

**MINISTRY OF EDUCATION AND TRAINING  
CAN THO UNIVERSITY  
COLLEGE OF INFORMATION AND COMMUNICATION TECHNOLOGY**



**GRADUATION THESIS  
BACHELOR OF ENGINEERING IN  
INFORMATION TECHNOLOGY  
(HIGH-QUALITY PROGRAM)**

**GRADE 10 ADMISSION MANAGEMENT  
SYSTEM FOR CAN THO CITY**

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Student ID: B2105686  
Class: 2021-2025 (K47)  
Advisor: Dr. Thai Minh Tuan**

**Can Tho, 12/2025**



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## **ABSTRACT**

This thesis focuses on designing an online grade 10 admission system applicable to multiple platforms (web, mobile) to synchronize the admission system of provinces and cities in Vietnam after the merger on July 1, 2025. This thesis aims to address the drawbacks of the current admission systems in three old provinces and cities (Can Tho City, Hau Giang Province, Soc Trang Province) and to develop an integrated system adaptable to the new Can Tho City. The thesis content includes four main subsystems: a subsystem for managing admission records; a subsystem for managing candidate exam information; a subsystem for managing scores and announcing admission results; and a subsystem for managing and controlling exam status. The thesis has used MySQL and Java Spring Boot for creating the backend; HTML, CSS, JavaScript, and React framework for web interface; Dart and Flutter for mobile interface, and some APIs from Google (reCAPTCHA API and Google Maps API) to connect between the frontend and backend. The thesis has completed all the basic and mandatory functions of an online admission system, and has many extended features to support user groups in the process of searching and processing information related to the admission period. This thesis has been advised, evaluated, and commented on by some officials working in secondary schools, high schools in Can Tho City, and in the Department of Education and Training, so it will suit the needs of the majority of users of the system.



# TABLE OF CONTENTS

<b>TABLE OF CONTENTS.....</b>	<b>i</b>
<b>LIST OF TABLES .....</b>	<b>iii</b>
<b>LIST OF FIGURES .....</b>	<b>v</b>
<b>CHAPTER 1: INTRODUCTION.....</b>	<b>1</b>
1.1. Overview of research situation .....	1
1.2. The reason for choosing the topic .....	1
1.3. The purposes of the thesis .....	2
1.4. Research methods.....	2
1.5. The subjects of the thesis .....	2
1.6. The scopes of the thesis.....	2
<b>CHAPTER 2: BACKGROUND .....</b>	<b>3</b>
2.1. Client–Server model.....	3
2.2. Model – View – Controller (MVC) .....	3
2.3. MySQL.....	3
2.4. Java and Spring Framework.....	3
2.5. React.....	4
2.6. Dart and Flutter .....	4
<b>CHAPTER 3: REQUIREMENTS ANALYSIS.....</b>	<b>5</b>
3.1. The general system flow .....	5
3.2. User groups .....	6
3.3. List of functions .....	9
3.4. Operating platforms .....	10
3.5. Detailed description of functions .....	11
<b>CHAPTER 4: SYSTEM DESIGN.....</b>	<b>30</b>
4.1. Architecture model of the system .....	30
4.2. Data model of the system.....	31
<b>CHAPTER 5: SYSTEM IMPLEMENTATION .....</b>	<b>37</b>
5.1. Web application .....	37
5.1.1. Functions for Guest users.....	37
5.1.2. Functions for Administrators .....	42
5.1.3. Functions for Admissions Council Officials.....	45
5.1.4. Functions for Secondary School Officials .....	49
5.1.5. Functions for High School Officials .....	54
5.1.6. Functions for Students .....	59
5.2. Mobile application .....	63

5.2.1. Functions for Guest users .....	63
5.2.2. Functions for Administrators .....	69
5.2.3. Functions for Admissions Council Officials.....	72
5.2.4. Functions for Secondary School Officials .....	76
5.2.5. Functions for High School Officials .....	78
5.2.6. Functions for Students.....	81
<b>CHAPTER 6: CONCLUSION.....</b>	<b>83</b>
6.1. Conclusion.....	83
6.2. Future work .....	83
<b>REFERENCES .....</b>	<b>84</b>

## LIST OF TABLES

Table 3.1. The list of functions .....	9
Table 3.2. Description of use case GUEST-01 .....	11
Table 3.3. Description of use case GUEST-02 .....	11
Table 3.4. Description of use case GUEST-03 .....	11
Table 3.5. Description of use case ALL-01 .....	12
Table 3.6. Description of use case ALL-02 .....	13
Table 3.7. Description of use case ALL-03 .....	13
Table 3.8. Description of use case ADMIN-01 .....	13
Table 3.9. Description of use case ADMIN-02 .....	14
Table 3.10. Description of use case ADMIN-03 .....	14
Table 3.11. Description of use case ADMIN-04 .....	14
Table 3.12. Description of use case ADMIN-05 .....	15
Table 3.13. Description of use case ADMIN-06 .....	15
Table 3.14. Description of use case ADMIN-07 .....	15
Table 3.15. Description of use case ADMIN-08 .....	16
Table 3.16. Description of use case SGDDT-01.....	16
Table 3.17. Description of use case SGDDT-02.....	17
Table 3.18. Description of use case SGDDT-03.....	17
Table 3.19. Description of use case SGDDT-04.....	17
Table 3.20. Description of use case SGDDT-05.....	18
Table 3.21. Description of use case SGDDT-06.....	18
Table 3.22. Description of use case SGDDT-07.....	18
Table 3.23. Description of use case SGDDT-08.....	19
Table 3.24. Description of use case SGDDT-09.....	19
Table 3.25. Description of use case SGDDT-10.....	19
Table 3.26. Description of use case THCS-01 .....	20
Table 3.27. Description of use case THCS-02 .....	20
Table 3.28. Description of use case THCS-03 .....	20
Table 3.29. Description of use case THCS-04 .....	21
Table 3.30. Description of use case THCS-05 .....	21
Table 3.31. Description of use case THCS-06 .....	21
Table 3.32. Description of use case THCS-07 .....	22
Table 3.33. Description of use case THCS-08 .....	22
Table 3.34. Description of use case THCS-09 .....	22
Table 3.35. Description of use case THCS-10 .....	23
Table 3.36. Description of use case THCS-11 .....	23
Table 3.37. Description of use case THCS-12 .....	23
Table 3.38. Description of use case THPT-01 .....	24
Table 3.39. Description of use case THPT-02 .....	24
Table 3.40. Description of use case THPT-03 .....	24

Table 3.41. Description of use case THPT-04 .....	25
Table 3.42. Description of use case THPT-05 .....	25
Table 3.43. Description of use case THPT-06 .....	25
Table 3.44. Description of use case THPT-07 .....	26
Table 3.45. Description of use case THPT-08 .....	26
Table 3.46. Description of use case THPT-09 .....	26
Table 3.47. Description of use case THPT-10 .....	27
Table 3.48. Description of use case THPT-11 .....	27
Table 3.49. Description of use case THPT-12 .....	27
Table 3.50. Description of use case THPT-13 .....	28
Table 3.51. Description of use case THPT-14 .....	28
Table 3.52. Description of use case HS-01 .....	28
Table 3.53. Description of use case HS-02 .....	29
Table 3.54. Description of use case HS-03 .....	29
Table 3.55. Description of use case HS-04 .....	29
Table 4.1. The overview information of entities/tables in the system .....	31
Table 4.2. Table DAN_TOC .....	32
Table 4.3. Table DTKK .....	32
Table 4.4. Table DTKK_CHUYEN .....	32
Table 4.5. Table DTUT .....	32
Table 4.6. Table HOC_SINH .....	32
Table 4.7. Table KET_QUA THI .....	33
Table 4.8. Table KQ_HOC_TAP .....	33
Table 4.9. Table LOAI_TK .....	34
Table 4.10. Table LOP_CHUYEN .....	34
Table 4.11. Table LOP_CHUYEN_THPT .....	34
Table 4.12. Table NGUYEN_VONG .....	34
Table 4.13. Table PHUONG_XA .....	35
Table 4.14. Table TAI_KHOAN .....	35
Table 4.15. Table THI_SINH .....	35
Table 4.16. Table TRANG_THAI_CSDL .....	35
Table 4.17. Table TRUONG_THCS .....	36
Table 4.18. Table TRUONG_THPT .....	36

## LIST OF FIGURES

Figure 3.1. Use Case Diagram for Guest users .....	6
Figure 3.2. Use Case Diagram for general functions of logged-in users .....	6
Figure 3.3. Use Case Diagram for Administrators.....	7
Figure 3.4. Use Case Diagram for Admissions Council Officials .....	7
Figure 3.5. Use Case Diagram for Secondary School Officials .....	8
Figure 3.6. Use Case Diagram for High School Officials .....	8
Figure 3.7. Use Case Diagram for Students.....	9
Figure 4.1. Architecture model of the system.....	30
Figure 4.2. Entity Relationship Diagram of the system (simplified version) .....	31
Figure 5.1. The homepage web interface .....	37
Figure 5.2. The footer of the web interface.....	38
Figure 5.3. Search Admission Result interface.....	38
Figure 5.4. The Search Result interface with only one student .....	39
Figure 5.5. The Search Result page with more than one student.....	39
Figure 5.6. Admission Numbers interface .....	40
Figure 5.7. Admission Information of High School for the Gifted .....	40
Figure 5.8. Admission Documents interface.....	41
Figure 5.9. Login interface.....	41
Figure 5.10. Administrator's homepage .....	42
Figure 5.11. Account Management homepage .....	42
Figure 5.12. Confirmation dialog for deleting an account.....	43
Figure 5.13. Add Account page .....	43
Figure 5.14. Dialog for importing accounts .....	44
Figure 5.15. Reset password dialog .....	45
Figure 5.16. Change Password page .....	45
Figure 5.17. Admissions Council Official's homepage .....	46
Figure 5.18. Student Management homepage.....	46
Figure 5.19. Update Student's Score page .....	47
Figure 5.20. Import Student's Score .....	47
Figure 5.21. State Management homepage .....	48
Figure 5.22. Update State dialogs (for Boolean and Timestamp states).....	48
Figure 5.23. Secondary School Official's homepage .....	49
Figure 5.24. Student Management homepage.....	49
Figure 5.25. Detailed Information page .....	50
Figure 5.26. Update Students page .....	50
Figure 5.27. Confirmation dialog to delete a student.....	51
Figure 5.28. Initiate Student Profile page .....	51
Figure 5.29. Add Student Profile page.....	52
Figure 5.30. Import Initial Student Profile dialog.....	52
Figure 5.31. Import Student Profile dialog .....	53

