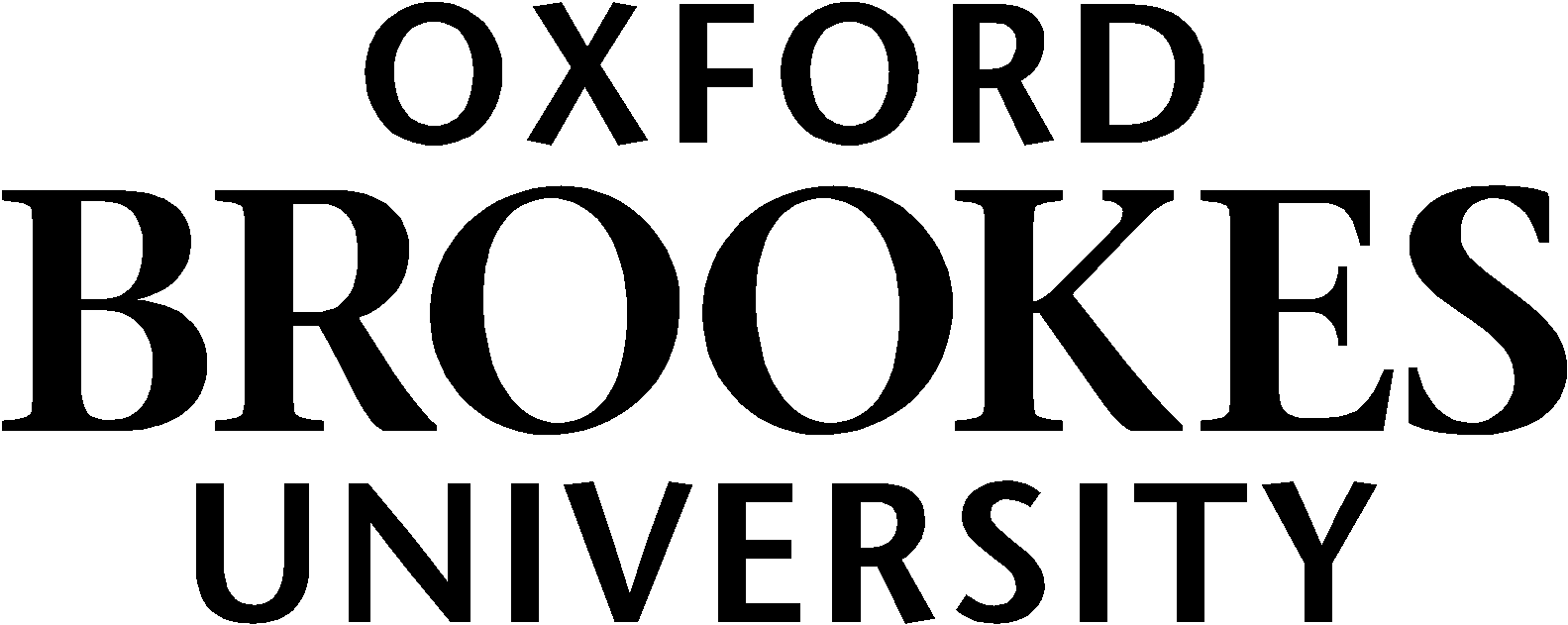
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**Assessment cover (Group submission)**

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| --- | --- | --- | --- |
| Module No: | COMP4035 | Module title: | **Computer Science Applications** |

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| --- | --- | --- | --- |
| Assessment number: | **1** | Assessment title: | **Reflections on creating a Project Proposal** |

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| --- | --- | --- | --- |
| Banner assignment identifier | **CWS1WEEK06** | Due date and time**:** | **Friday 1 November 2024 13:00** |

|  |  |
| --- | --- |
| Estimated total time to be spent on assignment: | *XXX hours per student* |

**LEARNING OUTCOMES**

|  |
| --- |
| **On successful completion of this assignment, students will be able to achieve the following learning outcomes (LOs):** |
| LO 1: Demonstrate an understanding of business processes and modern work practices including group work, show basic analytic reflection of these processes, and be able to document them. |

