7032CEM

# Assignment Brief Overview

# Agenda

# Deadline

## When do I need to submit?

**06/08/2025 at 6:00 PM (BST)**

**(6th of June 2025; 18:00 GMT+1)**

# 4 Overview

Design and develop **strictly** with the aid of a LLM, a functional secure system.
The assignment consists of the following parts:

- **A functional prototype** of a secure online system
- **An individual report**
  - **must contain correct links** to GitHub and video report
- Any additional files

**The weighting is 100% including all elements.**

# Practical Part

# 6 Practical Part Brief

- Creative SkillZ LLC — creating "PixelForge Nexus" secure online system
- using any language/system of your choice with the aid of an LLM
- The prototype should maintain the following functionality:

| | |
|---|---|
| **Core Functionality** | Project Management, team assignment, basic asset & resource management |
| **Privelage Separation** | Admin, Project lead, Developer |
| **Login Security** | Robust login system, MFA implementation |
| **Proposed Pages** | Sign In/Register, User dashboard, Account Settings, Project Details Page |

# 7 Core Functionality

## Project Management

- **Admins Add/Remove Projects**
  - **with name, description, and an initial deadline**
  - **Can mark projects as "Completed"**
- **All users can View a list of active projects**

## Team Assignment

- **Project Leads can assign developers to their specific projects.**
- **Developers can see a list of projects they are currently assigned to.**

## Basic Asset & Resource Management

- **Admins and Project Leads can upload general project documents associated with a project**
  - **e.g., design docs, meeting notes**
- **All users assigned to a project can view its uploaded documents.**

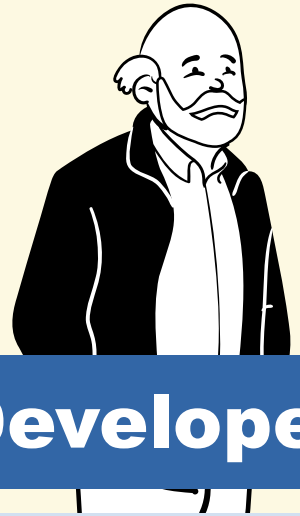
# 8 Privilege Separation

## Admin

- Can add/remove projects
- manage all user accounts (create, edit roles)
- upload documents for any project.

## Project Lead

- assign developers to their projects
- upload documents for their projects.



## Developer

- view projects they are assigned to and access associated project documents.

# 9 Login security

## Robust Login System

- Essential for secure password hashing and storage (e.g., using bcrypt).

## MFA Implementation

- Optional but highly recommended
- Adding Multi-Factor Authentication would significantly boost security.

# 10 Proposed Pages

# 11 Practical Element Information

**System Design**
(Demonstrated in Video)



**Security testing and analysis**
(Demonstrated in Video)

**System Development**



**Formal Methods**

# 12 Assessment Marking Criteria

| | **System Design**<br>Weighting**: 35%**<br>**(also Demonstrated in Video)** | **Security Testing and Analysis**<br>Weighting: **35%**<br>**(also Demonstrated in Video)** | **System Development**<br>Weighting: **20%** | **Formal Methods**<br>Weighting: **10%** |
|---|---|---|---|---|
| 80 to 100% | Marks above 80 will be awarded for going above and beyond the requirements for a distinction and demonstrate and innovative approach and insight.<br><br>A system design of professional standards, which is optimized for the given scenario.<br><br>The system design demonstrates a deep understanding of secure design principles.<br><br>The system design includes a comprehensive threat model that identifies and prioritizes potential security risks.<br><br>The system design includes, clear access control mechanisms, comprehensive data encryption strategies.<br><br>Detailed documentation illustrates how security principles are applied throughout the system design | Marks above 80 will be awarded for going above and beyond the requirements for a distinction and demonstrate and innovative approach and insight.<br><br>Professional standard security analysis and testing followed by security measures that significantly improve the overall system security and functioning. The entire security process is comprehensively documented.<br><br>The report includes comprehensive test cases and results, including code scanning reports | Marks above 80 will be awarded for going above and beyond the requirements for a distinction and demonstrate and innovative approach and insight.<br><br>System development is professionally executed, fully complying with all the respective methods and standards.<br><br>The codebase displays exceptional code quality and adherence to secure coding practices.<br><br>The documentation of the process is thorough, including detailed explanations of secure coding practices. | Marks above 80 will be awarded for going above and beyond the requirements for a distinction and demonstrate and innovative approach and insight.<br><br>Formal modelling and verification processes are professionally applied to the system covering and examining all the potential issues.<br><br>The report demonstrates a deep understanding of formal methods, with minimal errors in their application.<br><br>The process is fully documented. |