Figure 5.32. Delete All Students dialog .....	53
Figure 5.33. High School Official's homepage .....	54
Figure 5.34. Profile Management homepage .....	55
Figure 5.35. Detailed Information page .....	55
Figure 5.36. Update Student page .....	56
Figure 5.37. Confirmation dialog to delete a student.....	56
Figure 5.38. Add Student Profile page.....	57
Figure 5.39. Import Student Profile dialog .....	57
Figure 5.40. Confirmation dialog for deleting all students .....	58
Figure 5.41. Candidate Management page.....	59
Figure 5.42. Student's homepage .....	59
Figure 5.43. Student Information homepage.....	60
Figure 5.44. Update Information page .....	60
Figure 5.45. The Admission Form after exporting .....	61
Figure 5.46. Admission Result page (with successful message) .....	61
Figure 5.47. Admission Result page (with failure message) .....	62
Figure 5.48. Welcome page and homepage of the mobile application .....	63
Figure 5.49. Search Admission Result interface of the mobile application.....	64
Figure 5.50. The result interface after typing information.....	65
Figure 5.51. Admission Numbers interface of the mobile application .....	66
Figure 5.52. Admission Documents interface of the mobile application.....	67
Figure 5.53. Login interface of the mobile application.....	68
Figure 5.54. Administrator Homepage.....	69
Figure 5.55. Account Management page .....	70
Figure 5.56. Change Password page .....	71
Figure 5.57. Admissions Council Official's homepage .....	72
Figure 5.58. Candidate Management and Update Score page .....	73
Figure 5.59. State Management page .....	74
Figure 5.60. Update State dialog.....	75
Figure 5.61. Timestamp modifying (date and time) .....	75
Figure 5.62. Secondary School Official's homepage.....	76
Figure 5.63. Student Management and Student Detailed Information page .....	77
Figure 5.64. High School Official's homepage .....	78
Figure 5.65. Student Management and Detailed Information page .....	79
Figure 5.66. Candidate Management page.....	80
Figure 5.67. Student's homepage .....	81
Figure 5.68. Student Information page.....	82

# **CHAPTER 1: INTRODUCTION**

## **1.1. Overview of research situation**

Since 2018, to create more favorable conditions for secondary schools, high schools, parents, and students in Can Tho City (before the merger), Can Tho Department of Education and Training has deployed a common online enrollment system for all schools in the area on the web platform [1]. Through actual use, the system has shown its effectiveness in supporting online enrollment registration, as well as helping parents and students have an overview of the number of candidates registering for high schools in the city, and it is still being used until this year's enrollment period (school year 2025-2026). However, the application still has some limitations, such as: The application design is still quite sketchy, there are no distinctive signs to identify the enrollment system of Can Tho City when compared with other admission systems of other provinces and cities; The application interface has not been fully built; Difficult to locate and track content, because all information is contained on a single page.

In addition, since July 1, 2025, Vietnam has started operating a 2-level local government and implementing the merger of provinces and cities. In detail, the new Can Tho City includes old Can Tho City, Hau Giang Province, and Soc Trang Province [2]. Before the merger, each locality had a separate grade 10 enrollment support system that served the specific requirements of that province/city. However, after the merger, enrollment needs to be implemented uniformly on a common system and ensure good integration of elements of the systems corresponding to the old provinces, cities, and in accordance with the enrollment regulations of the new Can Tho City.

## **1.2. The reason for choosing the topic**

From the problem mentioned in 1.1, building an application to help administrators, officials, teachers, and students in the new Can Tho City (after the merger) synchronize enrollment data between old provinces and cities and make it more convenient to manipulate and manage information related to the grade 10 high school entrance exam is extremely urgent.

This topic was established as a valuable suggestion to contribute to improving and developing the enrollment system with a typical image of the locality, not only meeting the requirements for storing enrollment records on the online platform of the Department of Education and Training of Can Tho City, but also creating an intuitive, easy-to-follow interface for user groups, parents and students, and helping to synchronize data of the enrollment system of the old provinces/cities before merging into a unified, synchronized system.

### **1.3. The purposes of the thesis**

The purposes of the thesis are to design an application to support high school admissions for grade 10 students in Can Tho City on cross-platform (web platform and mobile application), helping to manage the list of registered students, manage candidates, exam scores, and announce exam scores conveniently and effectively, helping to improve the experience and efficiency of teachers, parents, students and other user groups.

### **1.4. Research methods**

The main approach of the topic is Theoretical research - Application development - Practical operation, with detailed content as follows:

- Search and collect information on the grade 10 admission regulations of provinces and cities before the merger, and discover the current web application of the grade 10 admission system of Can Tho City before the merger.
- Build detailed specifications of the requirements to be met with the software and functions of the system, and build the design framework of the system.
- Build interface and program web applications, mobile applications.
- Test and fix errors, evaluate the system.
- Operate the system in practice, adjust, and perfect the system.

### **1.5. The subjects of the thesis**

The research object of the thesis is the Grade 10 Admission Management System, with 6 main user groups: guests, administrators, officials of the Department of Education and Training, officials in charge at secondary schools, officials in charge at high schools, and students. This application has the following main subsystems: a subsystem for managing admission records; a subsystem for managing candidate exam information; a subsystem for managing scores and announcing admission results; and a subsystem for managing and controlling exam status.

### **1.6. The scopes of the thesis**

The topic focuses on building interfaces and operations to track and register student records (including personal information, academic results, admission wishes), operations to support high schools (assigning registration numbers, arranging exam rooms), and interfaces to view results for students on the web interface, including determining exam results according to the number of registered quotas. The application only supports admission to grade 10 at public high schools in Can Tho City (admission by a common examination) and does not support admission to private schools and other special schools in the area.

## CHAPTER 2: BACKGROUND

### 2.1. Client–Server model

The Client–Server model is an architectural pattern in which a client sends service requests and a server processes them and returns responses. The client typically handles the user interface and lightweight logic, while the server provides resources, executes business operations, or manages centralized data. Communication occurs through standard network protocols such as HTTP or TCP, enabling loosely coupled but well-coordinated systems. This model supports scalability, maintainability, and clear separation of responsibilities. However, the server may become a performance bottleneck or a single point of failure if not designed with load balancing or redundancy. The client–server model remains the foundation of most web applications, cloud services, and modern distributed systems [3] [4].

### 2.2. Model – View – Controller (MVC)

The Model – View – Controller (MVC) architecture separates an application into three independent components. The Model manages data and business logic, the View presents data to the user, and the Controller handles incoming requests and coordinates interactions between the Model and the View. This separation enhances maintainability, scalability, and testability. MVC also allows multiple Views to present the same Model and supports applications with complex interactions. It serves as the basis for many web and desktop frameworks, such as ASP.NET MVC, Spring MVC, and Ruby on Rails. Nonetheless, in large-scale applications, Controllers may grow overly complex if not structured carefully [5] [6].

### 2.3. MySQL

MySQL is an open-source relational database management system (RDBMS) based on the Structured Query Language (SQL). It follows a client–server architecture, where the MySQL Server manages data storage and processing, while client tools issue SQL commands. MySQL supports core relational features such as tables, indexes, foreign keys, and ACID transactions, making it suitable for enterprise-grade applications. Its performance, reliability, and ease of deployment have contributed to widespread adoption across web development, data-driven applications, and cloud platforms. MySQL also provides replication, partitioning, and high-availability configurations for large-scale systems. It is commonly used together with languages and frameworks such as Java, PHP, and Node.js, and is a standard component of the LAMP stack [7] [8].

### 2.4. Java and Spring Framework

Java is a general-purpose, object-oriented programming language designed for portability, reliability, and security through its “write once, run anywhere” philosophy. It provides a rich standard library and a robust runtime environment,

making it widely used in enterprise systems, web applications, mobile development, and distributed architectures. The Spring Framework builds on Java to offer a comprehensive ecosystem for developing modular and maintainable applications. Its core features include Inversion of Control (IoC), Dependency Injection (DI), and aspect-oriented programming, which improve code organization and testability. Spring also provides specialized modules such as Spring MVC for web development, Spring Data for database integration, and Spring Boot for rapid application setup and deployment. Together, Java and Spring constitute one of the most widely adopted stacks in enterprise and cloud-native development [9] [10].

## 2.5. React

React is an open-source JavaScript library designed for building dynamic and component-based user interfaces. It adopts a declarative programming style and manages UI rendering through a virtual DOM, which improves performance by minimizing direct DOM manipulation. In React, applications are composed of reusable components that encapsulate structure, behavior, and state, enhancing maintainability and scalability. State management can be handled internally or through external libraries such as Redux or Zustand for more complex applications. React also provides hooks - functional APIs for handling state, lifecycle logic, and side effects - to simplify component development. Its ecosystem includes companion tools such as React Router for navigation and Next.js for server-side rendering. React has become one of the most widely adopted front-end technologies in modern web development [11] [12].

## 2.6. Dart and Flutter

Dart is a modern, object-oriented programming language developed by Google, optimized for building user interfaces with strong support for asynchronous programming. Flutter, also developed by Google, is a cross-platform UI framework that uses Dart to build native-compiled applications for mobile, web, and desktop from a single codebase. Flutter's architecture centers on widgets - immutable UI components that describe visual structure and behavior. It uses a high-performance rendering engine (Skia) to draw every pixel on screen, enabling consistent design across platforms without relying on platform-specific UI components. The framework supports fast development through features like hot reload and provides a rich ecosystem of customizable widgets. Flutter is widely used for mobile app development due to its performance, flexibility, and fast time-to-market [13] [14].