**STUDENT NAMES**

|  |  |  |
| --- | --- | --- |
| **Student No:** | **Student ID Number (Only):** | **Group Name and Number:** |
| **1.** | **19327478** | **SET 1/ №39** |
| **2.** | **19313884** | **SET 1/ №39** |
| **3.** | **19318048** | **SET 1/ №39** |
| **4.** | **19311854** | **SET 1/ №39** |
| **5.** | **19322254** | **SET 1/ №39** |

**Statement of Compliance**  
By submitting this assessment I declare that the work submitted is my own and that the work I submit is fully in accordance with the University regulations regarding assessments. *(*[*www.brookes.ac.uk/uniregulations/current*](http://www.brookes.ac.uk/uniregulations/current)*)*

**Use of AI Tools:** You are required to use this [form](https://docs.google.com/forms/d/e/1FAIpQLSfjGiLTf7NEGMVeaZe62ufUxUs7kmw6HayzYTNKKioz_D3G2Q/viewform) to declare which AI tools you have used and how you have used them. Please complete the form and attach it to your submission as an Appendix, if you have used such tools.

Analysis:

Analysis of domain:

  Computer Systems:

"A computer system is viewed as a system that accepts some set of inputs, executes processing, and produces outputs" (Sebesta, 2022.) Our company will sell gym equipment; therefore, the website should process customer credentials on paying customers for such equipment and generate receipts to serve as proof of customer orders.

 Features:

The website should be designed to be easy to use because "usability is the key to customers" (Krug, 2014.) The computer system should display the products under clear categorization. The prices of each product need to be mentioned underneath each product. "Discounted products must be in bold "so that customer attention could be drawn to special offers" (Nielsen, 2021). Further, a safe and secure payment gateway must be developed for the safety of customer credentials. Also, it needs to "comply with data protection regulations to avoid data breaches" (Information Commissioner's Office [ICO], 2018). It will also reduce misunderstanding and ensure a smooth shopping experience with an automated system for the management of stock availability to notify the customers of out-of-stock availability of a product. In this respect, Laudon & Traver says, "a system to handle errors in order to indicate messages when there is an indication of problems while transactions are being made such as paying for an item. The system shall allow account creation for users above sixteen years old with the requirement of important information. Customers have to accept the terms and conditions before making a final decision by creating an account registration. Then, they can log in and purchase, and shop with our company. Website Features The name and "logo to show brand recognition" of the company should be placed in the website's header (Nielsen, 2021). A categorized section should be provided, with a navigation bar so customers may have an easier time browsing around and looking for an item they may want. An "About Us" section may be placed under the main header so customers can learn about the history of the company and their aims and ambitions-that is how it would appear from visiting competitor websites such as Gym shark (Gym shark, 2023).

  The shopping cart should be manageable: adding items inside, removal of items, and changing the quantity as each customer would want. The system should be able to provide convenience and speed for returning customers by storing card information for them to avoid having to re-enter payment details every other time a purchase must be made.

Different accounts:

Account Types: These are of varying types, such as customer and admin accounts. This will provide the administrative users with exclusive access in managing the website. Sebesta (2022) presents that this is true. A domain name that shows clarity, reflecting a brand's identity, is very important. A domain name is "the URL that shows up in the address bar of the browser", which clients will associate with the company's brand. GoDaddy (2023) presents that this is true.

 References:

1-Gym shark. (2023). About us. Retrieved from Gymshark Official Store - Gym Clothes & Workout Clothes

2 -Information Commissioner's Office. (2018).

3 -Krug, S. (2014). Don't make me think: A commonsense approach to web usability (3rd ed.)   book from amazon.

