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COURSEWORK WIZARD: DEADLINES VISUALISER

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Abstract

This dissertation addresses the challenge of managing coursework deadlines, a common issue among students that often results in stress and late submissions. Learning Management Systems (LMS) lack effective tools for task prioritisation and progress tracking. To solve this, Coursework Wizard was developed as a web-based platform combining LMS functionalities with project management techniques like Kanban boards and visual progress tracking. The system helps students manage their tasks incrementally, focusing on the process rather than just deadlines, while providing lecturers with tools to monitor submissions and track student progress. The platform was built using Next.js and tested through usability evaluations, including heuristic evaluations and System Usability Scale (SUS) surveys. The findings indicate that while the platform is intuitive and effective in managing coursework, it faces limitations in functionality and scalability. This dissertation outlines the development process, system evaluation, and identifies areas for future improvements, such as mobile compatibility, automated feedback, and advanced analytics. The proposed system aims to reduce the stress of deadline management for students while preparing them for real-world task management.

Keywords: Coursework, Deadlines, Visualisation, Usability, Time Management, LMS.

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List of Abbreviations

AI	Artificial Intelligence
API	Application Programming Interface
AR	Augmented Reality
ARIA	Accessible Rich Internet Applications
BBA	Bachelor of Business Administration
BCM	British Computer Society
BI	Business Intelligence
CPS	Cyber Physical System
CS	Computer Science
CSS	Cascading Style Sheets
CSV	Comma Separated Values
CW	Coursework
DB	Database
ERD	Entity Relationship Diagram
FAQ	Frequently Asked Question
GPA	Grade Point Average
GPT	Generative Pre-training Transformer
GUI	Graphical User Interface
HCI	Human Computer Interaction
HE	Heuristic Evaluation
HTML	Hyper Text Transfer Protocol
HW	Heriot-Watt
IDE	Integrated Development Environment
IEEE	Institute of Electrical and Electronics Engineers
IoT	Internet of Things
IR	Industrial Revolution
ISO	International Organisation for Standardisation
JSX	JavaScript XML
LA	Learning Analytics
LAD	Learning Analytics Dashboard
LMS	Learning Management System

List of Abbreviations

MOOC	Massive Open Online Course
MVC	Model View Controller
MVP	Minimum Viable Product
OOP	Object-Oriented Programming
OOUX	Object-Oriented UX
OS	Operating System
PJ	Project Journal
SDLC	Software Development Life Cycle
SMS	Short Message Service
SQL	Structured Query Language
STEM	Science, Technology, Engineering and Mathematics
SUS	System Usability Scale
TBD	To Be Decided
TMT	Temporal Motivation Theory
UI	User Interface
UX	User Experience
VR	Virtual Reality
VS	Visual Studio
WAF	Web Application Firewall
WBS	Work Breakdown Structure
XR	Mixed Reality

Chapter 1. Introduction

1.1 Project Background

Coursework is a form of assessment that challenges students to apply knowledge in solving real-world problems through assignments, reports, dissertations, and more [1]. This practical approach has shown increased academic performance and satisfaction among students. With technology rapidly spreading globally, the education sector has introduced digital platforms such as Learning Management Systems (LMS) to further assist students in their academic pursuits. LMS serves as e-classrooms where students can access study materials and submit assignments from home. Despite the many advantages of LMS, students often struggle to manage time and meet coursework deadlines. Statistics reveal that 50% of students delay starting coursework, and 75% submit their work within the last 48 hours, leading to heightened stress and late submissions [2] [3].

As coursework is a critical part of the degree, failure to meet deadlines can result in poor grades and subsequent depression. A Swedish study of 6,146 participants indicated that 20% of students aged 19-33 reported suicide thoughts and 3% attempted suicide. Upon further research, a positive relation was discovered between suicide attempts and school performance after considering factors like family background, social conditions, drug addiction, and health behaviours [4]. Researchers have addressed this issue by observing student behaviour through data analysis from LMS to uncover patterns. Upon evaluation, researchers found that delayed coursework is mainly due to a lack of self-control and time mismanagement [5]. Strategies to motivate students to start coursework early have been suggested, including setting proper deadlines, gamification, dashboards, task prioritisation, work breakdown structures, and time management. These strategies have shown positive results in experiments using various technologies alongside LMS. Research claims that integrating such self-regulation strategies into learning can help manage time [6].

While several LMSs exist in the market, they lack pedagogical usability and effective features for managing coursework deadlines, leading to increased stress and last-minute submissions. To address these challenges, this project proposes Coursework Wizard, a website designed to help students manage deadlines more effectively by incorporating proven strategies from experts in computer science and psychology. The website is inspired by Canvas, the LMS used at Heriot-Watt University, which has the highest usability score

among all LMSs [6]. Coursework Wizard divides coursework into small, manageable milestones and visualises deadlines in an interactive, Gantt chart-like calendar. Students can track their progress visually through gamification modules that motivate them and provide real-time feedback on their performance. This incremental approach reduces last-minute anxiety and allows students to review their work before submission, improving both the quality of their work and their grades. The site also ensures academic integrity, as the step-by-step progress allows for clear evidence of the student's own work. Ultimately, Coursework Wizard provides a comprehensive tool for managing deadlines, staying on track, and reducing stress, ensuring students can complete coursework on time with a higher degree of ownership and confidence.

1.2 Aims and Objectives

The aim of this dissertation is to develop an engaging and usable website to help students and lecturers effectively manage and visualise coursework deadlines. The system will integrate self-regulation and time management strategies in order to motivate students to start and finish coursework earlier. The primary objectives of the project are as follows:

- Visualise student progress to monitor performance and manage time
- Incorporate gamification modules to motivate students
- Provide regular reminders to maximise student engagement
- Display student submission statistics to lecturers
- Allow staff to track student performance and progress
- Conduct tests to evaluate usability and refine the website

1.3 Report Outline

The organisation of the subsequent chapters in this document is as follows:

- Chapter 2: Constitutes the literature review to provide background on coursework submission and reasons for delays. Moreover, it also explores learning management systems and usability evaluation techniques.
- Chapter 3: Discusses the system requirements and prioritises them using MoSCoW. It also outlines the Solo Scrum methodology used for development.
- Chapter 4: Covers the design process, system architecture, tools, prototypes, and the implementation of the website.

- Chapter 5: Describes the testing strategies, including unit and integration testing, heuristic evaluation, usability testing, and feedback from users.
- Chapter 6: Summarises the project outcomes, challenges, and suggests future improvements and potential industry applications.

Chapter 2. Literature Review

To encourage timely coursework submissions, it is crucial to understand the importance of coursework, the reasons behind late submissions, the role of LMSs, and the significance of usability. This chapter will look into these aspects to grasp the aims and objectives of this dissertation. Every section concludes with a brief paragraph critically analysing the previous works and connecting it with the website developed.

2.1 Pedagogical Background

2.1.1 Historical Evolution of Coursework

Around 50 years ago, Michael Bassey introduced formal assignments, or coursework, to pedagogy after completing his teacher training programme. The programme used a combination of coursework and examinations for assessments, and 98% of students were satisfied with this twofold approach. Bassey favoured it for its positive impact on stress reduction and improved performance [7]. In 1977, Derek Rowntree and John Heywood introduced alternatives to unseen exams, such as open-book, pre-released, and essay exams, to better assess students' strengths, weaknesses, and interests [8] [9]. They noted that while two people may perform the same action, their experience and motivation can differ significantly [10]. In 1985, coursework weighed 34% of the total marks and increased to 79% in 1994. By 1996, coursework became widespread across the UK [9].

2.1.2 Definition and Significance of Coursework in Education

Coursework refers to assessments completed over a longer period, either individually or collaboratively, such as assignments, dissertations, reports, and class assessments [1] [9]. It helps develop time management and teamwork skills, fostering collective responsibility and interaction with industry experts [11].

Coursework has positively impacted academic performance, with the percentage of first-class degrees in the UK rising from 39% to 68% between the 1950s and 2013 [9]. A 2024 study found that replacing exams with coursework worth 60% of the final grade contributed to grade inflation and increased the distribution of top-ranked degrees [12]. This suggests that coursework, whether used alone or with exams, leads to higher marks due to its collaborative nature, whereas exams, though resistant to AI manipulation, often encourage cramming that

doesn't reflect professional practice [13] [14]. Furthermore, coursework has long-term benefits, as students engage consistently over time, demonstrating broader abilities and developing strategic thinking. A Norwegian study found that 70% of students applied their coursework knowledge in their professional lives [15].

However, the lack of invigilation in coursework opens the door to plagiarism and contract cheating. While anti-plagiarism systems can detect some forms of cheating, they cannot identify AI-generated coursework. For instance, when [16] injected 100% AI-produced coursework into a UK-based university's portal, 94% of the submissions went undetected, and 83.4% outperformed real student submissions. Unsurprisingly, unsupervised online exams have also become targets of similar malpractices [9] [14].

In summary, while coursework enhances student performance and skill development, effective management is crucial to prevent cheating and ensure academic success. Coursework Wizard enhances coursework management by promoting consistent engagement and reducing last-minute cramming through task tracking and reminders.

2.2 Current Trends and Challenges in Coursework Management

2.2.1 Trends in Educational Technology

As mentioned by [9], academic bodies had started to shift to online examinations for essay-type questions, backed with overwhelming favour from older students. The usage of technology was not a surprise as many researchers predicted its permanent effect on education in 1966, stating that it will be an integral part of every child's life in the future [17].

The demand for online courses increased as technology advanced and the number of students with heterogeneous knowledge grew. As a result, universities underwent a digital transformation, introducing blended and online teaching where students can self-regulate their learning and submit coursework remotely at any time within the assigned dates. However, this degree of autonomy often leads to procrastination, with many students postponing submission until the last moment or engaging in plagiarism, which makes online courses more challenging [2] [18]. Despite the availability of free Massive Open Online Courses (MOOCs), most students fail to complete them and often drop out. Engagement rates, content retention, and learning outcomes are typically lower in MOOCs compared to

traditional learning methods. These issues can be addressed by using Learning Analytics (LA) to analyse student behaviour and propose solutions to increase engagement [19].

2.2.2 Analysis of Coursework Submission Patterns

Academic deadlines motivate students and combat procrastination, but they also lead to negative outcomes due to deadline rush [20] [21]. According to [22], 62% of students experience moderate stress over deadlines, with 19% experiencing severe stress. Short deadlines require continuous engagement whereas longer deadlines require students to work independently. As deadlines approach, students engage more in surface learning to gain temporary knowledge rather than deep learning [21]. This often results in a hyperbolic curve where submissions are clustered near deadlines and are more likely to be of poor quality [23].

To understand submission patterns, researchers analysed data from LMS and MOOC dashboards [24]. [3] found that 50% of students intentionally delay assignments until the last 24 hours, resulting in lower grades. A comparative study by [2] and [25] found second- and third-year students' submissions clustered near deadlines, with experienced students managing deadlines better. Statistically, 75% of third-year students made submissions within the last 48 hours, while 74% of second-year students submitted work in the last 24 hours.

[23] noted that deadlines scheduled before weekends increase procrastination more than those after weekends. Submissions made between 11 pm and 6 am were more likely to contain errors, indicating poor time management [2]. [26] found that fixed deadlines boosted student performance (mean \approx 89), while self-imposed deadlines were less effective (mean \approx 86).

To summarise, while online study offers flexibility, it often leads to procrastination and last-minute submissions, resulting in poor grades and increased stress. Coursework Wizard addresses these challenges by promoting better time management and consistent engagement through deadline reminders, progress tracking, and task prioritisation.

2.2.3 Challenges in Coursework Management

Digital ubiquity has increased students' addiction to social media, leading them to avoid work and engage in unproductive activities. A study of 758 students in Mexico and Spain found a problematic positive correlation between excessive Internet use and procrastination [25]. Lack of self-control leads to poor prioritisation, reduced academic seriousness, higher

anxiety, and diminished performance. With limited time to complete assignments, students lose motivation due to fear of failure, leading to depression. They often rationalise their poor performance by blaming time management issues and a lack of interest in the coursework [5].

I. Psychological Factors

Students struggle to focus on academics due to procrastination, which constitutes 80-95% of work issues such as unfinished assignments and missed deadlines. Since COVID-19, online learning has led to a swift surge in this trend with around 70% of university students engaging in moderate procrastination, and 14% being chronic procrastinators. Procrastination is linked to poor time management, motivation, anxiety, and perfectionism, and results in negative academic outcomes, stress, fear of failure, and mental distress [5].

In [27], procrastination is defined as the voluntary delay of intended actions despite knowing the potential consequences. Similarly, [28] define it as a habit of postponing tasks until they become too difficult to complete on time. [29] differentiates procrastination from postponement by stating that in procrastination, there is no guarantee when the task will be performed, and this could result in years of negligence. Procrastination negatively impacts lifestyle, as shown in a Swedish study where 344 students with mild procrastination experienced anxiety and depression, while others with severe procrastination showed intense psychological symptoms [25]. The delay leads to feelings of guilt and restlessness, and as deadlines approach, students regret the delay, preferring earlier deadlines [29].

Procrastination can be caused by the following:

1. Temporal discounting: Temporal discounting refers to prioritising short-term rewards, like the immediate joy from social media, over delayed future rewards such as good exam marks, leading students to procrastinate [27] [30] [21].
2. Longer deadlines: Longer deadlines can improve performance but may also cause students to overlook tasks, leading to late submissions, especially if deadlines are set before the required content is taught [31] [2]. According to Parkinson's Law, a mismatch between task length and deadlines can lead to procrastination, as extended deadlines often discourage early completion [5].
3. Time mismanagement: Time mismanagement leads to poor self-control, as students prioritise leisure activities over coursework and panic as deadlines approach, often

resorting to ineffective strategies like plagiarism, collusion, or using generative AI tools [5] [23].

4. Self-regulation failure: Self-regulation involves understanding one's behaviour to achieve goals, while emotional intelligence means controlling emotions to guide actions. When students fail to act on their intentions due to seeking short-term rewards, cognitive dissonance develops, leading to procrastination. About 47% of students procrastinate online due to their inability to self-regulate [27].
5. Lack of motivation: Low self-esteem, fear of failure, or self-distrust decreases self-efficacy, causing students to question their ability to complete tasks and eventually avoid attempting them. Motivation may decrease further in online settings due to the absence of peer pressure [5].
6. Underestimation of time: Being overly optimistic can backfire when students fail to accurately assess task complexity, leading to poor planning and wasted time [27].
7. Perfectionism: It causes students to focus on flawless outcomes, avoiding tasks out of fear of imperfection, which results in procrastination [5].

Students engage in either passive or active procrastination. All the attributes discussed earlier apply to passive procrastinators. Active procrastinators, on the other hand, intentionally delay submissions until they are pressured by deadlines for motivation. However, [27] and [29] argue that using procrastination as a coping strategy does not benefit students. Despite limited research, it has been observed that active procrastinators score higher than passive ones, but the risk of self-handicapping and failure exists [3].

II. External factors

Students may struggle to complete and submit online coursework due to a lack of resources. Common challenges include unstable internet connections and faulty devices, which can demotivate students and reduce the quality of their work. As technology becomes more pervasive, any disruption in access can negatively impact education. External factors such as work or family responsibilities, poor health, financial constraints, and emotional distress can also hinder academic progress [5]. Some students experience the "over-doer" phenomenon, where they overcommit to tasks with unrealistic timelines, leading to anxiety and missed deadlines. These delays differ from procrastination, as they are caused by external factors rather than psychological ones [5].

III. Academic Factors

[25] observed that assignment submission rates are influenced by academic factors, particularly the type of assignment, as shown in Table 2.1. They noted that students prefer working on presentations followed by projects and written assignments. Presentations are engaging and interactive, while writing tasks are often seen as daunting, leading to higher rates of non-submission, and long-term projects are delayed due to commitment challenges. The study found that difficult or unenjoyable coursework tends to be completed and submitted late. Students were more likely to procrastinate on both very easy and highly challenging tasks.

Table 2.1 Submission rates of coursework [25]

	On-time (%)	Delayed (%)	Not submitted (%)
Presentations	24.5	7.4	1.5
Written Assignments	18.3	12.4	2.7
Projects	9.1	23.6	0.6

Additionally, students often delay assignments they perceive as insignificant or beyond their competence. Many online learners lack the necessary prerequisites, leading to demotivation and missed deadlines [5]. These factors can be explained by the Temporal Motivation Theory (TMT), which suggests students are more likely to engage in tasks they enjoy or find beneficial. The theory defines utility (the willingness to engage in a task) as $\text{Utility} = \frac{EV}{\Gamma D}$, where E is the probability of success, V is the value of the task, D is the delay between completion and reward, and Γ is the student's sensitivity to the delay [32].

In conclusion, students struggle with meeting coursework deadlines due to procrastination, time mismanagement, and external factors. Coursework Wizard addresses these challenges by providing timely reminders, progress tracking, and tools like the Kanban board to help students prioritise tasks and start them early. It also locks subtasks until the necessary topics have been covered in class.

2.3 Usability and User Experience in Educational Platforms

Educational technology has evolved drastically in the past years, becoming a crucial part of learning. This has caused designers and developers to create software for everyday users and not just for tech savvies, leading to the concepts of user experience and usability in education. Moreover, as suggested by software psychology, educational technology needs to be evaluated using usability evaluation techniques to ensure its effectiveness [33].

2.3.1 Importance of Usability in Education

The term usability (formerly known as user-friendliness) was coined in the 1980s, but researchers failed to define it because it depends on varying factors and cannot be treated as a property of one entity [34]. Usability is generally defined by objective (performance) and subjective (satisfaction) outcome measures [35]. The International Organisation for Standardisation (ISO) defines usability as the extent to which a system can satisfy specific users in a specific context by helping them achieve goals effectively and efficiently, where satisfaction refers to the positive attitude toward the system, effectiveness means achieving goals accurately, and efficiency measures the resources used [33].

Nielsen provides parameters to evaluate the ease of use of an interface:

1. Learnability: Ease of learning a system for the first time
2. Efficiency: Resources and time needed to complete tasks
3. Memorability: Ease of remembering how to use a system after a break
4. Error Rate: Reduced errors and ease of recovery
5. Satisfaction: Comfort of using the system [36]

Despite efforts to define usability, existing standards often fail to fully apply to educational technologies because they overlook pedagogical and sociocultural factors [33]. Pedagogical usability, crucial for the acceptance of educational technology, includes content, multimedia, tasks, social interaction, and personalisation. If an LMS is difficult to navigate, learners may spend more time figuring it out than engaging with content, limiting learning outcomes [33] [37]. According to [38], a learner's intention to use a platform depends on perceived ease of use, with complex systems increasing anxiety and cognitive load, thus hindering academic performance. They distinguish between technical usability and pedagogical usability, emphasising how readability and ease of use impact learning outcomes. In pedagogical usability, it is recommended that system design mimic user learning behaviour by using familiar schemas, avoiding unnecessary features, and minimising distractions and anxiety.

Usability is crucial for educational platforms, as poor design increases cognitive load and limits learning outcomes. Coursework Wizard prioritises pedagogical usability by offering an intuitive design, clear navigation, and features that reduce distractions, helping students focus on their coursework effectively.

2.3.2 Usability Testing and Evaluation

Evaluating usability is difficult but measuring difficulties incurred while using the system is easy. There is an inverse relationship between ease of use and the number of difficulties faced. Identifying and quantifying these problems can help determine the usability, and the most common method for this is usability testing [34].

In usability testing, an observer watches typical users interact with the system to collect quantitative data on usage problems and effectiveness. Users can also be asked to Think Aloud, where they verbalise their thoughts while using the system, providing qualitative data on the learning process. This is often followed by a survey to measure usability and user satisfaction, which can either be developed by the user or be standardised [34].

I. Heuristic Evaluation (HE)

Usability evaluation methods aim to identify problems and maximise a system's ease of use, which is crucial for educational platforms to ensure a smooth learning experience and improve academic performance. When [38] evaluated ElectronixTutor, an Intelligent Tutoring System for electronics, students reported that poor design disrupted their learning. Issues included a mismatch between the user interface (UI) and students' mental models, and poorly visible navigation components. Students suggested the following improvements:

- Change the button terminology: The button to submit a question was labelled "Submit Your Answer", confusing students who wanted to ask a question, not submit an answer.
- Move progress bar: The progress bar was hard to find, located under a drop-down menu in the top-right corner. Students expected it on the left side with the course content.
- Improve agent graphics: Eye-tracking revealed students focused more on the tutor agent than the content. Students found the agent's jerky graphics distracting.

These suggestions align with usability heuristics. In Heuristic Evaluation (HE), evaluators interact with the system and compare it to a list of usability principles, called heuristics. The most well-known heuristics were introduced by Nielsen and Molich in 1990, after evaluating 249 usability issues [39]. According to Nielsen, 3-5 expert evaluators can identify up to 87% of usability issues, while novice evaluators typically detect only 23%, due to a lack of understanding of the abstract heuristics. To help train novice evaluators, [40] developed a detailed version of Nielsen's heuristics ([Appendix A](#)). HE is commonly used because it takes around two hours, is easy to use, cost-effective, and applicable to both complete and incomplete systems. The evaluation time can be reduced further with more evaluators [39].

To ensure a smooth learning experience, Coursework Wizard underwent Heuristic Evaluation (HE) to identify usability issues, similar to those observed in ElectronixTutor. This evaluation helps confirm whether the platform meets usability standards to enhance engagement and academic performance.

II. System Usability Scale (SUS) Survey

A System Usability Scale (SUS) is a standardised psychometric tool developed by John Brooke in 1986, widely used for reliable usability evaluation across various sample sizes. Around 43% of studies use SUS to assess subjective perceptions of a system's usability [34]. In a study by [41], students were divided into five teams to evaluate software using their preferred usability tool. Three teams chose SUS because it is short, customisable, easy to calculate, and effective for comparing systems, and it encourages honest participant feedback. SUS is especially suited for evaluating educational systems, as it also focuses on learnability.

The SUS survey consists of ten statements with alternating positive and negative tones, rated on a five-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree, and 3 = neutral) ([Appendix B](#)). Interpretation of the SUS score varies. According to [34], a score above 51 is “Okay”, 72 is “Good”, and 85 is “Excellent”. To calculate the final score out of 100:

1. For positive statements, subtract 1 from the scale position (x-1).
2. For negative statements, subtract the scale position from 5 (5-x).
3. Sum the ten values.
4. Multiply the total by 2.5 [34]

SUS is versatile and applicable to all system types. When [37] analysed research papers on educational usability, they found the usage of SUS in all of them, attaining a mean SUS score of 63.30, similar to previous research with scores of 70.09 and 68. Educational multimedia was marked most usable with a mean score of 76.43, followed by mobile applications, affective tutoring systems, LMS, and lastly, university websites. They concluded that current educational usability is good but with some issues.

The SUS is a reliable tool for assessing usability and was used to evaluate Coursework Wizard, aiming for a score above 70.09 to surpass the usability of existing platforms.

2.3.3 Importance of User Experience in Education

User Experience (UX) is the user's feelings, emotions, and preferences associated with the system before, during, and after its use. It is concerned with the levels of satisfaction driven by the user's needs and expectations [42] [43]. UX includes subjective factors that vary from one user to another, making usability a part of UX [44]. The UX of a system can be assessed on the content, usability, aesthetics, look and feel, functionality, as well as the sensual and emotional appeal [45]. Additionally, it is influenced by the user's demographics, perceptions, cognition, experience, financial status, and usage context [44]. Therefore, UX can also be defined as the interaction between the user, system, and context of usage [45].

Lack of student motivation and engagement poses serious challenges to in-time coursework submissions. Engagement can be defined as empowering users, making learning meaningful, and enabling interface customisation [46]. This can also be supported by gamification strategies [47]. To effectively design for UX, experts use the following tools [48] [49]:

1. Personas: Fictional characters representing the target audience, developed early in the design phase to understand user needs. Personas can be data-driven or ad-hoc.
2. Scenarios: Stories about user activities and interactions with the product, clarifying the product's purpose and features.
3. Use cases: Step-by-step processes derived from scenarios that outline task completion.
4. Object-Oriented UX (OOUX): An approach based on object-oriented programming, where objects are identified, and actions are assigned to them.

Combining personas and scenarios enhances these tools. According to [48], scenarios transform personas from passive to active by providing context, situation, and objectives.

Understanding UX principles was crucial in designing Coursework Wizard. Ad-hoc personas were developed to align the design with users' needs, guiding the creation of a user-friendly interface that motivated students, enhanced engagement, helped staff track student progress, and improved academic performance.

2.4 Coursework Management Systems

2.4.1 Overview of Learning Management Systems (LMS)

The development of Learning Management Systems (LMS) responded to the growth of online technology, providing an all-inclusive online classroom with features like course materials, gradebooks, professional training, and communication tools [50] [51]. LMS allows

instructors and learners to distribute, share, store, and access learning materials over the Internet without time and location constraints, making information accessible and reducing administrative costs [52]. The LMS market grew rapidly after the spread of the Internet and multimedia, and by 2018, 3500 institutions had adopted LMS. The usage increased significantly during COVID-19, with many institutions permanently adopting LMS [51][53].

LMS benefits both professors and students. Professors can use a variety of media, such as video, audio, images, and text, to support learning, track student performance, and distribute materials with ease. Students can enrol in classes, access materials, check grades, participate in discussions, take tests, and seek support from peers and professors [50]. A well-designed LMS should have centralised control for accessibility, self-service for tasks like enrolment, quick content creation and distribution, a secure environment, personalisation options, and integration with educational content [51].

When actively used, LMS helps students become more independent by providing constant feedback and additional resources like guides and assessments. However, studies show students often struggle with meeting deadlines. Researchers suggest implementing reward systems to motivate students, helping them stay on track, and maintain focus [50] [52].

2.4.2 Types and Examples of LMS in Education

I. Canvas

Canvas, a competitor of Blackboard, is used by 17.1% of American institutions and over 3000 universities worldwide [51] [53]. Canvas is available on computers and mobile devices, allowing flexible participation in timed assessments and instant feedback for quizzes [14]. It integrates with open-source tools like Google Docs for collaborative learning. Canvas consistently receives high satisfaction and usability scores, with faculty praising its ease drag-and-drop course creation, student progress tracking through Canvas Analytics, rubric creation, and grading with SpeedGrader [6] [51]. Students appreciate the modular organisation of content and the ability to engage in discussions via boards or groups. Study participants found that clear goals, timely feedback, and active discussions with instructors increased user satisfaction and cognitive presence [53].

II. Moodle

Moodle is an open-source, cost-free LMS used by 19.4% of institutions across 241 countries, with over 291 million users [53] [54]. It allows teachers to exchange files, conduct real-time discussions, and use a digital whiteboard. Though similar to Blackboard, Moodle's key distinction is its free cost [44]. Despite updates, users report UX issues with speed, content organisation, search functions, and navigation. The mobile app is especially criticised for its poor communication features, leading some users to avoid it for courses like philosophy [44] [54]. While Moodle offers tools for content organisation, assignment submissions, and grading, instructors often underutilise these features [6].

III. Blackboard Learn

Founded in 1997, Blackboard ranks highest in the number of users. It has more than twelve million users and 33.5% of educational institutions use it. It gained popularity after acquiring communication tools and live tutorials [53]. Blackboard and Moodle share many features, but teachers find Blackboard's announcement page more effective for reaching students [6]. A usability survey comparing Blackboard and Moodle showed that Blackboard was easier to learn and more satisfying to use, although some students reported higher response times [53].

In terms of preference, Blackboard is favoured for assignments and gradebooks, Moodle for assignments, and Canvas for quizzes, polls, syllabi, and tests. Satisfaction ratings are “C” for Canvas and Blackboard, and “D” for Moodle [6].

2.4.3 Perceived Usability and UX of Learning Management Systems (LMS)

Academic performance improves when LMS are usable and provide a productive UX [53]. While LMS share similar functionalities, they differ in user-friendliness, customisation, cost, requirements, and institutional needs [55]. Researchers have identified factors influencing the usability and UX of LMS. For example, [53] lists seven factors impacting user satisfaction on Blackboard: consistency, clear terminology, feature overload, informed location, simplicity, visible hyperlinks, and help sections. Additionally, response time, reliability, and accessibility equally influence LMS usage intention alongside usability.

However, [47] found that 50% of users are dissatisfied with LMS due to limited features, outdated UX, poor customer support, complexity, lack of agility, and inadequate reporting. These issues were categorised as design and managerial issues, although [45] argue that managerial issues do not impact UX.

[42] found that students attending online lectures were dissatisfied with the system, receiving poor grades due to system interruptions and connectivity issues. To improve UX, the following enhancements were suggested:

- Support service: Addressing software and hardware issues (e.g. slow transmission, microphone problems) and providing prompt customer support.
- Interactive communication: Allowing students to split screens to engage in both tasks and lectures simultaneously.
- Ease of use: Ensuring security, compatibility, and user-friendliness across devices.
- Learning resources: Including diverse resources and activities to enhance engagement.

LMS platforms like Canvas, Moodle, and Blackboard have made learning more accessible, but students often struggle with managing deadlines and completing assignments on time. Coursework Wizard addresses these challenges by focusing on usability and UX, ensuring that students can track and manage deadlines, unlike traditional LMS platforms. By learning from the usability issues in existing systems, this project aims to provide a more intuitive and effective platform for students to stay on track with their academic tasks.

2.5 Coursework Deadline Visualisation and Management

Poor time management causes students to complete less than 80% of their assignments, which results in poor grades. Students who complete assignments tend to receive higher grades [56]. To help students manage their time, experts have introduced management and visualisation tools and techniques which include processes, frameworks, concepts, trends, visuals, and exercises to meet project requirements [57] [58]. The concept of coursework management is inspired by project management where the project manager organises, schedules, controls, and monitors the project and team to achieve the goal efficiently. It is reported that project management improves the success rate of projects [59].

2.5.1 Coursework Management Strategies for LMS

I. Deadlines

Imposing deadlines for coursework promotes time management but also increases stress and pressure [28]. Therefore, instructors must ensure that deadlines do not clash with other courses, allow sufficient time for completing the work to promote student well-being [23]. By setting correct deadlines, students have a boundary against which they must work. The

problem arises when deadlines are not set correctly, leading to counterproductive activities and last-minute submissions [29]. To avoid such issues, experts suggest that midnight deadlines scheduled at the end of the week encourage students to spread their work over the week to avoid last-minute stress. It is also advisable to avoid setting deadlines on Monday mornings as students often stay up late despite having work or school the next day [23].

Moreover, the frequency and duration of coursework also influence student performance. Having small but regular deadlines improves engagement, completion of work, and performance. However, if all courses adopt this approach, the likelihood of coinciding deadlines increases. Therefore, it is important to break down longer deadlines into smaller ones according to the module and start the deadline only after the required course material is taught. In the case of longer deadlines, staff must monitor and track student progress [2].

Lastly, according to [28], imposing significant penalties for late submission further decreases performance. They recommend a deadline policy based on their research, where instructors should impose minor penalties along with a strict midterm deadline or no penalties at all.

II. Rewards and Incentives

Providing students with incentives upon assignment submission can motivate them to work harder and meet milestones on time [31]. These rewards should complement coursework and be appealing to students [29]. In an experiment by [27], students engaged in two tasks: without rewards, and with rewards. Despite exhaustion after the first task, students performed better on the rewarded task. However, [31] noted that students are motivated by immediate rewards and that delayed rewards show no improvement in performance.

To promote timely coursework submission, students can receive rewards in various forms. Certificates for completing coursework are more rewarding than end-of-program certificates because they are received immediately, and not after 3-4 years. Furthermore, they are preferred over trophies as they hold recognition and value beyond university. When combined with deadlines, certificates improve grades and prevent blank submissions [31].

[31] observed that incentives did not impact low- and high-ability students. Low-ability students were unlikely to achieve high GPAs even with maximum effort and high-ability students were motivated only by monetary rewards. However, incentives are highly effective

for average students who lack self-control. Deadlines and certificates can either help or hurt average students as most studies overlook them and focus on low- and high-ability students.

III. Reminders

Long deadlines allow students to work on coursework according to their preferences and availability. However, this often leads them to forget the coursework deadline [2]. [32] developed a tool for sending automatic periodic emails to students. These emails compare students' current progress with the due date and their peers' progress. They began a week before the deadline and were customised based on the student's most recent submission. The tool assesses the submission and rates it on a four-point scale: 'good' for students ahead of schedule, 'neutral' for on track, 'bad' for those behind, and 'undefined' for no submission. The email subject included the course code along with the status indicator. These emails resulted in a 23% decrease in late submissions and a 31% increase in early submissions.

IV. Work Breakdown Structure (WBS)

Work Breakdown Structure (WBS) is a project management technique where the multi-level project is broken down into smaller manageable activities for managing complex projects. The tasks are arranged in levels where each parent level has several detailed child tasks that need to be completed to complete the parent task. The breakdown can be represented using spreadsheets, flowcharts, lists, or Gantt charts. These representations provide a roadmap for the project where team members can focus on their tasks with an understanding of where and how their tasks fit into the picture. It shows the milestones, dependencies, and deliverables of the project as well [59].

WBS helps track the project, and if the project falls behind schedule, the team can identify the deliverables that will be impacted the most and plan ahead. Studies show that WBS simplifies project management and helps in predicting project delivery [59].

V. Time Mapping

Fiore suggests that when students have too much or too little time, they tend to procrastinate. To prevent this, he introduced time mapping. Here, deadlines are set for each calendar day by dividing it into 60-minute slots. First, unavailable time slots, such as school hours, are crossed out. Next, tasks are assigned to the available slots, compelling students to complete

the task within the designated time period. Furthermore, each productive task is followed by a recreational activity as a reward [60].