## **CHAPTER 3: REQUIREMENTS ANALYSIS**

### **3.1. The general system flow**

When accessing the application, guest users will be able to observe preliminary information about the number of days remaining until the exam, the schedule, and time of important events, and the expected exam schedule on the homepage interface. At the Admission Number interface, users can view the list of public high schools in the area along with the number of quotas and the number of registered applications. At the Document interface, users can view documents related to the exam issued by the Department of Education and Training and the City People's Committee. Users can go to the Login interface to use functions specific to each user group. After logging in, depending on the account type, users will be redirected to the appropriate interface and will only be allowed to perform the tasks that the user group is allowed to perform, specifically:

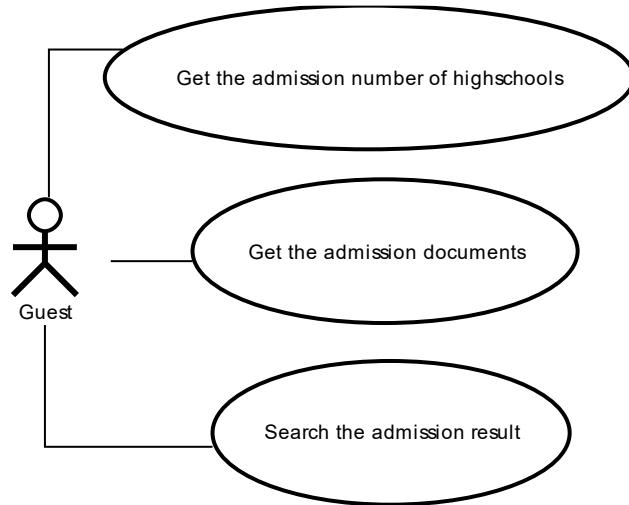
- + Administrators can manage created accounts, add and delete accounts. Administrators can also export the list of accounts and export the default password to give to the staff in charge of secondary and high schools, and can also re-issue passwords to users when they forget their passwords.
- + Admissions Council Officials can monitor the list of candidates, update scores for candidates, perform the admission process (by virtual filtering method) to give official admission results. In addition, staff can also lock or unlock exam statuses, such as the status allowing application registration, the status allowing updating registration numbers and exam rooms, the status allowing updating exam results, and the status announcing admission results to match reality.
- + Secondary School Officials can view the list of registered students, create new profiles for students (can create initial profiles with some basic information or create detailed profiles), and assign default accounts to students (by manually entering on the interface or importing Excel files to create multiple new student profiles and accounts at the same time), update, and delete profiles. In addition, the staff in charge can also export the list of student profiles and export the list of default accounts and passwords for students to access the system.
- + High School Officials can manage the list of profiles of students from other provinces taking exams at the corresponding secondary school (such as adding or importing profiles from Excel, updating, deleting profiles), and export the list of student profiles from other provinces and export the default accounts and passwords of students. In addition, the officer in charge can also view the list of candidates taking the exam at the school (those who register for the highest choice at the corresponding high school) and export the list of candidates taking the exam with information about the registration number and exam room of the candidates. Also, they can export the admission results of candidates participating in their high school.

- + Students can view their personal profile information and update the appropriate content, and can also view their own exam results when the Department of Education and Training announces the results.

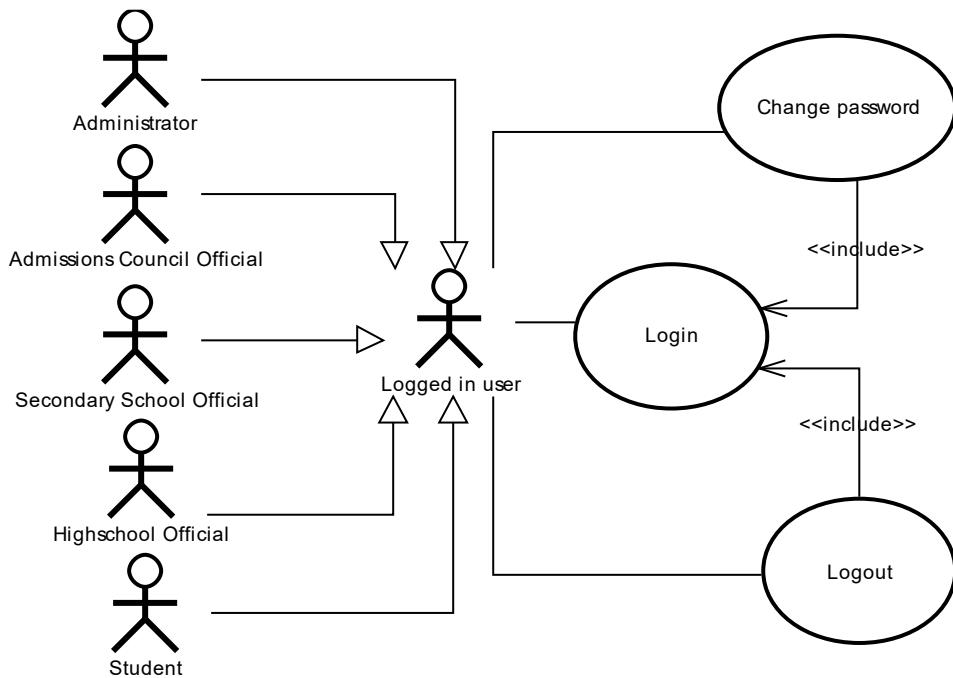
### 3.2. User groups

This application has six main user groups, including Guest users, Administrators, Admissions Council Officials (in the Department of Education and Training), Secondary School Officials, High School Officials, and Students.

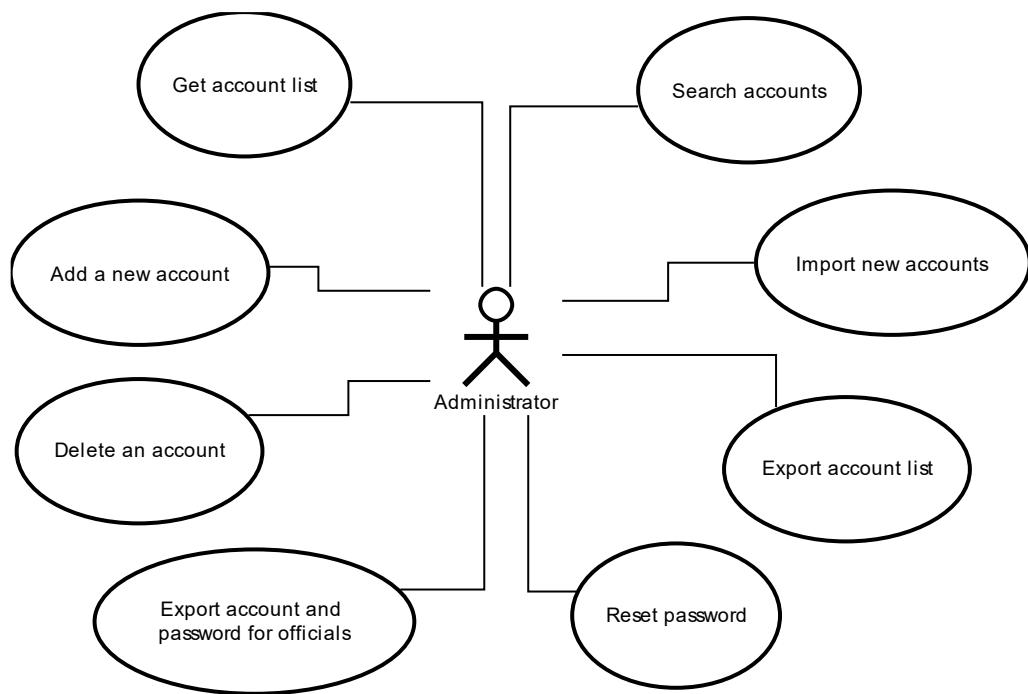
The relationship between users and functions is displayed from Figure 3.1 to Figure 3.7 below.



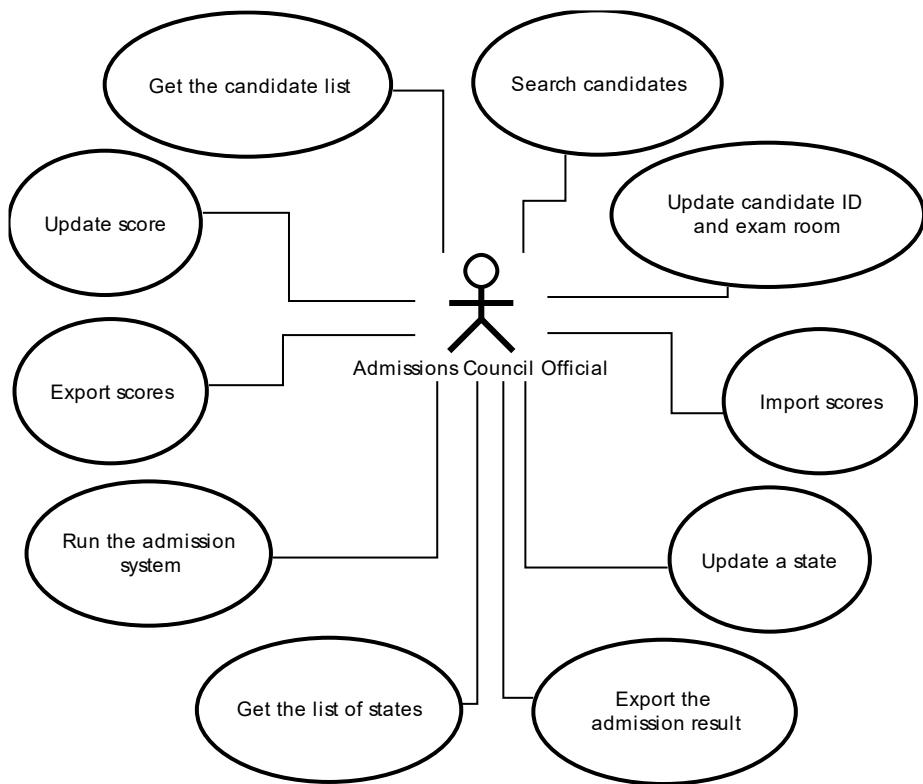
*Figure 3.1. Use Case Diagram for Guest users*