4-Laudon, K. C., & Traver, C. G. (2021). E-commerce 2021: Business, technology, and society (16th ed.). in the Pearson book

 5-Nielsen, J. (2021). Designing websites for ease of use. Nielsen Norman Group. Retrieved from [Nielsen Norman Group: UX Training, Consulting, & Research](https://www.nngroup.com/)

6 -The 8 most important features you need for a website- what is a computer system

[The 8 most important features you need for a website](https://webflow.com/blog/features-in-website?msockid=18a46d2ef5b8614c269779a0f46860da)

7 -The 8 most important features you need for a website- website features

[What is a Computer System? | Definition from TechTarget](https://www.techtarget.com/searchwindowsserver/definition/system)

System Development Process

Software development is a process that can be done through several different methodologies, choosing the right method ensures that the overall process for developing the software is as efficient as it can be. For our e-commerce platform, we will be using the Agile methodology, specifically the Scrum framework, as our system development process.

Agile is an iterative and incremental approach to software development that utilises flexibility, collaboration, and rapid delivery of working software. In our implementation, we will use key Scrum characteristics and events to make sure of efficient development. The Product Backlog will serve as a dynamic, prioritised list of user stories and requirements for our e-commerce system. Sprint Planning meetings will occur at the start of each sprint, typically lasting 2-4 weeks, where the development team will select items from the Product Backlog to form the Sprint Backlog. Daily Stand-up meetings will ensure continuous communication between the team. During each sprint, the team will develop, test, and integrate new features into the e-commerce platform. At the end of each sprint, a potentially shippable product increment will be demonstrated in the Sprint Review, allowing consumers and sellers to provide feedback.

Using Agile for our e-commerce project provided several technical advantages. Agile has the ability to respond to changing requirements, this is crucial in the dynamic e-commerce environment, where consumer demands and market trends frequently shift. Agile's iterative nature allows us to incorporate new features or modify existing ones without disrupting the entire development process. Secondly, Agile practices align well with Continuous Integration and Deployment (CI/CD) pipelines, enabling frequent code integrations and automated testing. This ensures that our e-commerce platform remains stable and functional throughout the development process. Thirdly, Agile encourages the creation of flexible and well-organised components. This is especially useful for e-commerce systems, as it makes it easier to integrate different parts like product catalogues, shopping baskets, and payment gateways. Furthermore, Agile focuses on delivering working software early and often allows us to quickly develop and test Minimum Viable Products (MVPs) for new features, gather user feedback, and validate ideas before full implementation. The iterative nature of Agile also allows for continuous performance testing and optimisation, ensuring that our e-commerce platform can handle increasing loads and maintain responsiveness. Compared to traditional methodologies like Waterfall, Agile offers several technical advantages for our e-commerce project, including faster time-to-market, reduced technical debt, better risk management, and improved testing and quality assurance. By breaking the project into smaller, manageable sprints, we can identify and address technical risks early in the development process. Regular code reviews, refactoring, and continuous integration practices help maintain code quality and reduce the accumulation of technical debt over time. While Agile offers benefits, we need to be aware of potential challenges such as maintaining comprehensive documentation. To mitigate these issues, we will implement regular backlog maintenance sessions and maintain a living documentation system that evolves with the project. By leveraging Agile methodology for our fitness-focused e-commerce platform, we aim to deliver a high-quality, adaptable system that can quickly respond to market demands and provide value to our users throughout the development process.

**References**

6 Game-Changing Benefits of Agile Methodology for eCommerce Success by Ankur Shah - [Brainspate](https://brainspate.com/blog/benefits-of-agile-methodology-for-ecommerce/)

System Capabilities

**Description**:

The website must be able to accommodate different kinds of accounts (personal, business, manufacturer, collaborator/sponsor and admin). To create an account users must be 16 or over; these accounts will have different purposes; personal accounts will be for personal use as they will allow one to perform basic functions on the website such as, purchasing an item. However, it will also allow the user to set their level (beginner, amateur, intermediate, professional), to get recommendations on what would be better for the client and even get tutorials on how to use the equipment. Furthermore, they’ll be able to look for gym facilities in the area and get assemblers for heavier orders. For business accounts they’ll have to prove that they run an existing and functional company related to anything gym-related, they’ll be able to do anything a personal account can do; they’ll also be able to make bulk orders and set their address as public for extra publicity by getting a sponsorship deal with the website. Manufacturers can set what kind of items they can produce and also their own calendar for availability. Sponsors can put up ads on the website after admin confirmation through a contract with the company. And finally admins, verify information input by system users, customer support and the legal side of the business (such as setting the terms and conditions); ensuring that the system is well and functioning at all times.