Time mapping consists of three components: scheduling, unscheduling, and logging. In scheduling, the student reserves the available time slot for an important task, prioritising it over other activities. In unscheduling, the student adds a fun activity after the important task and highlights it using a bright colour of their choice. Bright colours boost people's moods and motivate them to work harder to achieve the reward, while colours like red signify danger, causing anxiety. Lastly, students log all their activities to analyse their time usage and identify peak times of high productivity for better planning [56].

Digital incentives such as badges, trophies, certificates, and leaderboards can motivate students by increasing engagement and encouraging timely submissions. The integration of leaderboards in Coursework Wizard could foster competition, motivating students to begin their tasks earlier and avoid last-minute submissions. Additionally, implementing weekly progress reports to compare students' actual and expected progress could help keep students on track. The progress bar in Coursework Wizard adopted a status indicator system to further guide students. Moreover, the WBS concept was implemented in this project by having lecturers upload coursework divided into smaller, manageable subtasks, aligning coursework with lecture content and providing a structured roadmap for students. The colour theory, which associates the colour red with stress and anxiety, was applied to avoid using red and instead use colours that motivate students, ensuring a calm and productive environment.

2.5.2 Coursework Visualisation Strategies for LMS

I. Gamification

Gamification increases student motivation and engagement by integrating game design principles into non-game contexts. This concept was introduced by Nick Pelling in 2002 when he integrated gaming components like rewards into educational, fitness, and medical systems, leading to the emergence of serious games meant for serious purposes rather than entertainment. Gamification introduces fun elements into serious and boring tasks, motivating users to engage in behaviour and complete the activities [49]. In pedagogy, gamification captures the students' attention and involves them in the learning process. What satisfies them the most is the excitement of using acquired knowledge to solve problems [61]. Gamification is a psychological strategy that involves three components [49]:

1. Motivation – “Why are we doing this?”
2. Mastery – “How are we doing this?”
3. Triggers – “When are we doing this?”

The most common and appreciated gamification element used across all systems for visualisation is the progress bar. In games, it represents the health bar, but in non-game systems, it encourages users to achieve their goals by visualising their progress. Upon completion, the brain releases endorphins, making the user feel happy and content. Failing to complete the activity may leave a sense of incompleteness, causing stress or restlessness [49]. This component is implemented in Moodle for teachers to record students’ progress and be alert to dropping engagement. However, students are not satisfied because the progress bar does not specify what it represents (Figure 2.1) [61].



Figure 2.1 Progress Bar Plugin in Moodle [61]

II. Learning Analytics Dashboard (LAD)

Visuals like shapes and patterns make it easier for humans to understand and analyse large volumes of data compared to textual information [62]. In 2015, Coursera had 15 million students of whom only 2.5 million completed courses. This was because students were unable to commit time, the course was poorly designed, or they had no prior knowledge. To help students manage their courses and understand their learning progress, Coursera suggested using data mining to produce visual analytics [63] [64].

LADs visualise students’ online data to represent their study habits, academic performance, and learning status. They assist students by visualising patterns and providing real-time feedback to motivate them [65]. Monitoring student data allows early detection of students with high tendencies toward procrastination and failure, with 97% accuracy [66]. These students can be easily identified, and instructors can assist them by providing extra homework, frequent feedback, and continuous monitoring [67]. Moreover, LADs track students’ social networks and peer activities because upward social comparison with peers stimulates motivation and encourages students to work toward their goals [68]. In their study, [69] observed that LADs increase students’ self-esteem, satisfaction, and enjoyment.

Course Signals is one of the many LADs developed for students and instructors. It collects data and presents it as a traffic light where red represents students at a higher risk of failing the course, yellow for medium risk, and green for low risk (Figure 2.2). This analysis is shared with the student through in-app notifications, emails, or SMS. Additionally, it uses bar graphs to display students' activities, line graphs for weekly trends, scatter charts for peer comparison, and sociograms for online networking [64].



Figure 2.2 Course Signals LAD [64]

III. Kanban

Kanban, meaning “sign” in Japanese, was developed by Toyota for lean management and later adapted into Agile software development by Microsoft. It is a visual technique for tracking projects by creating a board with three columns and moving cards between them:

- To do: Contains a long list of all the tasks that need to be completed
- Doing: 3-4 tasks from the “to do” are moved here when work starts on them
- Done: Completed tasks are moved to this column [70]

To ensure that time spent on tasks is efficiently utilised, the number of tasks in the “doing” column is limited. A Kanban board can be created using a physical whiteboard and sticky notes, or a specialised software [70]. Kanban improves communication within the team, problems are solved collaboratively, project completion time is reduced, and productivity is increased. Since each card is assigned to a specific member, it becomes relatively easy to follow up on tasks directly with the concerned person [71].

Kanban can be implemented in all kinds of projects and requires no training. It complements incremental development, allowing the integration of changes during the project. With Kanban, tasks are clearly defined to avoid wasting time on irrelevant tasks, thus reducing additional costs. However, Kanban supports project management but cannot be used independently [71] (See [Appendix L – Figure 2](#)).

Gamification components like progress bars, LADs, and Kanban boards are widely used to enhance student engagement and manage coursework. Coursework Wizard implemented these strategies to improve time management and task tracking. The progress bar, inspired by

Course Signal, motivated students by visualising their progress and offering star rewards for completing subtasks, creating a sense of achievement and reducing stress. LADs, inspired by Coursera, helped track students' activities and identify students who may be procrastinating. This project integrated visual analytics through doughnut graphs to display student progress and activity levels. Additionally, the Kanban board, inspired by JIRA, was incorporated to allow students to prioritise and track subtasks. This combination of gamification and visualisation tools in Coursework Wizard aimed to boost student engagement, reduce procrastination, and provide clear insights into their coursework progress.

2.5.3 Self-Management Strategies to Meet Deadlines

Students can improve their academic performance and reduce procrastination through various techniques. One such method is the use of assignment logs or work journals, which help students track coursework data and monitor their progress. This practice increases self-awareness, enabling students to identify and reflect on counterproductive behaviours, leading to better time management and higher grades [56]. In 2024, Heriot-Watt University introduced project journals (PJs) for master's students, requiring them to document their progress, challenges, and achievements in 2–3-week intervals. PJs align with Agile development practices, fostering incremental progress and helping students manage their work while preventing last-minute cramming and issues like plagiarism [72] [73].

Other techniques include the use of implementation plans, the Eisenhower Matrix, and the Pomodoro Technique. Implementation plans enhance self-regulation by bridging the gap between intentions and actions, although students often delay completing assignments until the final hours [30]. Breaking tasks into smaller, manageable subtasks is another effective approach to overcoming procrastination, as it makes tasks feel less daunting and helps students engage in goal-directed behaviour [27]. The Eisenhower Matrix prioritises tasks based on urgency and importance, helping students manage their workload and avoid last-minute stress [60]. Finally, the Pomodoro Technique involves breaking tasks into smaller subtasks and working in short, focused intervals. Students set a timer for 25 minutes, followed by a short 3–5-minute break. This cycle is repeated four times, after which students reward themselves with a longer break of 20 minutes [65] [70].

By producing journals, students can keep track of their tasks and provide evidence of their own work. By intending to work on coursework, students can get themselves to at least start

the coursework and protect themselves from regrets of delaying work. The Eisenhower matrix will help them sort out tasks by preventing them from wasting time on unimportant and non-urgent tasks. Finally, the Pomodoro technique will motivate them to work on the task without interruption. These strategies can be integrated into LMS to limit distractions and encourage students to start working on their coursework earlier, however they were not implemented in this project.

2.6 Education 4.0

The revolution caused by technology was defined using the term Industrial Revolution (IR) which means the societal transition from manual work to automated work. There are 4 main IRs ranging from 1IR to 4IR, starting from the eighteenth century until today. The ongoing 4IR encompasses technologies like Artificial Intelligence (AI) and the Internet of Things (IoT), increasing human-machine interaction to boost performance and efficiency [74].

Soon, it will not be uncommon for robots to deliver lectures and solve mathematical problems using AI [75]. The job pool will face several changes as the world adopts 4IR technologies, disrupting the job market. The skills considered crucial now will be deemed unnecessary then, causing people to have several different jobs over their lifespan. According to studies, machines will advance to extreme AI levels by 2040, challenging the need to hire humans. The World Economic Forum states that 75 million jobs done today will be automated by 2030 and 133 million new jobs will exist [75] [74].

To cope with such challenges, people need to be retrained so that they are equipped with the required STEM skills [76]. Therefore, the educational sectors have implemented Education 4.0 in response to align with 4IR. In Education 4.0, education providers teach about technology by utilising digital technology and interconnectivity such as teleconferencing. The content is personalised to the needs of students, positively impacting the learning curve [74]. Education 4.0 is linked with smart learning environments like LMS and MOOC [77]. Studies show that three common trends will take over the educational sector in the next fifteen years: online institutions, unlimited access to online education, and MOOCs [78].

Chapter 3. Requirements Analysis and Methodology

3.1 System Specifications Using the MoSCoW Method

The functional and non-functional requirements in this section reflect the final implemented features, categorised by MoSCoW prioritisation. Initial requirements were refined during development to meet project constraints and goals:

- **Must Have:** Compulsory to achieve a minimum viable product (MVP)
- **Should Have:** Important requirements that are not necessary
- **Could Have:** Nice to have these requirements if there is extra time
- **Will Not Have:** Not at all important because of reasons like complexity or budget

3.1.1 Functional Requirements and MoSCoW Prioritisation

Functional requirements are system features that are linked to the system's functionality [79]. The functional requirements using the MoSCoW method are outlined in Table 3.1.

Table 3.1 Functional requirements

ID	Details	Priority
R1	Students and staff must be able to log into their respective accounts with suitable privileges.	M
R2	Staff must be able to upload the coursework subtasks.	M
R3	All users must be able to see the subtasks on their timeline.	M
R4	Students must be able to view the coursework subtasks and visualisations.	M
R5	Every coursework on the student portal must have a progress bar to track progress.	M
R6	Staff must be able to track students with zero submissions.	M
R7	Students should be able to organise and prioritise subtasks on Kanban Board.	S
R8	Users should be able to edit their profiles.	S
R9	Staff could be able to share submission statistics with students.	C
R10	The website could allow users to personalise their UI.	C
R11	Reminders could be provided to each student via email or website notifications.	C
R12	Students who submit coursework early could be rewarded with digital incentives or be placed on a leaderboard.	C
R13	Lecturers could provide one-on-one guidance to low-ability students.	C
R14	The website will not support coursework grading	W
R15	The system will not have a mobile version.	W
R16	Advanced AI features, such as AI assistants, will not be integrated.	W
R17	The website will not check for malpractices such as plagiarism.	W

3.1.2 Non-Functional Requirements

Non-functional requirements define the performance of the system [80]. They have also been prioritised using MoSCoW, as outlined in Table 3.2.

Table 3.2 Non-functional requirements

ID	Details	Priority
N1	Security: The website must defend against intrusion by implementing access control, to protect student and lecturer information.	M
N2	Usability: The user interface must be intuitive, satisfying, user-friendly, and meet the needs of the target audience.	M
N3	Documentation: Comprehensive documentation, user guides or FAQs must be provided for all users, including developers.	M
N4	Recoverability: The website should recover from system failures and resume normal processing.	S
N5	Accessibility: The system could be accessible to users with disabilities.	C
N6	Availability & Reliability: The website will not be available at all times with minimal downtime and perform without failures.	W
N7	Scalability: When the load increases, the website will not be able to scale up. Latency and throughput shall be at acceptable levels.	W
N8	Performance: The system will not be able to handle multiple concurrent users without affecting the response time.	W

3.1.3 MVP Goals and Additional Features

The MVP focuses on high-priority requirements aligned with limited time and expertise:

- Student Portal: Each student is enrolled in four courses and can visualise their progress for each coursework through a colour-coded progress bar (green for "on-time" and orange for "late") and a percentage showing completion. Students can prioritise subtasks using a Kanban board by organising unlocked subtasks, which are locked until the relevant lecture is delivered.
- Staff Portal: Staff can upload coursework subtasks and view student submission statistics. Doughnut charts, dashboard statistics, and a filterable student list allow tracking of students who have not started coursework.
- Shared Features: A Gantt-chart calendar visualises subtasks, reducing memory load and improving deadline tracking. All users can edit their profiles, receive notifications, view FAQs, submit a query, and change settings.

The website was hosted locally and run in development mode. To enforce security, separate portals for student and staff were implemented. To prevent data loss and ensure recoverability, all files were continuously pushed to GitHub with additional local backups in case of security threats such as accidental data deletion on GitHub servers. Help pages were included for all users with Frequently Asked Questions (FAQs) and a contact form for unanswered queries. During development, evaluation, and testing, the website occasionally became unresponsive but was restored by restarting the development server using the “npm run dev” prompt. Usability heuristics were used to enhance usability, and supervisor and

university friends were regularly consulted as potential end users to provide feedback. Supervisor was contacted more frequently and treated as a client whose suggestions were considered strongly to achieve a high-end product. During the initial stages, accessibility was considered by including Accessible Rich Internet Applications (ARIA) in JavaScript to enable assistive technologies like screen readers. However, due to time constraints, the idea of accessibility was discontinued. Canvas was used as an inspiration, as it is considered to have the highest usability among LMS platforms.

3.1.4 Features Planned but Not Implemented

The website was initially planned to send weekly reminders to students, with increased frequency to twice a week as deadlines approached because daily reminders can potentially spam and irritate students. Additionally, personalisation options were considered, allowing students to adjust font sizes or change the overall appearance with a dark theme. A reward system was also planned to motivate students on timely submissions, placing them on a leaderboard as an added incentive. These features were implemented into the GUI but were not made functional. Table 3.3 compares the features planned with features implemented.

Table 3.3 Comparative analysis of features planned and implemented

Feature	Proposal	Final Product
Student		
Submit coursework for up to four courses	✓	Fully Implemented
Receive reminders	✓	Partially Implemented
Display colour-coded progress bar and visualisations	✓	Fully Implemented
Eisenhower matrix	✓	Not Implemented
Automated feedback on submissions	✓	Not Implemented
Mandate project journal submission	✓	Not Implemented
Kanban Board	✗	Fully Implemented
Rewards for on-time submission	✗	Partially Implemented
Locked subtasks	✗	Fully Implemented
Staff		
Upload coursework subtasks	✓	Fully Implemented
Display student submission statistics	✓	Partially Implemented
Display deadline and progress visuals	✓	Fully Implemented
Provide one-on-one guidance to students	✓	Not Implemented
Track students with zero submissions	✗	Partially Implemented
Share submission statistics with students	✗	Partially Implemented
Shared		
Log in	✓	Fully Implemented

UI personalisation	✓	Partially Implemented
Time mapping calendar	✓	Fully Implemented
Edit profile	✓	Fully Implemented

3.2 Software Development Methodology

Solo Scrum was chosen to develop Coursework Wizard for its iterative flexibility, but its lack of team collaboration was a limitation that affected real-time feedback during development. Scrum is an agile, user-centric methodology that speeds up the development process. A product backlog was prepared containing a list of features required for the final product. The backlog was divided into sprints, which are timeframes, typically ranging from one to six weeks, for completing tasks in the sprint backlog. Sprints were created successively until the product backlog was empty. At the end of each sprint, a sprint review was held to reflect on what was accomplished ([Appendix K](#)) and to plan for improvements in the next sprint ([Appendix J](#)). This iterative process ensured that each sprint becomes more efficient. Typically, teams hold daily scrum meetings to discuss daily goals and ensure the product is always workable and in a deliverable state [81] [82] [83] [84]. The entire process is summarised in Figure 3.1.

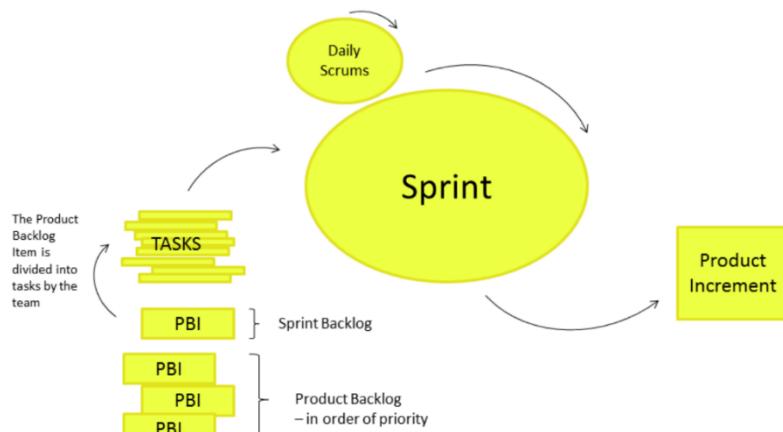


Figure 3.1 The Scrum Methodology [83]

However, despite symbolising teamwork, Scrum can be adapted for solo developers, where one person performs the roles of all team members [85] [82] [83] [84]. The Scrum framework was adapted as mentioned below:

- Product Owner: Defines and prioritises the project's scope. In this project, the product backlog was managed in JIRA ([Appendix L – Figure 1](#)) and the project's visual and functional scope were designed during Sprints 1-3.

- Scrum Master: Ensures the Scrum process runs smoothly, helps resolve problems, and keeps the project on track. As a solo developer, the progress was monitored through the Kanban board ([Appendix L – Figure 2](#)), JIRA reports ([Appendix L – Figures 3-6](#)), and project journals. Obstacles were identified and addressed by researching solutions or discussing issues with the supervisor when needed. This role was carried out throughout the entire project.
- Frontend Developer: Responsible for building the UI and ensuring design consistency. In this project, the focus was on building the user interface for the student and staff portals, ensuring alignment with the Figma prototypes. This work occurred mainly in Sprints 4-5.
- Database Designer and Backend Developer: Responsible for the database setup and backend logic. These roles were combined to design and set up the database, integrate it with the frontend, and implement the backend functionality for both the student and staff portals. This was primarily completed in Sprints 6-8.
- Tester and Documenter: Ensures usability testing is conducted, and the project is properly documented. This role was adapted in Sprint 9 where staff testing was conducted, feedback was gathered, and the results were documented for the report.

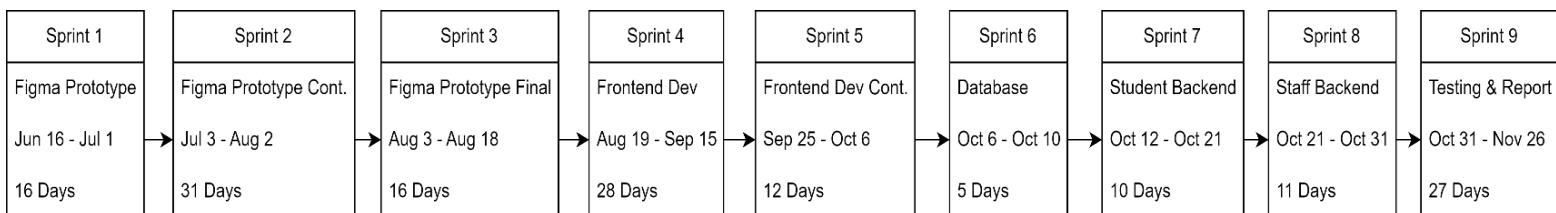
The project was developed incrementally, prioritising the MVP features first. Due to time constraints, non-essential features were moved to later sprints to focus on core functionalities, highlighting the agile flexibility of Solo Scrum. The development was completed in 9 sprints, with multiple features being implemented in each sprint. The development process could have been smoother if the sprints were more concise, rather than being vague or abstract, especially at the start of the project. Table 3.4 provides step-by-step details of each sprint's objectives, role adaptations, and results.

Table 3.4 Sprint breakdown

Sprint	Focused Features	Adapted Role(s)	Outcome
1	Website theme, logo design, and prototype of the landing pages	Product Owner and Designer	Selected the website's colour theme, designed the logo, and created landing page prototypes in Figma.
2	Prototype for the login pages and student portal (R1, R4, R7)	Product Owner and Designer	Developed Figma prototypes for the login pages and partially completed the student portal prototype.
3	Prototype for the student and staff portals (R2, R3, R4, R5, R6, R8, R10, R11)	Product Owner and Designer	Finalised the full website prototype on Figma, covering both student and staff portals.
4	Set up the Next.js application and build initial frontend (R1,	Frontend Developer	Set up the Next.js environment and implemented the GUI for pre-login

	R3, R5, R7)		pages and the majority of the student portal frontend.
5	Complete frontend for student and staff portals (R2, R3, R4, R6, R8, R11)	Frontend Developer	Finished all frontend coding for both the student and staff portals.
6	Design, create, populate, and connect database	Database Designer and Developer	Created the MySQL database, designed the schema, populated it, and connected it to the frontend.
7	Complete backend coding for the student portal (R1, R3, R5, R7)	Backend Developer and Tester	Implemented backend logic for the student portal and conducted initial usability testing.
8	Complete backend coding for the staff portal (R2, R3, R4, R6, R8, R11, R12)	Backend Developer	Completed backend coding for staff functionalities.
9	Conduct staff testing and finalise the report	Tester and Documenter	Conducted staff interviews for testing, gathered feedback, and completed the final report.

The process followed the core principles of Solo Scrum, with adjustments made to fit the needs of a single developer. While daily scrums were skipped, tools like JIRA and the Kanban board helped maintain progress and ensure continuous delivery. The development was iterative, with each sprint becoming more focused and efficient, although clearer sprint goals at the beginning would have streamlined the process further (Figure 3.2).

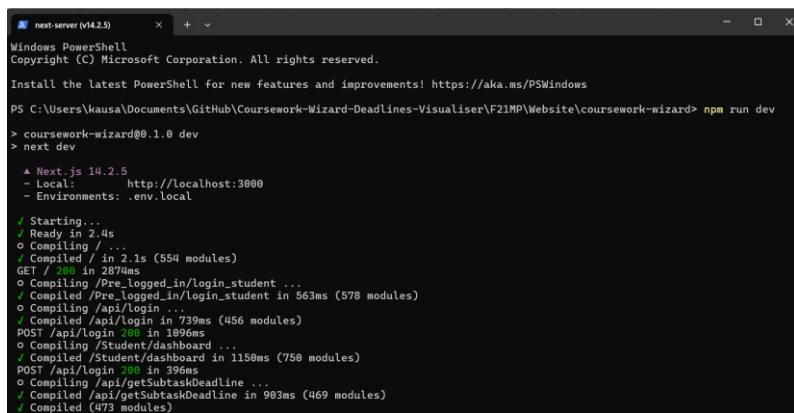


Chapter 4. Design and Implementation

4.1 Development Tools and Technologies

The development of the Coursework Wizard website was carried out using a combination of technologies to meet the project objectives. The following technologies were used:

- Next.js: Chosen for its full-stack capabilities, as it is built on top of React and includes both front-end and back-end functionality. This eliminated the need to learn separate technologies for the front-end and back-end, saving time and effort. The entire website was developed using Next.js, maintaining a consistent development environment throughout the project. The Next.js environment was accessed by prompts on the PowerShell (Figure 4.1). ESLint and Tailwind were not used for the development, the main language selected was JavaScript and not Typescript. JavaScript is the foundation of the project, as it is required for both React and Next.js development. Initially, React was considered for front-end development; however, by transitioning to Next.js, the development process became more efficient.



```
next-server (v14.2.5) x + v
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\Users\kausa\Documents\GitHub\Coursework-Wizard-Deadlines-Visualiser\F21MP\Website\coursework-wizard> npm run dev
> coursework-wizard@0.1.0 dev
> next dev

  ▲ Next.js 14.2.5
  - Local:          http://localhost:3000
  - Environments:  env.local

  ✓ Starting...
  ✓ Ready in 2.4s
  o Compiling /
  ✓ Compiled / in 2.1s (554 modules)
GET /api/login
  o Compiling /pre_logged_in/login_student ...
  ✓ Compiled /pre_logged_in/login_student in 563ms (578 modules)
  o Compiling /api/login ...
  ✓ Compiled /api/login in 739ms (456 modules)
POST /api/Login 200 in 1096ms
  o Compiling /Student/dashboard ...
  ✓ Compiled /Student/dashboard in 1150ms (750 modules)
POST /api/Login 200 in 396ms
  o Compiling /api/getSubtaskDeadline ...
  ✓ Compiled /api/getSubtaskDeadline in 983ms (469 modules)
  ✓ Compiled (473 modules)
```

Figure 4.1 Running Coursework Wizard in development mode

- Visual Studio Code: The editor used for coding the JSX and CSS files was Visual Studio Code (Figure 4.2). The initial idea was to use an Integrated Development Environment (IDE) like Webstorm but research suggested the potential problems it could cause. Instead, VS Code was finalised, and relevant extensions such as React.js Code Snippets, React Extension Pack, Prettier, npm Intellisense, Live Server, ESLint, ES7+ React/Redux/React-Native snippets, and HTML/CSS/JavaScript Snippets were installed.

Chapter 4. Design and Implementation

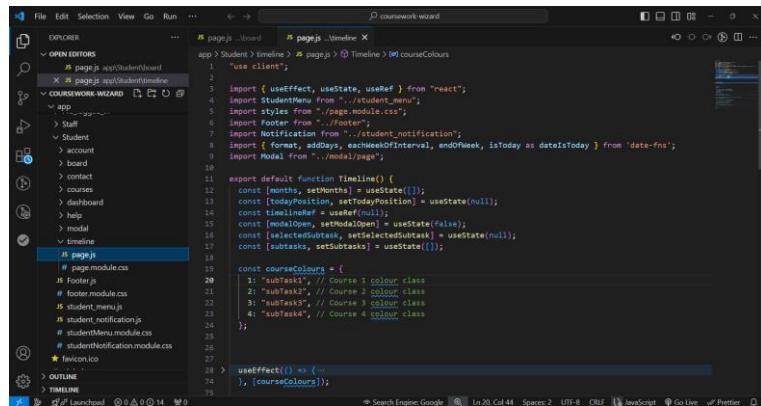


Figure 4.2 Visual Studio Code

- MySQL: My Structured Query Language (MySQL) was selected as the database system for the project due to prior experience with relational databases. Given the time constraints, there was insufficient time to learn a non-relational database like MongoDB. MySQL's familiar structure and commands provided an efficient solution for managing the project's data. MySQL Workbench was used for designing the Entity Relationship Diagram (ERD) and creating the local MySQL database (Figure 4.3).

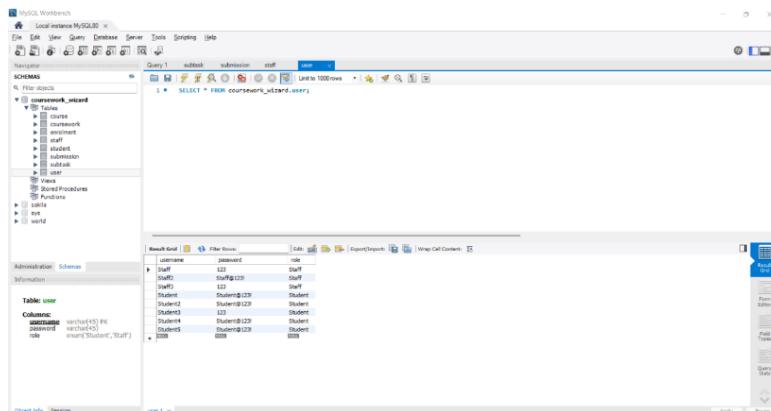


Figure 4.3 MySQL Workbench for creating and managing the database

- Postman: Postman was used to test and validate APIs during development, particularly for operations that involved interacting with the database (e.g. adding rows). This tool was essential for ensuring the backend APIs were functioning correctly (Figure 4.4).

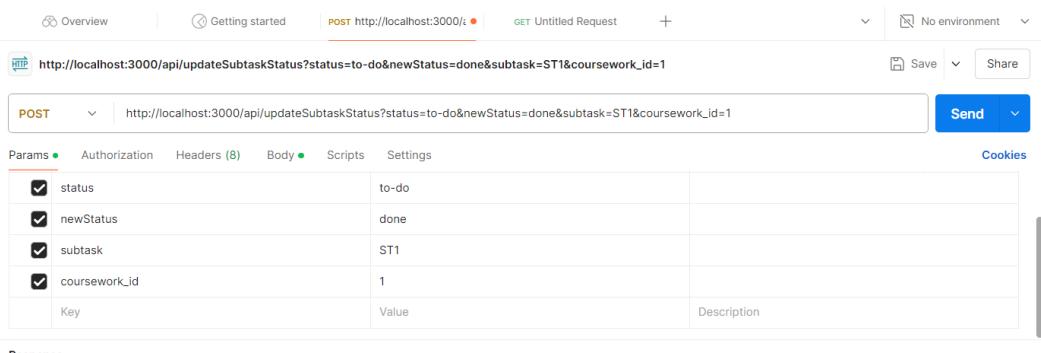


Figure 4.4 Postman for testing the APIs

- GitHub: Used for version control throughout the project. This was critical for preventing data loss, as well as for tracking changes made to the project over time (Figure 4.5). Using GitHub allowed to record changes and provided the ability to rollback to earlier versions, particularly during the integration of different components. However, there have been cases of GitHub crashing so local backups were also created to be on the safe side.

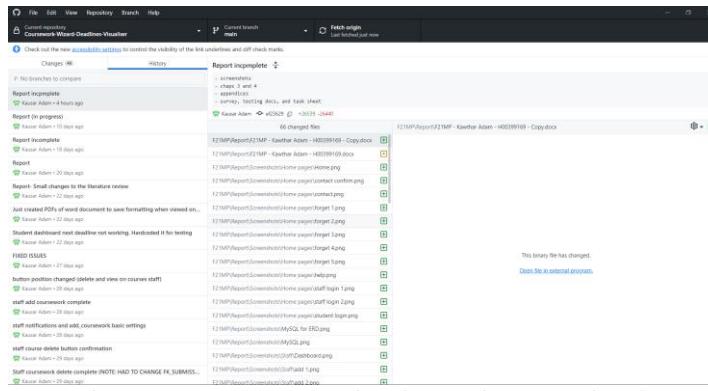


Figure 4.5 Coursework Wizard Repository on GitHub

- JIRA: For tracking progress throughout the project. It was used to manage tasks, set deadlines, and monitor the overall dissertation process. JIRA helped to stay organised and ensured that each phase of development was completed within the designated timeframe.
- Figma: Figma was used to create a high-fidelity prototype of the entire website UI and depicted the actual interactions of the website, serving as a guide for front-end development. This prevented spending excessive time on design decisions or trial and error during front-end coding. The prototype also helped identify and address potential usability and UX issues early on, ensuring smooth development.
- Other tools and technologies: Apart from the primary tools and technologies, additional resources were used for completing this project. YouTube, [FreeCodeCamp](#), [Next.js](#) documentation, and [NewLine](#) were used for tutorials on JavaScript, React, Next.js, and implementing features like Timeline, Doughnut Charts, and Kanban Boards. Platforms such as Google, [Reddit](#), ChatGPT, and [Stack Overflow](#) provided assistance in troubleshooting and resolving implementation challenges. Design tools like [LunaPic](#) and [ThisPersonDoesNotExist](#) were used for editing images and creating personas, while Google Fonts and Dafont helped in downloading fonts. Testing resources included [Marker](#) for usability documentation, [Testfort](#) for testing checklist, [Medium](#) for usability test plan, and Microsoft Forms for post-usability surveys. Additional tools like Outlook for communication, Microsoft Word for documentation, Google Chrome for website viewing, and Snipping Tool for capturing visuals further supported project completion.

These tools were carefully chosen to support project execution, reduce the need for learning too many new technologies, and to address the challenges faced during solo development.

4.2 Personas and User Requirements

Several personas were created during the design phase to understand the users and the context in which they will be using the website [86]. These personas helped illustrate the goals, challenges, and expectations of users and through them, the MVP and usability requirements were finalised ([Appendix M](#)). Below is a summary of 2 personas for student and staff:

- Persona 1: Alex Gibbler (BBA Student)
 - Goal: Keep track of deadlines and task prioritisation
 - Challenges: Forgets deadlines, starts working last moment, fails to prioritise tasks
 - Requirement IDs: R3, R4, R5, R7, R11
- Persona 2: Dr. Arnold Jacob (Mathematics Professor)
 - Goal: Manage and track student performance and progress
 - Challenges: Busy but organised, multiple classes and overloaded, has many students with late submissions
 - Requirement IDs: R3, R6

As mentioned in Chapter 3, the functional and non-functional requirements of the website were developed to address the challenges identified by the personas. The high-priority requirements of the MVP were selected to provide immediate value to the target users. Below is a summary of how these requirements align with the personas:

- Student (R4, R5, R7, R11, R12): The student personas require an intuitive way to track and manage their coursework progress. Features like progress bars, task prioritisation (via the Kanban board), and personalised reminders are designed to address these needs.
- Staff (R2, R6, R9, R13): Staff personas require features for managing coursework and tracking student performance. The ability to upload coursework and monitor student submissions through visuals will help meet these needs.
- Shared Features (R1, R3, R8, R10): Both student and staff personas can visualise deadlines on the Gantt chart calendar and personalise their account and profile. Usability is prioritised for all users to make the website easy to use and navigate.

4.3 Prototyping and UI Design

A high-fidelity prototype of the entire system was developed in Figma to ease and speed up the development process ([Appendix D](#)). This phase involved design decisions, including the selection of the logo, colour palette, font sizes, content organisation, and website layout. The prototyping process took over a month, as it involved multiple iterations and improvements based on feedback from friends and the project supervisor. Because of unfamiliarity with Figma and too many options to decide from, this phase took longer than expected, thus causing delays in the initial project plan. A common problem encountered on Figma was that the same component was not allowed to have more than one event such as hover and on-click. For this reason, two buttons were added for design purposes, increasing the workload. Later, such animations were ignored and directly implemented in the final website.