# 13 Assessment Marking Criteria

| | **System Design**<br>Weighting: **35%**<br>**(also Demonstrated in Video)** | **Security Testing and Analysis**<br>Weighting: **35%**<br>**(also Demonstrated in Video)** | **System Development**<br>Weighting: **20%** | **Formal Methods**<br>Weighting: **10%** |
|---|---|---|---|---|
| 70 to 79% | Detailed system design fully based on the secure design methodologies and standards.<br><br>Thorough and well-justified documentation.<br>The system design is well structured and display a clear understanding of security principles and a fully detailed threat model.<br><br>Most security controls are appropriately integrated into the design, with effective strategies for reducing threat. | An extensive security analysis and testing has been conducted providing mitigation techniques for the identified security issues.<br>The testing process covers key aspects of security.<br>Test cases and results provide a detailed overview of the security testing process.<br>Thorough and well-justified Documentation | System development fully complies with the secure development methods and standards.<br><br>The codebase demonstrates a high degree of adherence to secure coding practices, with minimal security vulnerabilities.<br><br>Thorough and well-justified documentation. | Formal modelling and verification processes fully examine the functioning and<br>security issues of the system<br><br>Formal methods are effectively used to analyse and address security concerns, with minimal errors.<br>The formal analysis is very well justified in the report. |
| 60 to 69% | System design incorporates an extensive range of principles which are very well discussed in the report.<br>The system design shows awareness of security concerns but may lack detail in threat modelling.<br>Most security controls are present but need further clarification. | A medium range of security analysis and testing techniques have been used providing effective solution for the detected problems. Process is very well described in the report. | System development fully complies with the proposed design, but partially with the secure development methods and standards.<br>Process is very well described in the report. | Formal modelling and verification processes extensively examine a wide range of functioning and security issues. The formal analysis is very well described in the report |
| 50 to 59% | System design incorporates the principles required for the proper functioning and security of the system but required more details.<br>Adequate discussion in the report. | A small range of security analysis and testing techniques have been used providing the respective solutions.<br>Test cases and results are provided but may lack completeness.<br>Adequate discussion in the report | System development considers basic functioning and limited security of the system with good explanation of the development stage.<br>The system development phase has basic security measures in | Behavioural model presents the basic functioning of the system incorporating security aspects as well. Verification examines the basic security issues. Adequate discussion in the report. |

# 14 Assessment Marking Criteria

| | **System Design**<br>Weighting: **35%**<br>**(also Demonstrated in Video)** | **Security Testing and Analysis**<br>Weighting: **35%**<br>**(also Demonstrated in Video)** | **System Development**<br>Weighting: **20%** | **Formal Methods**<br>Weighting: **10%** |
|---|---|---|---|---|
| | | | place, but there are notable areas where secure coding practices could be improved. | |
| 40 to 49% | System design meets the basic requirements with lack of details. Short discussion in the report. Security controls are present, but it is generic or incomplete. | Very limited security analysis and testing of the system with very few solutions provided. Test cases and results are limited in scope. Short discussion in the report. | System development complies with the requirement of a basic design. Short discussion in the report. | A very basic attempt of modelling the behaviour of the system and then verify it. Short discussion in the report. |
| Fail<br>30, 35% | No system design built or incomplete design provided. which is severely deficient in security aspects | There is no evidence of security testing or analysis provided or very poor system security and testing carried out with no recommended solutions. | No system developed or incomplete implementation of the system. No attention to system security | No or very poor application of formal methods to the system analysis. |
| Fail<br>0 to 29% | The system design is entirely devoid of security considerations and outcome not met or no system design built | No attempt or no system security testing carried . | Outcome not met or no system developed | No attempt or no application of formal methods to the system analysis. |

