School of Computing (SOC)
ST2515 Secure Coding

2025/2026 Semester 1
Assignment

Instructions and Guidelines:

1. This is a group assignment(2 per group by default) to be handed in by **11th Aug 2025, 9 a.m**.

2. Its weightage is 30% of the overall result. For the assignment, it will be graded weighted 80 marks on the report and 20 marks on the class presentation.

3. Students are required to submit a softcopy of the project (report and presentation slides) via the course website in PoliteMall.

4. Students are required to submit the academic integrity form

5. The presentation will be conducted on the week of **11th Aug 2025** during lesson Students are expected to explain their work during the presentation.

6. **No marks will be awarded**, if the work is copied or you have allowed others to copy your work. Warning: Plagiarism means passing off as one's own the ideas, works, writings, etc., which belong to another person. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turning it in as your own, even if you would have the permission of that person. Plagiarism is a serious offence and disciplinary action will be taken against you. If you are guilty of plagiarism, you may fail all modules in the semester, or even be liable for expulsion.

7. 50% of the marks will be deducted for assignments that are received within ONE (1) calendar day after the submission deadline. No marks will be given thereafter. Exceptions to this policy will be given to students with valid LOA on medical or compassionate grounds. Students in such cases will need to inform the lecturer as soon as reasonably possible. Students are not to assume on their own that their deadline has been extended.

8. Prepare the Declaration of Academic Integrity (SOC) form. Your Assignment will NOT be marked if the form is not submitted. The form is available in BrightSpace under Assignments > Declaration of Academic Integrity (SOC) form.

1.   Objectives

The goal of this assignment is for you to apply your code analyzing and web penetration skills for secure coding on a web project. A web project with source codes is provided for you to analyze. You can deploy and test the web application and review the source codes and find out the security vulnerabilities of the program. In the report, identify the web pages and the codes which constitute a security vulnerability. Suggest fixes for the flaws, providing code snippets as necessary in the report.

You are to submit a report indicating how the flaw can be exploited, where the flaw is found (web page name and codes) and suggestion of how it can be resolved.

For the presentation, you are to demonstrate how the vulnerability can exploited by a malicious hacker through running the web app on your laptop. A realistic demo showcasing the impact severity on the exploit will get higher marks. Explain also how the vulnerability can be solved.

2.   Report (80 marks)

Choose **FIVE (5)** categories from the topics below and **analyse TWO (2) vulnerabilities (1 detailed, 1 brief) per category**.

Note: Detailed differs from brief in that detailed requires example of how the vulnerability can be exploited while brief does not

Reference: https://owasp.org/Top10/

A01 Broken Access Control
A02 Cryptographic Failures
A03 Injection
A04 Insecure Design
A05 Security Misconfiguration
A06 Vulnerable and Outdated Components
A07 Identification and Authentication Failures
A08 Software and Data Integrity Failures
A09 Security Logging and Monitoring Failures
A10 Server Side Request Forgery (SSRF)
Others- Not classified as top 10 but can be found in OWASP

When evaluating the **security of the website**, please address all of the following elements:

- Type of flaw detected
- How it can be exploited specifically (**Only for detailed**)
- Identify code snippet exposing the vulnerability (if applicable)
- Recommendation
- Code snippet to solve the vulnerability
- Tools and methods you employed to test the web system.

Your grade for this assignment will be based on the thoroughness of your discussion of ALL of the elements above.

Pdf containing an example of how you can write the detailed finding can be found in the same assignment folder.

3.   Presentation (20 marks)

For the presentation, please address the following elements:

- Demo of how a malicious user can exploit your system for **ONE** category(topic) you are assigned
- How the exploit can be addressed/solved
- Summary and what you have learnt through this assignment

- End -