The first prototype was created quickly but lacked usability and aesthetics ([Appendix D – Figure 2](#)). As a result, the process was restarted. Before designing any pages, the colour scheme was finalised. Inspired by the green colour palette of the Teachable website, which gave a refreshing yet academic feel, a similar colour scheme was adopted but adjusted to make it more suitable for an academic platform by changing the shades slightly. Verdana and Georgia fonts were chosen because they appeared neutral, professional, and neither overly formal nor dull. Larger font sizes were used to enhance visibility and clarity for users. The page layouts were influenced by usability principles, focusing on simplicity and reducing visual clutter. While designing the student portal, the main challenge was to organise the content in a readable fashion. To design and make changes in Figma was time-consuming and thus, a rough design on paper was created first (Figure 4.6).

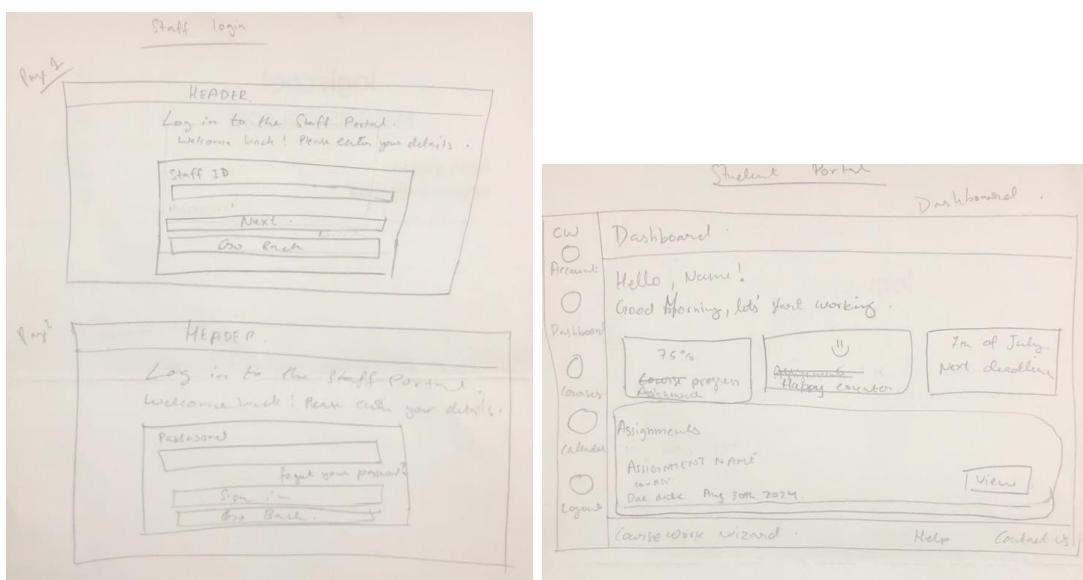


Figure 4.6 Paper Prototype

The following websites were referred for inspiration:

- Home page: Inspired from Dribbble which offered clean and modern web designs.
- Log in page: Inspired by OASIS (Curtin University) for its minimalism design.
- Help page: Inspired by Etihad Airways website for its interactive FAQ section, where collapsible features made the page appear clean and well-organised, as well as provide quick answers to common questions.
- Dashboards: Inspired by Power BI which included graphs and statistical displays.
- Kanban Board: Inspired by JIRA adapted to help students prioritise coursework subtasks by categorizing them as “To-Do”, “In Progress”, and “Completed”.
- General Layout: The Canvas LMS was used as an inspiration for the overall website. As mentioned in Chapter 2, Canvas ranks highest in usability compared to other LMSs, and the side navigation bar minimises space usage while ensuring ease of access. The icons on the navigation bar were free icons from Iconscout.

The initial logo design featured an owl symbolizing academics and wisdom, but it added unnecessary complexity. A simpler logo using the initials "CW" was chosen instead. However, feedback revealed that the initials resembled Arabic letters (ج), leading to further revisions (Figure 4.7a). The final logo adopted a more straightforward and readable style, ensuring clarity and professionalism (Figure 4.7b).



Figure 4.7 Coursework Wizard Logo (a) Old (b) New

Throughout the prototyping phase, feedback was collected iteratively from friends and classmates that acted as student personas, and the supervisor, representing the staff persona. Their suggestions were incorporated into the design to ensure the website remained clean, user-friendly, and visually appealing. Changes suggested were:

- Replace calendar with timeline: The first design for the timeline was a simple calendar with highlighted dates to show deadlines (Figure 4.8a). This was not effectively visualising the deadlines and thus the feature was redesigned once more before the final design was achieved (Figure 4.8b).



Figure 4.8 Rejected Designs for Timeline (a) Design 1 (b) Design 2

- Make courses a clickable tab: The dashboard was cluttered with buttons to view the coursework. It was suggested to instead make the tab clickable and remove the buttons.
- Coursework deletion: Editing published coursework can be a hassle and create unnecessary problems. Thus, edit coursework buttons were replaced by delete button.
- Coursework addition: The website should divide subtasks into dependent (sequential subtasks with prerequisites) and independent subtasks and lock them until the relevant lecture material is covered during lectures. The staff should be able to reorder the subtasks and delete them during the adding process.
- Subtask weight: It was recommended to assign each subtask a weightage for calculating progress only for staff members. However, weightage was added to the website but never used for calculations.
- Sharing class performance: The staff can release the class performance to students so that they can see how many students have completed. The share button was added to the staff portal but without any functionality.
- Course colours: The colours of the courses should be consistent across the website.
- Board: Rename to progress board to make the functionality self-explanatory to students.

While the prototype captured most of the website's functionality, a few features were added later during development. This iterative approach was made possible by the agile nature of the project, which allowed for incremental development and adjustments throughout the process.

4.4 System Design

The system design of the project involved defining the data structure, user interactions, and logical flow of the website. The focus was on creating a micro-LMS that supports efficient coursework management for both students and staff.

4.4.1 System Architecture

The system built on Next.js 14 consists of two primary user types: students and staff. Students can view and manage their coursework tasks, while staff can upload coursework and track student progress. Both user roles interact with the system through a well-defined UI designed to enhance usability and time management. No specific architectural pattern, such as MVC, was formally adopted but the modular approach naturally organised the system into distinct layers of functionality (Figure 4.9). The system consists of 4 parts:

1. Frontend: Responsible for the user interface components. It performs client-side rendering and user interactions with the GUI to enable smooth transitions between server-rendered and client-rendered pages.
2. APIs: Responsible for the backend and functionality. It handles user authentication, role-based access control for staff and students and is responsible for fetching and updating data in the database.
3. Database: It stores all the data of the website like the users, subtasks, and submissions.
4. Local Host: Since the website is hosted locally, the environment is on a single laptop.

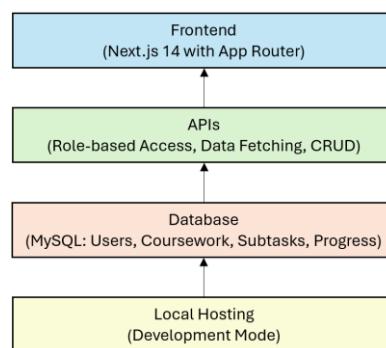


Figure 4.9 Coursework Wizard Architecture

The communication between the Next.js client and the database is handled using two types of requests: GET, for fetching data from the database, and POST, for updating the database. The requests are received by the middle layer, called the Express API server, which passes them to the in-memory cache, Redis. POST requests are submitted to a publish/subscribe system, while GET requests first check for data in the cache. If the data is found in the cache, it is passed to the client; otherwise, it is fetched from the database and stored in the cache for

future requests. POST requests are sent to the worker server, which subscribes to the publish/subscribe system to receive messages. The data in the MySQL database is then updated and saved (Figure 4.10) [87].

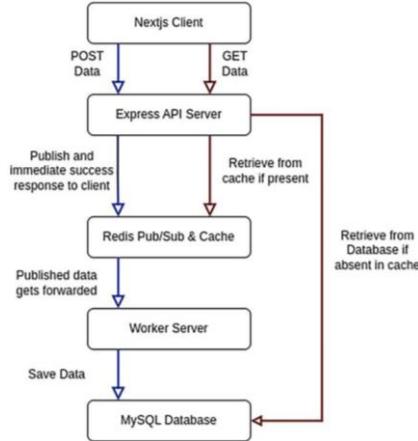


Figure 4.10 Next.js Architecture [87]

4.4.2 Database Design

The database was designed after completing the front-end development and played a critical role in managing the system's data. The schema was modelled using a relational database approach, implemented on MySQL due to its reliability and familiarity. The design captures key entities, relationships, and constraints required for uninterrupted operation. The main tables and their purpose include:

- User: A parent table to manage login credentials and roles (student or staff).
- Student and Staff: Two separate tables that extend the user table to store additional role-specific attributes.
- Course and Coursework: Tables to manage courses, their associated coursework, and deadlines.
- Subtask: Tracks individual coursework components with attributes such as start/end dates, weights, file attachments, and whether the subtasks are locked or unlocked.
- Enrolment: Manages the many-to-many relationship between students and courses.
- Submission: Stores data about students' submissions, including status for the Kanban board and file attachments.

The system supports key relationships such as:

- A course is managed by a single staff member.
- Students can enrol in multiple courses, while each course can have multiple students.

- Each coursework contains subtasks, which can be visualised and tracked by students.
- Submissions link students to their progress on individual subtasks.

The Entity-Relationship Diagram (ERD) for the system is shown in Figure 4.11. The ERD was finalised after completing the front-end development. Feedback from supervisor and backend development of the website resulted in iterations of the ERD, highlighting the agile nature of Scrum.

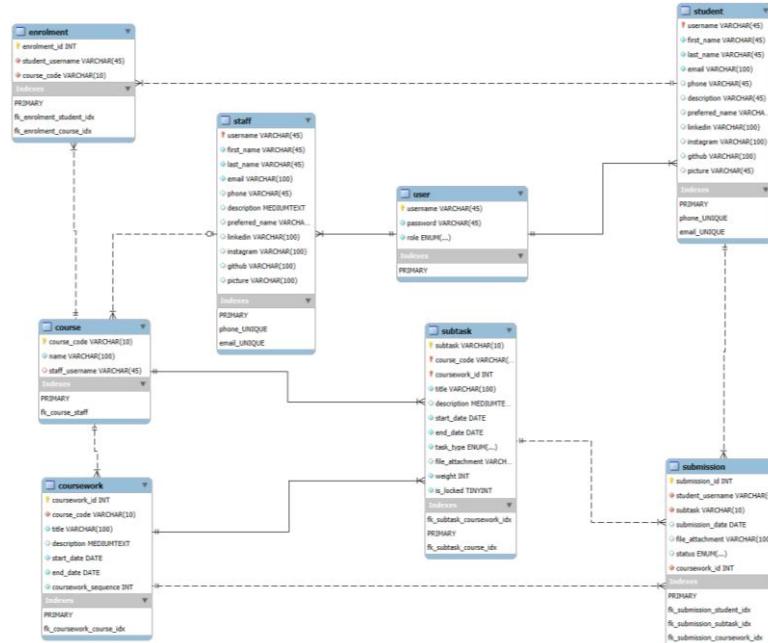


Figure 4.11 Entity-Relationship Diagram (ERD) for Coursework Wizard

The design followed a modular and relational database structure to ensure:

1. Data Integrity: Foreign keys were used to establish relationships and maintain consistency across tables, ensuring that data dependencies are enforced.
2. Recoverability: Regular GitHub commits, pushes, and local backups were maintained throughout development to mitigate the risk of data loss.

The database was initially poorly structured, not normalised, and impractical for some key functionalities. The design encountered scalability challenges due to its dependency on manually populated submission records. For instance:

- Manual Subtask Entries: To track submissions and allow updates to subtask statuses on the Kanban board, each subtask for every student required a separate row in the submissions table to be manually entered. If a student has 48 subtasks, 48 rows are required for that student. Although this solution allowed the Kanban board to function

and dynamically change subtask status upon submission, it is highly impractical and caused issues when integrated with the staff portal (Figure 4.12).

	submission_id	student_username	subtask	submission_date	file_attachment	status	coursework_id
▶	3	student	ST3	NULL	NULL	in progress	1
	4	student	ST4	NULL	NULL	in progress	1
	5	student	ST5	NULL	NULL	done	1
	8	student	ST3	NULL	NULL	done	3
	9	student	ST4	NULL	NULL	done	3
	44	student	ST1	NULL	NULL	done	3
	55	student	ST2	NULL	NULL	done	3
*	110	student	ST3	NULL	NULL	done	5
	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Figure 4.12 Submission Table

- Partial Normalisation: While the schema followed principles of relational databases, it was not fully normalised to the third normal form, as certain redundancies were retained to simplify development. These redundancies limited query efficiency and complicated integration of staff portal functionalities with the existing student portal.

4.4.3 Key Design Decisions

1. Security: Role-based access was implemented at the API level to ensure students and staff access only their respective privileges.
2. Simplicity: The schema was designed to balance functionality and simplicity, aligning with the limited time and resources available.
3. Focus on Core Functionality: The database was designed to support core student and staff functionalities, such as progress tracking and coursework management, rather than broader scalability.
4. Student Portal Visualisation: Visualisations and gaming modules were used to make the design effective and achieve objectives. Progress for every coursework was represented by a progress bar, completion percentage, emoji, and colour coded tabs. Upon successful submission, the colour of the bar and tab changed to green, otherwise remained orange. Every coursework also had an emoji that varied from sad to joyful depending on the number of submissions made. Stars were also rewarded for on-time submission. Subtasks that have not been covered in lectures were disabled and overlayed with a lock emoji. Every coursework also had a section displaying the next upcoming deadline along with the subtask and course name.
5. Staff Portal Visualisation: The staff dashboard had colour-coded doughnut graphs to represent submission statistics for each coursework where green meant completed, yellow meant in progress, and red meant pending. Furthermore, the sortable students list also had

colour codes for every student to make it easier to track students with minimal submissions.

4.5 Implementation

After developing the prototype, the supervisor was consulted multiple times to gather feedback until the design achieved maximum satisfaction. Once the prototype was finalised, the project transitioned from the role of designer to front-end developer for working on the GUI of the website. The first step was to install Next.js 14 and create a default application using the command prompt. The application was run in development mode, with the code edited on VS Code and the website tested on Google Chrome.

During the installation, Tailwind CSS configuration was skipped to reduce complexity due to a lack of experience with the technology. Instead, all styling was done manually from scratch, using the prototype as a reference. However, despite having a reference, the overall frontend development was not smooth because the frame size of the prototype did not match the display size of the actual website. The prototype frames had more height and less width, whereas the actual website was opposite. Therefore, the font sizes and content organisation had to be readjusted. Moreover, the side navigation bar would highlight the Dashboard when courses or account pages were accessed. An “if” statement was added to highlight the relevant icon on the side bar if the web page belonged to the account or course folders.

The next step was to create the database in MySQL and populate it with dummy data to make the website dynamic so that it can load and display the accounts of individual users. Following this, the backend of the website was developed using APIs. A connection to the local MySQL database was established and named “pool”. Individual API files were created for each action, utilising SQL commands to perform database operations. Upon successful execution, the corresponding functionality was implemented on the website. A simple formula was used to calculate the work progress:

$$\text{Completion Percentage} = \frac{\text{total subtasks submitted}}{\text{total unlocked subtasks}} * 100$$

During implementation, unfamiliarity with the technology posed several challenges, causing delays and setbacks. Despite being a moderately popular React framework, Next.js 14, which enforces the App Router configuration, had limited tutorials available. Most of the resources

focused on older versions, making it difficult to understand the new folder structure and script naming conventions. The official Next.js documentation became the primary resource for resolving these issues and for learning how to organise files correctly to make the website functional. The newer version required each page to have a separate folder with a page.js file. The same issue persisted when navigation components were added to the website since older versions imported router from router, whereas the newer version imported it from navigation.

At the start of the implementation phase, choosing Next.js felt like a disadvantage due to the steep learning curve. However, once the front-end development was complete, the decision seemed justified because Next.js eliminated the need for separate backend development with Node.js, offering a full-stack development solution. Nevertheless, some challenges persisted. For instance, while working on the timeline and Kanban board, many layout issues arose that could have been resolved easily with Tailwind CSS. Unfortunately, since Tailwind CSS was not configured at the start, installing it later distorted the entire website layout because Tailwind comes with default styling. As a result, Tailwind was disabled and alternate libraries like react-dnd-html5-backend and react-dnd were installed. Moreover, styling the timeline was challenging because all individual bars representing subtask duration had to be properly styled to prevent overlapping and misplacement. The solution was easy but hard to figure out and only required the bars to be styled as flex display and absolute.

One major issue encountered during evaluation was the slow speed of the website. Initially, it was assumed that this was due to local hosting. However, further research revealed that the development mode of Next.js is slower because it continuously reflects code changes and refreshes the application in real-time. Although building the website could have improved performance, this decision was not pursued because the project had already entered the evaluation phase. Building the website required resolving issues which caused the Kanban board to stop functioning.

The project also faced delays because of unfamiliarity with most of the technologies used. Learning JavaScript, followed by React.js and then Next.js was time-consuming, and minimal time was spent recreating small projects from tutorials. As a result, the website was implemented simultaneously while watching tutorials. This approach led to problems, as the implementation often outpaced the learning process. Many front-end components were initially incompatible with the backend, and key concepts such as props were learned later, requiring modifications to the front-end code during backend development.

Due to time constraints, the student portal was made fully dynamic, while the staff portal was only partially dynamic, with many components hardcoded. APIs were created for essential staff functionalities such as login, profile management, coursework, and timeline management. However, features like the doughnut graphs for displaying submission statistics, the student list, and identifying students with zero submissions were hardcoded. While hardcoding exists, the focus of this project was on delivering a usable design that incorporates time and project management functionalities to assist students in their academics and prepare them for their professional lives.

A few requirements, like reminders/notifications, rewards, Eisenhower Matrix, automated feedback, forget password, and journal submissions, were deprioritised, completely disregarded or not made fully functional during implementation. Features like notifications and rewards were added to the UI but were not made functional. Despite these challenges, the project demonstrated significant progress, with the core functionalities for students and staff implemented successfully to deliver the MVP (Screenshots of final website in [Appendix E](#)).

4.6 Assumptions

The following assumptions were made during the development of the Coursework Wizard to define the project scope and simplify implementation considering limited time and resources:

- Course Limit: The system was designed to accommodate a maximum of two courses for staff and four courses for students, reflecting the common practice of the university.
- Individual Projects Only: The system is tailored exclusively for individual projects, assuming that students will not work in groups.
- Familiarity with Canvas LMS: It is assumed that users are already familiar with the Canvas LMS interface, as Coursework Wizard's design is inspired by Canvas.
- Staff Responsibility for Subtasks: Staff are responsible for breaking coursework into subtasks and assigning deadlines, like the WBS described in 2.5.1. This ensures consistency across courses and reduces the complexity for students, who are not required to define their own subtasks.
- Non-Grading System: The system does not support grading functionality, as it focuses solely on task management, progress tracking, and deadline visualisation.
- Submission Deadline: The system assumes that all due dates are scheduled at midnight.

Chapter 5. Testing and Evaluation

5.1 Introduction

The aim of testing was to verify that the Coursework Wizard functions as intended, while the aim of evaluation was to validate that the system meets user needs and fulfils the project's requirements. Various methods were used during development and post-completion to ensure the system's functionality and usability.

5.2 Testing

5.2.1 Testing Strategy

During the development phase, testing was performed continuously. After every small change, the website was run in development mode and tested on the browser to check its functionality. This immediate testing ensured that issues were identified and resolved early.

Once the student portal was completed, development shifted to the staff portal. After the staff portal was implemented, the entire website was tested as a whole. However, during integration testing, several issues were encountered where the student portal stopped working properly after the addition of the staff portal. These problems were resolved through debugging and incremental adjustments. This approach of continuous and integration testing ensured that the website remained functional at all stages of development.

During the development, unit and integration testing were performed to ensure that each component was functioning properly independently and when combined with others. Once the system was developed, system testing was performed to test the system all together along with Heuristic evaluation to ensure usability. Ten students and two staff members were recruited for usability testing to verify the core functionalities for the MVP and get detailed feedback for further improvements.

5.2.2 Unit Testing

Unit tests were conducted to verify individual components and their functionality. Table 5.1 summarises the test cases, expected results, actual results, and status.

Table 5.1 Unit Test Cases

ID	Test Case	Expected Result	Actual Result	Status	Notes
TC0001	Verify user login with valid username and password.	Login successful.	User dashboard open	Passed	Nil
TC0002	Verify user login with invalid username and password.	Login failed. Show error message – invalid credentials.	Error message	Passed	Nil
TC0003	Verify student login with staff username and password.	Login failed. Show error message – invalid credentials.	Error message	Passed	Nil
TC0004	Verify staff login with student username and password.	Login failed. Show error message – invalid credentials.	Student dashboard open	Failed	The API was not checking for role on staff login. The test passed on second attempt.
TC0005	Verify password is changed upon reset using forget password.	Login successful using new password.	Student dashboard open	Passed	Nil
TC0006	Verify the upcoming deadline of the next subtask is displayed.	Display deadline for closest subtask with no submission yet.	Closest subtask deadline displayed	Passed	Nil
TC0007	Verify proper navigation icons are highlighted when clicked.	Icon of page open should be light green with black icon.	Dashboard highlighted when courses and account is open	Failed	Modified code by adding if statements to check if the page link is for the course pages, profile or settings, and highlight icon accordingly. The test passed on second attempt.
TC0008	Verify coursework 1 of each course is displayed.	4 colour-coded and clickable coursework should be displayed on the dashboard.	4 coursework displayed	Passed	Nil
TC0009	Verify progress bar of each coursework displays the completion percentage and is properly colour coded.	Completion percentage should be displayed on the centre of the bar and the colour should be green or orange depending on the progress.	17% completion orange coloured bar	Passed	Nil
TC0010	Verify the completion percentage is displayed for the coursework and visualised using different emojis.	Completion percentage should be displayed in simple numbers and visualised using sad or happy emojis.	17% work completed with a sad emoji saying, “Move Quickly!”	Passed	Nil
TC0011	Verify the colour of the subtask changes from orange to green when submission is made.	The subtask’s background colour should change to green upon submission.	Colour changed to green	Passed	Nil

Chapter 5. Testing and Evaluation

TC0012	Verify all dependent and independent subtasks for every coursework is displayed and colour coded.	Each course should have 2 lines dedicated for subtasks. First line for dependent subtasks and second for independent subtasks.	All subtasks are displayed	Passed	Nil
TC0013	Verify subtasks can be moved from one column to another.	Subtasks should be able to move between columns.	Subtasks can be moved	Passed	Nil
TC0014	Verify subtasks that have not been taught are locked.	Locked subtasks should be disabled and have a lock icon on them.	Locked subtasks are disabled	Passed	Nil
TC0015	Verify profile is viewed.	Profile should be displayed.	Profile picture not displayed	Failed	Changed attachment data type from blob to varchar. The test passed on second attempt.
TC0016	Verify profile is edited and saved.	Profile should be edited and saved.	Profile edited and displayed	Passed	Nil
TC0017	Verify the staff can delete coursework.	The website should ask for confirmation and remove the coursework from the database.	Coursework deleted after asking for confirmation	Passed	Nil
TC0018	Verify the staff can add new coursework and view it in the timeline.	Coursework should be added to the database and available across the website after validation.	Coursework added and updated on the timeline	Passed	The website asked for validation to ensure the dependent subtasks don't overlap and the number of total subtasks matches the sum of dependent and independent subtasks.
TC0019	Verify all students are displayed in the list and can be filtered and sorted.	Students belonging to each course and coursework should be displayed with colour coded status to show their work progress.	Students with colour coded status displayed	Passed	The page allows the staff to select the list of students to be displayed and sort them.
TC0020	Verify the staff dashboard displays the number of students with zero submissions and visualises submissions for each coursework separately.	Number of students with zero submissions should be displayed along with colour-coded doughnut graphs for each coursework.	Statistics and graphs displayed	Passed	The data is hardcoded.

5.2.3 Integration Testing

Integration testing ensures that individual components of the system work together as expected. For Coursework Wizard, this involved testing the interactions between the frontend, backend APIs, and the MySQL database. Each new feature was integrated incrementally and tested to confirm that it functioned properly within the larger system.

During development, components were continuously integrated into the website. After completing the student portal, the staff portal was implemented and integrated. However, this integration introduced unexpected issues, such as the student portal breaking after the staff portal was added. Specifically, the Kanban board stopped functioning, and subtasks failed to turn green even after successful submissions. This happened because the key constraints in the database tables had been modified during staff portal development. When certain records were deleted, cascading deletions were triggered, which unintentionally removed all records from the submission table. As a result, the submission table was empty, preventing status changes for subtasks. This issue directly affected the progress visualisation feature. To resolve this, the database schema was reviewed, the constraints were fixed, and the deleted records were re-added.

This iterative approach to integration testing ensured that issues were identified and resolved promptly, maintaining the overall usability and functionality of the Coursework Wizard.

5.2.4 Heuristic Evaluation

A HE was performed to assess the system's usability based on Nielsen's usability heuristics. The evaluation identified areas of strength and minor issues as mentioned below:

H1. Visibility of System Status: The system consistently displayed its state and actions clearly. For example, the "Forget Password" process included a step indicator and provided a confirmation page after submitting queries. Similarly, when an action was performed, the system gave immediate feedback to indicate whether the action was successful. The sidebar highlighted the icon of the current page, ensuring users always knew where they were. However, some inconsistencies were observed. For instance, while the coursework names were displayed, they lacked context confusing the user which coursework they are viewing.

H2. Match Between System and the Real World: The system followed a natural and logical order for steps, especially in processes like "Forget Password" and "Add Coursework." The

content was tailored specifically for Heriot-Watt University students and staff, and unnecessary information was avoided. Visuals were used extensively to make the content more visible. However, some issues were noted, such as using course codes instead of course names, which might be confusing. Simple and student-focused language was used, but improvements could include standardising coursework naming conventions.

H3. User Control and Freedom: Users had the freedom to resubmit files multiple times without restrictions. Exiting any page was straightforward, as the logout button was always visible. Additionally, deleting a course triggered a confirmation prompt to prevent unintentional deletions. However, some limitations existed. For example, staff members could not go back to edit details after reaching the review page when adding coursework.

H4. Consistency and Standards: The website maintained consistency across all pages. The same colour scheme, button styles, themes, and fonts were used throughout, giving the platform a cohesive look and feel. Even though the student and staff portals offered different functionalities, their design was consistent. Inspired by Canvas and JIRA, the interface had familiar patterns to enhance usability for users familiar with these platforms.

H5. Error Prevention: Input validation was implemented effectively in forms such as "Contact Us" and "Add Coursework," where only specific data types were allowed. A confirmation dialog was used for critical actions like deleting a course. However, some usability issues were noted, such as the confusing "Re/Submit" label on the submit button for subtasks and the lack of hover tooltips on tabs, which could have guided users better.

H6. Recognition Rather Than Recall: All information was presented clearly and prominently, minimising the need for users to memorise anything. Features like colour-coded keys for doughnut graphs and hover tooltips made the interface intuitive. However, the Kanban board lacked detailed instructions or tooltips, which could have helped users.

H7. Flexibility and Efficiency of Use: The system was simple and efficient, with no unnecessary steps added. Default states, such as "To-Do" for all subtasks, made the system predictable and easy to use. However, accessibility features like ARIA were only partially implemented, and input methods were limited to keyboards and mice, which restricted usability for users with special needs.

H8. Aesthetic and Minimalist Design: The website's design struck a balance between aesthetic appeal and academic focus, with a calm and peaceful interface. Content was clutter-

free, well-organised, and visually appealing. However, the large size of components made the interface feel "busy" to some users.

H9. Help Users Recognise, Diagnose, and Recover from Errors: Error handling was implemented in the console with detailed messages pointing to the exact location of errors. However, end users might not recognise or understand these errors unless they accessed the developer console. Data validation errors, such as invalid inputs in coursework forms, displayed clear and helpful messages for users to resolve the issue.

H10. Help and Documentation: The system included a "Help" page with FAQs for students, staff, and users who were not logged in. If a query was not answered in the FAQ, users could submit an inquiry via the contact form. However, there were no tutorials, tooltips, or detailed user guides, limiting the overall accessibility of help resources.

As mentioned in section 2.3.2, a novice evaluator typically detects only 23% of usability issues, therefore it can be approximated that 77% issues went unidentified. Having verified the system's technical functionality, the next section focuses on evaluating its usability and alignment with user requirements.

5.3 Evaluation

5.3.1 Usability Testing

Usability testing was conducted with 10 students who were given a task sheet outlining specific functional actions to perform on the website ([Appendix G](#)). First, the students were introduced to the system and distributed the information sheets. Once they agreed, they were asked to sign a consent form before proceeding with the test ([Appendix H](#)). During the testing, students followed the task sheet while thinking aloud, allowing their navigation patterns, errors, and observations to be recorded. The sessions were screen-recorded for further analysis to identify recurring patterns or challenges faced by users. The entire plan is summarised in Figure 5.1.

AUTHOR	CONTACT DETAILS	DATE		
KAWTHAR MOHAMMAD ADAM	Km2065@hw.ac.uk	18 th October 2024		
PRODUCT UNDER TEST	TEST OBJECTIVES	PARTICIPANTS	TEST TASKS	RESPONSIBILITIES
Coursework Wizard, a micro-LMS website that incorporates project management tools to improve coursework time management.	<ul style="list-style-type: none"> To evaluate website usability To understand the challenges faced by users while using the website To get feedback on how the website can be improved and aligned to match user needs To understand if the website would benefit users in managing their time and tasks so that they submit coursework on time 	<ul style="list-style-type: none"> 10 students and 2 professors will be recruited for testing. All participants will be from Heriot-Watt University. 	<ul style="list-style-type: none"> Students will have to perform 8 tasks: <ol style="list-style-type: none"> Login Subtask submission Timeline Kanban board Progress bar Edit profile Log out Forget password Students will have to submit 2 online surveys as well. Staff will engage in an interview and share their opinions. 	<ul style="list-style-type: none"> Author: Prepare and initiate test, and record and analyse results. Participants: Follow instructions, complete tasks, and answer questions.
BUSINESS CASE	EQUIPMENT			LOCATION & DATES
This test is required to evaluate the website and its usability. The results will help to understand the improvements required to make the website more usable and beneficial.	<ul style="list-style-type: none"> The website will be tested on the developer's laptop. Data will be recorded on paper and using a screen recorder. 			<ul style="list-style-type: none"> Location: Heriot-Watt University, Dubai Campus Date: <ul style="list-style-type: none"> Student: 21st October 2024 Staff: 5th November 2024
PROCEDURE				
Introduction and Participant Recruitment	Participant Consent	Tasks for students and website demo for staff	Surveys and interviews	Thanking participants

Figure 5.1 Usability Test Plan

After completing the tasks, students were asked to fill out an SUS (System Usability Scale) survey and a post-usability questionnaire to provide feedback ([Appendix F](#)). The questionnaire was designed to have less open-ended questions and more Likert scales questions. The average SUS score was 80, indicating good usability. The evaluation data and calculations are presented in [Appendix I](#). The feedback highlighted the following:

Strengths:

- All participants found logging in and out of the system straightforward. The logout button was always visible, making it easy to exit any page without confusion.
- Participants appreciated the website's calm and academic feel. The colour scheme, typography, and visuals were well-received, with specific praise for the use of green in the design. The average score received was 7.7 out of 10. Majority participants were able to identify clickable content and 7 out of 10 participants found the content size appropriate.
- The system provided clear feedback for most actions, such as indicating progress updates after submitting subtasks or confirming password changes. This aligns with heuristic principles for system status visibility.
- Features like "drag-and-drop" on the Kanban board and locked subtasks were understood by some participants, showing potential for usability with further clarification.
- The participants found the website very similar to Canvas.

Weaknesses:

- Most participants struggled with the drag-and-drop functionality on the "Board" page. The lack of instructions or tooltips made this task difficult for users unfamiliar with such interfaces.
- Many participants did not notice the progress bars for coursework, indicating that their placement needs improvement.
- The use of course codes instead of course names in some places confused participants. A more consistent naming convention, such as "Advanced Interaction Design: Application Design Coursework" was suggested.
- The labelling of the submit button as "Re/Submit" confused participants, as they assumed it was only for resubmissions.
- While a "Help" page was available, most participants avoided it or did not fully utilise the FAQs. Additionally, many clicked links for solutions without reading the provided guidance.
- Several participants used the browser's back button instead of the website's navigation features, indicating that the interface could better guide users.
- Alert windows displaying error messages were ignored by participants indicating lack of visibility.
- Some participants struggled with unclear instructions on the task sheet, which affected task performance. Additionally, testing was conducted when participants were in a hurry as it was getting late, leading to rushed interactions and incomplete observations.
- Participants expected the "Change Password" option to be in settings or profile sections, which differed from its actual location. Some also wanted a "show/hide" feature for passwords during updates.

The test sample size was very small, but the results show that the usability of Coursework Wizard is "Good" as per the scale mentioned in chapter 2.3.2. However, the results could have been more accurate if the tasks on the task sheet were clearer, and testing was scheduled earlier in the day. Moreover, few participants were not comfortable using Windows OS.

5.3.2 Staff Feedback

The staff feedback evaluation involved two professors from Heriot-Watt University. Initially, five staff members were contacted, but only two responded. Due to scheduling conflicts, individual sessions were conducted with each professor. Since the staff portal was primarily

hardcoded, asking staff members to test it directly was not feasible. Instead, the evaluation focused on demonstrating the website and gathering their opinions through a semi-structured interview format ([Appendix I](#)).