# Deliverables

## What needs to be submitted?

**a written report (.docx file)**

**(GitHub + Video links included inside)**

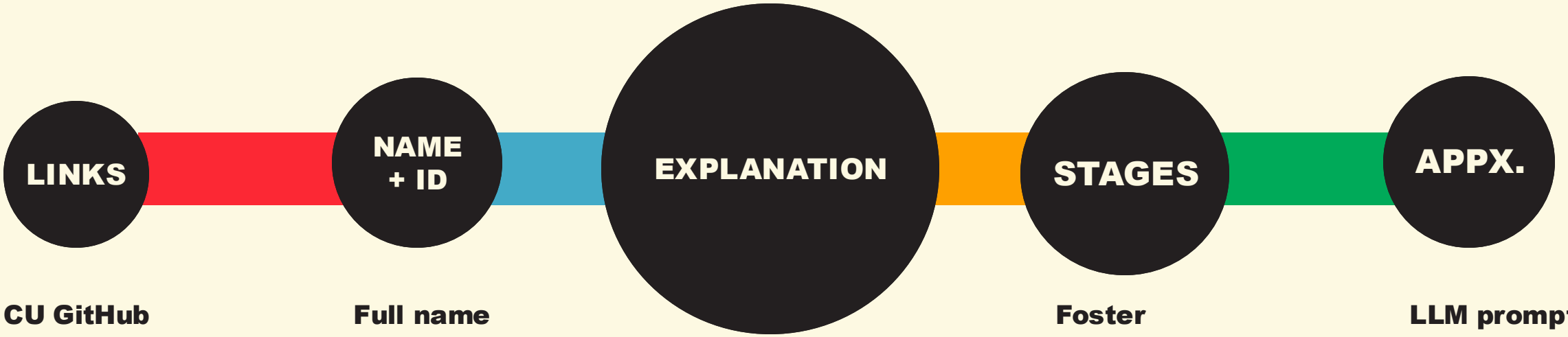
# 16 Deliverables

| Deliverable | Type |
| --- | --- |
| Individual Report | MS Word / .docx |
| GitHub Repository Link | Part of the 7032CEM-2526MAYSEP organisation |
| Video Link | Hosted on Microsoft OneDrive |

# 17 About Individual Report

- At the end of the module, you will be expected to submit an individual report.
- This must be entirely your own work.
- The report is based on the prototype that you have completed and should report on the development process and the evaluation of the prototype system.
- You should also identify any assumptions that you have made.

# 18 Report - Indicative evidence




**CU GitHub repository**

**Microsoft OneDrive video**

**Full name**

**Student ID**

**Explanation of the methods and techniques followed**

**Foster holistically superior methodologies**

**LLM prompt history; listing**

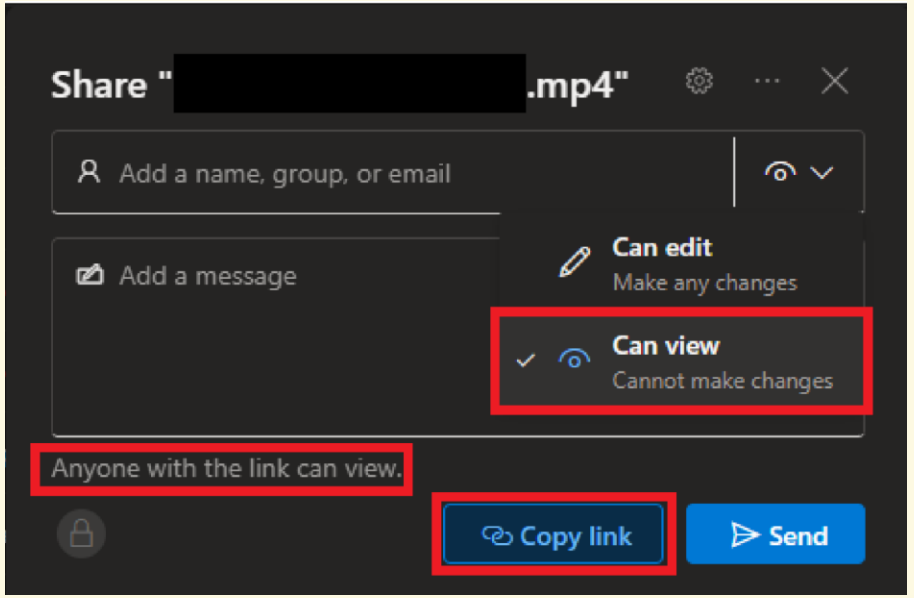
**Any other resources used (APA style referencing!)**

# 19 About GitHub Repository

- **Must use the Coventry University GitHub**
  - **7032CEM-2526MAYSEP organisation**
- **Name format "7032CEM-2526MAYSEP_YourStudent ID"**
- **Repository visibility = private**
- **Must add module staff to your repository as collaborators**
  - **Mia Mohac – ad9235**
  - **Antal Goldschmidt – ab2216**

# 20 About Video Report

- **5 minutes** or less
- **Shows:**
  - **output** of the coursework
    - highlighting the significant aspects of the work
  - use **voice-overs and/or text overlays**
- **To record:**
  - OBS or Microsoft Teams
- **uploaded to Microsoft OneDrive**



# Platform

## Where do I need to submit?

**Aula > Journey > Assignments**

**(Make sure you have access to it well before deadline)**

# Submission

**Deadline: 06/08/2025 at 6PM**
**Platform: Aula > Journey > Assignments**
**File types:**
- **MS Word (.docx) for report**
  - **+ CU GitHub repository link**
  - **+ Microsoft OneDrive video link**

# Any Questions?

**Mia Mohac – ad9235@coventry.ac.uk or**

**Antal Goldschmidt – gab2216@coventry.ac.uk**

# 24 GitHub Repo Demo

**There is a brief online which guides us step by step on how to create a repository,**

**Navigate to**
**Aula > Journey > Materials > GitHub Guide**