Building Useable Software [34208, 34210, 34206, 36987]

Agile Software Engineering Project

Deadline: April 30th 2026, 16:00 UK time

1 Assignment Overview

In this coursework, you will work as a product development team to design, implement, test, and evaluate a software prototype using an Agile methodology.

The project consists of two sprints, but is submitted as a single integrated coursework submission.

Requirements, design, implementation, and testing are carried out iteratively within each sprint, reflecting modern Agile software engineering practice. You will be assessed on:

- The quality of your product
- The soundness of your engineering decisions
- Your use of Agile practices
- Your ability to reflect and adapt across sprints

Note: Marks are awarded only at the group level, but individual contribution evidence is required for fairness and moderation.

2 Team Construction

Talk to your peers and form a group of 4-5 people by following the next steps:

1. Login to Canvas
2. Navigate to the People section
3. Go to the BUS coursework tab, where you will find two sets of teams (BUS and BUS Dubai).

3 Project Context

Each team must select one out of the four challenge scenarios from this document and treat it as a product opportunity. This means your team is responsible for:

- Defining the problem you want to address
- Deciding which features matter most
- Making justified trade-offs within the available time.

There is no single correct solution. Different teams may make different decisions for the same challenge.

4 Challenges

The proposed challenges are intentionally open-ended. You are not expected to implement all suggested features; they are illustrative examples only. More information about the challenges is described in the Appendix.

4.1 Choosing a Challenge

You should choose a challenge that:

- Your group finds engaging and motivating,
- Allows you to define a clear and focused MVP (Minimum Viable Product),
- Supports meaningful Agile iteration within the time available.

Note: There is no advantage in choosing a more complex or technically ambitious challenge. Assessment is based on quality of reasoning, prioritisation, and iteration, not on feature quantity or technical complexity.

4.2 EXPECTATIONS for all Challenges

Regardless of the challenge you choose, your submission must demonstrate the following:

1. Personas
2. Product vision
3. Product Backlog and User stories (grouped by feature)
4. Sprint 1 (Weeks2-6)
   - Stories selected
   - Design (class diagram, sequence diagram)
   - Implementation of one core end-to-end feature derived from one or more user stories to demonstrate a working MVP. It can run it locally or online, demonstrate input - processing - output and show a clear connection to the acceptance criteria.
     Python script with:
     – accepts user input
     – performs logic
     – displays results
     Simple web page with:
     – HTML form
     – basic backend logic
     Console-based menu system
   - Testing explicitly mapped to the stories and acceptance criteria.
5. Sprint 2 (Weeks7-11): Same structure as Sprint 1 + prototype (video)
6. Individual contrition evidence and meeting logs

Note: "Core feature" means a main system functionality (not basic technical functions like login, registration, or logout).
"End-to-end" means input (user provides something) - processing (system does something meaningful) - output (user sees a result).
"Design models" are expected to be lightweight and evolving. You will not be penalised for changing or discarding models between sprints if this is justified.

5 Prototype

As evidence of your MVP, submit a short video (3-5 min) that demonstrates end-to-end functionality for three core features derived from the user stories (not basic technical functions like login, registration, or logout). (**Deadline:** April 30th at 16:00 UK time).

The video must:

- Show the system being executed (e.g., running application, interaction flow)
- Briefly explain how the implemented functionality satisfies the user story in the backlog and its acceptance criteria (voice-over or captions)

Additional guidance:

- The video may be recorded by one team member on behalf of the group.
- Presentation quality is not assessed; clarity of functionality is what matters.

Note: You can use Microsoft Stream or any other tool to record the video. Upload the created file under the **"Product video"** assignment on Canvas by the end of Sprint 2.

More information: Microsoft Stream

6 Marking Criteria

While the coursework is group-marked, evidence of individual contribution must be visible through user stories, Git history, and design artefact ownership.

Remember you are assessed on decision-making, prioritisation, iteration, and justification — not on feature quantity or technical sophistication.

7 Submission Format

One group member must submit a single ZIP file per group under the **"Agile portfolio"** assignment on Canvas by the end of Sprint 2. (**Deadline:** April 30th at 16:00 UK time).

Your product backlog and user stories are the primary evidence of your work.

Every user story marked as "Done" must be linked to concrete evidence, such as:

- A UML diagram
- Source code with corresponding Git commit references
- Acceptance test evidence (e.g. screenshots, logs, or test outputs).

Note: If a story is marked "Done" without evidence, it will not be treated as complete.

7.1 Required ZIP file Content

Your ZIP file must contain:

- Agile Product Portfolio as a PDF file
- Source code
- Git repo link, Git log exported as a text file (include date/time commit)

8 Appendix

8.1 Challenge 1: Net Zero - Supporting the UK's Transition to a Low-Carbon Society

Problem Context
The UK government has committed to achieving net-zero greenhouse gas emissions by 2050 as part of its response to climate change. Achieving this goal requires changes across multiple sectors, including energy use, transportation, housing, agriculture, and consumer behaviour. While national strategies and policies exist, individuals and communities often lack accessible tools to understand their environmental impact or take informed action.