Student Portal:

- Both staff members agreed that the student portal provides benefits by helping students manage their deadlines and coursework visually. They appreciated the timeline and dashboard, which reduce memory load by showing all coursework deadlines in one place. They noted that students no longer need to remember deadlines, which is particularly beneficial for younger students or those new to university.
- Staff Member 1 emphasised that the student portal was an improvement over Canvas, which lacks tools for task prioritisation.
- However, both professors highlighted that some features might not be practical for older students or postgraduate students who are expected to independently manage their work.

Staff Portal:

- The staff portal received mixed reviews. Both professors expressed concerns about the additional workload placed on staff by requiring them to break down coursework into subtasks. Staff Member 1 estimated that 60–70% of coursework might become more time-consuming to manage, especially for written assignments. They suggested that it is better for students to learn time and project management themselves.
- Staff Member 2 disagreed with the idea of staff "babysitting" students, arguing that this level of micromanagement is impractical in real-life scenarios and does not align with the goal of preparing students for independence. They suggested that the staff portal should focus more on marking, identifying late submissions, and other administrative tasks rather than planning coursework for students.
- Additionally, Staff Member 2 raised a concern about the ability to verify if students are genuinely completing their work. They pointed out that even with incremental submissions, students could use generative AI tools to create the entire coursework, break it into subtasks, and submit them one by one. This weakens the argument that breaking coursework into subtasks can help staff identify the work is completed by the student.

Kanban Board:

- While both professors found the Kanban board useful, they pointed out its lack of instructions and clarity. Staff Member 1 recommended using a clearer icon to represent the board, as many students may not be familiar with project management tools.
- Staff Member 2 was less enthusiastic, stating that the Kanban board felt unnecessary and overly playful, potentially turning education into a "circus".

Usability, Look, and Feel:

- Both professors praised the system's usability, stating it was intuitive, familiar, and easy to navigate. Staff Member 1 noted that the design would be approachable even for first-time users, as all information is visible, and the interface avoids unnecessary clutter.
- Staff Member 2 suggested adding more guidelines for certain features, such as the Kanban board, to enhance usability.

Forget Password Process:

- The "Forget Password" feature was appreciated for its simplicity and clarity. Both professors liked the step indicators (e.g., Step 1 of 4) and the immediate feedback provided at each stage, which aligned with usability standards.

Visualisations:

- The professors agreed that visualisations, like progress bars, effectively reduce memory load. However, Staff Member 1 noted a limitation: when a coursework has only one subtask, no progress is displayed. They suggested introducing additional features, such as a Pomodoro timer, to encourage time tracking. However, they also acknowledged that students often rush to meet deadlines, which may limit the timer's effectiveness.

Share Button:

- Staff Member 1 suggested that the share button could be repurposed to export statistics as a CSV file for internal use by staff, rather than sharing data directly with students. Staff Member 2 believed that sharing progress data with students could be motivating but recommended keeping it optional.

Gamification:

- Opinions on gamification features like the leaderboard were divided. Staff Member 1 suggested anonymising rankings to avoid increasing anxiety among students, proposing that only percentages (e.g. Top 3%) should be shown. They also acknowledged that the effect of ranking systems depends on the student's personality, therefore it should be optional.

- Staff Member 2 was less supportive, stating that gamification might not suit the platform's purpose of preparing students for professional environments. They believed that the dashboard and timeline provided sufficient motivation without adding gamified elements.

Additional Suggestions:

- Staff Member 1 proposed adding a "reminder" feature to the staff portal, allowing professors to send emails to students who have not started their coursework. However, Staff Member 2 opposed this idea, arguing that it would increase the workload and promote micromanagement.
- Push notifications for students (e.g. a deadline reminder email one week before the due date) were also suggested as a useful feature.

Overall, the staff feedback highlighted several strengths of the system, such as its usability, visualisations, and focus on helping students manage their coursework effectively. However, the additional workload on staff by the staff portal was a major concern. Both professors emphasised the importance of refining features to balance functionality for students while minimising the burden on staff. The student portal was rated highly, with its features seen as a valuable improvement over existing systems like Canvas. However, the staff portal requires further development to address the concerns raised and better align with professional life.

5.4 Summary of Findings

The evaluation results, including SUS scores and feedback from students and staff, validated that Coursework Wizard achieved its goals of providing task and time management tools alongside progress visualisation. The average SUS score of 80 indicated good usability, and students appreciated the website's aesthetics, simplicity, and focus on academic functionality.

The testing and evaluation revealed several areas for improvement across the system:

- The Kanban board lacked clarity and instructions, making it difficult for users to understand and use effectively.
- The progress bar and some visual elements were overlooked by many students, suggesting the need for improved placement.
- Inconsistent terminology, such as using course codes instead of names in some areas, confused users and disrupted the flow.

- Accessibility features were minimal, with limited support for users with special needs, such as screen readers or voice commands.
- Hardcoded elements in the staff portal restricted flexibility and practicality.

Despite these challenges, the project demonstrated significant progress in delivering a functional MVP. Coursework Wizard was appreciated for its usability, intuitive design, and focus on addressing key academic challenges faced by students. These findings provide a strong foundation for future improvements, including enhancing the Kanban board, increasing accessibility, and replacing hardcoded elements with fully dynamic components to support scalability.

Overall, the system successfully met its core objectives and showed great potential to evolve into a robust platform that balances student and staff needs, offering a valuable tool for academic and professional growth.

Chapter 6. Conclusion and Future Work

6.1 Potential for Industry Implementation and Future Work

If this project was to be developed in the industry, the website would be fully dynamic and get integrated into an LMS such as Canvas or Moodle. The website would adapt to different screen sizes and include an application for mobile users. Inclusive UX design would allow all kinds of users to utilise Coursework Wizard by supporting people with varying disabilities like colour-blindness and hearing impairment.

Moreover, to support the non-functional requirements, the website could be connected to Cloudflare's nameserver, which would provide a dashboard to visualise website traffic, security events, and performance metrics in real time. By using these tools, the development team could identify bottlenecks and take actions to optimise the website. With Cloudflare's reverse proxy, website traffic would first go through Cloudflare's servers and then reach the website, increasing security, performance, and reliability:

- Performance: Website contents will be stored on the nearest Cloudflare server, reducing response time because data will be loaded from the nearest server.
- Security: Cloudflare's Web Application Firewall (WAF) will protect the website from attacks by filtering malicious or suspicious requests.
- Scalability and Reliability: When website traffic increases near deadlines, the load balancer will distribute load and scale up by using more servers to ensure high availability, reduced downtime, and fault tolerance.

Future work could include piloting the system in a real academic setting. For example, one lecturer could adopt the platform for a semester with a small group of students. This pilot phase would provide valuable insights into how the system performs under real-world conditions and highlight further areas for improvement. Features like advanced analytics, mobile compatibility, and enhanced accessibility could then be added based on this feedback.

6.2 Limitations

Although Coursework Wizard met its core objectives, several limitations were identified during testing and evaluation:

- Restricted course and coursework capacity: The system is limited to four courses for students and two coursework per course. These restrictions were necessary to simplify database design and system performance in development mode.
- Progress tracking limitations: The progress bar feature requires multiple subtasks for accurate tracking. If coursework contains only one subtask, progress cannot be monitored.
- No support for group projects: The system is not designed to support group projects, limiting its application to individual tasks only.
- Limited user base: The system targets Heriot-Watt University students and staff, assuming users are already familiar with Canvas. This restricts its wider adoption.
- Static features in staff portal: Many components of the staff portal, such as submission statistics, are hardcoded, reducing flexibility and scalability.
- No grading capabilities: Coursework Wizard excludes any grading functionality, which might limit its usefulness for academic staff who require integrated assessment tools.
- Scalability and performance constraints: The system was tested in development mode, which limits its speed and scalability. It was not deployed or optimised for larger audiences.
- Manual subtask creation: Staff must manually break coursework into subtasks, which will be time-consuming and impractical for certain types of assignments.
- Limited accessibility and mobile support: Accessibility features like screen readers and ARIA attributes are minimal, and the system is not optimised for mobile devices.

While these limitations arose due to time constraints, limited resources, and limited technology competency, they highlight opportunities for future development to improve scalability, accessibility, and usability.

6.3 Conclusions and Final Reflections on the Project

Developing Coursework Wizard was both challenging and rewarding. The project successfully delivered an MVP that achieved its primary objectives of providing task and time management tools, as well as visualisations for tracking progress. The student portal was praised for its usability, simplicity, and ability to reduce memory load by visualising coursework deadlines and progress indicators.

However, the journey was not without challenges. Working as a solo developer meant managing multiple roles, from designing and implementing features to gathering user

feedback and conducting testing. Learning new technologies like Next.js, managing database constraints, and handling the steep learning curve for components added to the complexity of the project. The hardcoded elements in the staff portal and the partially dynamic backend further highlighted areas that need improvement.

Reflecting on the development process, I regret not starting earlier, as the time constraints made it difficult to achieve the full potential of the project. Ironically, this is what Coursework Wizard aims to change for students, helping them break down tasks into manageable parts and focus on the process, not just the deadlines. By integrating project management tools like the Kanban board with LMS features, this platform bridges a gap, preparing students not only for academic success but also for professional life.

One of the most valuable aspects of the project was the feedback received from students and staff. While students appreciated the intuitive design and functionality, staff raised critical points about the workload and practicality of certain features, such as manually breaking coursework into subtasks. These insights not only validated the system's strengths but also provided a clear direction for future iterations.

Despite its limitations, Coursework Wizard demonstrated potential as a platform to help students manage their coursework effectively while preparing them for professional environments. Looking ahead, piloting the system in a real academic setting would provide essential data to refine its features further.

In conclusion, Coursework Wizard has laid a strong foundation for a scalable and user-friendly academic tool. With further development, it has the potential to address the needs of both students and staff while evolving into an industry-ready platform.

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Appendix A: Heuristic Evaluation

Below is a list of Nielsen's heuristics created by [40]:

- H1. Visibility of system status
 - a. State: The current state of the system and available actions
 - b. Location: Where the user is currently
 - c. Progress: How much more is left to complete a task
 - d. Closure: Notification upon task completion
- H2. Match between system and the real
 - a. Understandability: Use content that the target audience can understand easily
 - b. Natural and logical order: Present information in steps that are followed normally in the real-world. For example, e-shopping
 - c. Appropriateness: The content should be appropriate for the target audience
- H3. User control and freedom
 - a. Reversibility: All actions should be reversible - recover deleted files
 - b. Emergency exit: Exit undesirable situations without extensive procedures
 - c. Informing users: Inform the user about the critical action he/she is taking
- H4. Consistency and standards
 - a. Consistency: Element usage should be the same throughout the system
 - b. Standards: Use knowledge of previous similar systems and apply it
- H5. Error prevention
 - a. Instructions: Clear instructions and requirements for performing tasks
 - b. Constraints: Do not allow certain input from the user like numbers for name
 - c. Confirmation: To avoid unintentional actions, the system should ask before executing serious and irreversible actions
 - d. Notification: Notify users about critical changes and updates
 - e. Autosaving: If the system fails, all user data will be lost. To prevent this, the system should autosave time-consuming data
 - f. Flexible inputs: Allow alternate ways of entering input to enhance flexibility
 - g. Defaults: Add default states that are preferred by people and inform them
- H6. Recognition rather than recall
 - a. Availability: Make information visible at all times so that users do not need to memorise it. For example, directions on streets
 - b. Suggestions: Provide accurate suggestions to users because they might be unfamiliar with the system and want they want
- H7. Flexibility and efficiency of use
 - a. Flexibility: The system is usable for all kinds of users
 - b. Efficiency: Do not add unnecessary steps to compete a task

H8. Aesthetic and minimalist design

- a. Aesthetic: If the system is aesthetically pleasing, users will perceive it as usable and ignore minor usability issues
- b. Organisation: Organise sections in a sensible order by categorising similar elements together and separating different sections
- c. Simplicity: Simple and uncluttered interface with only necessary content

H9. Help users recognise, diagnose, and recover from errors

- a. Recognising errors: When an error occurs, the system should clearly display the error message and the user should be able to understand that an error has occurred
- b. Understanding errors: Location and reason of the error
- c. Recovering from errors: Display instructions and steps for resolving the error

H10. Help and documentation

- a. Help: There should be a contact point for providing help to users
- b. Documentation: Easy to follow user guides, FAQs, and tutorials

Appendix B: SUS Survey

Figure 1 shows the questions of an SUS survey [88].

		1	2	3	4	5
1	I think that I would like to use this system frequently.	<input type="radio"/>				
2	I found the system unnecessarily complex.	<input type="radio"/>				
3	I thought the system was easy to use.	<input type="radio"/>				
4	I think that I would need the support of a technical person to be able to use this system.	<input type="radio"/>				
5	I found the various functions in the system were well integrated.	<input type="radio"/>				
6	I thought there was too much inconsistency in this system.	<input type="radio"/>				
7	I would imagine that most people would learn to use this system very quickly.	<input type="radio"/>				
8	I found the system very awkward to use.	<input type="radio"/>				
9	I felt very confident using the system.	<input type="radio"/>				
10	I needed to learn a lot of things before I could get going with this system.	<input type="radio"/>				

Appendix B – Figure 1 The standard SUS Survey [88]

Appendix C: Professional, Legal, Ethical and Social Issues

Professional Issues

The work done during this project will be compliant with the British Computer Society (BCM) Code of Conduct. The development of the website and its testing will follow software engineering practices, ensuring a professional development process. Moreover, all code will be properly organised, commented, and documented for increased readability, and the website will adhere to usability standards. Any outside work referred to will be clearly referenced. Software and tools will only be utilised if their licenses permit it.

Legal Issues

All relevant laws and regulations will be followed for this project. The data collected from the usability test will be obtained by participants' consent and will be completely anonymised to protect their privacy. Throughout the project, all software and other copyrighted materials will be used with permission from their respective licenses. After the development of the website, the developer will ensure that only authorised individuals have access to the website.

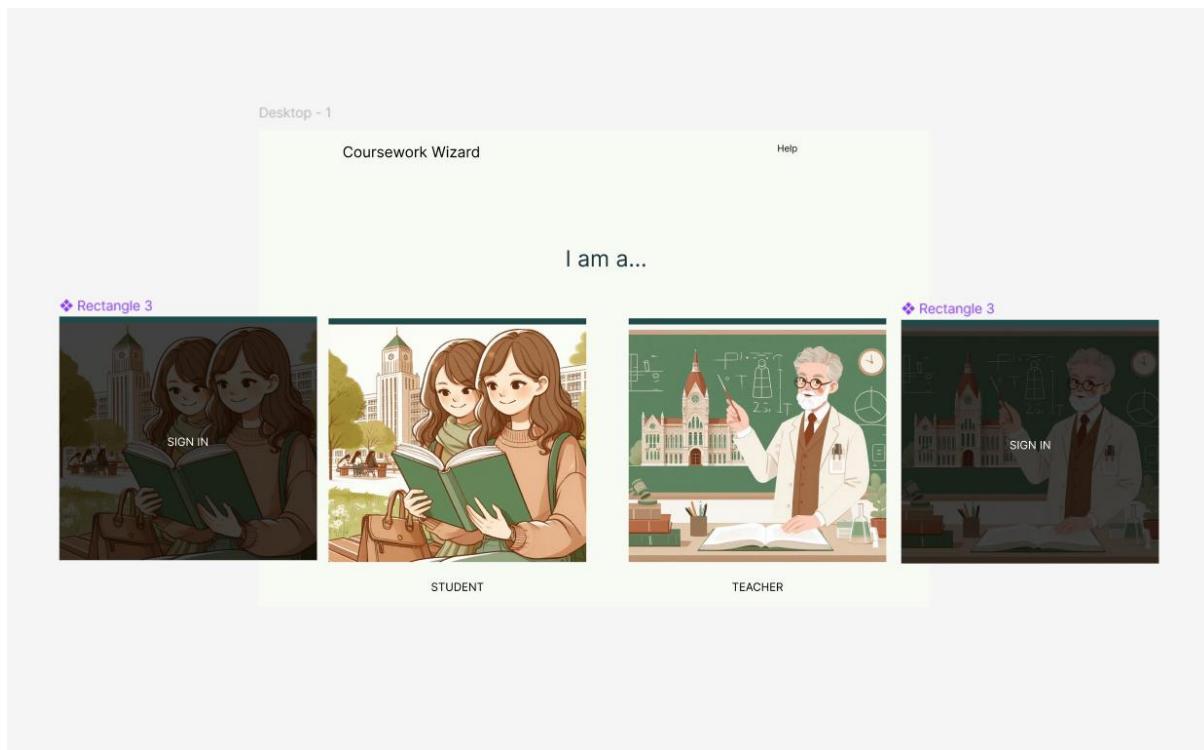
Ethical Issues

Since data will be obtained from human subjects during testing, all participants will be provided with information sheets describing the project and the testing procedure. Additionally, they will be provided with consent forms explaining how their anonymised data will be used. The participants will be given the freedom to withdraw from the test at any point. The research will be transparent and will adhere to General Data Protection Regulation Compliance. Finally, the website will also ensure user privacy with the help of authorisation.

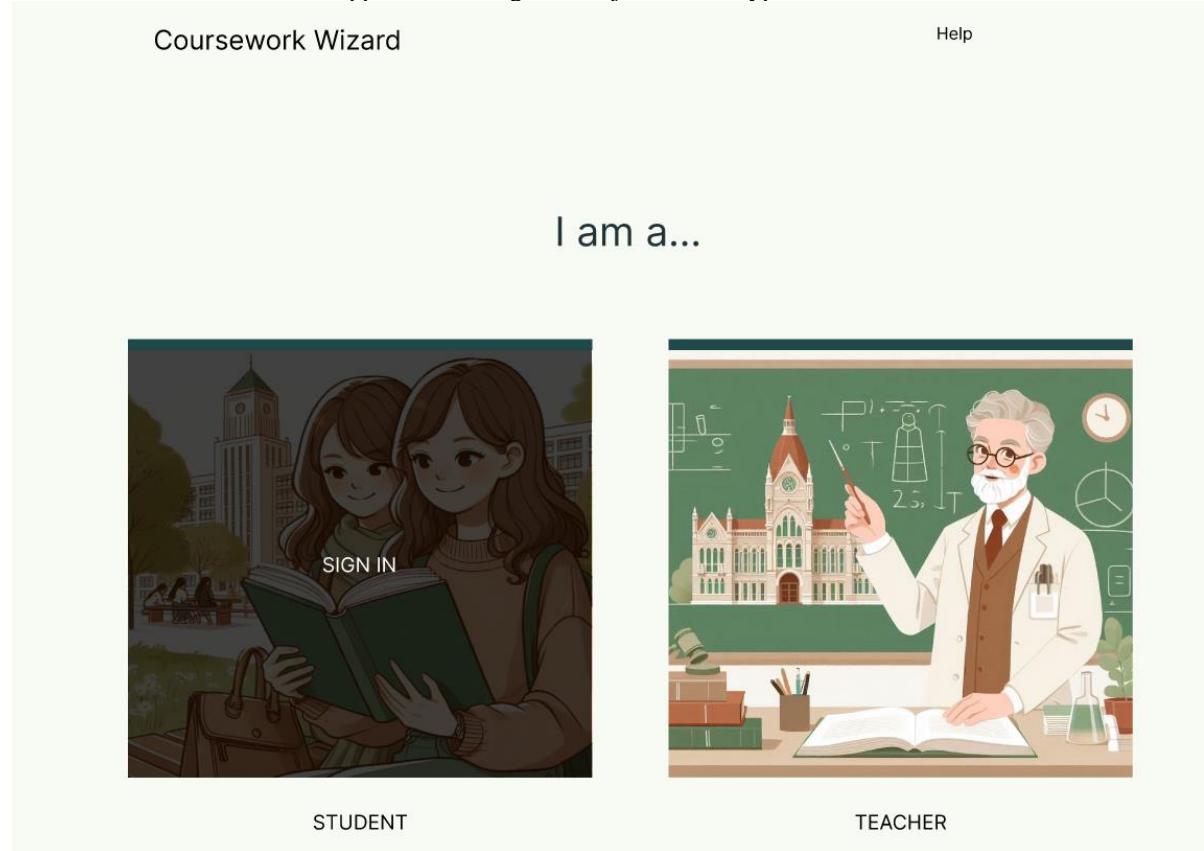
Social Issues

This project aims to reduce the negative social impact of deadline mismanagement practiced by students. The website will monitor and visualise students' progress to motivate them, help them combat procrastination, and prevent heightened stress levels caused by delaying assignments out of a lack of self-regulation. Additionally, the website will aim to promote positive user experiences by following usability guidelines and helping students manage their coursework efficiently.

Appendix D: Prototype

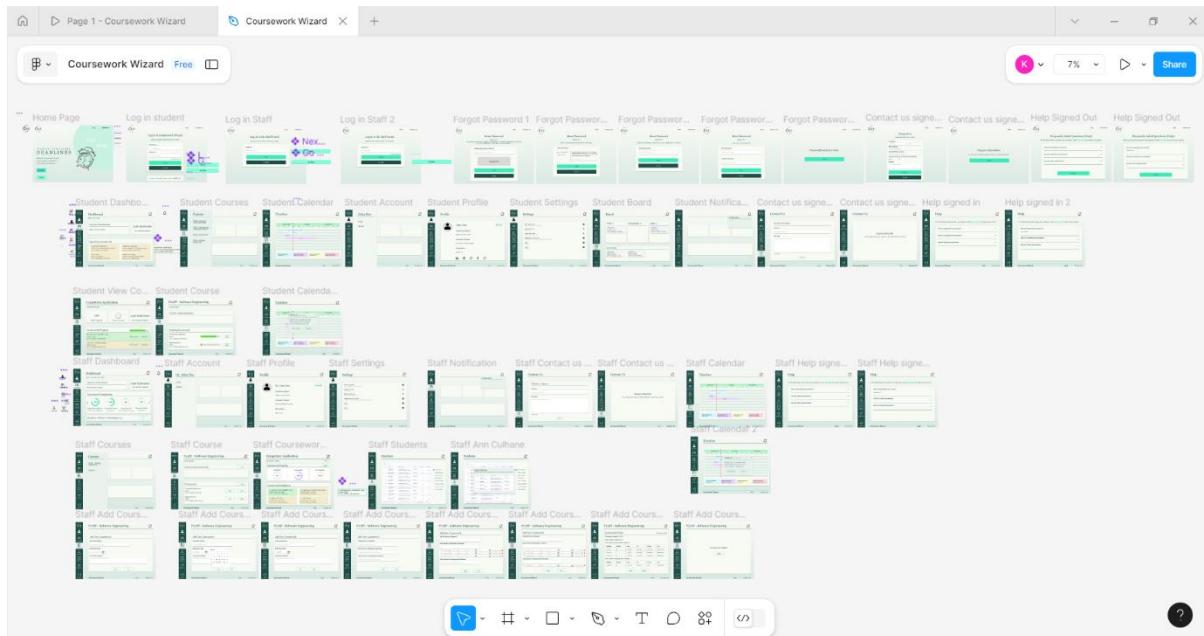


Appendix D – Figure 1 Rejected Prototype in Editor

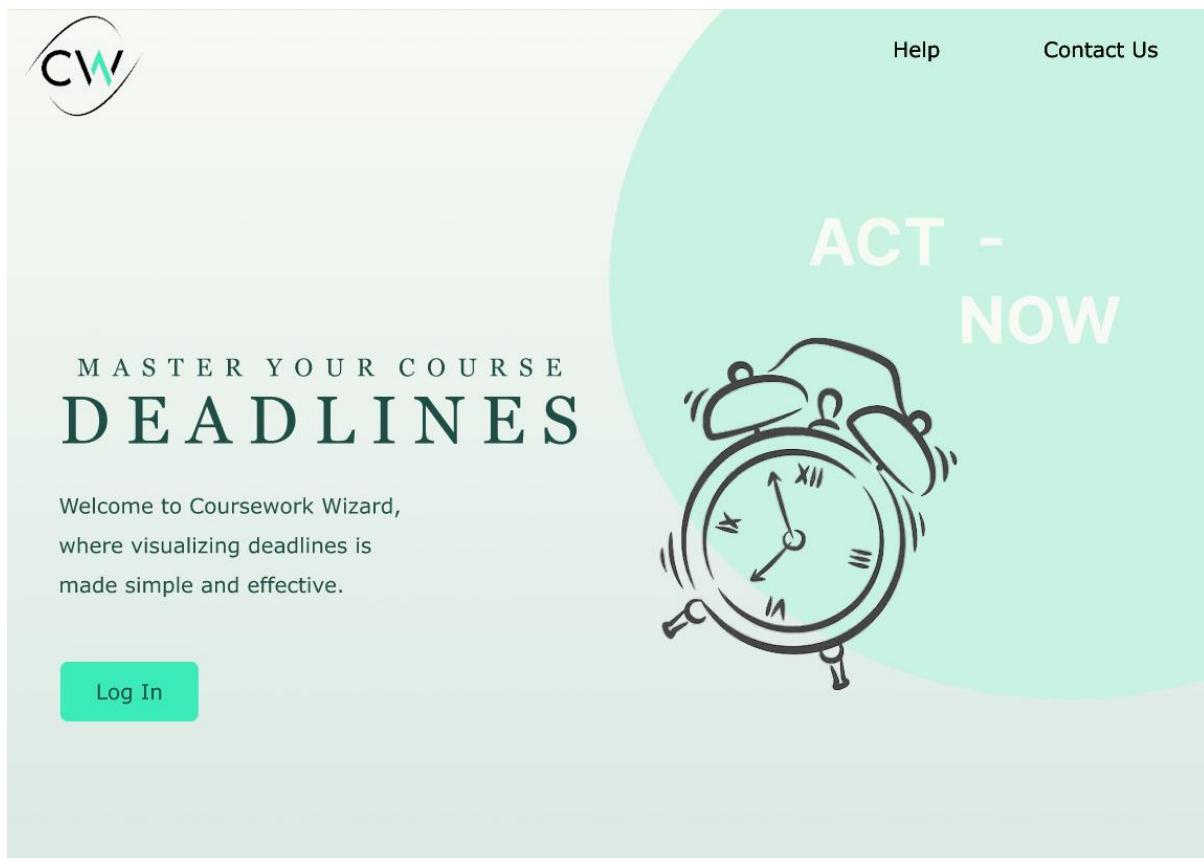


Appendix D – Figure 2 Rejected Prototype

Appendix D: Prototype



Appendix D – Figure 3 Final Prototype in Editor



Appendix D – Figure 4 Home Page

Appendix D: Prototype

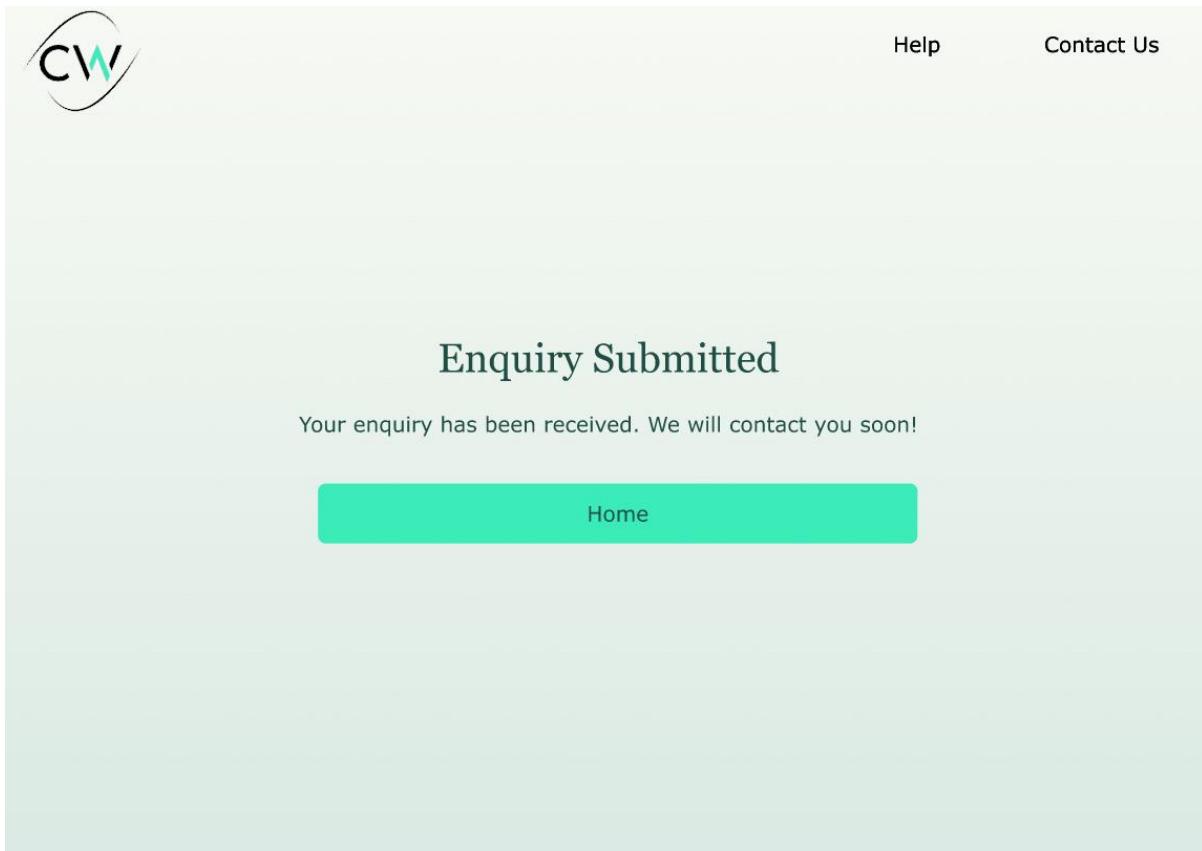
The screenshot shows a light green header bar with the CW logo on the left, and 'Help' and 'Contact Us' links on the right. Below the header is a section titled 'Frequently Asked Questions (FAQs)' in bold black text. A sub-instruction below it says, 'If the following do not answer your question, kindly [click here](#) to submit your enquiry.' The main content area contains three expandable sections: 'How do I personalise my account?' (with an upward arrow icon), 'How do I resubmit my coursework?' (with a downward arrow icon), and 'How do I add a profile picture?' (with a downward arrow icon). Each section has a horizontal line below it. At the bottom of the content area is a teal-colored button labeled 'Home'.

Appendix D – Figure 5 Help Page

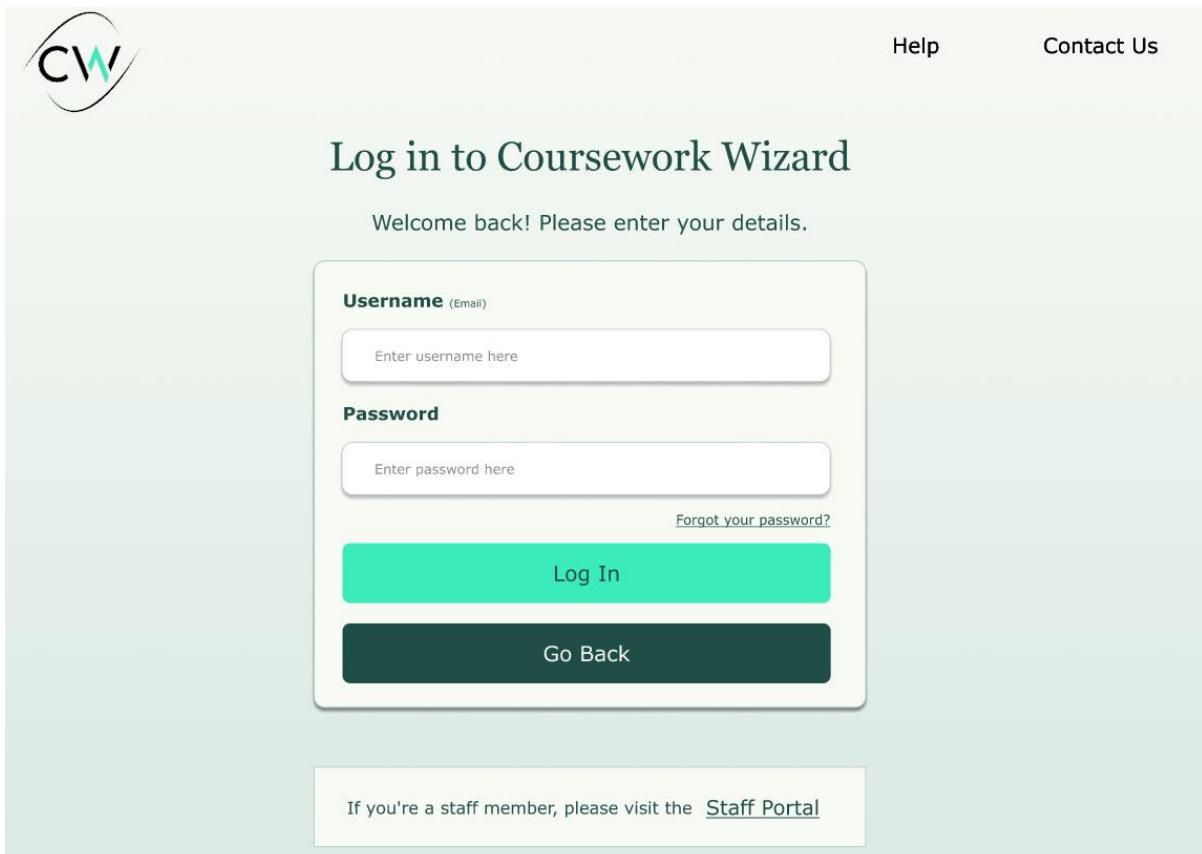
The screenshot shows a light green header bar with the CW logo on the left, and 'Help' and 'Contact Us' links on the right. Below the header is a large section titled 'Contact Us' in bold black text. A sub-instruction below it says, 'Please fill in the form below.' The form consists of several input fields: 'Full Name' (with 'First name' and 'Last name' sub-fields), 'Email Address' (with a placeholder 'Enter email address here'), 'Contact Phone Number' (with a placeholder 'Enter contact phone number here'), and 'Are you currently enrolled at Heriot-Watt?' (with two radio buttons: 'Yes' and 'No'). Below these is an 'Enquiry' field with the placeholder 'Enter enquiry details here'. At the bottom of the form are two buttons: a teal-colored 'Submit' button and a dark grey 'Cancel' button.

