**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

**Examination Tools applying Block Chain Technology**

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| **Capstone Project code** | ExamTool |

- Ho Chi Minh City, **11 September 2018** -

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Definitions, Acronyms, and Abbreviations

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| **Name** | **Definition** |
| L.O | Learning Outcome |
| MVC | Model View Controller |
| API | Application Programming Interface |
| IDE | Integrated development environment |
| GUI | Graphic user interface |
| ERD | Entity relationship diagram |
| I/O | Input/Output |

Table 1: Definitions, Acronyms, and Abbreviations

# A. Introduction

1. Project Information

* Project name: **Examination Tools applying Block Chain Technology**
* Project Code: **ExamTool**
* Product Type: **Web Application, Desktop Application**
* Start Date: **September 11, 2018**
* End Date: **December 13, 2018**

1. Introduction

In this document, we introduce a solution for FPT University Examination system. The current system have some problems like it does not guarantee the quality of the result and it may be used by students to exploit vulnerabilities for cheating. Based on our researches and analysis, we proposed a new solution for FPT University Examination system.

Chúng tôi sẽ tổ chức câu hỏi, đề thi theo dạng Learning Outcome và áp dụng công nghệ block-chain. Learning Outcome. Learning outcomes are statements that describe the knowledge or skills students should acquire by the end of a particular assignment, class, course, or program, and help students understand why that knowledge and those skills will be useful to them. Khi đề thi được tạo ra dựa trên L.O thì nó sẽ đảm bảo cho việc chứa toàn bộ nội dung của một môn học. Bên cạnh bảo đảm nội dung của đề thi, chúng tôi cũng sẽ bảo đảm đề thi và kết quả đề thi được bảo mật bằng cách sử dụng block-chain. Block-chain là một công nghệ cho phép truyền tải dữ liệu một cách an toàn dựa vào hệ thống mã hoá vô cùng phức tạp. Chúng tôi sẽ sử dụng block-chain vào quá trình duyệt đề để đảm bảo đề thi sẽ không bị chỉnh sửa. (Câu cú còn lắp bắp nên sửa lại s cho đọc ok nhất nha T.T)

1. Current Situation

Two weeks before the exam start, staff will create test for each subject. The current question management system is manage questions by chapters. Depending on the teacher's requirements, the staff will randomly select questions based on the topic or chapter. Such random selection like that can not guarantee the test for being covered with the entire knowledge of the subject. After generated, lecture of the subject will be notified and review the topic. During review process, lectures can remove or edit any questions in the test but the system could not update those modifications automatically in the question bank. Therefore, the reviewer has to edit the questions once over again in next time. If nothing is wrong, the test will be kept confidential until the exam. The reviewer has to sign in a document to confirm that the test can be used for the upcoming exam.

Upon exam arrival, students will enter the examination room, open the current examination software to take the exam. Before entering the room, students can turn on fraudulent applications and hide it. The examiners cannot know what students are doing outside the room so if the software is not in the blacklist it will not be destroyed by the exam software and students can use actions such as using shortcut to trigger an event to capture a test page, or to black out a self-contained search text message, or, more importantly, to use TeamViewer to complete the test. Such behaviors will help students pass the exam easily and not evaluate the real ability of students. After the exam finish, the exam software can add those cheating applications to the blacklist, students will find another application and so on, cannot prevent students from cheating during the course.

1. Problem Definition

* The topic is divided by topic and chapter, not cover all the content of a course.
* The question updating is repeated and not synchronized.
* Cannot prevent student from cheating during examinations

1. Proposed Solution

**5.1. Feature Functions**

* **Random question base on L.O:** Lecture will select L.O first, then all questions will be random base on them.
* **Update question in question bank:** After leader edit questions in the exam, that questions in question bank will be updated.
* **Anti-cheating:** We will prevent unnecessary actions and all processes in the list which was inputted, will be killed.

**5.2. Values and Challenges Value**

**Values**

* Provide better question bank management
* Generate exam that can cover all content of the course
* Kill processes which is not allowed while doing an exam.

**Challenges**

* Many import types is supported.
* Reduce cheating on exam.

1. Functional Requirement

Functional requirements of the system are listed as below:

**Test Department**

* Manage question bank
* Support import many questions with different types
* Support generate examination test from the question banks.

**Student**

* Support doing an exam
* Get result of exam when submit exam to server has problem

**System Handler**

* Anti-cheating
* Apply block chain technology to match the result and examinee in process.

1. Role and Responsibility

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| --- | --- | --- | --- | --- |
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Table 2: Role and Responsibilities