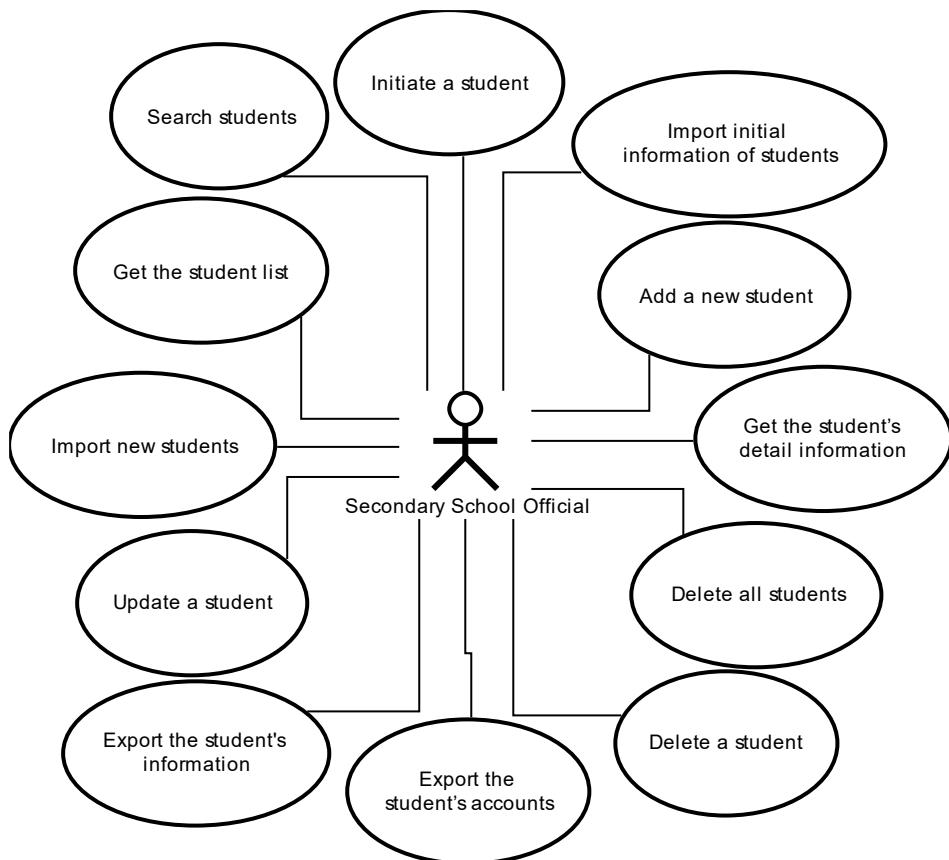
*Figure 3.2. Use Case Diagram for general functions of logged-in users*



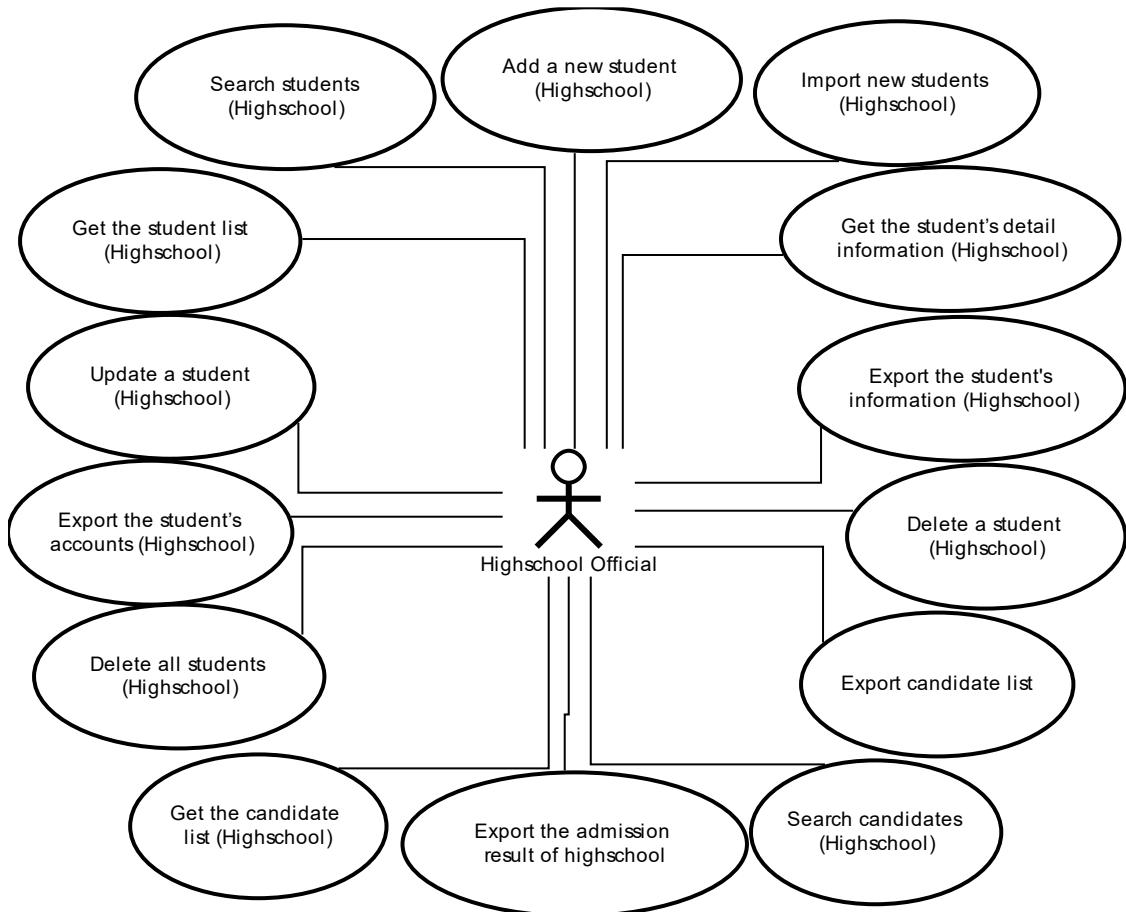
*Figure 3.3. Use Case Diagram for Administrators*



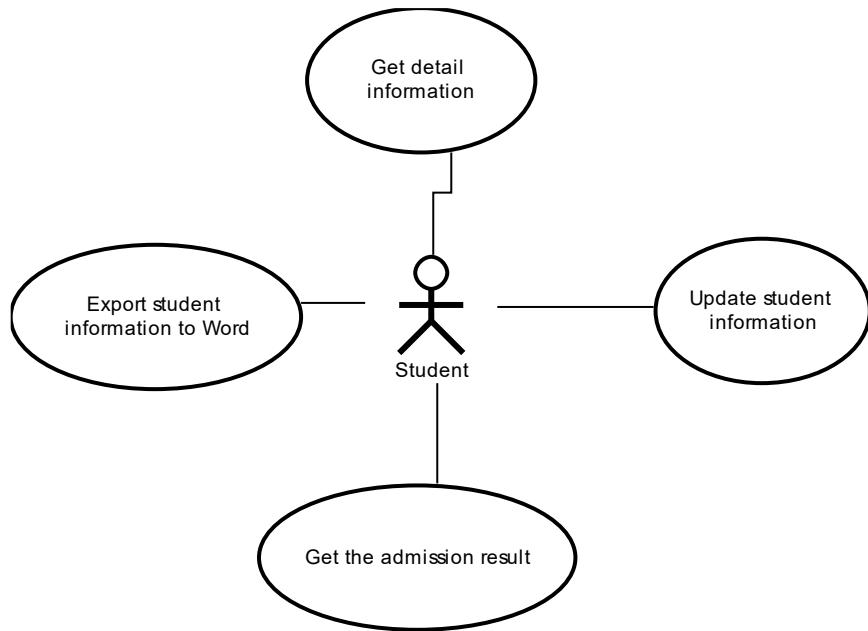
*Figure 3.4. Use Case Diagram for Admissions Council Officials*



*Figure 3.5. Use Case Diagram for Secondary School Officials*



*Figure 3.6. Use Case Diagram for High School Officials*



*Figure 3.7. Use Case Diagram for Students*

### 3.3. List of functions

The list of functions of the system is shown in Table 3.1 below. There are 54 functions, which are 54 use cases and they will be mentioned in part 3.5 below.

*Table 3.1. The list of functions*

#	Function ID	Function name
1	GUEST-01	Get the admission numbers of high schools
2	GUEST-02	Get the admission documents
3	GUEST-03	Search the admission result
4	ALL-01	Login
5	ALL-02	Change password
6	ALL-03	Logout
7	ADMIN-01	Get account list
8	ADMIN-02	Search accounts
9	ADMIN-03	Add a new account
10	ADMIN-04	Import new accounts
11	ADMIN-05	Delete an account
12	ADMIN-06	Export account list
13	ADMIN-07	Export account and password for officials
14	ADMIN-08	Reset password
15	SGDDT-01	Get the candidate list
16	SGDDT-02	Search candidates
17	SGDDT-03	Update candidate ID and exam room
18	SGDDT-04	Update score
19	SGDDT-05	Import scores
20	SGDDT-06	Export scores

21	SGDDT-07	Run the admission system
22	SGDDT-08	Export the admission result
23	SGDDT-09	Get the list of states
24	SGDDT-10	Update a state
25	THCS-01	Get the student list
26	THCS-02	Search students
27	THCS-03	Initiate a student
28	THCS-04	Import the initial information of students
29	THCS-05	Add a new student
30	THCS-06	Import new students
31	THCS-07	Get the student's detailed information
32	THCS-08	Update a student
33	THCS-09	Export the student's information
34	THCS-10	Export the student's accounts
35	THCS-11	Delete a student
36	THCS-12	Delete all students
37	THPT-01	Get the student list
38	THPT-02	Search students
39	THPT-03	Add a new student
40	THPT-04	Import new students
41	THPT-05	Get the student's detailed information
42	THPT-06	Update a student
43	THPT-07	Export the student's information
44	THPT-08	Export the student's accounts
45	THPT-09	Delete a student
46	THPT-10	Delete all students
47	THPT-11	Get the candidate list
48	THPT-12	Search candidates
49	THPT-13	Export candidate list
50	THPT-14	Export the admission result of high school
51	HS-01	Get detailed information
52	HS-02	Update student information
53	HS-03	Export student information to Word
54	HS-04	Get the admission result

### 3.4. Operating platforms

With the web application, the system is compatible with current versions of Google Chrome, Firefox, and Microsoft Edge browsers.

With the mobile application, after deployment, the system is compatible with current versions of Android operating systems.

### 3.5. Detailed description of functions

The detailed description of each function is provided in each table from Table 3.2 to Table 3.55 below.

Each table from Table 3.2 to Table 3.4 represents the detailed information of each use case for guest users, with 3 use cases, including getting the admission numbers of high schools in Can Tho City, getting the admission documents, and searching the admission result.