Appendix D – Figure 6 Contact Us Page

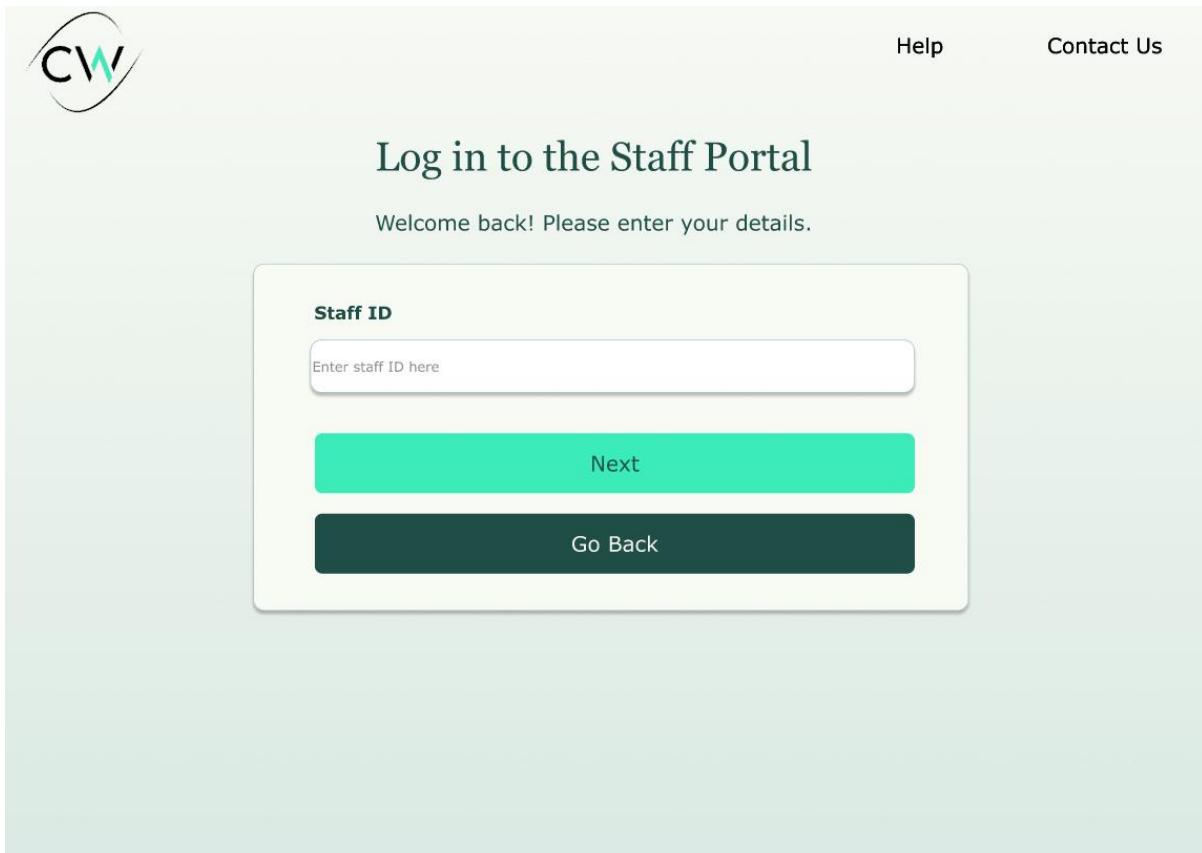
Appendix D: Prototype



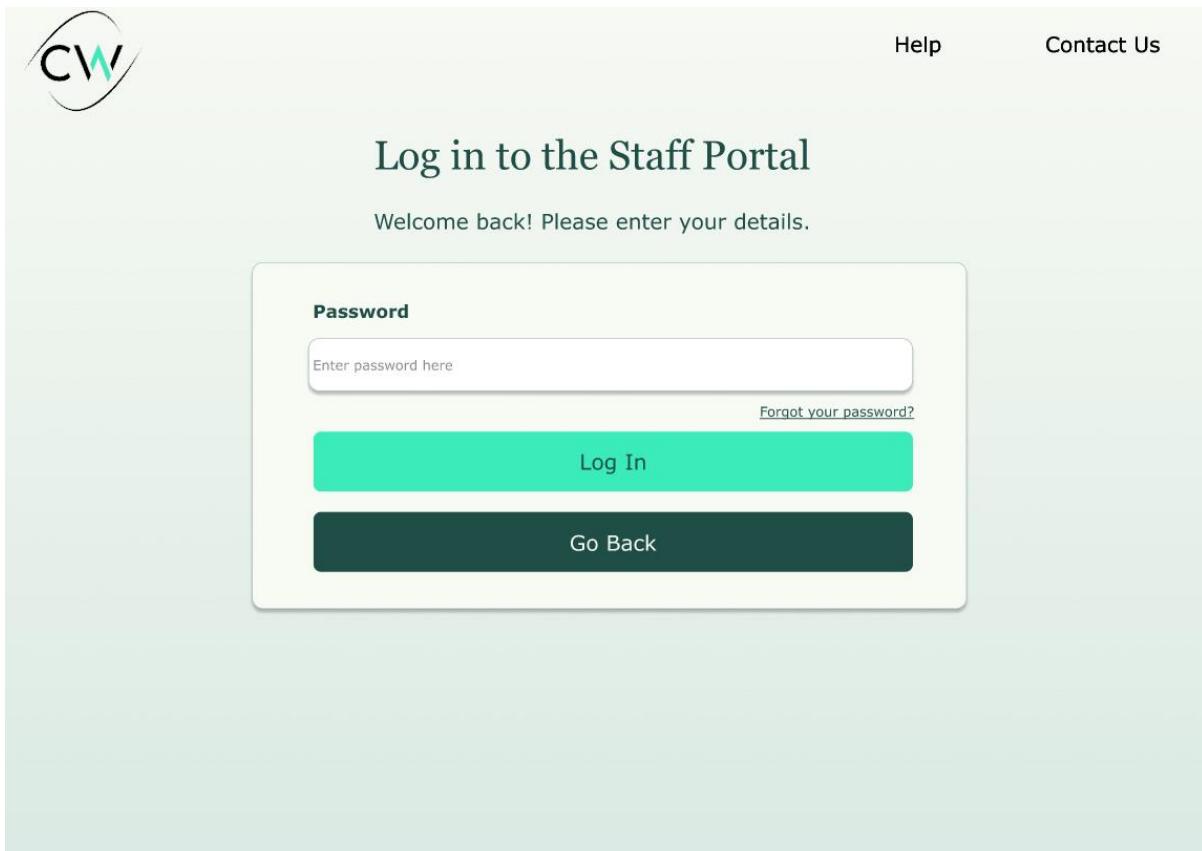
Appendix D – Figure 7 Contact Us Submission Confirmation



Appendix D – Figure 8 Student Login



Appendix D – Figure 9 Staff Login 1



Appendix D – Figure 10 Staff Login 2

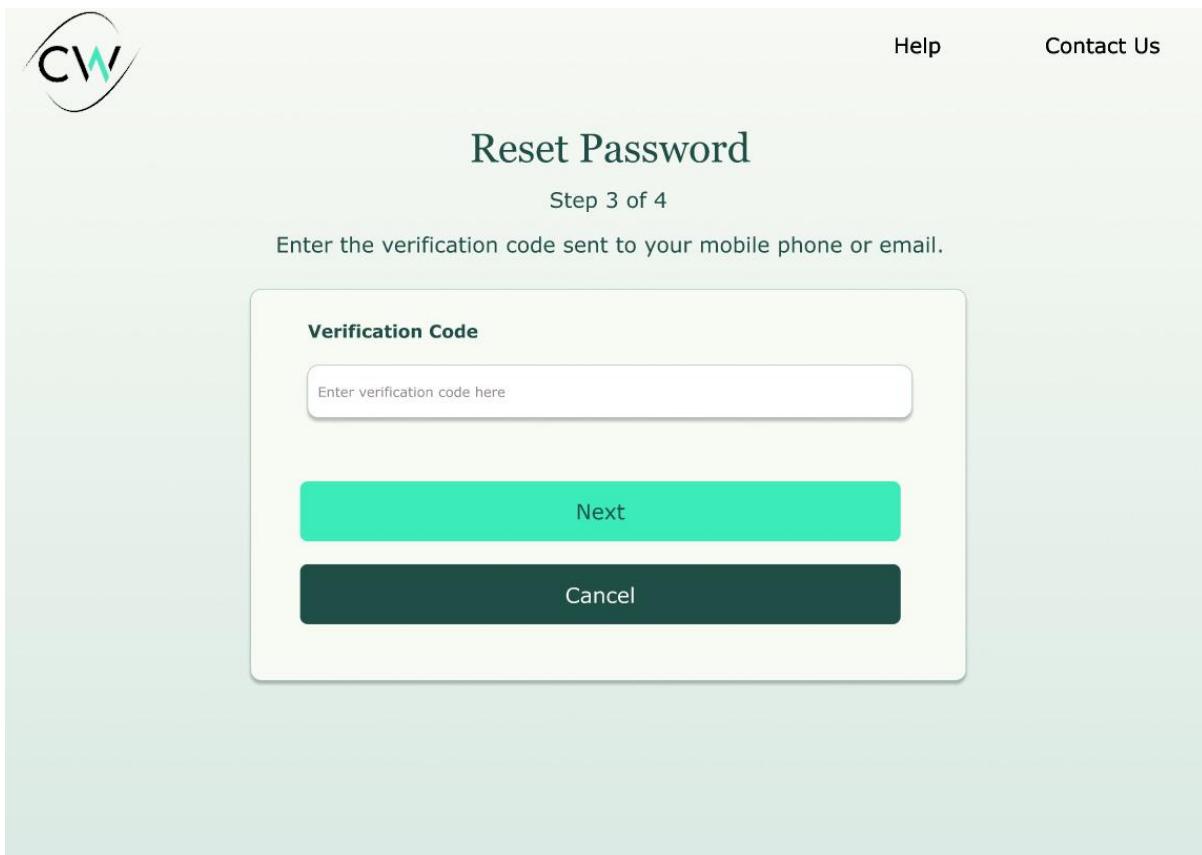
Appendix D: Prototype

The screenshot shows a 'Reset Password' page. At the top right are 'Help' and 'Contact Us' links. The title 'Reset Password' is centered above 'Step 1 of 4'. A sub-instruction says 'To recover your account, begin by entering your student username or staff ID and the characters in the picture or audio below.' Below this is a form with a label 'Student Username or Staff ID' and a text input field containing placeholder text 'Enter student username or staff ID here'. To the right of the input field is a large gray rectangular area labeled 'Captcha here'. At the bottom are two buttons: a teal 'Next' button and a dark green 'Cancel' button.

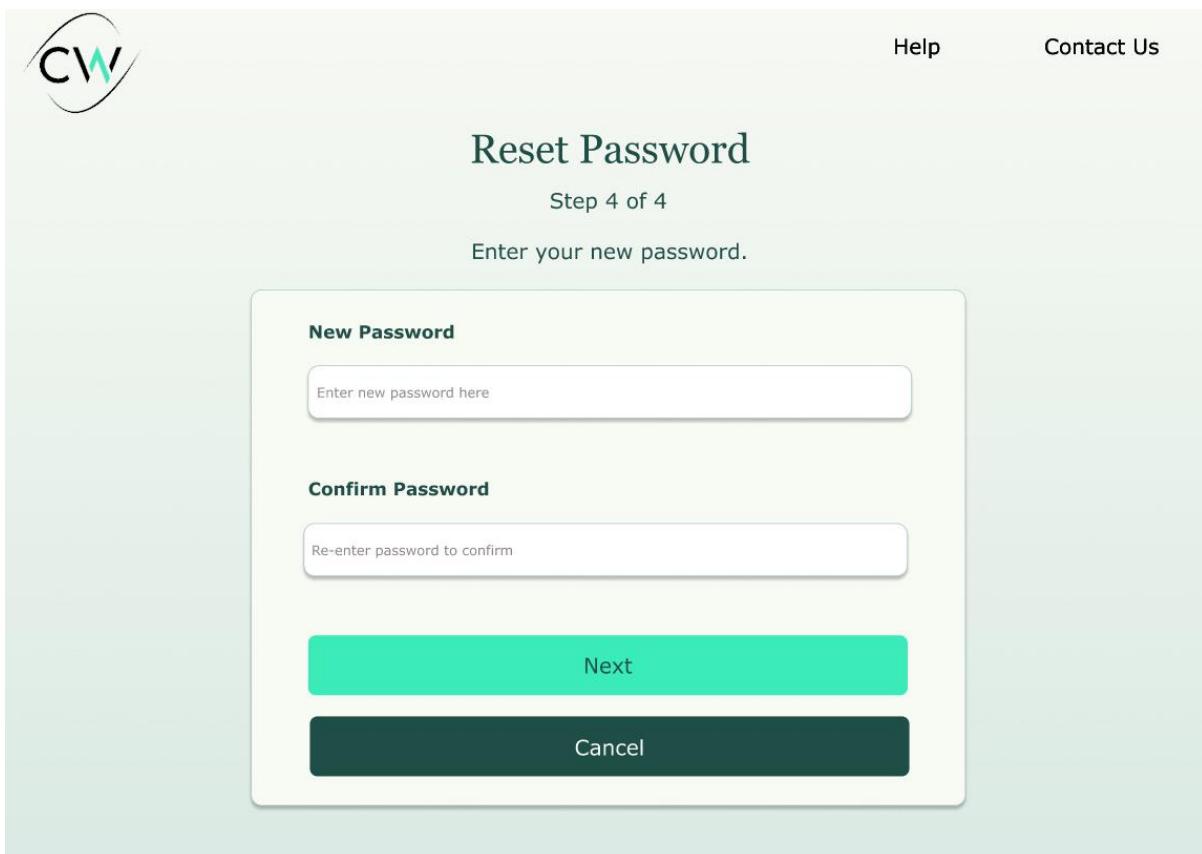
Appendix D – Figure 11 Forget Password 1

The screenshot shows a 'Reset Password' page. At the top right are 'Help' and 'Contact Us' links. The title 'Reset Password' is centered above 'Step 2 of 4'. A sub-instruction says 'Select your preferred method for verification.' Below this is a section titled 'User Verification' with two radio button options: 'Text my mobile phone' (selected) and 'Send an email'. To the right of the options is a text block explaining the verification process: 'In order to protect your account, we need you to enter your complete mobile phone number (*****74) below. You will then receive a text message with a verification code which can be used to reset your password.' Below this is a text input field with placeholder text 'Enter your phone number here'. At the bottom are two buttons: a teal 'Next' button and a dark green 'Cancel' button.

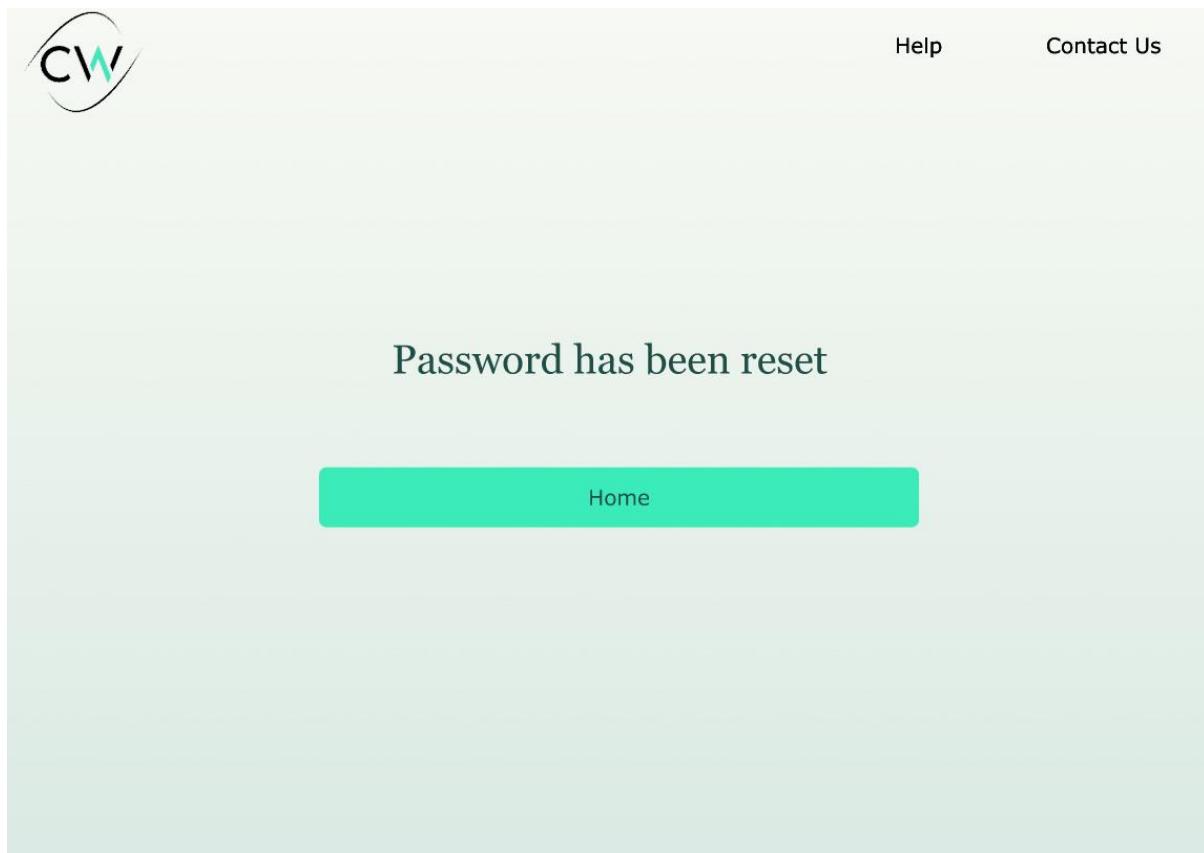
Appendix D – Figure 12 Forget Password 2



Appendix D – Figure 13 Forget Password 3



Appendix D – Figure 14 Forget Password 4



Appendix D – Figure 15 Password Reset Confirmation

A screenshot of a web-based student dashboard. The left sidebar contains a vertical navigation menu with icons and labels: Account (person icon), Dashboard (clock icon), Courses (book icon), Timeline (calendar icon), Board (checklist icon), Contact Us (phone icon), and Log out (left arrow icon). The main content area has a header 'Dashboard' with a bell icon showing a red notification dot. Below it, a greeting 'Hello, John Doe!' is displayed. The dashboard features several cards: an 'Important Announcement' card with 'Announcement Details' placeholder text; a '24th September' card with 'Next Subtask Deadline' placeholder text; an 'Upcoming Coursework' section with four items: 'Competitor Application' (F21SF - Software Engineering Foundations, Due on Tuesday, 21st October), 'Relational Databases' (F21DF - Database and Information Systems, Due on Saturday, 26th October), 'John Lewis' (F21EC - E-Commerce, Due on Wednesday, 23rd October), and 'Application Design' (F21AD - Advanced Interaction Design, Due on Sunday, 27th October). At the bottom, there are links for 'Coursework Wizard', 'Help', and 'Contact Us'.

Appendix D – Figure 16 Student Dashboard

The screenshot shows the 'Courses' section of a student application. On the left is a dark sidebar with icons for Account, Dashboard, Courses (selected), Timeline, Board, Contact Us, and Log out. The main area lists four courses: F21AD - Advanced Interaction Design, F21DF - Database and Information Systems, F21EC - E-Commerce, and F21SF - Software Engineering. A bell icon in the top right has a red notification dot. At the bottom are Help and Contact Us links.

Courses

F21AD - Advanced Interaction Design

F21DF - Database and Information Systems

F21EC - E-Commerce

F21SF - Software Engineering

Help Contact Us

Appendix D – Figure 17 Student Courses

The screenshot shows the 'F21SF - Software Engineering' course page. It features a header with the course name and a bell icon. Below is a 'Course Details' section and a 'Course Announcements' section. The main content area is titled 'Pending Coursework' and lists two tasks: 'Competitor Application' and 'Application GUI'. Each task includes details like due dates and progress bars. At the bottom are Coursework Wizard, Help, and Contact Us links.

F21SF - Software Engineering

Course Details

Course Announcements

Pending Coursework

Competitor Application
Details Due on Tuesday, 21st October

Application GUI
Details Due on Tuesday, 26th November

Coursework Wizard Help Contact Us

Appendix D – Figure 18 Student Course Page

Competitor Application

Coursework Details

- 75% Work Completed
- You are on track!
- 24th September Next Subtask Deadline

Coursework Progress

- Develop your competitor class
 - Subtask Details
 - Due on Tuesday, 17th September
 - [View Subtask](#)
 - [Resubmit](#)
- Alter your competitor class
 - Subtask Details
 - Due on Tuesday, 24th September
 - [View Subtask](#)
 - [Submit Now](#)

Coursework Wizard [Help](#) [Contact Us](#)

Appendix D – Figure 19 Student Coursework View Page

Timeline

September	October	November
02-08 MTWTFSS	09-15 MTWTFSS	16-22 MTWTFSS
23-29 MTWTFSS	30-06 MTWTFSS	07-13 MTWTFSS
14-20 MTWTFSS	21-27 MTWTFSS	28-03 MTWTFSS
25-01 MTWTFSS	04-10 MTWTFSS	11-17 MTWTFSS
18-24 MTWTFSS	25-01 MTWTFSS	

Develop your competitor class

- F21SF - ST1
- F21SF - ST2
- F21SF - ST3
- F21SF - ST4

F21AD - ST1

F21AD - ST2

Coursework Wizard [Help](#) [Contact Us](#)

Appendix D – Figure 20 Student Timeline

The screenshot shows the 'Timeline' section of the prototype. On the left is a vertical sidebar with icons for Account, Dashboard, Courses, Timeline, Board, Contact Us, and Log out. The main area has a header 'Timeline' and a bell icon. Below is a timeline grid for September, October, and November. A modal window is open for 'Subtask 1' (moveable window) in September. The task details are: 'Develop your competitor class', 'Subtask Details (do not add weight)', and 'Due on Tuesday, 17th September'. Buttons for 'View Subtask' and 'Resubmit' are at the bottom of the modal. At the bottom of the timeline grid, there are four coursework boxes: 'Software Engineering - Coursework 1' (light blue), 'Advanced Interaction Design - Coursework 1' (light purple), 'Software Engineering - Coursework 2' (light yellow), and 'Advanced Interaction Design - Coursework 2' (pink).

Appendix D – Figure 21 Subtask Modal on Student Timeline

The screenshot shows the 'Board' section of the prototype. The left sidebar includes icons for Account, Dashboard, Courses, Timeline, Board, Contact Us, and Log out. The main area has a header 'Board' and a bell icon. It features a Kanban board with three columns: 'TO DO 1' (containing 'Subtask 2'), 'IN PROGRESS 0' (empty), and 'DONE 1 ✓' (containing 'Subtask 1'). Below the board is a section titled 'Locked Tasks' with two items: 'Subtask 3' and 'Subtask 4'. At the bottom is a footer with 'Coursework Wizard', 'Help', 'Contact Us', and 'Log out'.

Appendix D – Figure 22 Student Kanban Board

The screenshot shows the 'Student Account' interface. On the left is a vertical sidebar with a dark green header containing the 'CW' logo. Below it are several icons with labels: 'Account' (user icon), 'Dashboard' (chart icon), 'Courses' (book icon), 'Timeline' (calendar icon), 'Board' (checklist icon), 'Contact Us' (phone icon), and 'Log out' (arrow icon). The main content area has a light green header with the name 'John Doe'. To the right of the name is a small bell icon with a red dot. Below the header is a horizontal menu bar with 'Profile' and 'Settings' underlined. The main body is a large, empty rectangular area.

Appendix D – Figure 23 Student Account

The screenshot shows the 'View Student Profile' interface. It has a similar structure to Figure 23, with a sidebar on the left and a main content area on the right. The main content area features a large profile card for 'John Doe'. The card includes a placeholder profile picture, the name 'John Doe', an 'Edit Profile' button, and sections for 'Preferred Name' (with a placeholder 'Preferred name here'), 'Contact Details' (with a placeholder 'Email and phone number'), and 'Biography' (with a placeholder 'About me').

Appendix D – Figure 24 View Student Profile

The screenshot shows the 'Settings' page of a student application. On the left is a vertical navigation bar with icons for Account, Dashboard, Courses, Timeline, Board, and Contact Us, along with Log out and Coursework Wizard buttons. The main area is titled 'Settings' and contains several configuration options with toggle switches:

- Make Profile Public**: Allow other students to view your profile. (On)
- Increase Font Size**: Make text larger. (Off)
- Enable Dark Theme**: A dark colour background theme. (Off)
- Disable Keyboard Shortcuts**: This will give improved experience to people using screen readers. (On)
- Label**: Description. (On)
- Label**: Description. (On)

At the bottom are Help and Contact Us links.

Appendix D – Figure 25 Student Settings

The screenshot shows the 'Notifications' page of a student application. It features a vertical navigation bar on the left with icons for Account, Dashboard, Courses, Timeline, Board, and Contact Us, along with Log out and Coursework Wizard buttons. The main area is titled 'Notifications' and displays three large, empty rectangular boxes representing notification items.

Appendix D – Figure 26 Student Notifications

The screenshot shows the 'Contact Us' page of a student portal. On the left is a vertical sidebar with icons for Account, Dashboard, Courses, Timeline, Board, Contact Us, and Log out. The 'Contact Us' icon is highlighted. At the top right is a bell icon with a red notification dot. The main content area has a title 'Contact Us' and a sub-section 'Submit an Enquiry'. It contains two input fields: 'Subject*' and 'Message*', both with placeholder text. A note at the bottom says '*Required Fields'. A 'Submit' button is at the bottom right. The footer includes links for Coursework Wizard, Help, and Contact Us.

Submit an Enquiry

Subject*

Enter enquiry subject here

Message*

Enter details about your enquiry here

*Required Fields

Submit

Coursework Wizard Help Contact Us

Appendix D – Figure 27 Student Contact Us

The screenshot shows the 'Contact Us' page after an enquiry has been submitted. The layout is identical to Figure 27, with the same sidebar and header. The main content area now displays a confirmation message: 'Enquiry Submitted' followed by 'Your enquiry has been received. We will contact you soon!'. The footer links are also present.

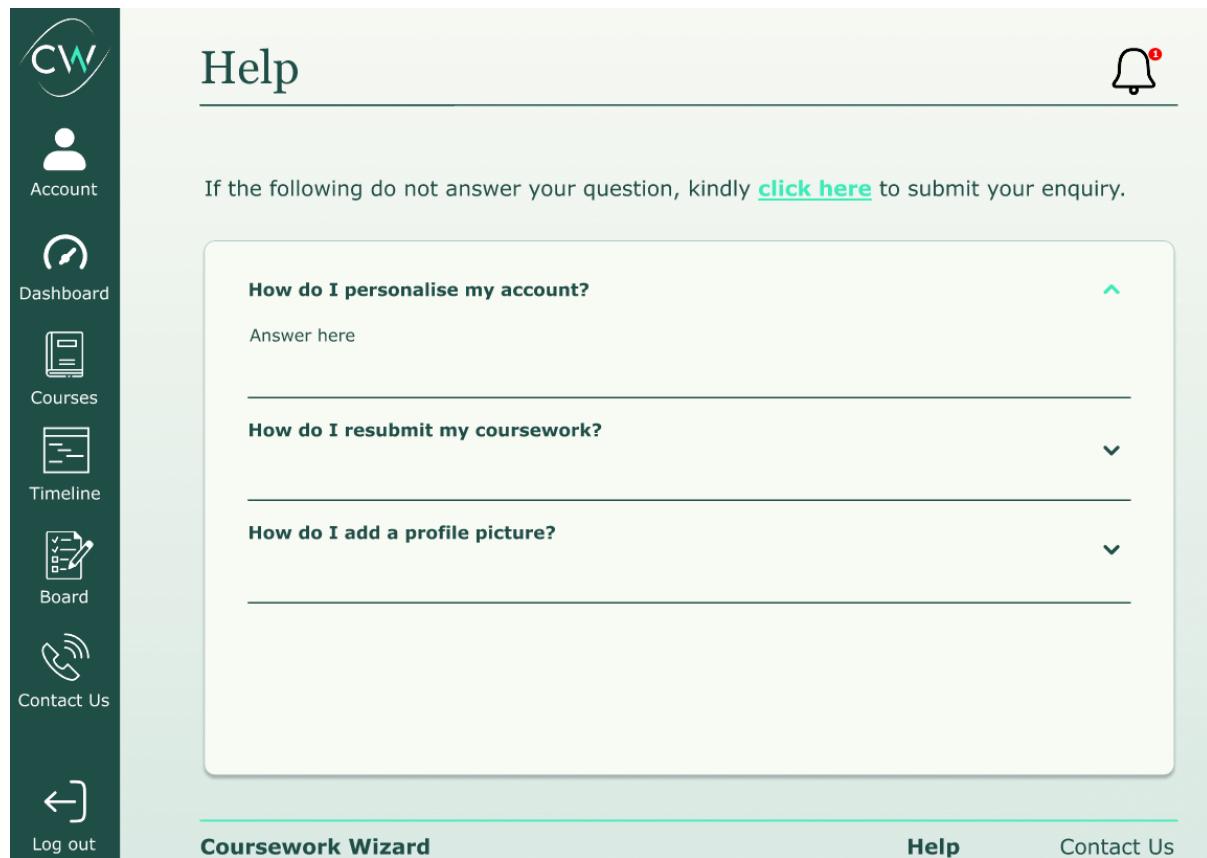
Contact Us

Enquiry Submitted

Your enquiry has been received. We will contact you soon!

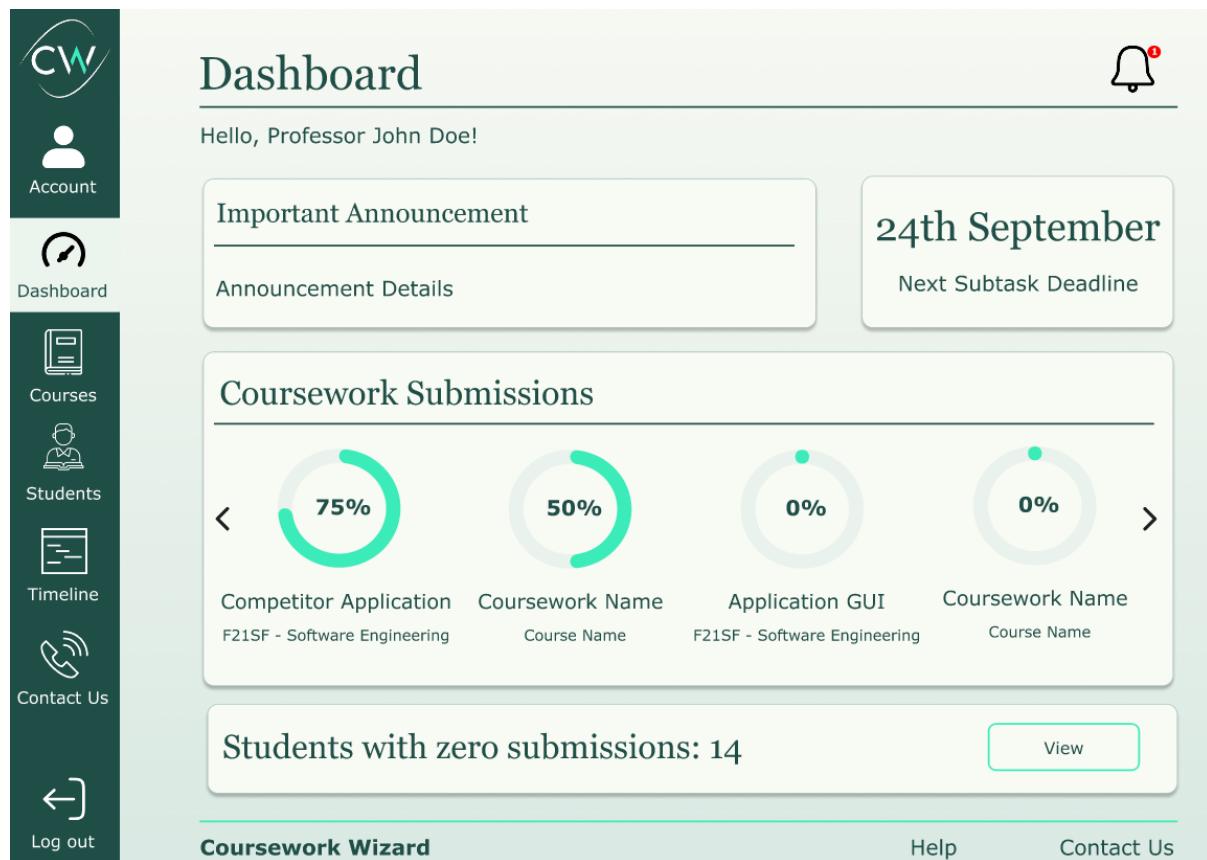
Coursework Wizard Help Contact Us

Appendix D – Figure 28 Student Contact Us Confirmation



The screenshot shows the 'Help' page of a student application. On the left is a vertical sidebar with icons for Account, Dashboard, Courses, Timeline, Board, Contact Us, and Log out. The main content area has a header 'Help' and a bell icon. A message says: 'If the following do not answer your question, kindly [click here](#) to submit your enquiry.' Below are three expandable sections: 'How do I personalise my account?' (Answer: 'Answer here'), 'How do I resubmit my coursework?' (Answer: 'Answer here'), and 'How do I add a profile picture?' (Answer: 'Answer here'). At the bottom are links for 'Coursework Wizard', 'Help', and 'Contact Us'.