**User Stories**:

*Personal account users*

1.       As a user I want to be able to create different types of accounts for different needs (personal, business, manufacturer, admin, sponsor)

2.       As a user I want to be able to log on to the website to make purchases

3.       As a user I want to be able to filter out items to look for specific items according to my needs

4.       As a user I want to be able to modify my basket to add or remove items from my basket

5.       As a user I need to be able to choose how to pay for my purchases

6.       As a user I want to be able to choose when to get my order delivered to match with my availabilities

7.       As a user I want to be able to choose where my order is delivered to be aware of where to pick it up

8.       As a user I need to be able to set my level (beginner, amateur, intermediate, professional) to get personal recommendations on what kind of equipment I could get and what kind of exercises I should perform

9.       As a user I need to know how to safely and efficiently perform exercises with the equipment provided to avoid injuries and see proper results/gains

*Business account users*

1.       As a business I need to be able to get the equipment directly delivered at my gym facility for convenience

2.       As a business I want access to assemblers to build heavier machines

3.       As a business I want to be able to advertise my company through the website

*Manufacturer*

1.       As a manufacturer I need to be able to set my own prices for products I’ve manufactured to make a profit on it

2.       As a manufacturer I need to be able to set my availabilities on when I can produce more equipment or items

*Sponsors*

1.       As a sponsor I need to be able to put up ads on the website to advertise my products

*Admin/Staff*

1.       As a admin I need to be able to register data on the system to allow users to log in with their personal details

2.       As an admin I want to be able to monitor the website to ensure it is bug free

**Reference:**

Agile Business Consortium. (2014). *DSDM Project Framework, Chapter 15: Requirements and user stories.* https://www.agilebusiness.org/dsdm-project-framework/requirements-and-user-stories.html

Evaluation of Issues

**Data Privacy and Security**

Gym users and gym owners will provide sensitive information, including payment details and personal data when making transactions. The Data Protection Act 2018 and UK GDPR set guidelines for how companies handle customer data. Failing to secure this information could result in data breaches, leading to identity theft, financial loss, and losing consumer trust.

The platform must make sure that it provides robust encryption and security measures to protect sensitive information. This includes securing payment data during transactions and implementing firewalls, intrusion detection systems, and regular security checks to safeguard against hacking. The website must maintain transparent data usage policies to inform users how their data is collected, stored, and used. Adhering to data protection laws is needed to avoid legal repercussions and to be ethical.

**Accessibility and Inclusivity**

The Consumer Credit Act 1974 and Equality Act 2010 is about the need for inclusive services. The website or application should feature accessibility tools such as screen reader compatibility, simple navigation, and alternative text for images to accommodate users with visual or mental impairments. This makes sure that people with disabilities can use the platform just as easily as others, whilst upholding ethical standards.

Providing clear, understandable information on financial terms helps protect users from falling into debt when using credit options to purchase equipment. This allows consumers to make informed decisions.

**Transparency in Pricing and Fees**

Businesses and Consumers require transparency, particularly regarding pricing. Under the Payment Services Regulations 2017, Misrepresentation Act 1967, and Consumer Protection from Unfair Trading Regulations 2008, consumers need to be informed of all costs associated with their purchases, including delivery charges. Hidden fees can damage consumer trust but also violate these laws.

The website must display prices and additional fees upfront, allowing users to understand the full cost of their purchase before completing the transaction. Following the Advertising Standards Authority (ASA) Code also protects consumers by preventing misleading advertisements and pricing information, further promoting transparency.

**Environmental Impact**

The Climate Change Act 2008 and Environmental Protection Act 1990 encourage businesses to minimise their carbon footprint. Offering eco-friendly delivery options, using sustainable materials for packaging, and partnering with responsible manufacturers are all ethical strategies to reduce environmental damage.