*Table 3.2. Description of use case GUEST-01*

GUEST-01	Get the admission numbers of high schools
<b>Description</b>	Guests see the list of high schools with the admission number of each high school provided.
<b>Actors</b>	Guests
<b>Pre-condition</b>	None
<b>Result</b>	Guests see the list of high schools and the admission numbers.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Guests click on the “Admission number” button.</li> <li>2. The system retrieves the high school list and their admission number and provides it to the guests.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.3. Description of use case GUEST-02*

GUEST-02	Get the admission documents
<b>Description</b>	Guests see the list of documents related to the admission process.
<b>Actors</b>	Guests
<b>Pre-condition</b>	None
<b>Result</b>	Guests see the detailed documents.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Guests click on the “Admission Documents” button.</li> <li>2. The system retrieves the document list, then provides it to the guests.</li> <li>3. Guests choose one of those documents to see the details.</li> <li>4. The system shows the document details.</li> <li>5. Users can see the document details or open it in a new tab.</li> </ol>
<b>Alternative flow</b>	None.
<b>Exception flow</b>	None

*Table 3.4. Description of use case GUEST-03*

GUEST-03	Search the admission result
<b>Description</b>	Guests search for admission results.
<b>Actors</b>	Guests

<b>Pre-condition</b>	None
<b>Result</b>	Guests see the admission result of a student.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Guests click on the “Search result” button, the system redirects to the search page, and retrieves the high school list.</li> <li>2. Guests choose the high school, search type, keyword, and click on the reCAPTCHA button, then click “Search”.</li> <li>3. The system shows the search result (see Alternative flow and Exception flow).</li> </ol>
<b>Alternative flow</b>	<ol style="list-style-type: none"> <li>3.1. If there is only 1 student in the result list, it will show the full result of this student for guests.</li> <li>3.2. If there is more than 1 student in the result list, it will show the student list. Users need to choose one of them to see the detailed result, like Alternative flow 3.1.</li> </ol>
<b>Exception flow</b>	<ol style="list-style-type: none"> <li>3.1. If there are no students in the result list, it will show a message for guests to notify them that no student matches their search requirements.</li> <li>3.2. If guests have not clicked on the reCAPTCHA button, it will show a warning message to notify guests that they must verify before searching.</li> </ol>

Each table from Table 3.5 to Table 3.7 represents the detailed information of each use case for all users who have accounts, with 3 use cases, including logging in to the system, changing password, and logging out.

*Table 3.5. Description of use case ALL-01*

<b>ALL-01</b>	<b>Login</b>
<b>Description</b>	Guests log in to the system using the username and password provided by the officials/administrators.
<b>Actors</b>	Guests
<b>Pre-condition</b>	None
<b>Result</b>	Guests log in successfully and go to the homepage of their role.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Guests click on the “Login” button, and the system redirects to the login page.</li> <li>2. Guests type their username, password, click on the reCAPTCHA button to verify, and click the “Login” button.</li> <li>3. The system checks the user’s account and shows a successful message, then redirects users to the suitable page with their role.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	<ol style="list-style-type: none"> <li>3.1. If the username and password do not match, it will show an error message.</li> <li>3.2. If guests have not clicked on the reCAPTCHA button, it</li> </ol>

	will show a warning message to notify guests that they must verify before searching.
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*Table 3.6. Description of use case ALL-02*

<b>ALL-02</b>	<b>Change password</b>
<b>Description</b>	Users change their current password.
<b>Actors</b>	Users (Admins, Admissions Council Officials, Secondary School Officials, High School Officials, Students)
<b>Pre-condition</b>	Users have logged in (complete use case ALL-01).
<b>Result</b>	Users change their passwords successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Users click on the “Change password” button. The system redirects to the Change Password page.</li> <li>2. Users type their current password, their new password, and confirm their new password before clicking on “Save”.</li> <li>3. The system shows a successful message for users.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	3.1. If the current password does not match with the actual current password, or the new password is the same as the current password, or the confirmed new password is not match the new password, it will show an error message for users.

*Table 3.7. Description of use case ALL-03*

<b>ALL-03</b>	<b>Logout</b>
<b>Description</b>	Users log out of the system.
<b>Actors</b>	Users (Admins, Admissions Council Officials, Secondary School Officials, High School Officials, Students)
<b>Pre-condition</b>	Users have logged in (complete use case ALL-01).
<b>Result</b>	Users log out successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Users click on the “Logout” button, then the system shows a dialog for users to confirm.</li> <li>2. Users click on the confirm button, then the system redirects users to the homepage.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If users click on the “Undo” button, it will close the dialog.

Each table from Table 3.8 to Table 3.15 represents the detailed information of each use case for administrators, with 8 use cases. Administrators will work on the Account Management subsystem with all use cases related to retrieving and managing accounts for all users in the admission system.

*Table 3.8. Description of use case ADMIN-01*

<b>ADMIN-01</b>	<b>Get account list</b>
<b>Description</b>	Admins see the full account list in the system.

<b>Actors</b>	Admins
<b>Pre-condition</b>	Admins have logged in.
<b>Result</b>	Admins see the list of accounts with overview information.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Admins click on the “Account management” button.</li> <li>2. The system retrieves the account list and shows it in the interface for admins.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.9. Description of use case ADMIN-02*

<b>ADMIN-02</b>	<b>Search accounts</b>
<b>Description</b>	Admins search accounts by keyword.
<b>Actors</b>	Admins
<b>Pre-condition</b>	Admins have logged in, complete use case ADMIN-01.
<b>Result</b>	Admins get an account list suitable for their keyword.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Admins type their keyword in the search box.</li> <li>2. The system will search and filter accounts and show them in the interface for admins.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no account exists, the system will show an error message for admins.

*Table 3.10. Description of use case ADMIN-03*

<b>ADMIN-03</b>	<b>Add a new account</b>
<b>Description</b>	Admins add a new account for officials.
<b>Actors</b>	Admins
<b>Pre-condition</b>	Admins have logged in, complete use case ADMIN-01.
<b>Result</b>	Admins add a new account successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Admins click on the “Add account” button. The system will redirect to the Add Account page.</li> <li>2. Admins type information in all boxes and choose “Submit”.</li> <li>3. The system checks the account and shows a successful message for admins.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	3.1. If admins submit an account with the same username, it will show an error message.

*Table 3.11. Description of use case ADMIN-04*

<b>ADMIN-04</b>	<b>Import new accounts</b>
<b>Description</b>	Admins import a list of accounts for officials.
<b>Actors</b>	Admins
<b>Pre-condition</b>	Admins have logged in, complete use case ADMIN-01.

<b>Result</b>	Admins import the list of accounts successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Admins click on the “Import accounts” button, then a dialog will be shown.</li> <li>2. Admins choose an Excel file containing the account list and import it, then click on the “Import” button.</li> <li>3. The system will check all accounts in the list and show the import result, including the number of successful accounts and errors (if they exist).</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.12. Description of use case ADMIN-05*

<b>ADMIN-05</b>	<b>Delete an account</b>
<b>Description</b>	Admins delete an official account.
<b>Actors</b>	Admins
<b>Pre-condition</b>	Admins have logged in, complete use case ADMIN-01.
<b>Result</b>	Admins delete an account successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Admins click on the “Delete account” button on an account. The system will show a confirmation dialog.</li> <li>2. Admins choose the confirm button, the system will delete this account, the dialog will be closed, and the list will be refreshed.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.13. Description of use case ADMIN-06*

<b>ADMIN-06</b>	<b>Export account list</b>
<b>Description</b>	Admins export the list of all accounts to Excel.
<b>Actors</b>	Admins
<b>Pre-condition</b>	Admins have logged in, complete use case ADMIN-01.
<b>Result</b>	Admins export the list of accounts successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Admins click on the “Export account list” button.</li> <li>2. The system will export the list of accounts in an Excel file. Admins can install it on their computer.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.14. Description of use case ADMIN-07*

<b>ADMIN-07</b>	<b>Export account and password for officials</b>
<b>Description</b>	Admins export the username and password list for officials.
<b>Actors</b>	Admins
<b>Pre-condition</b>	Admins have logged in, complete use case ADMIN-01.

<b>Result</b>	Admins export the list of usernames and passwords of users.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Admins click on the “Export account for officials” button.</li> <li>2. The system will export the list of accounts (username, password) for officials in an Excel file. Admins can install it on their computer.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.15. Description of use case ADMIN-08*

<b>ADMIN-08</b>	<b>Reset password</b>
<b>Description</b>	Admins reset the password for users if they contact admins.
<b>Actors</b>	Admins
<b>Pre-condition</b>	Admins have logged in, complete use case ADMIN-01.
<b>Result</b>	Admins reset passwords for users successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Admins click on the “Reset password” button. A dialog will be opened.</li> <li>2. Admins type the username of users who want to reset their password.</li> <li>3. The system shows the successful message and shows the new default password for admins to transfer to users.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

Each table from Table 3.16 to Table 3.25 represents the detailed information of each use case for Admission Council Officials from the Department of Education and Training of Can Tho City, with 10 use cases. Officials will work on the Candidate Management subsystem with all use cases related to retrieving and managing admission result of all candidates participating in the admission exam of Can Tho City (from SGDDT-01 to SGDDT-08), and the State Management subsystem with all use cases related to managing important states of the system (from SGDDT-09 to SGDDT-10), such as admission permission or show the final result, which can affect other functions of other users in the admission system.

*Table 3.16. Description of use case SGDDT-01*

<b>SGDDT-01</b>	<b>Get the candidate list</b>
<b>Description</b>	Officials see the full candidate list in the system.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in.
<b>Result</b>	Officials see the list of candidates and their scores.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Candidate management” button.</li> <li>2. The system retrieves the candidate list and shows it in the interface for Officials.</li> </ol>

<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no candidates exist, an error message will be shown.

*Table 3.17. Description of use case SGDDT-02*

<b>SGDDT-02</b>	<b>Search candidates</b>
<b>Description</b>	Officials search candidates by keyword.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in, completed use case SGDDT-01.
<b>Result</b>	Officials get the candidate list suitable for their keyword.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials type their keyword in the search box.</li> <li>2. The system will search and filter candidates and show them in the interface for Officials.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no candidates exist, an error message will be shown.