Appendix D – Figure 29 Student Help Page



The screenshot shows the 'Dashboard' page of a staff application. On the left is a vertical sidebar with icons for Account, Dashboard, Courses, Students, Timeline, Contact Us, and Log out. The main content area has a header 'Dashboard' and a bell icon. It displays a 'Hello, Professor John Doe!' message, an 'Important Announcement' section with 'Announcement Details', and a '24th September' section for 'Next Subtask Deadline'. Below is a 'Coursework Submissions' section with four circular progress indicators: 'Competitor Application' at 75%, 'Coursework Name' at 50%, 'Application GUI' at 0%, and 'Coursework Name' at 0%. At the bottom is a section for 'Students with zero submissions: 14' with a 'View' button, and links for 'Coursework Wizard', 'Help', and 'Contact Us'.

Appendix D – Figure 30 Staff Dashboard

F21SF - Software Engineering

Course Details

Course Announcements

+ New

Coursework

+ New

- Competitor Application**
 - Details
 - Due on Tuesday, 21st October
 - [View](#)
 - [Delete](#)
- Application GUI**
 - Details
 - Due on Tuesday, 26th November
 - [View](#)
 - [Delete](#)

Coursework Wizard Help Contact Us

Appendix D – Figure 31 Staff Course Page

Competitor Application

Coursework Details

Edit

Coursework Progress

Share

Completed	In Progress	No Submission
0%	70%	30%

Coursework Breakdown

- 1. Develop your competitor class
 - Subtask Details and weight
 - Due on Tuesday, 17th September
- 2. Expand and test
 - Subtask Details and weight
 - Due on Tuesday, 24th September
- 3. Finalise your program and report
 - Subtask Details and weight
 - Due on Tuesday, 1st October
- 4. Write essay
 - Subtask Details and weight
 - Due on Tuesday, 8th October

Coursework Wizard Help Contact Us

Appendix D – Figure 32 Staff Coursework View Page

Add New Coursework

Coursework Name

Enter coursework name here

Submission Date

26/06/2024

SUN	MON	TUE	WED	THU	FRI	SAT
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Coursework Details

Enter details about the coursework

Coursework Wizard

Help

Contact Us

Appendix D – Figure 33 Staff Add New Coursework 1

Add New Coursework

Total Number of Subtasks

4

Total number of Dependent Subtasks

3

Subtask 1 Name	Weight	From	To	Attachment	✖
Subtask 2 Name	Weight	From	To	Attachment	✖
Subtask 3 Name	Weight	From	To	Attachment	✖

Total number of Independent Subtasks

1

Subtask 4 Name	Weight	From	To	Attachment	✖
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Coursework Wizard

Help

Contact Us

Appendix D – Figure 34 Staff Add New Coursework 2

F21SF - Software Engineering

Coursework Name Submission Date

Coursework Details: Details

Total number of subtasks: 4

Total number of dependent subtasks: 3

Subtask	Weight	From	To	Prereq	File
Subtask 1	4	x/x/2024	x/x/2024	Lecture 3	Attachment
Subtask 2	7	x/x/2024	x/x/2024	Subtask 1	Attachment
Subtask 3	3	x/x/2024	x/x/2024	Subtask 2	Attachment

Total number of independent subtasks: 1

Subtask	Weight	From	To	Prereq	File
Subtask 4	4	x/x/2024	x/x/2024	None	Attachment

[Back](#) [Publish](#)

Coursework Wizard Help Contact Us

Appendix D – Figure 35 Staff Add New Coursework 3

F21SF - Software Engineering

Coursework Added

[View Timeline](#)

Coursework Wizard Help Contact Us

Appendix D – Figure 36 Staff Add New Coursework Confirmation

Appendix D: Prototype

#	Name	Course Name	Status	Completed Hours	Remaining Hours
1	Ann Culhane 5684236526	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	In progress	2 Hours	4 Hours
2	Ahmad Rosser 5684236527	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Completed	6 Hours	0 Hours
3	Zain Calzoni 5684236528	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	In progress	3 Hours	3 Hours
4	Leo Stanton 5684236529	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Inactive	0 Hours	6 Hours
5	Kaiya Vetrovs 5684236530	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	In progress	1 Hours	5 Hours
6	Ryan Westervelt 5684236531	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Completed	6 Hours	0 Hours
7	Corey Stanton 5684236532	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Inactive	0 Hours	6 Hours
8	Adison Aminoff 5684236533	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	In progress	2 Hours	4 Hours
9	Alfredo Aminoff 5684236534	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Inactive	0 Hours	6 Hours

1-10 of 97 Rows per page: 10 1/10

Appendix D – Figure 37 Students List

#	Subtask	Subtask Details	Status
1	Subtask 1 F21SF - Coursework 1	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Completed
2	Subtask 2 F21SF - Coursework 1	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Completed
3	Subtask 3 F21SF - Coursework 1	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Incomplete
4	Subtask 4 F21SF - Coursework 1	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nulla...	Incomplete

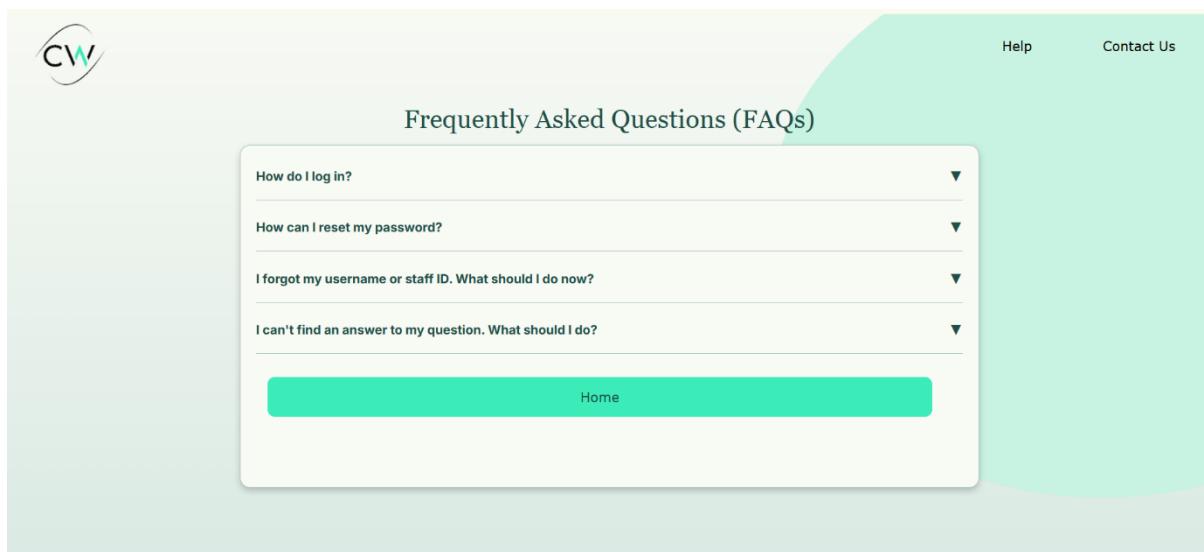
1-10 of 97 Rows per page: 10 1/10

Appendix D – Figure 38 View Individual Student Submission Status

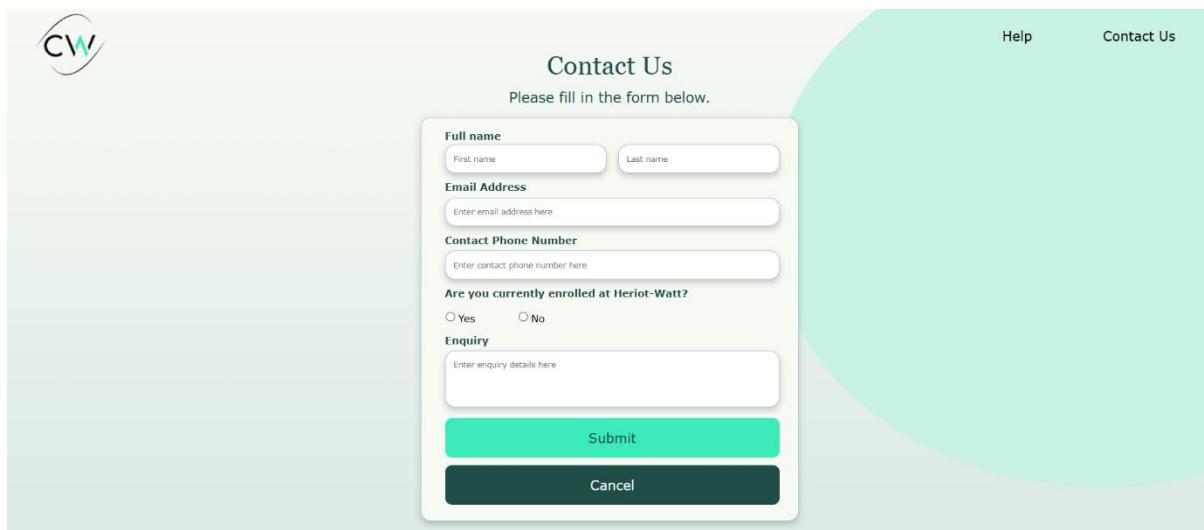
Appendix E: Final Website



Appendix E – Figure 1 Home Page



Appendix E – Figure 2 Help Page



Appendix E: Final Website

Appendix E – Figure 3 Contact Us Page

The screenshot shows a light green web page with a large circular graphic on the right. In the top right corner, there are links for "Help" and "Contact Us". On the left side, there is a logo consisting of a stylized "CW" monogram. The main content area features a heading "Enquiry Submitted" and a message "Your enquiry has been received. We will contact you soon!". Below this is a teal-colored button labeled "Home".

Appendix E – Figure 4 Contact Us Confirmation Page

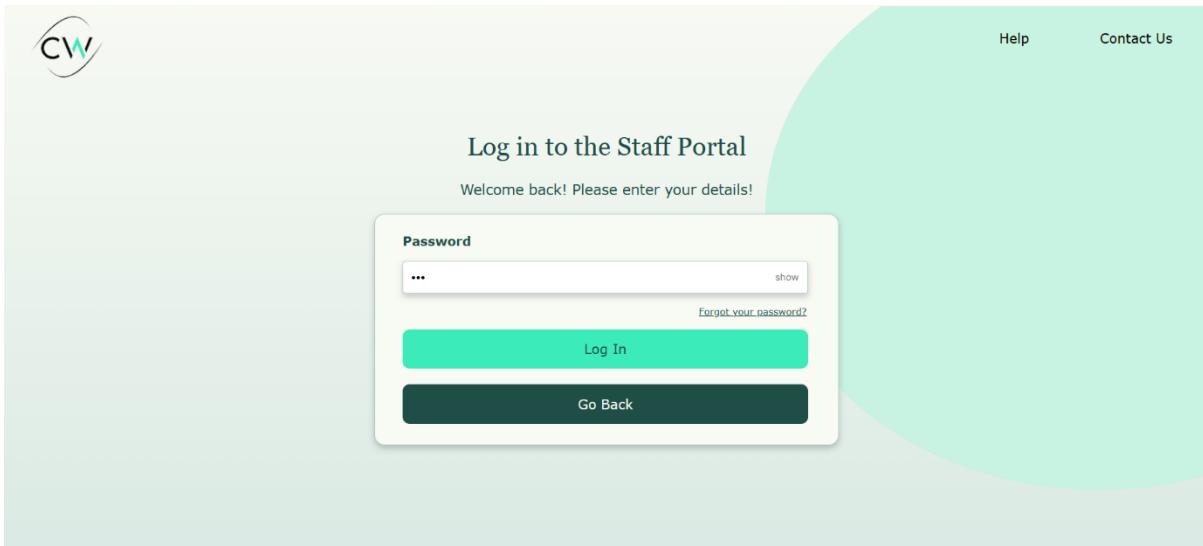
The screenshot shows a light green web page with a large circular graphic on the right. In the top right corner, there are links for "Help" and "Contact Us". On the left side, there is a logo consisting of a stylized "CW" monogram. The main content area features a heading "Log in to Coursework Wizard" and a message "Welcome back! Please enter your details!". Below this is a form with fields for "Username" (with placeholder "Enter username here") and "Password" (with placeholder "Enter password here" and a "show" link). There is also a link "Forgot your password?". At the bottom of the form are two buttons: a teal "Log In" button and a dark teal "Go Back" button. A note at the bottom of the page says "If you're a staff member, please visit the Staff Portal."

Appendix E – Figure 5 Student Login

The screenshot shows a light green web page with a large circular graphic on the right. In the top right corner, there are links for "Help" and "Contact Us". On the left side, there is a logo consisting of a stylized "CW" monogram. The main content area features a heading "Log in to the Staff Portal" and a message "Welcome back! Please enter your details!". Below this is a form with a field for "Staff ID" (with placeholder "Enter staff ID here"). At the bottom of the form are two buttons: a teal "Next" button and a dark teal "Go Back" button.

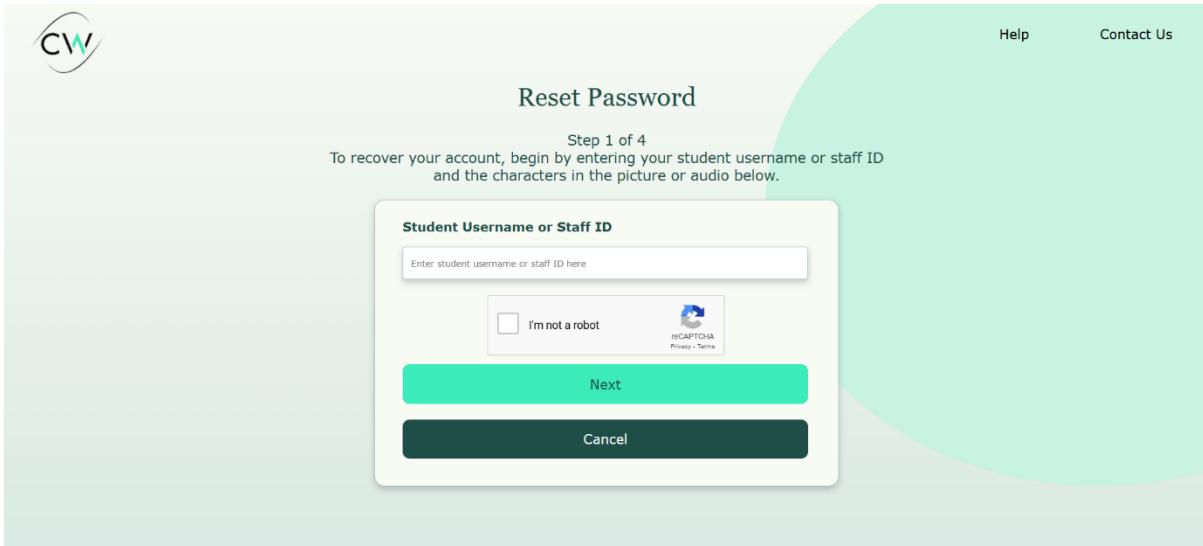
Appendix E: Final Website

Appendix E – Figure 6 Staff Login 1



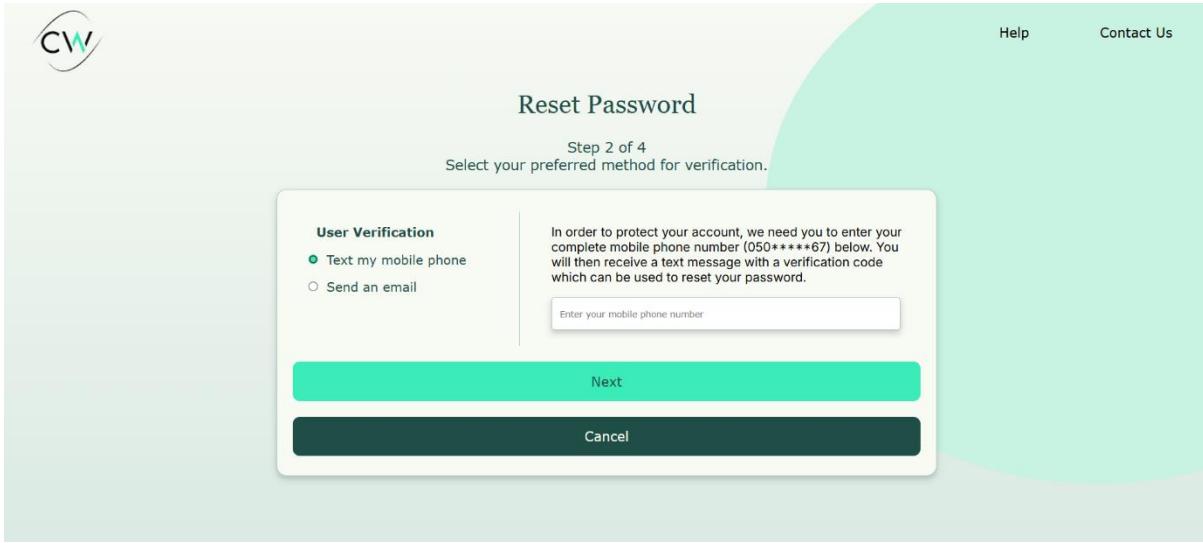
The screenshot shows the 'Log in to the Staff Portal' page. At the top right are 'Help' and 'Contact Us' links. The main title 'Log in to the Staff Portal' is centered above a message 'Welcome back! Please enter your details!'. Below this is a password input field with a 'show' link, a 'Forgot your password?' link, a teal 'Log In' button, and a dark teal 'Go Back' button.

Appendix E – Figure 7 Staff login 2



The screenshot shows the 'Reset Password' page, Step 1 of 4. It instructs the user to enter their student username or staff ID and verify they are not a robot. It features a 'Student Username or Staff ID' input field, a reCAPTCHA checkbox, and a teal 'Next' button.

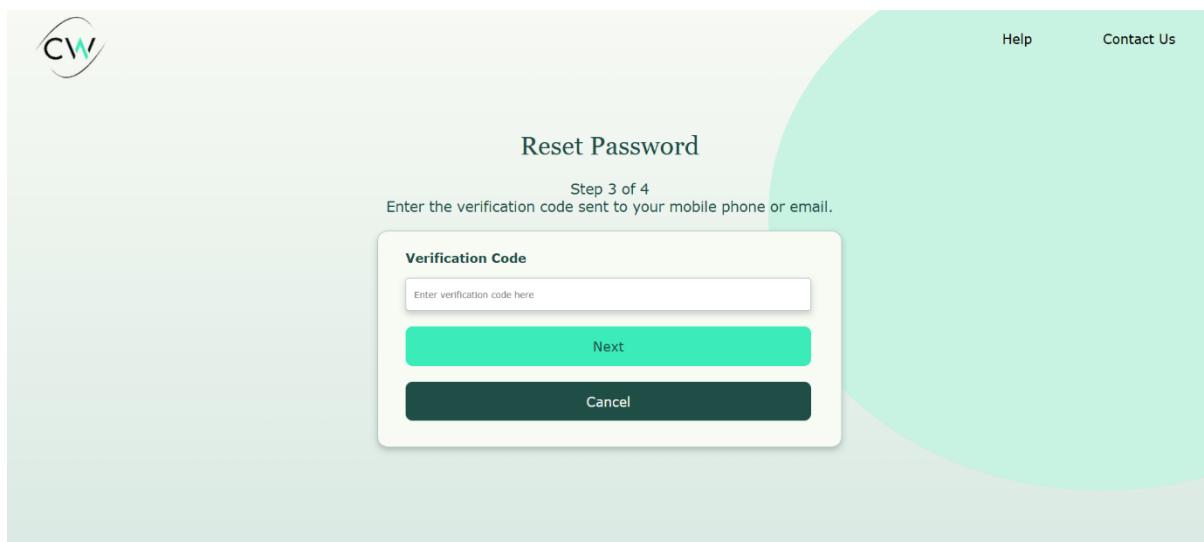
Appendix E – Figure 8 Forgot Password 1



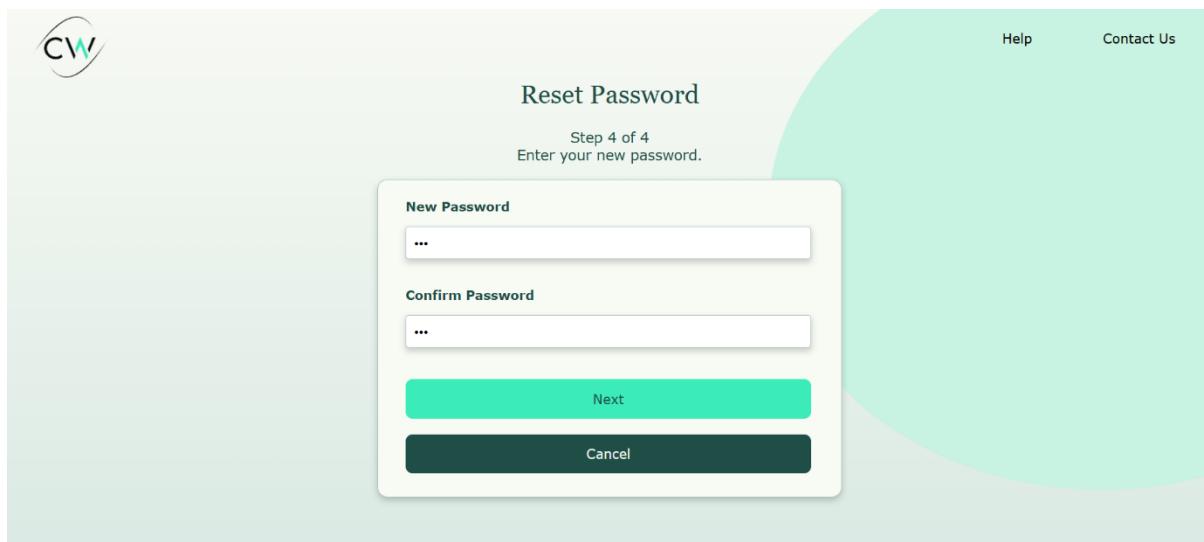
The screenshot shows the 'Reset Password' page, Step 2 of 4. It asks the user to select a verification method: 'Text my mobile phone' (selected) or 'Send an email'. It includes a note about protecting the account by entering a mobile phone number, a mobile phone number input field, and a teal 'Next' button.

Appendix E: Final Website

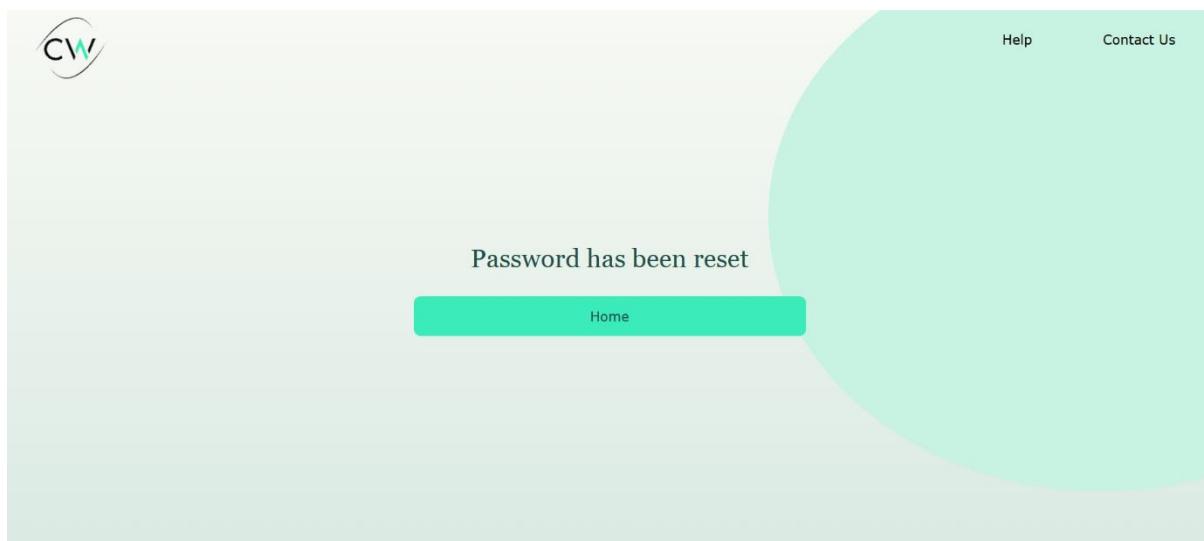
Appendix E – Figure 9 Forgot Password 2



Appendix E – Figure 10 Forgot Password 3



Appendix E – Figure 11 Forgot Password 4



Appendix E: Final Website

Appendix E – Figure 12 Password Reset Confirmation

The screenshot shows the Student Dashboard. On the left is a sidebar with a logo, account information, and navigation links for Dashboard, Courses, Timeline, Board, Contact Us, and Log Out. The main area has a header "Student Dashboard" and a greeting "Hello, Charles Dickens!". It features a "Important Announcement" section with a title "Announcement Details" and a "Next Subtask Deadline for F21AD" box showing "14/11/2024". Below this is an "Upcoming Coursework" section with four items: "Application Design" (F21AD - Advanced Interaction Design, Due on 14/11/2024), "Competitor Application" (F21SF - Software Engineering, Due on 15/11/2024), "Relational Databases" (F21DF - Database and Information Systems, Due on 16/11/2024), and "John Lewis" (F21EC - E-Commerce, Due on 17/11/2024). The bottom of the dashboard includes copyright information ("© 2024 Coursework Wizard") and links for Help and Contact Us.

Appendix E – Figure 13 Student Dashboard

This screenshot shows a similar Student Dashboard layout. The sidebar includes a logo, account information, and navigation links for Dashboard, Courses, Timeline, Board, Contact Us, and Log Out. The main area has a header "Student Dashboard" and a greeting "Hello, Charles Dickens!". It features a "Courses" section with links to "Advanced Interaction Design", "Software Engineering", "Database and Information Systems", and "E-Commerce". Below this is an "Upcoming Coursework" section with four items: "Competitor Application" (F21SF - Software Engineering, Due on 15/11/2024), "John Lewis" (F21EC - E-Commerce, Due on 17/11/2024), "Relational Databases" (F21DF - Database and Information Systems, Due on 16/11/2024), and "Application Design" (F21AD - Advanced Interaction Design, Due on 14/11/2024). The bottom of the dashboard includes copyright information ("© 2024 Coursework Wizard") and links for Help and Contact Us.

Appendix E – Figure 14 Student Courses

This screenshot shows the F21SF - Software Engineering course page. The sidebar includes a logo, account information, and navigation links for Dashboard, Courses, Timeline, Board, Contact Us, and Log Out. The main area has a header "F21SF - Software Engineering" and a "Course Details" section with a "Course Announcement" box containing "Announcement Details". Below this is a "Pending Coursework" section with two items: "Competitor Application" (Coursework Details, Due on 15/11/2024) with a progress bar at 50% and a "View/Submit" button, and "Application GUI" (Coursework Details, Due on 10/12/2024) with a progress bar at 0% and a "View/Submit" button. The bottom of the page includes copyright information ("© 2024 Coursework Wizard") and links for Help and Contact Us.

Appendix E: Final Website

Appendix E – Figure 15 Student Course Page

F21SF - Competitor Application Coursework

Coursework Details

100%
Work Completed

Good Job!

No upcoming deadlines
Next Subtask Deadline

Work Progress

- ST1 - Competitor class
Due on 16/10/2024
- ST2 - Alter class
Due on 22/10/2024
- ST4 - Research essay
Due on 15/11/2024
- ST3 - ArrayLists
Due on 01/11/2024

View Subtask Re/Submit

View Subtask Re/Submit

View Subtask Re/Submit

View Subtask Re/Submit

© 2024 Coursework Wizard

Help Contact Us

Appendix E – Figure 16 Student Coursework View Page

F21AD - Application Design Coursework

Coursework Details

0%
Work Completed

Move Quickly!

08/10/2024
Next Subtask Deadline

Work Progress

- ST1 - Planning
Due on 08/10/2024
- ST2 - Literature Review
Due on 15/10/2024
- ST3 - Storyboarding
Due on 22/10/2024
- ST4 - Prototype
Due on 29/10/2024
- ST5 - Evaluation
Due on 14/11/2024

View Subtask Re/Submit

© 2024 Coursework Wizard

Help Contact Us

Appendix E – Figure 17 Student Locked Subtaaks

Timeline

September October November December

02 - 08	09 - 15	16 - 22	23 - 29	30 - 06	07 - 13	14 - 20	21 - 27	28 - 03	04 - 10	11 - 17	18 - 24	25 - 01	02 - 08	09 - 15	16 - 22	23 - 29
MTWTFSS																

ST1 ST2 ST3 ST4 ST5 ST6 ST7

ST1 ST2 ST3

ST4

ST1 ST2 ST3

ST1

ST2

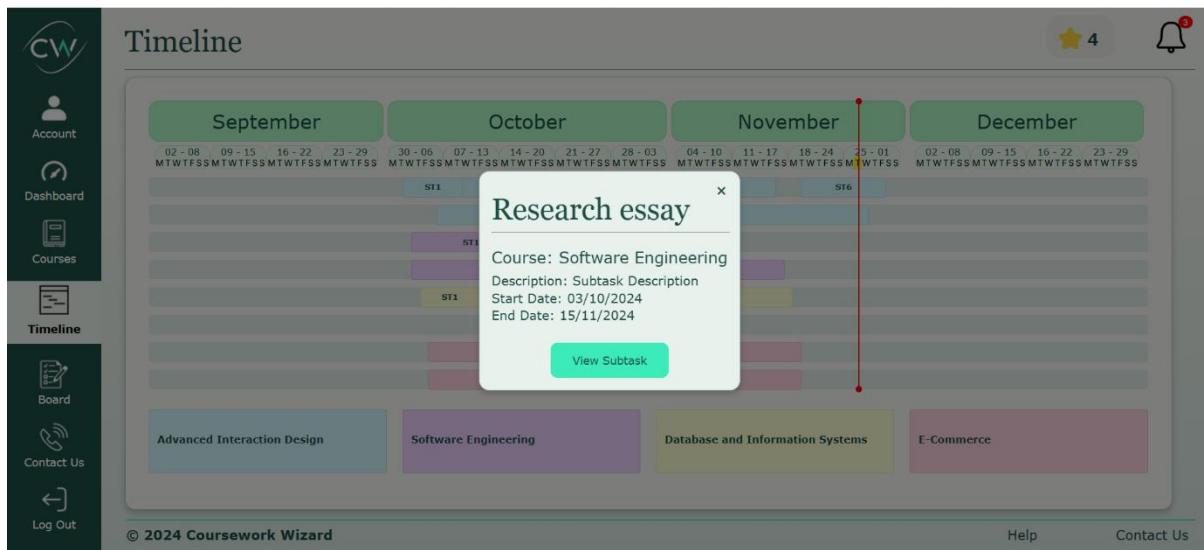
Advanced Interaction Design Software Engineering Database and Information Systems E-Commerce

© 2024 Coursework Wizard

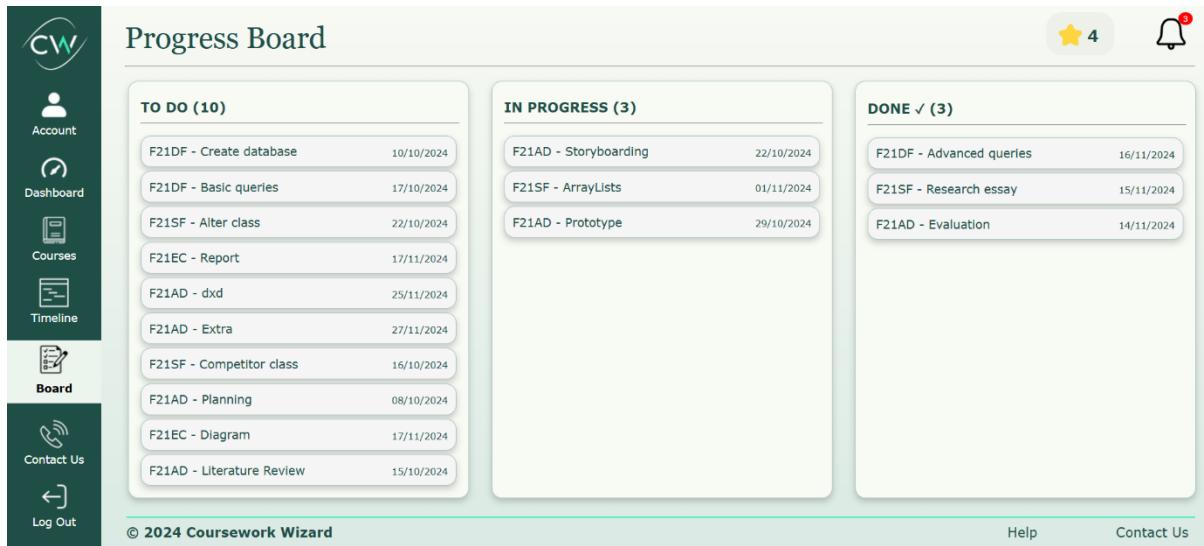
Help Contact Us

Appendix E: Final Website

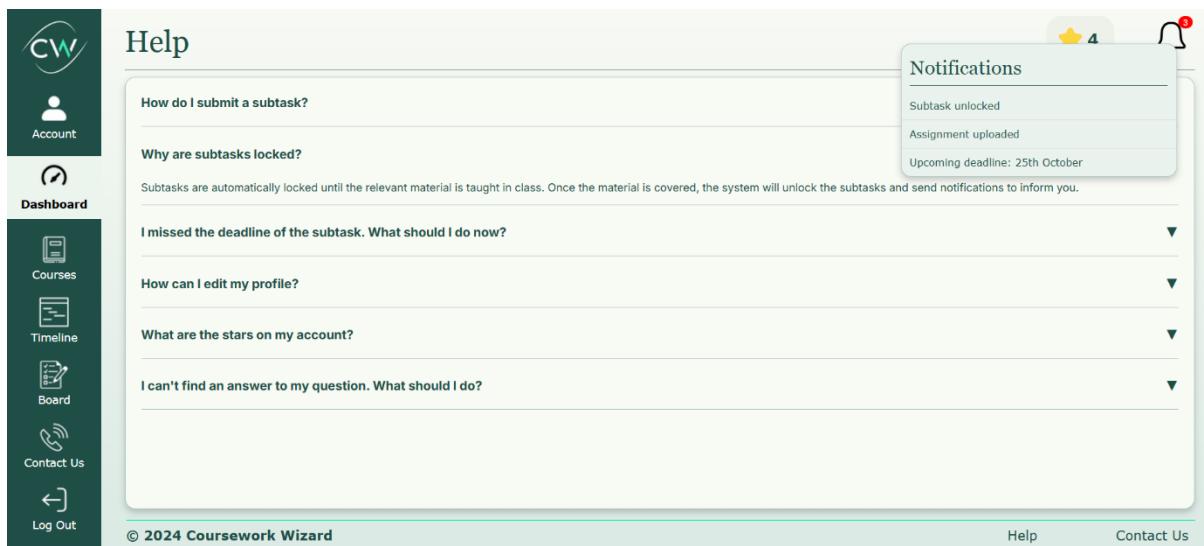
Appendix E – Figure 18 Student Timeline



Appendix E – Figure 19 Student Timeline Modal Subtask View



Appendix E – Figure 20 Student Kanban Board



Appendix E: Final Website

Appendix E – Figure 21 Student Notifications

The screenshot shows the 'Student' dashboard. On the left is a sidebar with a logo, account information, and navigation links for Dashboard, Courses, Timeline, Board, Contact Us, and Log Out. The main area has tabs for 'Account' and 'Board'. A notification bar at the top right shows a star rating of 4 and a bell icon with a red dot. Below the tabs, there's a section for 'Next Subtask Deadline' with a date of 14/11/2024 and a note for 'Next Subtask Deadline for F21AD'. The 'Board' section displays two items: 'Competitor Application' (F21SF - Software Engineering, Due on 15/11/2024) and 'John Lewis' (F21EC - E-Commerce, Due on 17/11/2024). At the bottom are 'Help' and 'Contact Us' links.

