as your client. You are to interview your client to determine the exact requirements and to develop your solution using suitable technologies.

To carry out the project professionally, you must carefully consider the appropriate development methodology and the choice of implementation technologies. This should be based on the client‘s needs and the nature of the project. You will need to document the choice of these methods and technologies and any alternatives in your report and justify your choices. The application should be developed based upon a sound software engineering or networking/telecoms approach, which should cover the requirements elicitation, implementation, testing and evaluation phases where you verify the solution and critically evaluate the overall result.

You also need to plan your project and generate a project schedule with task breakdown, effort allocation, and task sequencing. You are then required to demonstrate the use of this documentation, including any updates/adjustments that reflect the true development history, including any rescheduling, and provide a critical reflection on the history of your project.
You must evaluate your system with your client and confirm that it meets the requirements originally negotiated and satisfies the client’s needs. This evaluation activity must be reflective and show that the development process and the product were properly tested and evaluated.

How well you report all these aspects will affect the mark you receive; **please view the marking criteria**. Your module mark is derived both from your ability to provide a technical solution for a client AND from the portfolio, which documents the planning and conduct of the project in total; compliance with portfolio requirements is, therefore, very important.

Task 1: Portfolio Report

You are required to produce a portfolio report that documents the project's development. This MUST be submitted as a single PDF file that is well structured, coherent and contains the following sections:

Front Cover: This should include the module code, your project title, your student's name and your ID.

Contents: Your work MUST include page numbers throughout and in its contents.

1. **Requirements Specification:** A mandatory statement of your proposed solution's functional, non-functional, or technical requirements and expected deliverables using the template provided. Your client must approve and sign off on this statement as a basis for the development.

2. **Planning Documentation:** A Project Schedule that identifies the tasks, effort allocation, timescales and deliverables required during the project to successfully generate the proposed solution and systems documentation by the specified deadline. This must also reflect upon any revisions to scheduling where applicable during the project

3. **Client Contact Record Sheet:** Mandatory record of 3 client meetings. This should be completed and signed off by your client and yourself at set points in the project, then scanned and inserted into your e-portfolio illustrating your regular engagement with the client with key bulleted Action Points.

4. **Methodology:** A report made with direct reference to your Planning Documentation, which explains and justifies the main approaches, methods and tools you have built into your planning cycle to ensure that you deliver the specified solution to your client in the agreed-upon timescales. Note this report must be written in your own words about your professional practice. This is NOT a research review, so you are not required to reference academic papers. However, you need to investigate the approaches you intend to implement and apply in your practice to write about them critically.

5. **Solution Design Documentation:** Present the design documentation you have created relevant to your field of study. The section includes the design of the product prototype, documentation that describes the system, and evidence.

6. **Testing and Evaluation:** This section should detail how you tested your project against the functional and non-functional requirements. You should provide details of the testing methodologies, protocols, frameworks, tools, etc., and provide your testing results.

7. **Technical Deployment of the Solution:** This section describes the solution's technical requirements, including a summary of any installation and/or deployment procedures in the proposed production environment. It is highly recommended that a screencast be also included.

8. **Critical Reflection:** Regarding your Planning Documentation and Practitioner Statement, critically review the effectiveness of implementing the methods and tools adopted during the entire planning and development cycle and how this will inform and adapt your approach to client projects in the future.

Task 2: Prototype Product and Demonstration

You are required to produce a working solution and demonstrate this to your client. This demonstration will be done via a pre-recorded video, which shows the functionality of the solution you have created. Your solution must:

1. Conform to the agreed requirements
2. Be functional and largely error-free

You should carefully plan your demonstration before you begin recording it to ensure that you fully demonstrate how you have met each requirement.

You will only be graded on the functionality you demonstrate in the video.

Submission Requirements

Task 1: For this task, you must submit a single PDF file containing all the sections outlined in the Assessment Tasks section of this document.

Task 2: For this task, you are required to submit a video demonstration of your solution; you will only be graded on the functionality that you demonstrate in this video.

Help with Referencing

Whenever you need to refer the reader to the source of some information, e.g., a book/journal/academic paper/WWW address, provide a citation at that point within the main body of your report.

Example 1: ... *as we are all now aware, referencing is not trivial (Kendal, 2017)*

Provide a reference list towards the end of your research paper (after your conclusions section but before any appendices) that contains:

- References, a list of books/journals/academic papers/URLs, etc., that have been directly cited from within the report (see example citation above).
- Any material from which text, diagrams or specific ideas have been used, even if this has been presented in your own words, must be cited within the main body of the paper and listed in the reference list. It is not enough to list this material in a bibliography.

Example 2: For Example 1 (using the Harvard system), the reference list would contain the following:

Kendal S., 2017, Referencing standards, International Student Journal, Vol 55, Pages 25 – 30, Scotts Pub., ISBN 1-243567-89

This shows the authors, the date published, the title of the paper (in single quotes), the title of the journal or conference (in italics), volume, page numbers, and publisher (ISBN desirable but not essential).

For further help, see the following book, which is available in the library:

- Cite Them Right: The Essential Guide to Referencing and Plagiarism by Richard Pears and Graham Shields

An interactive online version of this guide is available by logging into My Sunderland with your User ID and password and then clicking on Me and Library Resources.