*Table 3.18. Description of use case SGDDT-03*

<b>SGDDT-03</b>	<b>Update candidate ID and exam room</b>
<b>Description</b>	Officials update the candidate ID, exam room for candidates.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in, complete use case SGDDT-01.
<b>Result</b>	Officials update the candidate ID and exam room successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Update candidate ID and exam room” button.</li> <li>2. The system will run to assign candidate ID and exam room for all candidates in the system, and show a successful message for officials.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.19. Description of use case SGDDT-04*

<b>SGDDT-04</b>	<b>Update score</b>
<b>Description</b>	Officials update scores for a candidate.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in, completed use case SGDDT-01.
<b>Result</b>	Officials update scores successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Update score” button on a candidate in a list, and the Update score interface will be shown.</li> <li>2. Officials modify the scores of this candidate and click on the Save button to confirm.</li> <li>3. The system will check the score and show a successful message for officials.</li> </ol>
<b>Alternative flow</b>	None

<b>Exception flow</b>	3.1. If the score typing is not valid, it will show an error message for officials.
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*Table 3.20. Description of use case SGDDT-05*

<b>SGDDT-05</b>	<b>Import scores</b>
<b>Description</b>	Officials import scores for candidates.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in, completed use case SGDDT-01.
<b>Result</b>	Officials import scores successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Import scores” button. The system will show a dialog.</li> <li>2. Officials choose the Excel file that contains the list of candidates with their scores and import it, then choose the Import button to score.</li> <li>3. The system will check and show the import result with the number of successful candidates and errors, if any.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.21. Description of use case SGDDT-06*

<b>SGDDT-06</b>	<b>Export scores</b>
<b>Description</b>	Officials export the scoreboard of all candidates.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in, complete use case SGDDT-01.
<b>Result</b>	Officials export the scoreboard successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Export scores” button.</li> <li>2. The system will export the scoreboard in an Excel file. Officials can install it to their computer.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.22. Description of use case SGDDT-07*

<b>SGDDT-07</b>	<b>Run the admission system</b>
<b>Description</b>	Officials run the admission system.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in, completed use case SGDDT-01.
<b>Result</b>	Officials run the system successfully, and the data is modified.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Run the admission system” button.</li> <li>2. The system will run a process to check whether candidates are admitted to any high school in their choices. After finishing, it will show a message to notify officials.</li> </ol>
<b>Alternative flow</b>	None

<b>Exception flow</b>	None
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*Table 3.23. Description of use case SGDDT-08*

<b>SGDDT-08</b>	<b>Export the admission result</b>
<b>Description</b>	Officials export the detailed admission result of all students.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in, complete use case SGDDT-01.
<b>Result</b>	Officials export the result successfully.
<b>Main flow</b>	1. Officials click on the “Export admission result” button. 2. The system will export the result in an Excel file. Officials can install it to their computer.
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.24. Description of use case SGDDT-09*

<b>SGDDT-09</b>	<b>Get the list of states</b>
<b>Description</b>	Officials get the full list of states related to the admission.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in.
<b>Result</b>	Officials get the state list successfully.
<b>Main flow</b>	1. Officials click on the “State management” button. 2. The system will show the list of states existing in the system.
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no state exists, it will show an error message.

*Table 3.25. Description of use case SGDDT-10*

<b>SGDDT-10</b>	<b>Update a state</b>
<b>Description</b>	Officials update a state value.
<b>Actors</b>	Admissions Council Officials
<b>Pre-condition</b>	Officials have logged in, complete use case SGDDT-09.
<b>Result</b>	Officials update a state successfully.
<b>Main flow</b>	1. Officials click on the “Update state” button on a state. A dialog will be opened. 2. Officials modify the state (see Alternative flow), then click on the Submit button to save. 3. The system checks and shows a successful message, then refreshes the list.
<b>Alternative flow</b>	2.1. With the Boolean state, officials choose one value in the dropdown list. 2.2. With the timestamp state, officials modify the date and time using the text box or the browser’s interface to update.
<b>Exception flow</b>	None

Each table from Table 3.26 to Table 3.37 represents the detailed information of each use case for Secondary School Officials, with 10 use cases. Officials will work on the Student Management subsystem with all use cases related to retrieving and managing admission information of all students studying in their secondary school.

*Table 3.26. Description of use case THCS-01*

<b>THCS-01</b>	<b>Get the student list</b>
<b>Description</b>	Officials see the full student list of their secondary school.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in.
<b>Result</b>	Officials see the list of students and their information.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Student management” button.</li> <li>2. The system retrieves the student list and shows it in the interface for Officials.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no students exist, an error message will be shown.

*Table 3.27. Description of use case THCS-02*

<b>THCS-02</b>	<b>Search students</b>
<b>Description</b>	Officials search students by keyword.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THCS-01.
<b>Result</b>	Officials get the student list suitable with their keyword.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials type their keyword in the search box.</li> <li>2. The system will search, filter students and show them in the interface for Officials.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no students exist, an error message will be shown.

*Table 3.28. Description of use case THCS-03*

<b>THCS-03</b>	<b>Initiate a student</b>
<b>Description</b>	Officials create initial information for a student.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THCS-01.
<b>Result</b>	Officials create student profile successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Initiate student” button. The system will redirect to the page for creating initial data for students.</li> <li>2. Officials complete form fields and click on “Submit”.</li> <li>3. The system will check and show a successful message.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	3.1. If the student ID exists or officials have not typed in all fields, it will show an error message to officials.

*Table 3.29. Description of use case THCS-04*

<b>THCS-04</b>	<b>Import initial information of students</b>
<b>Description</b>	Officials import initial information for multiple students.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THCS-01.
<b>Result</b>	Officials import students successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Import initial information” button. A dialog will be shown.</li> <li>2. Officials choose the file containing the initial student list, then import it and click on “Import”.</li> <li>3. The system will check data and show the import result, including the number of students imported successfully and the number of errors, if any.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.30. Description of use case THCS-05*

<b>THCS-05</b>	<b>Add a new student</b>
<b>Description</b>	Officials add a new student profile.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THCS-01.
<b>Result</b>	Officials import students successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Add student” button. The system will redirect to the import page.</li> <li>2. Officials complete form fields and click on “Submit” to confirm their information.</li> <li>3. The system will check and show a successful message.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	3.1. If officials have not provided information in mandatory fields, or the student ID exists, it will show an error message.

*Table 3.31. Description of use case THCS-06*

<b>THCS-06</b>	<b>Import new students</b>
<b>Description</b>	Officials import multiple students.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THCS-01.
<b>Result</b>	Officials import students successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Import students” button. A dialog will be shown.</li> <li>2. Officials choose the file containing the student list, similar as the template provided in the dialog, and the ZIP file</li> </ol>

	<p>containing profile images of students, then import it and click on “Import”.</p> <p>3. The system will check data and show the import result, including the number of students imported successfully and the number of errors, if any.</p>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.32. Description of use case THCS-07*

<b>THCS-07</b>	<b>Get student's detailed information</b>
<b>Description</b>	Officials see the detailed information of a student.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THCS-01.
<b>Result</b>	Officials see the student information.
<b>Main flow</b>	<p>1. Officials click “Detailed Information” button of a student.</p> <p>2. The system will redirect to the Detail Information page.</p> <p>Officials can see the detailed information of a student.</p>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.33. Description of use case THCS-08*

<b>THCS-08</b>	<b>Update a student</b>
<b>Description</b>	Officials update a student in their list.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THCS-01.
<b>Result</b>	Officials update the student successfully.
<b>Main flow</b>	<p>1. Officials click on the “Update” button on a student. The system will redirect to the Update page.</p> <p>2. Officials modify form fields if needed and click on “Submit” to confirm their information.</p> <p>3. The system will check and show a successful message.</p>
<b>Alternative flow</b>	None
<b>Exception flow</b>	<p>3.1. If officials have not typed information in mandatory fields, or if the student ID have existed, it will show an error message.</p>

*Table 3.34. Description of use case THCS-09*

<b>THCS-09</b>	<b>Export the student's information</b>
<b>Description</b>	Officials export information of students in an Excel file.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THCS-01.
<b>Result</b>	Officials export file successfully.
<b>Main flow</b>	1. Officials click on the “Export student information” button.

	2. The system will export an Excel file containing detailed information of students, officials can install and save this file.
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.35. Description of use case THCS-10*

<b>THCS-10</b>	<b>Export the student's accounts</b>
<b>Description</b>	Officials export the list of student's accounts.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THCS-01.
<b>Result</b>	Officials export file successfully.
<b>Main flow</b>	1. Officials click on the “Export student account” button. 2. The system will export an Excel file containing students' accounts, officials can install, save it to their computer and then transfer it to the students.
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.36. Description of use case THCS-11*

<b>THCS-11</b>	<b>Delete a student</b>
<b>Description</b>	Officials delete a student.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THCS-01.
<b>Result</b>	Officials delete the student successfully.
<b>Main flow</b>	1. Officials click on the “Delete” button on a student. A confirmation dialog will be shown. 2. Officials click on the Confirm button to delete, the system will delete this student, close the dialog and reload the list.
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.37. Description of use case THCS-12*

<b>THCS-12</b>	<b>Delete all students</b>
<b>Description</b>	Officials delete all students in their secondary school.
<b>Actors</b>	Secondary School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THCS-01.
<b>Result</b>	Officials delete all students successfully.
<b>Main flow</b>	1. Officials click on the “Delete all students” button, a confirmation dialog will be shown. 2. Officials click on the Confirm button to delete, the system will delete students, close the dialog and reload the student list.
<b>Alternative flow</b>	None

<b>Exception flow</b>	None
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Each table from Table 3.38 to Table 3.51 represents the detailed information of each use case for High School Officials, with 14 use cases. Officials will work on the Student Management subsystem with all use cases related to retrieving and managing admission information of all students studying outside Can Tho City and participating in the admission exam in their current high school (from THPT-01 to THPT-10). This subsystem is only available for high schools that accept students from both inside and outside of Can Tho City (such as High Schools for the Gifted or some other special schools). Officials can also work on the Candidate Management subsystem with all use cases related to retrieving and managing candidate information of all candidates who will participate in the exam in their high school (from THPT-11 to THPT-14).

*Table 3.38. Description of use case THPT-01*

<b>THPT-01</b>	<b>Get the student list</b>
<b>Description</b>	Officials see the full student list registered in their high school.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in.
<b>Result</b>	Officials see the list of students and their information.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Student management” button.</li> <li>2. The system retrieves the student list and shows it in the interface for Officials.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no students exist, an error message will be shown.

*Table 3.39. Description of use case THPT-02*

<b>THPT-02</b>	<b>Search students</b>
<b>Description</b>	Officials search students by keyword.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THPT-01.
<b>Result</b>	Officials get the student list suitable with their keyword.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials type their keyword in the search box.</li> <li>2. The system will search and filter students and show them in the interface for Officials.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no students exist, the system will show an error message for Officials.

*Table 3.40. Description of use case THPT-03*

<b>THPT-03</b>	<b>Add a new student</b>
<b>Description</b>	Officials add a new student profile.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THPT-01.