Appendix E – Figure 22 Student Account

The screenshot shows the 'Student Profile' page. The sidebar is identical to Figure 21. The main content includes a circular profile picture of Selena Gomez, her preferred name (Selena Gomez), contact details (student@gmail.com), biography (student), and social media links for LinkedIn, Instagram, and GitHub. At the bottom are 'Edit Profile' and 'Contact Us' buttons.

Appendix E – Figure 23 Student View Profile

The screenshot shows the 'Edit Profile' form. The sidebar is identical to previous figures. The form allows editing of the preferred name (Selena), biography (student), and social links (LinkedIn, Instagram, GitHub). It includes a file input field for profile pictures with the placeholder 'Choose File No file chosen'. Buttons for 'Save Changes' and 'Cancel' are at the bottom right. The footer includes the 'Coursework Wizard' logo and 'Help' and 'Contact Us' links.

Appendix E: Final Website

Appendix E – Figure 24 Student Edit Profile

The screenshot shows the 'Settings' page for a student account. The left sidebar includes links for Account, Dashboard, Courses, Timeline, Board, Contact Us, and Log Out. The main content area has a title 'Settings'. It contains four toggle switches: 'Make Profile Public' (off), 'Increase Font Size' (on), 'Enable Dark Theme' (off), and 'Disable Keyboard Shortcuts' (off). A 'Save Changes' button is at the bottom. Top right icons show 4 stars and a notification bell.

Appendix E – Figure 25 Student Settings

The screenshot shows the 'Help' page for a student account. The left sidebar includes links for Account, Dashboard, Courses, Timeline, Board, Contact Us, and Log Out. The main content area lists several help topics with expandable sections: 'How do I submit a subtask?', 'Why are subtasks locked?', 'I missed the deadline of the subtask. What should I do now?', 'How can I edit my profile?', 'What are the stars on my account?', and 'I can't find an answer to my question. What should I do?'. A top right badge indicates 4 stars and a notification bell. A note says 'Keep submitting on time to get more stars and exchange them for prizes!'. Bottom navigation includes Help and Contact Us.

Appendix E – Figure 26 Student Rewards

The screenshot shows the 'Contact Us' page for a student account. The left sidebar includes links for Account, Dashboard, Courses, Timeline, Board, Contact Us, and Log Out. The main content area has a title 'Submit an Enquiry'. It features two input fields: 'Subject*' and 'Message*'. Both have placeholder text: 'Enter enquiry subject here' and 'Enter details about your enquiry here'. A note at the bottom left says '*Required Fields'. A 'Submit' button is at the bottom right. Top right icons show 4 stars and a notification bell. Bottom navigation includes Help and Contact Us.

Appendix E: Final Website

Appendix E – Figure 27 Student Contact Us

The screenshot shows a 'Help' page with a sidebar on the left containing icons for Account, Dashboard, Courses, Timeline, Board, Contact Us, and Log Out. The main content area is titled 'How do I submit a subtask?' and lists other questions such as 'Why are subtasks locked?', 'I missed the deadline of the subtask. What should I do now?', 'How can I edit my profile?', 'What are the stars on my account?', and 'I can't find an answer to my question. What should I do?'. A navigation bar at the bottom includes 'Help' and 'Contact Us'.

Appendix E – Figure 28 Student Help Page

The screenshot shows the 'Instructor Dashboard' with a sidebar on the left. The main content area displays 'Students with zero submissions: 5' and a 'Coursework Submissions' section with four donut charts. The charts show the status of coursework submissions for 'Application Design', 'Competitor Application', 'Application Evaluation', and 'Application GUI'. A navigation bar at the bottom includes 'Help' and 'Contact Us'.

Appendix E – Figure 29 Staff Dashboard

The screenshot shows the 'F21SF - Software Engineering' staff dashboard with a sidebar on the left. The main content area includes a 'Course Details' section for 'Competitor Application' and a 'Coursework' section for 'Application GUI'. Each section has 'Delete' and 'View' buttons. A navigation bar at the bottom includes 'Help' and 'Contact Us'.

Appendix E: Final Website

Appendix E – Figure 30 Staff Course Page

The screenshot shows the 'F21AD - Application Design' course page. On the left is a dark sidebar with icons for Account, Dashboard, Courses (selected), Timeline, Students, Contact Us, and Log Out. The main content area has a header 'Coursework Details' and a 'Coursework Progress' section with three donut charts: 'COMPLETED' (17.65%), 'IN PROGRESS' (35.29%), and 'NO SUBMISSION' (47.06%). Below this is a 'Coursework Breakdown' section listing six tasks: ST1 - Planning (Due 08/10/2024), ST2 - Literature Review (Due 15/10/2024), ST3 - Storyboarding (Due 22/10/2024), ST4 - Prototype (Due 29/10/2024), ST5 - Evaluation (Due 14/11/2024), and ST6 - Extra (Due 31/12/2024). At the bottom are links for '© 2024 Coursework Wizard', 'Help', and 'Contact Us'.

Appendix E – Figure 31 Staff Coursework View Page

The screenshot shows the 'F21SF - Software Engineering' course page. The sidebar is identical to Figure 30. The main content area has a 'Course Details' section and a 'Course Announcement' section with a '+ New' button. Below is a 'Coursework' section listing two items: 'Competitor Application' (Due 15/11/2024) and 'Application GUI' (Due 10/12/2024), each with 'Delete' and 'View' buttons. A modal dialog box is open in the center, asking 'localhost:3000 says Are you sure you want to delete this coursework?' with 'OK' and 'Cancel' buttons. At the bottom are links for '© 2024 Coursework Wizard', 'Help', and 'Contact Us'.

Appendix E – Figure 32 Staff Coursework Deletion Confirmation

The screenshot shows the 'F21AD - Advanced Interaction Design' staff coursework wizard, step 1: 'Add New Coursework'. The sidebar is identical to previous figures. The main form has fields for 'Coursework Name' (Prototype Evaluation), 'Submission Date' (12/26/2024), and 'Coursework Details' (text area: 'Evaluate prototype using evaluation techniques covered in class.'). At the bottom are 'Cancel' and 'Next' buttons. At the very bottom are links for '© 2024 Coursework Wizard', 'Help', and 'Contact Us'.

Appendix E: Final Website

Appendix E – Figure 33 Staff Add Coursework 1

The screenshot shows the 'F21AD - Advanced Interaction Design' interface. On the left is a dark sidebar with icons for Account, Dashboard, Courses, Timeline, Students, Contact Us, and Log Out. The main area has a light gray background. At the top, it says 'Total Number of Subtasks: 4'. Below that, 'Total Number of Dependent Subtasks: 3' is listed with three items: 'Select 2 evaluation techniques' (weight 2, from 11/27/2024, to 12/03/2024, file "subtask_sample.pdf"), 'Apply first evaluation technique' (weight 4, from 12/04/2024, to 12/10/2024, file "subtask_sample.pdf"), and 'Apply second evaluation technique' (weight 4, from 12/11/2024, to 12/17/2024, file "subtask_sample.pdf"). Under 'Total Number of Independent Subtasks: 1', there is one item: 'Report' (weight 6, from 11/27/2024, to 12/24/2024, file "subtask_sample.pdf"). At the bottom are 'Cancel' and 'Next' buttons.

Appendix E – Figure 34 Staff Add Coursework 2

The screenshot shows the 'F21AD - Advanced Interaction Design' interface. The sidebar and top navigation are identical to Figure 33. The main area is titled 'Prototype Evaluation' and shows 'Submission Date: 26/12/2024'. It displays 'Coursework Details: Evaluate prototype using evaluation techniques covered in class.' Below this, 'Total Number of Subtasks: 4' and 'Total Number of Dependent Subtasks: 3' are listed. A table shows the details for the dependent subtasks:

Subtask	Weight	From	To	File Name
Select 2 evaluation techniques	2	27/11/2024	03/12/2024	"subtask_sample.pdf"
Apply first evaluation technique	4	04/12/2024	10/12/2024	"subtask_sample.pdf"
Apply second evaluation technique	4	11/12/2024	17/12/2024	"subtask_sample.pdf"

Below this, 'Total Number of Independent Subtasks: 1' is listed with one item: 'Report' (weight 6, from 27/11/2024, to 24/12/2024, file "subtask_sample.pdf"). At the bottom are 'Cancel' and 'Publish' buttons.

Appendix E – Figure 35 Staff Add Coursework Review

The screenshot shows the 'F21AD - Advanced Interaction Design' interface. The sidebar and top navigation are identical to previous figures. The main area displays a message 'Coursework Added' in bold black text. Below it is a green button labeled 'View Timeline'.

Appendix E: Final Website

Appendix E – Figure 36 Staff Coursework Added Confirmation

The screenshot shows the 'Timeline' section of the staff interface. A modal window titled 'Select 2 evaluation techniques' is open, displaying the task details: 'Task for Advanced Interaction Design - Coursework 2', 'Start Date: 27/11/2024', and 'End Date: 03/12/2024'. It includes two buttons: 'View Subtask' and 'Re/Submit'. The background timeline shows four courseworks: 'Coursework 1 Advanced Interaction Design' (blue), 'Coursework 1 Software Engineering' (purple), 'Coursework 2 Advanced Interaction Design' (yellow), and 'Coursework 2 Software Engineering' (pink). Each coursework has a sub-task bar below it labeled ST1, ST2, ST3, and ST4.

Appendix E – Figure 37 Staff View Subtask Timeline Modal

The screenshot shows the 'Students' section of the staff interface. A table lists students from 'F21SF' course with their coursework status. The columns are: #, NAME, COURSE NAME, COURSEWORK, STATUS, COMPLETED, and REMAINING. The data is as follows:

#	NAME	COURSE NAME	COURSEWORK	STATUS	COMPLETED	REMAINING
2	Justin Timberlake	F21SF	Coursework 2	No Submission	0	5
1	Selena Gomez	F21SF	Coursework 2	In Progress	3	2
2	Justin Timberlake	F21SF	Coursework 1	In Progress	3	2
3	Charles Dickens	F21SF	Coursework 1	In Progress	0	5
3	Charles Dickens	F21SF	Coursework 2	In Progress	2	3
6	Elvis Presley	F21SF	Coursework 2	In Progress	3	2
1	Selena Gomez	F21SF	Coursework 1	Completed	5	0
6	Elvis Presley	F21SF	Coursework 1	Completed	5	0

Appendix E – Figure 38 Students List

Appendix F: Questionnaires



Student System Usability Scale (SUS) Survey

The purpose of this System Usability Scale (SUS) survey is to help us understand your experience of using the Coursework Wizard website in terms of usability. The data collected from this survey will remain confidential and will only be used for F21MP. Thank you in advance for taking the time to complete this survey.

* Required

1. Participant Number *

Enter your answer

2. Please answer the questions below regarding the website Coursework Wizard without taking loading time and website speed in consideration. *

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I think that I would like to use this website frequently.	<input type="radio"/>				
2. I found the website unnecessarily complex.	<input type="radio"/>				
3. I thought the website was easy to use.	<input type="radio"/>				
4. I think that I would need the support of a technical person to be able to use this website.	<input type="radio"/>				
5. I found the various functions in this website were well integrated.	<input type="radio"/>				
6. I thought there was too much inconsistency in this website.	<input type="radio"/>				
7. I would imagine that most people would learn to use this website very quickly.	<input type="radio"/>				
8. I found the website very cumbersome/awkward to use.	<input type="radio"/>				
9. I felt very confident using the website.	<input type="radio"/>				
10. I needed to learn a lot of things before I could get going with this website.	<input type="radio"/>				

Appendix F – Figure 1 System Usability Scale (SUS) Survey



Student Post-Usability Questionnaire

The purpose of this questionnaire is to help us understand your experience of using the Coursework Wizard website in terms of usability and improvements that can be made. The data collected from this survey will remain confidential and will only be used for F21MP.

Thank you in advance for taking the time to complete this survey.

* Required

1. Participant Number *

Enter your answer

2. How would you rate the colour palette of this website? *

0 1 2 3 4 5 6 7 8 9 10

Extremely Poor Extremely Good

3. Were you able to clearly differentiate between links and other content? *

Yes
 No

4. Was the size of the content, menus, drop-downs, and other features appropriate? *

Yes
 No

5. If applicable, describe any major challenge you may have had during the tasks?

Enter your answer

6. We would love to get your suggestions to help us improve our website.

Enter your answer

Submit

Appendix F – Figure 2 Post-Usability Questionnaire

Appendix G: Testing Documents



TASK SHEET

Project title: COURSEWORK WIZARD – DEADLINES VISUALISER

Important Notes for the Usability Test

1. No Assistance During the Test

The purpose of this test is to assess how intuitive and easy to use the *Coursework Wizard* website is without external help. Therefore, the researcher **will not provide any assistance or guidance** during the test. All the information you need to complete the tasks has been provided.

- If the researcher helps one participant, it could affect the accuracy and reliability of the results.
- The only exception is if there is a **technical issue** that prevents you from continuing with the tasks.
- If you are unable to complete a specific task, you may skip it and mention the challenges in the post-usability survey.

2. Loading Time

Since the website is hosted locally, there may be **increased loading times** during the test. Please disregard any delays in loading time when completing the tasks or filling out the post-usability questionnaires, as this is unrelated to the scope of this experiment.

3. Functional and Non-Functional Parts of the Website

Not all parts of the website are currently functional. If you encounter any non-functional components that prevent you from completing a task, please note them in the post-usability survey.

4. Please read all the tasks thoroughly before starting the test. As you navigate through all features, please think aloud to share your thoughts.

Thank you in advance for your time and effort in participating in this usability test! Your feedback is invaluable for my master's dissertation and will greatly contribute to improving the usability of the website. Your participation plays a key role in the success of this project, and I truly appreciate your support.

Appendix G – Figure 1 Task Sheet for Students 1

Appendix G: Testing Documents

Task 1

Log in to the website as a student using the following credentials:

Username: student

Password: student@123!

Task 2

Submit all subtasks for the coursework **F21AD (Advanced Interaction Design) – Application Design**. Select the **Assignment.pdf** file for submission. Please note any changes you observe before and after the submission.

Task 3

View subtask details for **ST1 of Software Engineering** from the "Timeline" page.

Task 4

Complete all subtasks for **F21DF** on the "Board" page.

Task 5

Check the progress of **F21EC (E-Commerce)** coursework from "Courses".

Task 6

Change your profile preferred name to "**Justin**" and update the profile picture by selecting "**justin.png**".

Task 7

Log out.

Task 8

Update your password. Use the following details to complete the task:

Username: student3

Mobile number: 0501234567

Email address: student@gmail.com

Verification code: 123

New password: student123

Appendix G – Figure 2 Task Sheet for Students 2



INFORMATION SHEET

Project title: COURSEWORK WIZARD – DEADLINES VISUALISER

Objectives

For my master's thesis, I am investigating the usability and effectiveness of **Coursework Wizard**, a micro learning management system (LMS) designed to help students manage long-term coursework. Inspired by Canvas, the website aims to reduce last-minute stress and improve task organisation by combining features of an LMS and a project management tool. Coursework Wizard assists students in managing their time, staying organised, and meeting deadlines. It also enables staff to monitor submissions, identify struggling learners, and provide targeted support.

This investigation focuses on evaluating usability and user experience for both students and staff, assessing how well the platform meets their needs. Through usability testing and feedback from questionnaires, the research aims to understand perceptions of its effectiveness in facilitating coursework management.

The purpose of this information sheet is to inform participants about the research, data collection process, and their requirements for participation. It outlines the study's objectives, types of data collected, and measures to ensure participant safety and confidentiality, as well as the steps for consent and data withdrawal.

Data collection

Participants will be given a task sheet, which they are required to complete in the researcher's presence. During the task, their actions will be observed, and a screen recording will be made to time task completion for analysis purposes. Following the task, participants will be asked to complete an online survey and questionnaire regarding their experience. No personal or sensitive information will be gathered.

The data collected will be **pseudo-anonymised**. Each participant will be assigned a unique participant number, which will be used to identify their data. Personal identifiers such as names will not be collected, and all screen recordings will be linked only to the participant number. Participants will be informed of how they can access or request the removal of their data if they choose to do so.

Experiment Protocol

The testing will take approximately 30 minutes or less. Participants will be required to complete around 7 tasks, each designed to be straightforward and brief. Since the tasks involve navigating a website, they should not take long. However, as the website is hosted locally, there may be slower loading times, which could contribute to

Appendix G – Figure 3 Information Sheet for Students 1

extending the duration of the tasks. If the website proves to be less user-friendly, this may also result in longer completion times.

There are no risks associated with this test. Participants will use a laptop provided by the researcher, ensuring no personal data is shared. The test will take place in a controlled environment at the university, and the website is hosted locally, further minimising potential risks.

If participants decide to take part, they will be required to sign a consent form before beginning the test.

Compensation

This study is being conducted as part of my master's dissertation, and, as such, there will be no financial compensation for participation. Your involvement is entirely voluntary, and I sincerely appreciate your consideration in contributing to this research.

Withdraw

Participants have the right to withdraw from the study at any time without any consequences. If you choose to withdraw, your decision will be respected, and your data will be excluded from the study without affecting your relationship with the researcher or the institution.

What the Participant Needs to Do with the Consent Form

Participants should read the consent form carefully. If you agree to participate, please sign and date the form to confirm your understanding and consent to the research.

What Happens After the Participant Signs the Consent Form

Once you have signed the consent form, it will be securely stored and will not be shared with anyone outside of the research team. You will then be provided with further instructions regarding the study's procedures and what will be expected of you as a participant. If you have any questions or concerns about the study at any time, please feel free to reach out.

For additional details or to request the deletion of your data, you can reach out to km2065@hw.ac.uk or you can contact the project supervisor via h.zantout@hw.ac.uk.

NOTE: Please find below further information on Heriot-Watt Data Protection

1. Data Protection Officer contact details: dataprotection@hw.ac.uk
2. Here is the link to the Heriot-Watt University Privacy Notice for Research Participants: <https://www.hw.ac.uk/uk/services/docs/information-governance/PrivacyNoticeResearch-V4Finalversion.pdf>
3. Data controller is Heriot-Watt University

Appendix G – Figure 4 Information Sheet for Students 2



CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

- I confirm** that the purpose of this study was explained to me in sufficient detail and I have had the opportunity to consider the information, to ask questions and have these answered satisfactorily.
- I confirm** that I am over 18 years old.
- I understand** that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without consequences.
- I understand** that any data I give will be used in the dissemination of findings and will remain anonymous.
- I feel** I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.
- I agree** to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name:
Signature:
Date:
Email Address:

I would like to receive information on the results of this study: Yes No

Appendix G – Figure 5 Consent Form for Participants

Appendix H: Signed Consent Forms

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

o I confirm that the purpose of this study was explained to me in sufficient detail and I have had the opportunity to consider the information, to ask questions and have these answered satisfactorily.

o I confirm that I am over 18 years old.

o I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without consequences.

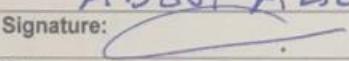
o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name:	Abdul Aziz Shaghil
Signature:	
Date:	5/11/2024
Email Address:	9.shaghil@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 1 Consent Form 1

Appendix H: Signed Consent Forms

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

o I confirm that the purpose of this study was explained to me in sufficient detail and I have had the opportunity to consider the information, to ask questions and have these answered satisfactorily.

o I confirm that I am over 18 years old.

o I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without consequences.

o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Abdul Maajid Aga
Signature: Abdul.
Date: 21/10/2024
Email Address: amaa2024@hw.ac.uk.

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 2 Consent Form 2

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

o I confirm that the purpose of this study was explained to me in sufficient detail and I have had the opportunity to consider the information, to ask questions and have these answered satisfactorily.

o I confirm that I am over 18 years old.

o I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without consequences.

o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

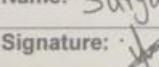
o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Sufyaan Atif

Signature: 

Date: 21/10/24

Email Address: sa2255@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 3 Consent Form 3

Appendix H: Signed Consent Forms

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

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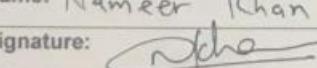
o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawther Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Nameer Ichan
Signature: 
Date: 21/10/2024
Email Address: nak2006@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 4 Consent Form 4

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

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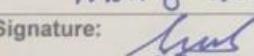
o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Mary Qasim Shihani
Signature: 
Date: 2024-Oct-21
Email Address: mqs2000@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 5 Consent Form 5

Appendix H: Signed Consent Forms

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

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o I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without consequences.

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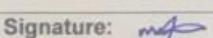
o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: MORAM KHALID

Signature: 

Date: 21-05-2024

Email Address: mmmk2000@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 6 Consent Form 6

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

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o I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without consequences.

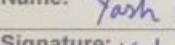
o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Yash Nadkarni
Signature: 
Date: 21/10/2024
Email Address: nadkarniyashsmg4@gmail.com

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 7 Consent Form 7

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

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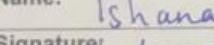
o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Ishana Jabbar
Signature: 
Date: 21/02/24
Email Address: ij2002@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 8 Consent Form 8

Appendix H: Signed Consent Forms

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

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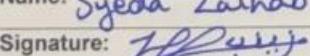
o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Syeda Zainab Fathima
Signature: 
Date: 21/10/25
Email Address: sz2021@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 9 Consent Form 9

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

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Please tick the initial boxes

○ I confirm that the purpose of this study was explained to me in sufficient detail and I have had the opportunity to consider the information, to ask questions and have these answered satisfactorily.

○ I confirm that I am over 18 years old.

○ I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without consequences.

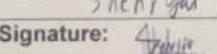
○ I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

○ I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

○ I agree to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name:	Shehryar Naeem
Signature:	
Date:	21 October 2024
Email Address:	sn2054@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 10 Consent Form 10

HERIOT WATT UNIVERSITY

CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

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o I understand that any data I give will be used in the dissemination of findings and will remain anonymous.

o I feel I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.

o I agree to take part in the above study.

Project Student:
Kawther Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Mohammad Kobra Sartae
Signature: M. Kobra Sartae
Date: 2024-0ct-21
Email Address: ms2072@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 11 Consent Form 11



CONSENT FORM

Project title: COURSEWORK WIZARD: DEADLINES VISUALISER

Heriot-Watt University attaches high priority to the ethical conduct of research. We therefore ask you to consider the following points before signing this form. Your signature confirms that you are willing to participate in this study, however, signing this form does not commit you to anything you do not wish to do, and you are free to withdraw your participation at any time.

Please tick the initial boxes

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- I confirm** that I am over 18 years old.
- I understand** that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without consequences.
- I understand** that any data I give will be used in the dissemination of findings and will remain anonymous.
- I feel** I am well enough, physically and mentally, to complete the tasks as described in the Information Sheet.
- I agree** to take part in the above study.

Project Student:
Kawthar Mohammad Adam
E-mail: km2062@hw.ac.uk

Project Supervisor:
Dr Hind Zantout
Email: h.zantout@hw.ac.uk

Name: Heba El-Shimy
Signature:
Date: 5/11/2024
Email Address: H.Elshimy@hw.ac.uk

I would like to receive information on the results of this study: Yes No

Appendix H – Figure 12 Consent Form 12

Appendix I: Evaluation Results

Student Usability Test Observation

Participant 1

Task 1: Easy

Task 2: Unable to find the submit button

Noticed subtask colour change

Only submitted one subtask

Task 3: Easy

Task 4: Went to dashboard first

Did not know it had to be dragged

Thought it had to be loaded when clicked

Task 5: Asked if this is the progress

Task 6: Easy

Task 7: Went to account for logout

Task 8: Tried logging in to change password

Got lost

Additional observation: Preferred going to the CW through the dashboard instead of courses

About participant: 4th year cs student, was in a hurry

Participant 2 (8 mins)

Task 1: Easy

Task 2: Could not find the submit button

Task 3: Easy

Task 4: Took a while but completed

Task 5: Easy

Task 6: Easy

Task 7: Easy

Task 8: Could not find forgot password

Went to help but read the FAQ about forgot username. Clicked on the link and reached contact us. She was entering the details. I had to stop her and guide her. Took 2.15 for this task

About Participant: Was in a hurry. Uses Macbook so was slow on windows. Wanted better structured tasks and instructions about dragging (on board). CS 4th year student

Participant 3

Task 1: Easy. Noticed name

Task 2: Easy. Noticed locked subtasks and understood the purpose

Task 3: Went to coursework page instead of timeline

Repeated the task but viewed F21DF instead of F21SF

Task 4: Went to coursework page again instead of board

Repeated the task but failed to drag

Task 5: Easy

Task 6: Did it separately

Task 7: Easy

Task 8: Logged in again instead of using forget password

Completed it

About participant: Also, in a hurry. CS 4th year student

Participant 4

Task 1: Easy

Task 2: Noticed all changes except stars

Task 3: Did not check the subtasks

Task 4: Dragged and dropped halfway through. Needed help

Task 5: Did not notice the bar

Task 6: Went to coursework page. Some difficulty in finding edit profile but found it

Task 7: Easy

Task 8: Easy

Entered email for verification code

About participant: CS 4th year student. Read the sheets

Participant 5

Task 1: Easy

Task 2: Found it hard to find the submit button

Thought the button was for resubmit only

Noticed 100% complete

Task 3: Opened view subtask

Found it later

Task 4: Went to dashboard to do it

Then board

Was clicking on it

Figured out dragging without help

Task 5: Did not notice the bar

Task 6: Went to settings first

Task 7: Easy

Task 8: Easy

Thought email and phone number, both had to be entered so got confused

Additional Observation: Did struggle slightly

About participant: CS 4th year student. Read the sheets

Participant 6

Task 1:Easy

Task 2: Easy

Task 3: Went to course page instead of timeline

Went to timeline but did not view it

Task 4:Clicked on them

Found the drag but struggles slightly

Task 5:Did not notice the bar

Task 6:Easy

Task 7: Easy

Task 8:Easy

Additional Observation: Used back buttons of browser instead of interacting with the menu

About participant: CS 3rd year student

Participant 7

Task 1: Made mistake in password. Tried to re-enter password without closing alert

Task 2: Went to coursework from side bar instead of using the CW links on the dashboard

Easy

Noticed the locked subtasks

Noticed the progress

Task 3: Went to courses instead of timeline

Could not find timeline

Viewed F21DF instead of F21SF

Task 4: Clicked on the subtask

Thought he must go back to courses

Couldn't figure out dragging. Needed help

Task 5: Did not notice the progress bar

Task 6: Easy

Task 7: Easy

Task 8: Went to help and followed the correct FAQ

He thought email was skipped but later realised it was an option to select either email or phone number

Needed the show button for confirm password

About participant: CS 3rd year student. Read the sheets before test

Additional Observation: Seemed to have some eye vision problem

Participant 8

Task 1: Easy

Task 2: Took long and viewed subtasks

Did not notice any changes

Was submitting same subtask again

Task 3: Went to dashboard

Then to courses -> Software Engineering

Then to timeline

Task 4: Went to dashboard

Then to courses -> database

Submitted subtasks there

Repeated the task after I told him. He clicked on the subtasks but could not figure out the dragging part

Task 5: Did not notice the progress bar

Task 6: Did the tasks separately

Task 7: Easy

Task 8: Went to help, then dashboard, then to help, checked the correct FAQ but clicked on the link without reading and reached contact us. Asked him to read. Completed

Additional Observation: Did not use the logo to go back to the main page to change password. Went for browser back button

About participant: Engineering student. Not good with computers. Made basic mistakes. Did not read any of the sheets provided before the test. Was conscious because I was making notes and many times stopped in between.

Participant 9

Task 1:Easy

Task 2: Went to courses 2 times. Confused. Then selected the CW from dashboard

Tried to submit next subtask without closing the alert

Task 3:Thought he had to click on the colour key Software Engineering. Then he realised and viewed the correct subtask

Task 4:Clicked on the subtask

Could not figure out

Task 5:Did not notice the bar

Task 6: Easy

Task 7:Easy

Task 8:Easy

About participant: Robotics student

Participant 10

Task 1:Easy, Liked the green colour and the design

Task 2:Went to courses instead of dashboard

Found it straightforward

Got confused with the button working Re/Submit

Noticed the updated work progress

Task 3:Went to courses first

Task 4:First clicked on the tasks

Found the dragging part himself but took time

Task 5:Went to e-commerce

Then went to notifications

Then saw the progress

Task 6:First went to settings

Task 7:Easy but expected a log out confirmation

Task 8:Was about to log in again but saw the forgot password option

Entered email for username

Needed show/hide to see password on new password page

About participant: Robotics student

Most common mistakes:

- Show/hide button on new password page
- Dragging on board page
- Should have course code and course name everywhere
- People did not use the help section when they got stuck
- Directly clicked the links for solution rather than reading the FAQ properly
- Most did not notice the progress bar
- Many ignored the alert window
- Some expected change password to be in settings or profile
- Most preferred using the browser back buttons
- Logout and login was easy
- Board was difficult
- Most found the Re/Submit button confusing. Most did not even notice the colour change. No one noticed the stars. Some explanation must be provided on the page
- Most were in a hurry
- Most were not confident enough to explore the website on their own, may be conscious because of me
- Most did not read the sheets and tasks before the task

My mistakes:

- Forgot to record participant 2
- It was too late to perform testing. Most of them were in a hurry since it was time for them to go home
- The tasks on the task sheet were not clear. I failed to structure them properly
- Should have recruited all participants from same year of study and program

Student SUS Score

Appendix I – Table 1 SUS Survey Responses

Participant Number	Q1 +	Q2 -	Q3 +	Q4 -	Q5 +	Q6 -	Q7 +	Q8 -	Q9 +	Q10 -
1	3	3	3	2	3	1	4	1	3	3
2	4	3	2	3	4	2	3	2	3	4
3	5	2	4	1	4	3	5	4	5	1
4	5	1	5	2	5	1	5	1	5	1
5	4	1	5	1	5	1	4	1	5	1
6	5	1	5	1	5	1	4	1	5	1
7	4	2	4	1	4	1	4	1	4	2
9	4	2	4	1	5	2	5	2	4	1
10	4	3	4	1	3	4	5	1	4	1
8	3	3	4	2	3	2	4	1	3	2

Appendix I – Table 2 SUS Survey Final Score

Participant Number	Sum of points	Final (sum * 2.5)
1	26	65
2	22	55
3	32	80
4	39	97.5
5	38	95
6	39	97.5
7	33	82.5
9	34	85
10	30	75
8	27	67.5
Average SUS Score		80 (Good)

Student Post-Usability Questionnaire Results

Appendix I – Table 3 Student Post-Usability Questionnaire Responses

ID	How would you rate the colour palette of this website?	Were you able to clearly differentiate between links and other content?	Was the size of the content, menus, drop-downs, and other features appropriate?	If applicable, describe any major challenge you may have had during the tasks?	We would love to get your suggestions to help us improve our website.
1	8	Yes	No	I had an issue figuring out that I had to drag for completing a task and marking it as complete. tasks could be more well defined	Adding more context menus and keeping the change password in the settings
2	7	No	Yes	the sidebar (navigation bar) could be a bit smaller the courses page could have the code of the courses loved the timeline and progress features!!	less compact
3	9	Yes	No	The drag and drop feature was not explicitly mentioned and the update your password task is a bit confusing but other than that it was good.	Having a simple home page after logging in is key. I suggest having more pages with each having appropriate content.
4	10	Yes	Yes		
5	8	Yes	Yes	the drop-downs, i thought the system would allocate it to done based on the progress.	system would allocate the drop-down of the tasks to done based on the progress
6	8	Yes	Yes	task drag and drop	tutorial for beginners who are not familiar

Appendix I: Evaluation Results

					with canvas
7	7	Yes	Yes		Being able to switch to the tasks from the boards section.
9	4	Yes	Yes	dragging the tasks from the to do list	instruction on how to move tasks from the to do list to the completed
10	10	Yes	Yes	N/A	password icon to see the pass, inconsistent fonts and sizes, so if you could work on that, it should be good!
8	6	Yes	No	not major challenge but the overall look and UI for the website can be improved to make it look more appealing	same as above
Average	7.7	9 Yes and 1 No	7 Yes and 3 No	Drag: 4 Update pass: 1 Task definition: 1	

Suggestions Summary

Appendix I – Table 4 Student Suggestions

password change in settings
more menu options
smaller side bar
less compact (less clutter), simple dashboard by adding more pages
add course code to all course pages
tutorial for beginners that don't use canvas
instructions for drag and drop
show hide in confirm pass
consistent fonts and sizes
overall look and UI

Staff Testing Questions

1. Feedback, opinions, and suggestions for the student and staff portal
2. Kanban board
3. Usability, look and feel
4. Most and least liked features
5. Forget password
6. Share button
7. Would you use it
8. Is it cluttered/ too busy?
9. Visualisations
10. Gamification like leaderboard

Staff 1

Student portal

- Canvas doesn't have anything to prioritise tasks for students

Staff portal

- More work for them because of breaking down work
- May be staff needs to rethink for some cw
- For many cw (60-70%) could be added workload
- Less flexibility for older students because they have lots of other things to do
- Very difficult to breakdown written cws into subtasks
- It is better for students to learn time and project management like staff breaking into sprints
- The process of staff dividing cw into subtasks is not very practical in real-life because students need to do it themselves at that stage
- Good for younger students but not for 3rd or 4th year undergraduate students and postgraduate students

Visualisations will not be shown if there is only one subtask. There will be no progress because there are no multiple subtasks, just one subtask. Having pomodoro technique might be helpful as it will record the time spent on the subtask but this might not reflect reality if the student is rushing to complete the subtask or cw because at that moment, students just focus on the deadline and not on any other aspect

Major improvement over canvas for students as it shows the cw deadlines on the dashboard so the student doesn't need to remember the dates; reducing memory load

Way better than Vision (system used by university before canvas), because on vision, the student had to remember the dates

Share button: sharing with students is not a good idea. However, the staff at HW need to sometimes export stats from Canvas for some internal purposes. So, the share button here can export the statistics as csv for internal purposes. Also, it might not be useful for all courses

Usability: very familiar for canvas and non-canvas users. Intuitive. Easy navigation. Would not need help for first time users. Everything is visible. Good. Nothing bad. Look and feel is good. All information is visible. No unnecessary clutter.

