 

CAPSTONE PROJECT REGISTER

Class: Duration time: from ..…….../2022 To ..….…./2022

(\*) Profession: <Software Engineer> Specialty: <ES> <IS> (\*) Kinds of person make registers: Lecturer Students

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1. Register information for supervisor (if have)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Full name** | **Phone** | **E-Mail** | **Title** |
| Supervisor 1 | Nguyễn Đức Lợi | 091.674.3939 | Loind9@fe.edu.vn | Mr. |
| Supervisor 2 |  |  |  |  |

1. Register information for students (if have)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Full name** | **Student code** | **Phone** | **E-mail** | **Role in Group** |
| Student 1 | Lê Hồng Nguyên | SE130342 | 0934092425 | nguyenlhse130342@fpt.edu.vn | Leader |
| Student 2 | Nguyễn Quốc Trường Huy | Se140296 | 0706749673 | huynqtse140296@fpt.edu.vn | Member |
| Student 3 | Hoang Tuan Anh | Se140335 | 0797991707 | anhhtse140335@fpt.edu.vn | Member |
| Student 4 |  |  |  |  |  |

1. Register content of Capstone Project (\*) 3.1. Capstone Project name:

English: Design and implement a management system for a chain of hotels and motels using IoT technology

Vietnamese: Thiết kế và thực hiện hệ thống quản lý cho chuỗi khách sạn, nhà nghỉ bằng công nghệ IoT

Abbreviation: DIMS

- Context:

In today's era when people's economic life is improved and they really focus on activities such as travel, experience, private life. Especially young people today, the demand for renting hotels and motels is very high. They are a group of customers who can access high technology very quickly, often they want the procedures of room rental and check-out to be quick, convenient and private, discreet and comfortable. At the same time, the owners of hotels and motels also want to have more customers access to their services. For the manager of a series of hotel chains, motels they also have to implement a smart management system to easily track all activities there.

The hotel and motel chain management system applies technology, including functions such as booking, check-in, check-out, payment, budget management and statistics, history tracking ..

* Users through the user app to choose a room, choose a reservation date and time, room type, number of rooms, receive a promotional code (if any), make a reservation deposit, make payment, cancel the reservation, change the date and time,. ... After successful registration, the system sends a confirmation message and QC code to the user to open / close the door lock, the code is only valid according to the time the user booked the room.
* The receptionist (hotel staff, motel) uses the image processing system to scan the citizen identification code / national identity card / driver's license, it will get the necessary information of the customer such as: full name, date of birth, permanent address, citizen identification number to manually enter in the form to avoid errors and long waits due to staff typing
* Managers (hotel owners or motel owners) can authorize reception staff to access the system, can monitor employee visits, timekeeping, and monitor tenant information. Make detailed spreadsheets and summary tables of income and expenditure from room rental activities, look up the history of information and make graphs. Perform other administrative activities,...

In the context of more and more motels and hotels, finding a source of customers is extremely difficult. That's why we need a difference to be able to create something new and experience for our customers. Just like for customers, finding affordable, safe, comfortable, private and transparent accommodation has always been a difficult problem to solve. DIMS was born not only to solve these basic difficulties but also to give customers a new experience in renting rooms.

**Objectives:**

+ Learn about image processing algorithms, perform image scanning to output text

+ Research and implement electronic circuits, signal processing circuits

+ Research on QR Code, how to create and decode it, how to get an API to compare results.

+ Study the electronic key and the built-in QR code to make it a complete key

+ Build WebSite to store data

+ Build a WebSite client so that customers can access the UniLive ecosystem (Search, Booking, Payment, Account Management, Complaints, Comments, Apply Promotions, Spending Statistics, .. ...)

+ Build a partner WebSite to support partners to install and manage their properties (install room information, room statistics (revenue per room), revenue statistics (day, month, year), create promotions forever,…)

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

* 1. **Theory and practice (document):**
     + Software development process: we apply Agile Methodology typically using Jira to support
     + Document and requirements specification : We use UML 2.4 Specification to describe it .
     + System uses 3-tier architecture (Client - Server - Database).
       - Server-side technique: asp .Net technology, …
       - Client-side technique : React, c/c++ ...
       - Database : SQL Server, firebase
     + Code and version management : GitHub .
       - Using HTTP and RestAPI.
     + Using microprocessor / microcontroller to build a central management system. Realize the image processing circuit and electronic door lock system
     + Complete electronic key capable of receiving and sending data to the server and decoding the QR code.
     + **References:**

+<https://reactjs.org/docs/getting-started.html>

+<https://docs.microsoft.com/enus/dotnet/api/system.net.mail.smtpclient.send?view=net-6.0>

+<https://github.com/fustyles/Arduino/tree/master/ESP32-CAM_QRCode_Recognition/ESP32QRCodeReader_Page>

+<https://randomnerdtutorials.com/esp32-http-get-post-arduino/>

* 1. **Program:**

Build a system that supports the following key features:

+ Generate and decode QR code.

+ Integrated into the lock so that the key is capable of receiving data from the server and decoding QR code.

+ A Website User for users to book rooms:

- Log in sign up

- Edit personal information, verify identity.

- Search, view rooms, view comments, save rooms

- Booking, payment.

- Your room, change room code, cancel room, support service, ....

+ A Website Admin for investors to manage their assets:

- Edit the number of rooms, room rates.

- Revenue statistics (day, month, year).

- Customer statistics.

- Generate promo code.

+ Apply online payment method to User website.

* 1. **Other products:**

+ All functions must operate efficiently.

+ QR code will be sent to customers after they pay for the booked room.

+ Must verify identity before booking.

+ The room can be canceled if the booking time is less than 1 hour or can be canceled through the support service.

1. **Other comment (propose all relative thing if have)**

- The first student will study about electronic keys and identify QR codes, then will assist the second student in coding the website.

- The second student will study how to store, retrieve data and build a Server.

- The 3rd student will study interfaces, drawing charts, and filters.

- Team coordination to perfect the product

# Supervisor (If have)

*(Sign and full name)*

HCM, date / /

# On behalf of Registers

*(Sign and full name)*