<b>Result</b>	Officials import students successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Add a Student” button. The system will redirect to the Add Student page.</li> <li>2. Officials complete form fields and click on “Submit” to confirm their information.</li> <li>3. The system will check and show a successful message.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	3.1. If officials have not provided information in mandatory fields, or if the student ID exists, it will show an error message.

*Table 3.41. Description of use case THPT-04*

<b>THPT-04</b>	<b>Import new students</b>
<b>Description</b>	Officials import multiple students.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THPT-01.
<b>Result</b>	Officials import students successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click on the “Import students” button. A dialog will be shown.</li> <li>2. Officials choose the file containing the student list, similar to the template provided in the dialog, and the ZIP file containing profile images of students, then import it and click on “Import”.</li> <li>3. The system will check data and show the import result, including the number of students imported successfully and the number of errors, if any.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.42. Description of use case THPT-05*

<b>THPT-05</b>	<b>Get student's detailed information</b>
<b>Description</b>	Officials see the detail information of a student.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THPT-01.
<b>Result</b>	Officials see the student information.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Officials click the “Detail Information” button of a student.</li> <li>2. The system will redirect to See detail page, officials can see the detailed profile and information of a student.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.43. Description of use case THPT-06*

<b>THPT-06</b>	<b>Update a student</b>
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<b>Description</b>	Officials update a student in their list.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THPT-01.
<b>Result</b>	Officials update the student successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>Officials click on the “Update” button of a student. The system will redirect to the Update page.</li> <li>Officials modify form fields if needed and click on “Submit” to confirm their information.</li> <li>The system will check and show a successful message.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	3.1. If officials have not typed information in mandatory fields, or if the student ID exists, it will show an error message.

*Table 3.44. Description of use case THPT-07*

<b>THPT-07</b>	<b>Export the student’s information</b>
<b>Description</b>	Officials export information of students in an Excel file.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THPT-01.
<b>Result</b>	Officials export file successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>Officials click on the “Export student information” button.</li> <li>The system will export an Excel file containing full information of students, officials can install and save this file.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.45. Description of use case THPT-08*

<b>THPT-08</b>	<b>Export the student’s accounts</b>
<b>Description</b>	Officials export the list of students’ accounts.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THPT-01.
<b>Result</b>	Officials export file successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>Officials click on the “Export student account” button.</li> <li>The system will export an Excel file containing students’ accounts, officials can install and save it to their computer, and then transfer it to the students.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.46. Description of use case THPT-09*

<b>THPT-09</b>	<b>Delete a student</b>
<b>Description</b>	Officials delete a student.
<b>Actors</b>	High School Officials

<b>Pre-condition</b>	Officials have logged in, completed use case THPT-01.
<b>Result</b>	Officials delete the student successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>Officials click on the “Delete” button on a student, a confirmation dialog will be shown.</li> <li>Officials click on the confirm button to delete, the system will delete this student, close the dialog and reload the list.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.47. Description of use case THPT-10*

<b>THPT-10</b>	<b>Delete all students</b>
<b>Description</b>	Officials delete all students registered in their high school.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THPT-01.
<b>Result</b>	Officials delete all students successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>Officials click on the “Delete all students” button, a confirmation dialog will be shown.</li> <li>Officials click on the confirm button to delete, the system will delete students, close the dialog and reload the student list.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.48. Description of use case THPT-11*

<b>THPT-11</b>	<b>Get the candidate list</b>
<b>Description</b>	Officials see the candidate list participating in the admission exam at their high school.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in.
<b>Result</b>	Officials see the candidate list and their information.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>Officials click on the “Candidate management” button.</li> <li>The system retrieves the candidate list and shows it in the interface for Officials.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.49. Description of use case THPT-12*

<b>THPT-12</b>	<b>Search candidates</b>
<b>Description</b>	Officials search candidates by keyword.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THPT-11.
<b>Result</b>	Officials get the candidate list suitable for their keyword.
<b>Main flow</b>	1. Officials type their keyword in the search box.

	2. The system will search and filter candidates and show them in the interface for Officials.
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If no students exist, an error message will be shown.

*Table 3.50. Description of use case THPT-13*

<b>THPT-13</b>	<b>Export candidate list</b>
<b>Description</b>	Officials export the list of candidates in an Excel file.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, completed use case THPT-11.
<b>Result</b>	Officials exported the candidate list successfully.
<b>Main flow</b>	1. Officials click on the “Export candidate list” button. 2. The system will export an Excel file containing candidate information. Officials can install and save it to their computer.
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.51. Description of use case THPT-14*

<b>THPT-14</b>	<b>Export the admission result of high school</b>
<b>Description</b>	Officials export the detailed admission result of all students participating the exam in their high school.
<b>Actors</b>	High School Officials
<b>Pre-condition</b>	Officials have logged in, complete use case THPT-11.
<b>Result</b>	Officials export the result successfully.
<b>Main flow</b>	1. Officials click on the “Export admission result” button. 2. The system will export the result in an Excel file. Officials can install it to their computer.
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

Each table from Table 3.52 to Table 3.55 represents the detailed information of each use case for Students, with 4 use cases. Students will work on the Student Management subsystem with all use cases related to retrieving and updating admission information of the student. Also, they can export the Word file as an admission form containing their admission information and get their admission result.

*Table 3.52. Description of use case HS-01*

<b>HS-01</b>	<b>Get detailed information</b>
<b>Description</b>	Students see their detailed admission information.
<b>Actors</b>	Students
<b>Pre-condition</b>	Students have logged in.
<b>Result</b>	Students see their detailed information.
<b>Main flow</b>	1. Students click on the “Student information” button.

	2. The system retrieves the detailed information and shows it in the interface for Students.
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.53. Description of use case HS-02*

<b>HS-02</b>	<b>Update student information</b>
<b>Description</b>	Students update their information.
<b>Actors</b>	Students
<b>Pre-condition</b>	Students have logged in, completed use case HS-01.
<b>Result</b>	Students update information successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Students click on the “Update information” button, and the system will redirect to the Update information page.</li> <li>2. Students modify their information if needed and click on the “Save” button to confirm.</li> <li>2. The system will check and show the successful message.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.54. Description of use case HS-03*

<b>HS-03</b>	<b>Export student information to Word</b>
<b>Description</b>	Students export their information to a Word file.
<b>Actors</b>	Students
<b>Pre-condition</b>	Students have logged in, completed use case HS-01.
<b>Result</b>	Students export the file successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Students click on the “Export information” button.</li> <li>2. The system will export the information in a Word file. Students can install it on their computer.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	None

*Table 3.55. Description of use case HS-04*

<b>HS-04</b>	<b>Get the admission result</b>
<b>Description</b>	Students see their admission results.
<b>Actors</b>	Students
<b>Pre-condition</b>	Students have logged in.
<b>Result</b>	Students see their results successfully.
<b>Main flow</b>	<ol style="list-style-type: none"> <li>1. Students click on the “Admission result” button.</li> <li>2. The system will retrieve the result and show it to students.</li> </ol>
<b>Alternative flow</b>	None
<b>Exception flow</b>	2.1. If the state in the system for showing the result is “Not permitted”, it will show an error message.

# CHAPTER 4: SYSTEM DESIGN

## 4.1. Architecture model of the system

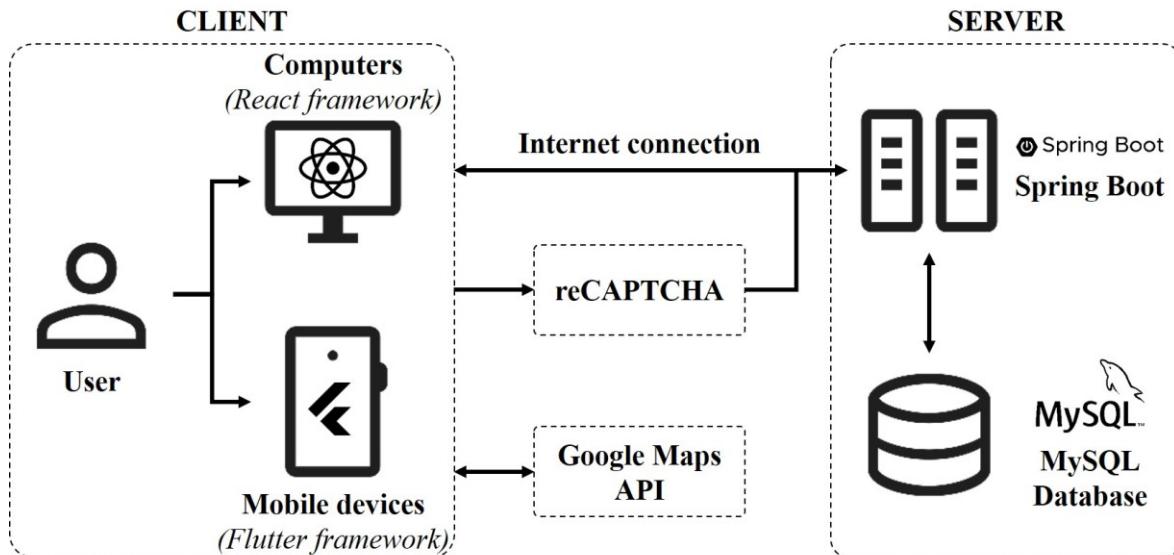


Figure 4.1. Architecture model of the system

The application is designed according to the Client–Server model, as shown in Figure 4.1 above. On the server side, there are 2 main components: The relational database, which is a MySQL database, and the Spring Boot framework to connect between clients and the MySQL database. On the client side, users can connect to the system by using web browsers, such as Google Chrome, Firefox, and Microsoft Edge, or using a mobile application from both Android and iOS operating systems to connect to the server side.