This challenge asks you to design a software product that supports behaviour change, awareness, or decision-making related to emissions reduction and sustainability.

Users

- Members of the public
- Local communities or households
- Organisations or small businesses
- System administrators

Challenge Focus
Your product should address one clearly defined sustainability problem, such as:

- Supporting individuals in reducing their carbon footprint
- Improving recycling or resource reuse
- Encouraging sustainable transport or energy choices
- Raising awareness of environmental impact

8.2 Challenge 2: Remote Health Monitoring - Supporting Independent Living for Older Adults

Problem Context
The UK's ageing population presents increasing challenges for healthcare and social care systems. Older adults are at higher risk of falls, chronic conditions, and hospitalisation, and often require ongoing monitoring and support to maintain independence. At the same time, healthcare services face pressure to deliver high-quality care efficiently and sustainably.

This challenge asks you to design a software product that supports older adults, carers, or healthcare professionals through monitoring, guidance, or communication — without attempting to replace clinical decision-making.

Users

- Older adults
- Family members or informal carers
- Healthcare or social care professionals
- System administrators

Challenge Focus
Your product should address one specific problem, such as:

- Supporting medication adherence or daily routines
- Encouraging physical activity or rehabilitation
- Enabling basic health tracking or reporting
- Improving communication with carers or professionals

8.3 Challenge 3: Student Help - A University Student Support Platform

Problem Context
University students experience academic, personal, and wellbeing challenges that can negatively affect their studies and overall experience. Although universities offer support services, these are often fragmented, difficult to access, or reactive rather than proactive. This challenge asks you to design a software product that supports students in a meaningful, ethical, and accessible way.

Users

- Students
- University staff (e.g. academics, wellbeing teams)
- External professionals (e.g. counsellors or coaches)
- System administrators

Challenge Focus Your product should address one or two clearly defined problems, such as:

- supporting academic workload management
- improving access to wellbeing resources
- supporting social connection or engagement

8.4 Challenge 4: Green Campus - A Sustainable Campus Management Platform

Problem Context
University campuses contribute significantly to energy consumption, waste generation, and environmental impact. While sustainability initiatives exist, awareness, engagement, and coordinated monitoring are often limited. This challenge asks you to design a product that supports sustainable behaviours and decision-making on campus.

Users

- Students
- University staff (e.g. academics, researchers)
- Campus or facilities managers
- System administrators

Challenge Focus
Your product should address one or two sustainability challenges, such as:

- reducing energy usage awareness
- improving waste management practices
- encouraging sustainable transport choices
- increasing engagement with sustainability initiatives

9 Important Notes

Feedback: 15 working days from the final submission date on April 30th 2026 at 16:00 on Canvas.

Drop-in sessions: eaching Assistants (TAs) play two complementary roles in this module:

- **Customer Role:** TAs act as representative users/customers who provide formative feedback on your product ideas, user stories, backlog, and prototype.
- **Support Role:** TAs help clarify coursework expectations, Agile practices, and technical or conceptual questions.

Your engagement with TAs is an essential part of the Agile learning process. You are required to attend:

- At least two meetings between weeks 3 and 6 before the end of Sprint 1.
- At least two meetings in Weeks 7–10 before the end of Sprint 2.

Each meeting will last approximately 15–20 minutes and will be conducted online. Make sure to update your Agile portfolio before each meeting since the TAs will report your progress to us.

From Week 3 onwards, weekly drop-in sessions will be available. Each group will be assigned one TA who will act as the primary customer for your product-based project across the term, ensuring continuity of feedback.

Detailed instructions on how to book sessions will be provided on Canvas and Microsoft Teams.

We strongly encourage you to use these sessions to:

- Validate your product vision and user stories
- Obtain feedback on your backlog and priorities
- Discuss design ideas and prototype progress
- Raise any questions or concerns about the coursework

Regular engagement with your TA will help you stay on track and improve the quality of your final submission.

Late Submission Policy: Late submissions will be permitted for two working days, with a penalty of 5% per day. No submissions will be allowed following that, unless you have received an extension from CS Wellbeing for valid extenuating circumstances. (Submission Policy)

Plagiarism and Generative AI: Generative AI is a rapidly developing technology, and there is still much to learn about using tools effectively and ethically. Because of this, the university is committed to protecting academic integrity, ensuring that the work submitted for evaluation remains the student's. The University Code of Practice for Academic Integrity sets out what plagiarism is and provides examples of academic misconduct. (Plagiarism Policy) and (GenAI Policy)

References

[1] Student mental health in England: Statistics, policy, and guidance

[2] Higher Education Sustainability Initiative