CAPSTONE PROJECT REGISTER

Class: Duration time: from …./…/…. To …/… /…..

(*) Profession: Information Assurance Specialty: <ES> ☐ <IS> ☐ <JS> ☐

(*) Kinds of person make registers: Lecturer ☒ Students ☐

1. Register information for supervisor (if have)

	Full name	Phone	E-Mail	Title
Supervisor 1	Hồ Hải	0903 369 970	haih5@fe.edu.vn	Mr
Supervisor 2				

2. Register information for students (if have)

	Full name	Student code	Phone	E-mail	Role in Group
Student 1	Võ Minh Khánh	SE140781	0368 848 460	khanhvmse140781@fpt.edu.vn	Leader
Student 2	Trần Đăng Khoa	SE140934	0856 073 843	khoatdse140934@fpt.edu.vn	Member
Student 3	Nguyễn Quốc Bửu	SE140936	0911 004 045	buunqse140936@fpt.edu.vn	Member
Student 4					Member

3. Register content of Capstone Project

(*) 3.1. Capstone Project name:

English: **Building an auto-grading web application to simulate web vulnerabilities for Web security laboratory**

Vietnamese: **Xây dựng ứng dụng web mô phỏng và chấm điểm tự động cho thực hành bảo mật web.**

Abbreviation:

- ……

(*) 3.2. Main proposal content (including result and product)

a) Theory and practice (document):

Introduction Overview

Securing web applications has become an essential part of the development cycle for IT engineers, especially security and software engineers. A survey identified 'application performance' and 'functionality and features as the most common success metrics within software development (67% and 62% respectively), and four of five (79%) respondents said 'secure code'. Moreover, four in five (81%) managers were more likely to hire talent with secure coding skills; nine of ten managers and developers surveyed said coding securely was challenging.

It is important for students to have a solid knowledge not only in theory but also in practical when they are still in university. Therefore, a suitable environment is needed for students to practice without any limitation and injuring the real world.

There are many places such as CTF events, HackTheBox, Tryhackme, or PortSwigger Academy for strengthening their skills. But they are also having their own disadvantages: expensive for students; instructors are not able to track their students' activities, especially in CTF events where players can share the flag; some CTFs cannot focus on enough categories; instructors can't customize the lesson due to the platform's dependence and so on.

In many universities, students have to set up the lab environment on their own devices. It helps remove the platform dependence that the instructor can ask their student to set up the environment for their lesson. However, the environment can be different in each lab that will cost the student much time to set up. Moreover, each student has to prepare their hardware to adapt to all lab requirements. It can be costly and time-consuming. The last con is that after the student submits their lab, the instructor has to manually evaluate the result.

In this research, a platform manages multiple vulnerable websites inside where students can practice and their activities are tracked. In each lab lesson, the lecturer can open the lab automatically then the student can do their work in separate environments. Additionally, instructors can customize the lab by injecting triggers in their source code then upload to the server.

Objective of the project:

- Building an auto-grading web application to simulate web vulnerabilities for Web security laboratory

b) Program:

- An auto-grading web application

Tools/Platform

- ReactJS
- NodeJS
- Python
- MongoDB
- Nginx
- Docker
- IDE
- Discord
- Jira

Hardware: 02 PCs:

- Processor – i7
- Hard Disk – 20 GB
- Memory – 8 GB RAM

c) Other products:

-……

4. Other comment (propose all relative thing if have)

Proposed Tasks for students:

- Student 1:
  - Design architecture of the website
  - Research techniques for multi-instance web
  - Developing tool to interact with docker
- Student 2:
  - Research techniques for web backend API
  - Developing web backend API
- Student 3: develop all the frontend features
  - Research technique and best practice pattern for frontend project
  - Developing UI
  - Support backend

Tp. Hồ Chí Minh, date 15/11/2021

Supervisor (If have)	**On behalf of Registers**
(Sign and full name)	*(Sign and full name)*

Hồ Hải