**Compliance with Payment and Consumer Protection Laws**

The platform must comply with the Financial Services and Markets Act 2000, the Consumer Rights Act 2015, and the Sale of Goods Act 1979. These laws protect consumer rights related to product quality, returns, and refunds. Ethically, the platform must honour these rights by offering fair return policies and accurate product descriptions. Following these laws ensures ethical operations and legal protection for the business and its customers.

**References:  
- Gov.uk links:**

<https://www.legislation.gov.uk/ukpga/2018/12/contents><https://www.legislation.gov.uk/ukpga/1974/39><https://www.legislation.gov.uk/ukpga/2010/15/contents><https://www.legislation.gov.uk/ukpga/1967/7><https://www.legislation.gov.uk/ukpga/2008/27/contents><https://www.legislation.gov.uk/ukpga/1990/43/contents><https://www.legislation.gov.uk/ukpga/2015/15/contents><https://www.legislation.gov.uk/ukpga/2000/8/contents>**- Information Commissioner's Office link**

<https://ico.org.uk/for-organisations/guide-to-data-protection/>**- Equality and Human Rights Commission link**

<https://www.equalityhumanrights.com/en/equality-act/equality-act-2010>**- Advertising Standards Authority**

<https://www.asa.org.uk/codes-and-rulings/advertising-codes.html>

Testing

**Testing is a crucial part of any project before releasing it to the public. This part always requires careful consideration, as in case of missing any tests, the failure of a project while it is released is going to impact the company negatively, for example loss or reputation.**

**Based on our analysis and functional requirements, our website will have key features, such as creating an account, shopping cart, terms and conditions, filter search, payment gateways and more. The goal of our testing strategy is to ensure the reliability, security and usability of our website. There are multiple ways of testing, however we will implement the most effective and efficient ones**

**Grey Box testing is a combination of well known Black Box and White Box testing. The advantage of Grey box is that it covers the situation from the both perspectives, for example our website has multiple interactive features, which will be tested to see if they respond with user’s interactions, and  moreover, the White box perspective on code lines will ensure that any code lines errors are fixed, so the situation is checked from the outside and inside. This test is very useful as it helps to find difficult to identify problems. It balances the functional and structural testing, allowing to test how the system behaves, but also to verify that the actual code is correct and internal components interact correctly. In the case of our website, it can be used to check whether the payment completed correctly, and if the sensitive data is kept private, such as bank details.**

**Security testing is one of the most important ones, as it ensures the safety of our customers, which are the main part of every businesses’ success. The more secure it is, the less chance there is of something bad happening and affecting our company’s reputation. This is the way of testing where we will check if users can input their private details safely, if the card details are cleared after it's been used, and this data doesn't go anywhere and is not exposed for hackers. For our company’s purpose, we will test the most sensitive parts of our websites, such as card details, personal information, etc, and we will ensure that it does not expose our users to threat. As it was mentioned in our project, we will follow Legal actions and legislations, such as the Data Protection Act. Based on our user stories for the website, this strategy is extremely important to finish the final experience and safety for consumers.**

**User Acceptance Testing, or UAT, is based on user’s and customer’s perspective, that is why it is important to implement it, as the user experience will depend on it. UAT provides a perfect way to look at the problems from the user perspective, and find the problems, which were not noticed from the developer perspective. Our company’s goal is to ensure excellent customer and user experience, therefore we will implement this method from a user perspective and will make sure everything is user friendly and acceptable. For our fitness equipment website, UAT confirms that users can navigate the site, search for products, add items to cart, check out, and have a very good experience using it. This test definitely suits our requirements and website, as users may uncover problems or bugs that previous stages, such as Black Box, might have missed, for instance user noticing problems with check out etc.**

**In conclusion UAT, Security, and Grey Box testing were matching our requirements and goals, so to decrease our expenses and increase our productivity and quality of our website, these strategies will help us to build a perfect environment for consumers.**

**Reference/s:**

[**Grey Box testing**](https://www.imperva.com/learn/application-security/gray-box-testing/#:~:text=Gray%20box%20testing%20)