Kanban board could have a different icon to make it clearer. Students are not familiar with project management tools.

Gamification module like leaderboard or things similar to it would be good but it depends on the student's personality. However, it should not show or specify the rank. Just show you are in top 3%, etc... It can be optional for students so that they can turn it on or off. Don't mention names and anonymise it because it can raise anxiety. The ranking system is something that even schools are eliminating, so the students that join university (this generation) will not be familiar or comfortable with this ranking system.

Forgot password: the screens show the step number which is good because the website is giving proper feedback to the user after every step

Additional feedback:

- Push notifications to the user on email one week before the deadline
- Regarding cws, this platform is good. Canvas has many more features but cant be compared because this is a prototype and perhaps canvas was something similar when it had started

Additional features:

- Staff can send reminders to students from the students page. There can be a fixed template inside the system. Each row can have a tick box. When more than one row/student is selected, the button to send reminder will be activated(not greyed out) and a reminder to those students will be sent to start working

This is an mvp and covers all the basic features.

Good for students. Extra load for staff

Staff 2

More refinement. Idea is good

Challenge is doing the full check at once. Breaking will make more sense. Improved version of canvas

Usability: easy but need more guidelines

Gamification module: dashboard and timeline is enough. Depends on who you are targeting.

Keep it serious because we are preparing adults not kids

Kanban board: simple but has no instructions. Turning education into circus (not happen). kanban board for each cw

Dashboard: clear. May be add more details. May be have to define titles

Staff portal:

- More helpful for students
- Disagree with babysitting students. Staff should not plan the cw and create subtasks
- Send reminder would not recommend
- Don't want to micromanage
- Extra work for staff and micromanaging
- Will not help with understanding if the work is done by the student. Gen AI tools can do this

Overall:

- Helps students become independent because they are managing it themselves. 9/10. Reduce stress
- For staff, 3 or 4 / 10
- Most like: timeline and kanban (kanban if organised properly)
- Drawback for faculty: investing too much time and micromanaging
- Staff dashboard should focus on marking, who is late, etc... rather than focusing on students completing their cws
- Usability: good
- Student portal: process; Staff portal: results
- Share button will motivate students. It will be helpful
- Forget password: it is standard

Appendix J: JIRA Sprint Planning

Sprint 1 Planning - Figma Prototype			Details										
Sprint planning checklist													
<table border="1"> <thead> <tr> <th>Preparation</th><th>Meeting</th><th>Follow up</th></tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> Organise the backlog Create Figma project Create GitHub repo </td><td> <ul style="list-style-type: none"> Nil </td><td> <ul style="list-style-type: none"> Update JIRA Update GitHub Ensure the prototype is workable at the end of sprint </td></tr> </tbody> </table>				Preparation	Meeting	Follow up	<ul style="list-style-type: none"> Organise the backlog Create Figma project Create GitHub repo 	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none"> Update JIRA Update GitHub Ensure the prototype is workable at the end of sprint 				
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Sprint planning meeting items			Sprint planning resources										
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Appendix J – Figure 1 Sprint 1 Planning – Figma Prototype

Sprint 2 Planning - Figma Prototype Cont.			Details						
Sprint planning checklist									
<table border="1"> <thead> <tr> <th>Preparation</th><th>Meeting</th><th>Follow up</th></tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> Create smaller issues to get clear tasks </td><td> <ul style="list-style-type: none"> Present prototype to supervisor for feedback </td><td> <ul style="list-style-type: none"> Consistency of both portals Update GitHub Update Journal </td></tr> </tbody> </table>				Preparation	Meeting	Follow up	<ul style="list-style-type: none"> Create smaller issues to get clear tasks 	<ul style="list-style-type: none"> Present prototype to supervisor for feedback 	<ul style="list-style-type: none"> Consistency of both portals Update GitHub Update Journal
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Sprint planning meeting items			Capacity planning						
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Appendix J – Figure 2 Sprint 2 Planning – Figma Prototype Cont.

Appendix J: JIRA Sprint Planning

<p>Sprint 3 Planning - Figma Prototype</p> <hr/> <p>Sprint planning checklist</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Preparation</th> <th>Meeting</th> <th>Follow up</th> </tr> </thead> <tbody> <tr> <td>• Create smaller issues to get clear task</td> <td>• Present prototype to supervisor for feedback</td> <td>• Check the font styles • Update GitHub • Update Journal</td> </tr> </tbody> </table> <p>Sprint team members</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Name</th> <th>Role</th> </tr> </thead> <tbody> <tr> <td>Kausar Adam</td> <td>Product owner and designer</td> </tr> </tbody> </table> <p>Sprint planning meeting items</p> <p>Goals:</p> <ul style="list-style-type: none"> • To complete prototype design for student and staff pages • To get the prototype reviewed by supervisor <p>Agenda</p> <ol style="list-style-type: none"> 1. To complete all open issues before beginning next sprint 2. To dedicate next sprint for staff design <p>Previous sprint summary</p>	Preparation	Meeting	Follow up	• Create smaller issues to get clear task	• Present prototype to supervisor for feedback	• Check the font styles • Update GitHub • Update Journal	Name	Role	Kausar Adam	Product owner and designer	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Sprint theme</td> <td>Prototype</td> </tr> <tr> <td>Story points</td> <td>Introduction and Student pages</td> </tr> <tr> <td>Summary</td> <td>Got the foundation for the website but still did not complete the student portal</td> </tr> </table> <p>Details</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>Start date</td> <td>02 Aug 2024</td> </tr> <tr> <td>End date</td> <td>18 Aug 2024</td> </tr> <tr> <td>Sprint theme</td> <td>Student Prototype</td> </tr> </table> <p>Capacity planning</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td></td> <th>Current sprint</th> <th>Previous sprint</th> </tr> <tr> <td>Total days</td> <td>17 days</td> <td>31 days</td> </tr> </table> <p>Potential risks</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th>Risk</th> <th>Mitigation</th> </tr> <tr> <td>The author has extreme workload</td> <td>The author will complete main designs and skip navigation</td> </tr> </table> <p>Sprint planning resources</p> <p>Sprint boards and retrospectives</p> <ul style="list-style-type: none"> • Sprint 2 Retrospective • https://kausaradam.atlassian.net/browse/CW <p>Team resources and definitions</p> <ul style="list-style-type: none"> • https://github.com/KausarAdam/Coursework-Wizard-Deadlines-Visualiser 	Sprint theme	Prototype	Story points	Introduction and Student pages	Summary	Got the foundation for the website but still did not complete the student portal	Start date	02 Aug 2024	End date	18 Aug 2024	Sprint theme	Student Prototype		Current sprint	Previous sprint	Total days	17 days	31 days	Risk	Mitigation	The author has extreme workload	The author will complete main designs and skip navigation
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Appendix J – Figure 3 Sprint 3 Planning – Figma Prototype

<p>Sprint 4 Planning - Front-End Development</p> <hr/> <p>Sprint planning checklist</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Preparation</th> <th>Meeting</th> <th>Follow up</th> </tr> </thead> <tbody> <tr> <td>• Install node.js • Set up the next.js application</td> <td>• Present the final front-end to supervisor at the end of the sprint or may be in between if any problem occurs</td> <td>• Update GitHub • Update JIRA • Update journals</td> </tr> </tbody> </table> <p>Sprint team members</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Name</th> <th>Role</th> </tr> </thead> <tbody> <tr> <td>Kausar Adam</td> <td>Frontend developer</td> </tr> </tbody> </table> <p>Sprint planning meeting items</p> <p>Goals:</p> <ul style="list-style-type: none"> • To set up the system with node.js and the next application • To complete the front-end of the website • To get the front-end reviewed by the supervisor <p>Agenda</p> <ol style="list-style-type: none"> 1. To complete the front-end design 2. To leave to issues for the next sprint which will focus on the back-end development <p>Previous sprint summary</p>	Preparation	Meeting	Follow up	• Install node.js • Set up the next.js application	• Present the final front-end to supervisor at the end of the sprint or may be in between if any problem occurs	• Update GitHub • Update JIRA • Update journals	Name	Role	Kausar Adam	Frontend developer	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Sprint theme</td> <td>Figma Prototype</td> </tr> <tr> <td>Story points</td> <td>Prototype completion and supervisor feedback</td> </tr> <tr> <td>Summary</td> <td>Completed the prototype and got it reviewed by supervisor. The changes suggested were also incorporated</td> </tr> </table> <p>Details</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>Start date</td> <td>19 Aug 2024</td> </tr> <tr> <td>End date</td> <td>15 Sep 2024</td> </tr> <tr> <td>Sprint theme</td> <td>Website front-end development</td> </tr> </table> <p>Capacity planning</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td></td> <th>Current sprint</th> <th>Previous sprint</th> </tr> <tr> <td>Total days</td> <td>28 days</td> <td>17 days</td> </tr> </table> <p>Potential risks</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th>Risk</th> <th>Mitigation</th> </tr> <tr> <td>The author is unable to complete development</td> <td>Move remaining issues to the next sprint</td> </tr> <tr> <td>Unable to replicate the prototype</td> <td>Alternate designs will be used</td> </tr> </table> <p>Sprint planning resources</p> <p>Sprint boards and retrospectives</p> <ul style="list-style-type: none"> • https://kausaradam.atlassian.net/browse/CW <p>Team resources and definitions</p> <ul style="list-style-type: none"> • GitHub 	Sprint theme	Figma Prototype	Story points	Prototype completion and supervisor feedback	Summary	Completed the prototype and got it reviewed by supervisor. The changes suggested were also incorporated	Start date	19 Aug 2024	End date	15 Sep 2024	Sprint theme	Website front-end development		Current sprint	Previous sprint	Total days	28 days	17 days	Risk	Mitigation	The author is unable to complete development	Move remaining issues to the next sprint	Unable to replicate the prototype	Alternate designs will be used
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Appendix J – Figure 4 Sprint 4 Planning – Front-End Development

Appendix J: JIRA Sprint Planning

Sprint 5 Planning - Front-End Dev Cont.

Sprint planning checklist

Preparation	Meeting	Follow up
<ul style="list-style-type: none"> Divide staff portal into components (issues) Search for relevant tutorials 	<ul style="list-style-type: none"> Present the final front-end to supervisor at the end of the sprint before jumping into back-end 	<ul style="list-style-type: none"> Update GitHub Update JIRA Update journals

Sprint team members

Name	Role
Kausar Adam	Frontend developer

Sprint planning meeting items

Goals:

- Complete student portal
- Complete staff portal
- Review code for back-end compatibility
- Prepare a testing strategy
- To get the front-end reviewed by the supervisor

Agenda

1. Complete front end
2. Leave no unattended issues behind

Previous sprint summary

Details

Sprint theme	Front end
Story points	Pre-landing pages and 80% student platform
Summary	Completed front-end coding on Next.js for landing pages and for most student platform

Capacity planning

	Current sprint	Previous sprint
Total days	6 days	28 days

Potential risks

Risk	Mitigation
Cannot complete the front-end	Focus on important features to get MVP
Relevant tutorials not available	Try to get alternate design

Sprint planning resources

Sprint boards and retrospectives

- [Sprint 4 Retrospective](#)
- <https://kausaradam.atlassian.net/browse/CW>

Team resources and definitions

- [GitHub](#)

Appendix J – Figure 5 Sprint 5 Planning – Front-End Development Cont.

Sprint 6 Planning - Database

Sprint planning checklist

Preparation	Meeting	Follow up
<ul style="list-style-type: none"> Install MySQL Create issues in the backlog 	<ul style="list-style-type: none"> Get database design approved 	<ul style="list-style-type: none"> Update GitHub Update JIRA Update journals

Sprint team members

Name	Role
Kausar Adam	Database designer and developer

Sprint planning meeting items

Agenda

1. Create database diagram
2. Create the database on MySQL
3. Enter test data
4. Connect database with website

Previous sprint summary

Sprint theme	Front-end continuation
Story points	Student and staff portal completion
Summary	Completed the entire front-end design

Details

Start date	06 Oct 2024
End date	13 Oct 2024
Sprint theme	Database

Capacity planning

	Current sprint	Previous sprint
Total days	8 days	10 days

Potential risks

Risk	Mitigation
Falling behind schedule	Use hardcoding

Sprint planning resources

Sprint boards and retrospectives

- <https://kausaradam.atlassian.net/wiki/pages/createrpage.action?spaceKey=-7120200261be7edcf5473fb33cab1cbad4317e&title=Sprint%204%20Retrospective>
- <https://kausaradam.atlassian.net/browse/CW>

Team resources and definitions

- [GitHub](#)

Appendix J – Figure 6 Sprint 6 Planning – Database

Appendix J: JIRA Sprint Planning

Sprint 7 Planning - Student Back End								
Sprint planning checklist								
<table border="1"> <thead> <tr> <th>Preparation</th><th>Meeting</th><th>Follow up</th></tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> Create issues in the back end Identify important features Add data into database </td><td> <ul style="list-style-type: none"> Complete backend Test it Prepare testing documents Get everything approved Confirm testing on 21st of October Student testing Test analysis </td><td> <ul style="list-style-type: none"> Update JIRA, journals, and GitHub Follow up with supervisor for review, approval, and confirmation </td></tr> </tbody> </table>			Preparation	Meeting	Follow up	<ul style="list-style-type: none"> Create issues in the back end Identify important features Add data into database 	<ul style="list-style-type: none"> Complete backend Test it Prepare testing documents Get everything approved Confirm testing on 21st of October Student testing Test analysis 	<ul style="list-style-type: none"> Update JIRA, journals, and GitHub Follow up with supervisor for review, approval, and confirmation
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Name	Role							
Kausar Adam	Backend developer and tester							
Sprint planning meeting items								
<p>Agenda</p> <ol style="list-style-type: none"> Complete student backend Test Prepare for user testing Supervisor review and approval UI testing (only student) Test result analysis <p>Previous sprint summary</p>								
<table border="1"> <thead> <tr> <th>Sprint theme</th><th>Database</th></tr> <tr> <th>Story points</th><th>Database design and creation</th></tr> <tr> <th>Summary</th><th>Complete database creation on MySQL</th></tr> </thead> </table>			Sprint theme	Database	Story points	Database design and creation	Summary	Complete database creation on MySQL
Sprint theme	Database							
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	Current sprint	Previous sprint						
Total days	11 days	8 days						
Potential risks								
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Sprint planning resources								
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Appendix J – Figure 7 Sprint 7 Planning – Student Back End

Sprint 8 Planning - Staff Back End								
Sprint planning checklist								
<table border="1"> <thead> <tr> <th>Preparation</th><th>Meeting</th><th>Follow up</th></tr> </thead> <tbody> <tr> <td>Nil</td><td> <ul style="list-style-type: none"> Final review with supervisor </td><td> <ul style="list-style-type: none"> Update JIRA, GitHub, and journals </td></tr> </tbody> </table>			Preparation	Meeting	Follow up	Nil	<ul style="list-style-type: none"> Final review with supervisor 	<ul style="list-style-type: none"> Update JIRA, GitHub, and journals
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Name	Role							
Kausar Adam	Backend developer							
Sprint planning meeting items								
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Story points	Student Portal							
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Details								
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Total days	11 days	9 days						
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Appendix J – Figure 8 Sprint 8 Planning – Staff Back End

Appendix J: JIRA Sprint Planning

Sprint 9 Planning - Staff Testing and Report																					
✓ Sprint planning checklist																					
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⚡ Sprint planning meeting items																					
<p>Agenda</p> <ol style="list-style-type: none"> 1. Staff testing 2. Student test results 3. Staff test results 4. Diagrams 5. Unit test cases 6. Usability test plan template 7. Fix RP report 8. Final report 																					
Previous sprint summary																					
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Appendix J – Figure 9 Sprint 9 Planning – Staff Testing and Report

Appendix K: JIRA Sprint Retrospective

Sprint 1 Retrospective

Overview

Date	01 Jul 2024
Team	Coursework Wizard (Kausar Adam)
Participants	Kausar Adam

Retrospective

Start doing	Stop doing	Keep doing
<ul style="list-style-type: none"> Start work earlier 	<ul style="list-style-type: none"> Referring to multiple websites for inspiration 	<ul style="list-style-type: none"> Updating Jira and GitHub
<ul style="list-style-type: none"> Create design on paper then on Figma 	<ul style="list-style-type: none"> Changing the colour theme 	<ul style="list-style-type: none"> Allocating at least one hour to work daily
<ul style="list-style-type: none"> Refer to report for deciding on the design components 		

Action items

- Refer to report
- Paper prototype

Appendix K – Figure 1 Sprint 1 Retrospective

Sprint 2 Retrospective

📋 Overview

Date	02 Aug 2024
Team	Coursework Wizard (Kausar Adam)
Participants	Kausar Adam

💡 Retrospective

Start doing	Stop doing	Keep doing
<ul style="list-style-type: none"> Dividing tasks into smaller tasks 	<ul style="list-style-type: none"> Multitasking 	<ul style="list-style-type: none"> Updating Jira, GitHub and Journal
<ul style="list-style-type: none"> Creating personas and scenarios 	<ul style="list-style-type: none"> Taking long breaks 	<ul style="list-style-type: none"> Paper prototyping
<ul style="list-style-type: none"> Assign time for work 	<ul style="list-style-type: none"> Adding navigation, only focus on the design 	

✓ Action items

- Personas and Scenarios
- Remaining student pages

Appendix K – Figure 2 Sprint 2 Retrospective

Sprint 3 Retrospective

📋 Overview

Date	19 Aug 2024
Team	Coursework Wizard (Kausar Adam)
Participants	Kausar Adam

💡 Retrospective

Start doing	Stop doing	Keep doing
<ul style="list-style-type: none"> • Be consistent by dedicating time daily 	<ul style="list-style-type: none"> • Taking long breaks because I tend to forget the progress 	<ul style="list-style-type: none"> • Updating GitHub, Jira, and Journal
<ul style="list-style-type: none"> • Work step-by-step 	<ul style="list-style-type: none"> • Completing several tasks together 	<ul style="list-style-type: none"> • Supervisor feedback
<ul style="list-style-type: none"> • Test after every change 		

✓ Action items

- Installation
- Basic set up
- Website styling
- All web pages (starting with the home pages, student pages, and lastly the staff pages)

Appendix K – Figure 3 Sprint 3 Retrospective

Sprint 4 Retrospective

📋 Overview

Date	25 Sep 2024
Team	Coursework Wizard (Kausar Adam)
Participants	Kausar Adam

🗣 Retrospective

Start doing	Stop doing	Keep doing
<ul style="list-style-type: none"> Start working from day 1 	<ul style="list-style-type: none"> Starting tasks without a clear target 	<ul style="list-style-type: none"> Updating progress on Jira and in journal
<ul style="list-style-type: none"> Follow tutorial instead of jumping into project directly 	<ul style="list-style-type: none"> Wasting time 	<ul style="list-style-type: none"> Local backup
		<ul style="list-style-type: none"> Breaking larger tasks into subtasks

✓ Action items

- Continue student portal
- Start and complete staff portal
- Review code for back-end compatibility
- Testing strategy

Appendix K – Figure 4 Sprint 4 Retrospective

Sprint 5 Retrospective

📋 Overview

Date	06 Oct 2024
Team	Coursework Wizard (Kausar Adam)
Participants	Kausar Adam

💡 Retrospective

Start doing	Stop doing	Keep doing
<ul style="list-style-type: none"> Prioritising important tasks 	<ul style="list-style-type: none"> Focusing too much on details to get a perfect outcome 	<ul style="list-style-type: none"> Jira and GitHub
<ul style="list-style-type: none"> Being consistent 		<ul style="list-style-type: none"> Meeting deadlines
<ul style="list-style-type: none"> Documentation 		<ul style="list-style-type: none"> Feedback from supervisor

✓ Action items

- Create design for database
- Create database
- Connect database with the website

Appendix K – Figure 5 Sprint 5 Retrospective

Sprint 6 Retrospective

📋 Overview

Date	10 Oct 2024
Team	Coursework Wizard (Kausar Adam)
Participants	Kausar Adam

💡 Retrospective

Start doing	Stop doing	Keep doing
• Focusing on tasks with highest priority	• Going into details	• Updating GitHub, Jira, and journals
		• Consistency

✓ Action items

- Complete Student's back end
- Prepare testing documents for testing on the 21st of October
- Try getting consent for screen recording

Appendix K – Figure 6 Sprint 6 Retrospective

Sprint 7 Retrospective

📋 Overview

Date	21 Oct 2024
Team	Coursework Wizard (Kausar Adam)
Participants	Kausar Adam

💡 Retrospective

Start doing	Stop doing	Keep doing
<ul style="list-style-type: none">Code for high-priority modules first	<ul style="list-style-type: none">End moment changes	<ul style="list-style-type: none">Updating Jira, journals and GitHub
		<ul style="list-style-type: none">Being agile

✓ Action items

- Student portal testing
- Complete staff portal backend
- Prepare task sheets for staff testing
- Recruit staff members for testing

Appendix K – Figure 7 Sprint 7 Retrospective

Sprint 8 Retrospective

📋 Overview

Date	31 Oct 2024
Team	Coursework Wizard (Kausar Adam)
Participants	Kausar Adam

💡 Retrospective

Start doing	Stop doing	Keep doing
• Working on the report	• Trying to multitask	• Working daily
	• Delaying tasks because they seem difficult	• Prioritising tasks
		• Updating Jira, GitHub and journal

✓ Action items

- Staff portal testing
- Report
- Diagrams
- Test cases

Appendix K – Figure 8 Sprint 8 Retrospective

Sprint 9 Retrospective

📋 Overview

Date	27 Nov 2024
Team	https://kausaradam.atlassian.net/people/team/cd5791df-e4cb-455c-ab93-ea35fcaa8560 (Kausar Adam)
Participants	Kausar Adam

💡 Retrospective

Start doing	Stop doing	Keep doing
<ul style="list-style-type: none">• Time and task management	<ul style="list-style-type: none">• Procrastinating	<ul style="list-style-type: none">• Tracking progress

✓ Action items

- Proofread
- Final review
- Submission

Appendix K – Figure 9 Sprint 9 Retrospective

Appendix L: JIRA Graphs

Projects / Coursework Wizard: Deadlines Visualiser

Backlog

Item	Status	Owner
EW-226 Usability test plan	TESTING	DONE ✓ KA
EW-242 Appendices	REPORT	DONE ✓ KA
EW-225 Test cases	TESTING	DONE ✓ KA
EW-239 Features planned vs implemented	REPORT	DONE ✓ KA
EW-236 Prototyping and UI design	REPORT	DONE ✓ KA
EW-238 Assumptions	REPORT	DONE ✓ KA
EW-237 Implementation	REPORT	DONE ✓ KA
EW-204 Limitations	REPORT	DONE ✓ KA
EW-228 System design	REPORT	DONE ✓ KA
EW-229 Personas description	REPORT	DONE ✓ KA
EW-233 Development Tools	REPORT	DONE ✓ KA
EW-231 Methodology	REPORT	DONE ✓ KA

More results

Search: Filter: KA Epic: 1 Clear filters Insights View settings

Appendix L – Figure 1 JIRA Backlog

Projects / Coursework Wizard: Deadlines Visualiser

CW Sprint 9 - Testing & Report

- Fix RP report - Final Report - All Diagrams - Staff Testing

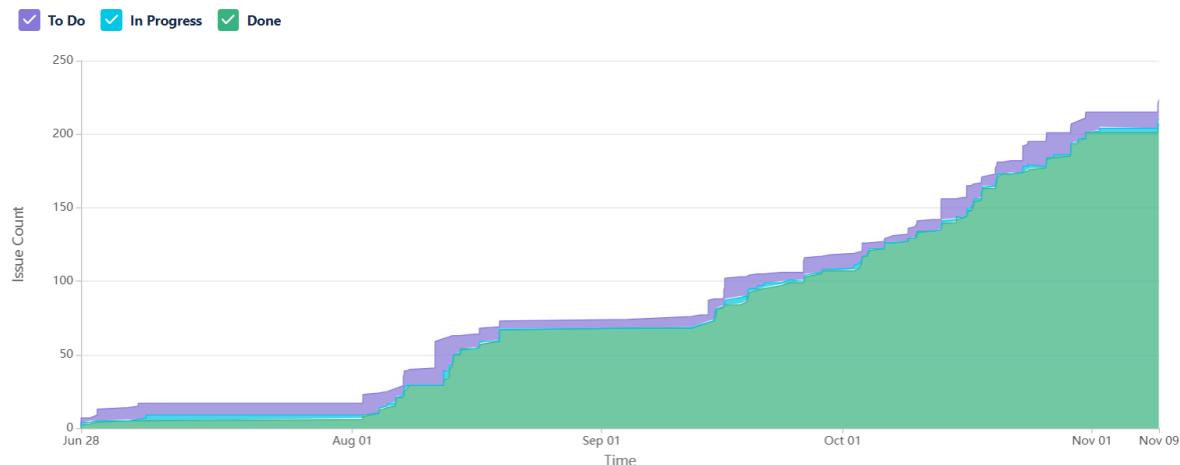
Column	Items
TO DO 5	Test cases (TESTING), Related Work (literature review) (REPORT), Conclusion (literature review) (REPORT), Format Sprint Planning (REPORT)
IN PROGRESS 3	Development Tools (REPORT), Methodology (REPORT), Usability test plan (TESTING)
DONE 6	Update ERD (DATABASE), Staff testing (TESTING), Fix RP report based on feedback (REPORT), Chapter 1 (REPORT)

11 days | Complete sprint

Search: Filter: KA Epic: None Insights View settings

Appendix L – Figure 2 JIRA Kanban Board

Appendix L: JIRA Graphs



Appendix L – Figure 3 JIRA Cumulative Flow Diagram for Coursework Wizard

Date - November 1st, 2024 - November 26th, 2024

Sprint goal - - Fix RP report - Final Report - All Diagrams - Staff Testing



Appendix L – Figure 4 JIRA Burn Up Chart for Sprint 9

Date - October 21st, 2024 - October 31st, 2024

Sprint goal - Perform student portal testing and complete the staff portal backend

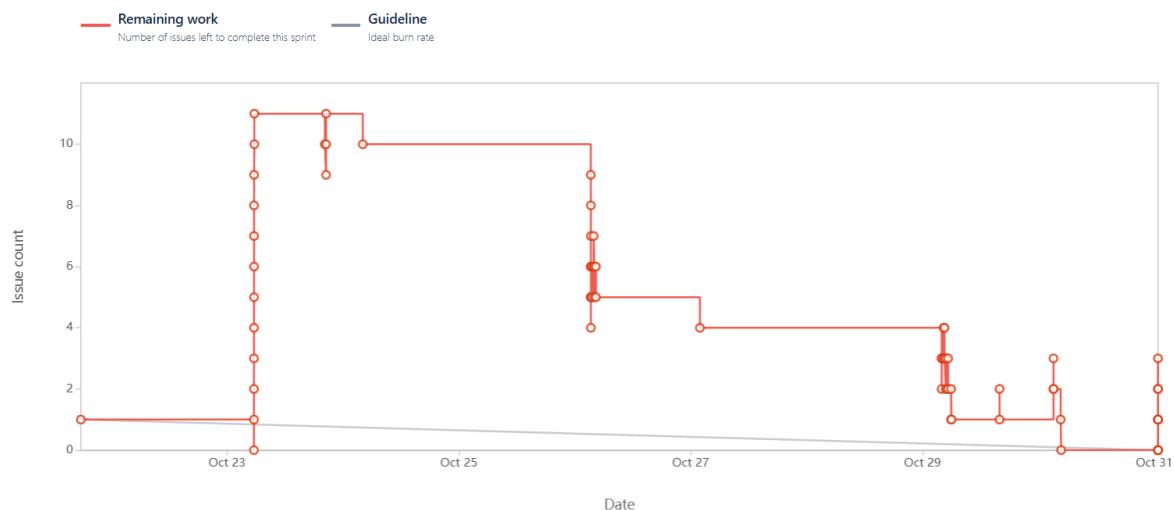


Appendix L – Figure 5 JIRA Burn Up Chart for Sprint 8

Appendix L: JIRA Graphs

Date - October 21st, 2024 - October 31st, 2024

Sprint goal - Perform student portal testing and complete the staff portal backend



Appendix L – Figure 6 JIRA Burn Down Chart for Sprint 8

Appendix M: Personas

Name: Daniel Tanner
Age: 20
Major: Computer Science
Goal: Manage coursework efficiently and stay organised



Key Characteristics

- High achiever
- Good at balancing multiple coursework
- Wants to maximise productivity
- Tech-savvy

"I have a lot on my plate, and I need a way to manage everything efficiently. Keeping track of my progress will help me stay on top."

Appendix M – Figure 1 Student Persona 1

Name: Haley Scott
Age: 31
Major: MBA
Goal: Balance work and studies



Key Characteristics

- Working post-grad student
- Highly motivated
- Struggles with balancing work and studies
- Time constraints

"Balancing work and MBA is tough. I need a reliable system to track my coursework deadlines and manage my tasks, so that I don't fall behind."

Appendix M – Figure 2 Student Persona 2

Name: Alex Gibbler

Age: 19

Major: BBA

Goal: Keep track of deadlines and task prioritisation



Key Characteristics

- Average student
- Forgets deadlines
- Starts working last moment
- Fails to prioritise tasks based on deadlines
- Moderately tech-savvy

"Sometimes I forget deadlines and lose marks because of penalties. I need to prioritise my tasks and keep track of coursework deadlines."

Appendix M – Figure 3 Student Persona 3

Name: Michelle Swift

Age: 22

Major: Psychology

Goal: Improve time management and reduce stress



Key Characteristics

- Struggling student
- Procrastinator
- Poor time management
- Misses deadlines all the time

"I worry about missing my deadlines. I need to keep track of everything so I can manage my time better and reduce stress."

Appendix M – Figure 4 Student Persona 4

Name: Ahmed Ehab
Age: 30
Major: PhD in Engineering
Goal: Be consistent in research and manage teaching



Key Characteristics

- Research assistant
- Part-time lecturer
- Organised but overloaded
- Works late nights
- Passionate researcher

"I enjoy my work, but I feel burnt out. It is difficult to research, teach and complete coursework at the same time. I need a system which can track deadlines and prioritise them."

Appendix M – Figure 5 Staff Persona 1

Name: Dr. Arnold Jacob
Age: 52
Department: Maths
Goal: Manage and track performance and progress



Key Characteristics

- Busy but organised
- Moderately tech-savvy
- Multiple classes and overloaded
- Has many students with late submissions

"I need an easy way to upload coursework and set deadlines. Tracking student progress visually will help me identify who needs support."

Appendix M – Figure 6 Student Persona 2

Name: Dr. Lisa Elvis
Age: 43
Department: History
Goal: Provide individual support to students



The portrait shows a woman with shoulder-length brown hair, smiling at the camera. She is wearing a dark-colored top.

Key Characteristics

- Supportive lecturer
- Prioritises student needs
- Learning technological tools
- Likes to provide feedback

"I want to support my students individually, so I need to see their progress clearly. Sending personalized feedback will help them improve."

Appendix M – Figure 7 Student Persona 3