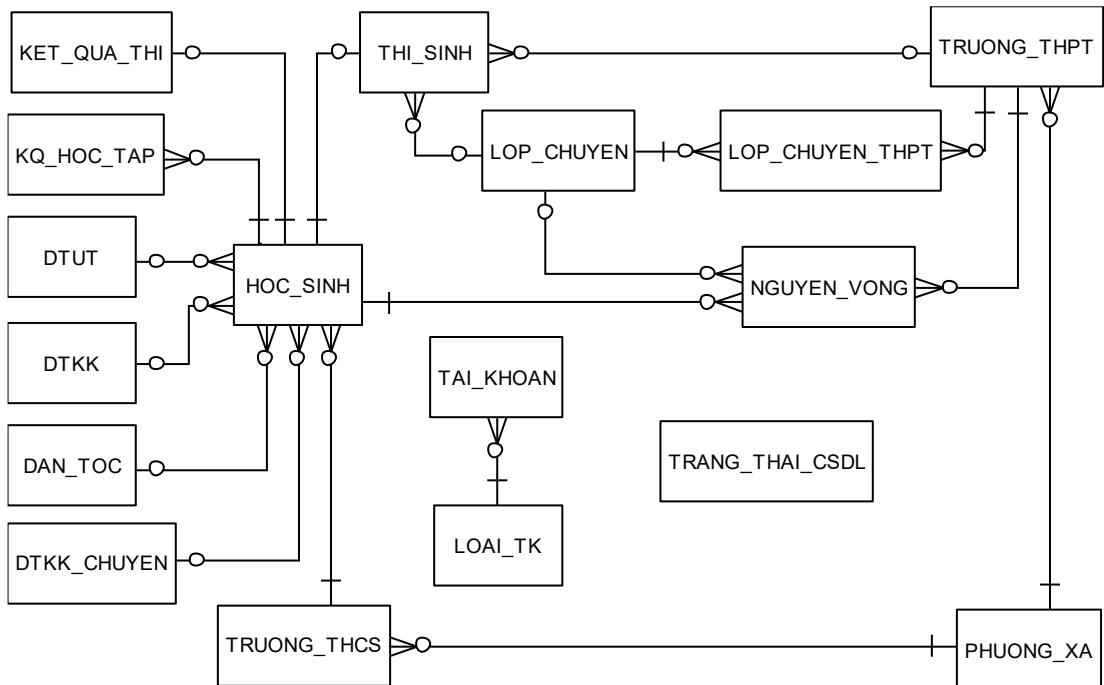
In detail, the MySQL database will store almost all important information about students' profiles, choices, and exam results. This database also stores account information of all users and other common information related to the exam, such as the list of Secondary schools, High schools, priority groups, encouraged groups, and ethnic groups. From that information, users can use functions to create, update, or aggregate data according to their needs.

Spring Boot framework works as a bridge that connects the client side and the MySQL database. In this framework, a large number of REST APIs have been implemented to connect between the client-side and the database. Users can only use these APIs to connect without interacting directly with the database, which will make the data in the database safer.

Client-side and server-side need an internet connection to identify each other. Besides client-side and server-side, some other public APIs have been used in this application, such as Google Maps API, which is used to present the map of the office at the bottom of the web interface, and reCAPTCHA API to check the validation of some sensitive activities or DDoS, such as login or searching exam results.

#### **4.2. Data model of the system**

The system includes 17 entities (tables), with the simplified version of Entity Relationship Diagram (ERD) represented in Figure 4.2 below.



*Figure 4.2. Entity Relationship Diagram of the system (simplified version)*

The overview information of each table is described in Table 4.1 below.

*Table 4.1. The overview information of entities/tables in the system*

#	Table name	Main function
1	DAN_TOC	Represents the ethnic group of students.
2	DTKK	Represents the encouraged group of students.
3	DTKK_CHUYEN	Represents the encouraged group of students if they are participating in High Schools for the Gifted.
4	DTUT	Represents the priority group of students.
5	HOC_SINH	Represents the detailed information of students.
6	KET_QUA THI	Represents the admission result of students.
7	KQ_HOC_TAP	Represents the study results of students in the secondary school.
8	LOAI_TK	Represents the type of accounts.
9	LOP_CHUYEN	Represents the specialized class/subject that will appear in Can Tho City.
10	LOP_CHUYEN_THPT	Represents the specialized class/subject in a particular High School for the Gifted.
11	NGUYEN_VONG	Represents the admission selections/choices of students in Can Tho City.
12	PHUONG_XA	Represents the ward, commune, or special zone of

		a secondary school or a high school.
13	TAI_KHOAN	Represents the account of users.
14	THI_SINH	Represents the admission information of candidates participating in the exam.
15	TRANG_THAI_CSDL	Represents the database and admission state for Admission Council Officials.
16	TRUONG_THCS	Represents the list of Secondary Schools.
17	TRUONG_THPT	Represents the list of High Schools.

The details of each entity (table) are shown from Table 4.2 to Table 4.18 below.  
*(In the following tables, PK means Primary Key constraint; NN means Not Null constraint; and UQ means Unique constraint.)*

Table 4.2. Table DAN\_TOC

Column name	Data type	PK	NN	UQ	Default
MA_DT	INT	x	x		
TEN_DT	VARCHAR(255)		x		

Table 4.3. Table DTKK

Column name	Data type	PK	NN	UQ	Default
MA_DTKK	INT	x	x		
TEN_DTKK	VARCHAR(255)		x		
DIEM_CONG	DECIMAL(5,2)		x		0.00

Table 4.4. Table DTKK\_CHUYEN

Column name	Data type	PK	NN	UQ	Default
MA_DTKK_CHUYEN	INT	x	x		
TEN_DTKK_CHUYEN	VARCHAR(255)		x		
DIEM_CONG	DECIMAL(5,2)		x		0.00

Table 4.5. Table DTUT

Column name	Data type	PK	NN	UQ	Default
MA_DTUT	INT	x	x		
TEN_DTUT	VARCHAR(255)		x		
DIEM_CONG	DECIMAL(5,2)		x		0.00

Table 4.6. Table HOC\_SINH

Column name	Data type	PK	NN	UQ	Default
MA_HS	INT	x	x		
HO_VA_CHU_LOT_HS	VARCHAR(255)		x		
TEN_HS	VARCHAR(255)		x		0.00
GIOI_TINH	TINYINT(1)				NULL
NGAY_SINH	DATE				NULL

NOI_SINH	VARCHAR(255)				NULL
MA_DT <i>(FK from DAN_TOC (MA_DT))</i>	INT				1
DIA_CHI_THUONG_TRU	VARCHAR(2048)				NULL
CHO_O_HIEN_NAY	VARCHAR(2048)				NULL
MA_THCS <i>(FK from TRUONG_THCS (MA_THCS))</i>	VARCHAR(20)		x		
NAM_TOT_NGHIEP_THCS	INT				2026
MA_DTUT <i>(FK from DTUT (MA_DTUT))</i>	INT				0
MA_DTKK <i>(FK from DTKK (MA_DTKK))</i>	INT				0
MA_DTKK_CHUYEN <i>(FK from DTKK_CHUYEN (MA_DTKK_CHUYEN))</i>	INT				0
NGOAI_NGU_DANG_HOC	VARCHAR(255)				NULL
NGOAI_NGU_DU THI	VARCHAR(255)				NULL
SO_DIEN_THOAI	VARCHAR(255)				NULL
DIEM_TB_MON_CHUYEN	DECIMAL(5,2)				NULL
TONG_Diem_TB_Lop_9	DECIMAL(5,2)				NULL
ANH_DAI_DIEN	VARCHAR(255)				NULL
TEN_THCS_NGOAI_TPCT	VARCHAR(255)				NULL
TEN_XA_NGOAI_TPCT	VARCHAR(255)				NULL
TEN_TINH_NGOAI_TPCT	VARCHAR(255)				NULL

Table 4.7. Table KET\_QUA THI

Column name	Data type	PK	NN	UQ	Default
MA_HS <i>(FK (1:1) from HOC_SINH (MA_HS))</i>	VARCHAR(20)	x	x		
DIEM_TOAN	DECIMAL(5,2)				NULL
DIEM_VAN	DECIMAL(5,2)				NULL
DIEM_MON_THU_3	DECIMAL(5,2)				NULL
DIEM_MON_CHUYEN	DECIMAL(5,2)				NULL

Table 4.8. Table KQ\_HOC\_TAP

Column name	Data type	PK	NN	UQ	Default
MA_HS	VARCHAR(20)	x	x		

<i>(FK from HOC_SINH (MA_HS))</i>					
LOP	INT	x	x		
HOC_TAP	VARCHAR(50)		x		
REN_LUYEN	VARCHAR(50)		x		

Table 4.9. Table LOAI\_TK

Column name	Data type	PK	NN	UQ	Default
MA_LOAI_TK	INT	x	x		
TEN_LOAI_TK	VARCHAR(255)		x		

Table 4.10. Table LOP\_CHUYEN

Column name	Data type	PK	NN	UQ	Default
MA_LOP_CHUYEN	VARCHAR(5)	x	x		
TEN_LOP_CHUYEN	VARCHAR(255)		x		
MON_CHUYEN	VARCHAR(255)		x		

Table 4.11. Table LOP\_CHUYEN\_THPT

Column name	Data type	PK	NN	UQ	Default
MA_THPT <i>(FK from TRUONG_THPT (MA_THPT))</i>	VARCHAR(20)	x	x		
MA_LOP_CHUYEN <i>(FK from LOP_CHUYEN (MA_LOP_CHUYEN))</i>	VARCHAR(5)	x	x		
CHI_TIEU	INT		x		0

Table 4.12. Table NGUYEN\_VONG

Column name	Data type	PK	NN	UQ	Default
MA_HS <i>(FK from HOC_SINH (MA_HS))</i>	VARCHAR(20)	x	x		
MA_THPT <i>(FK from TRUONG_THPT (MA_THPT))</i>	VARCHAR(20)		x		
THU_TU	INT	x	x		
NV_2B	TINYINT(1)				0
LOP_TIENG_PHAP	TINYINT(1)				0
MA_LOP_CHUYEN <i>(FK from LOP_CHUYEN (MA_LOP_CHUYEN))</i>	VARCHAR(5)				NULL
KET_QUA	VARCHAR(255)				NULL

Table 4.13. Table PHUONG\_XA

Column name	Data type	PK	NN	UQ	Default
MA_PHUONG_XA	INT	x	x		
TEN_PHUONG_XA	VARCHAR(255)		x		

Table 4.14. Table TAI\_KHOAN

Column name	Data type	PK	NN	UQ	Default
TEN_TK	VARCHAR(50)	x	x		
MAT_KHAU	VARCHAR(255)				NULL
MA_LOAI_TK (FK from LOAI_TK (MA_LOAI_TK))	INT		x		4
SO_DINH_DANH	VARCHAR(20)				NULL
HASH_MAT_KHAU	VARCHAR(255)				NULL
DA_DOI_MAT_KHAU	TINYINT(1)				0

Table 4.15. Table THI\_SINH

Column name	Data type	PK	NN	UQ	Default
MA_HS (FK (1:1) from HOC_SINH (MA_HS))	VARCHAR(20)	x	x		
MA_THPT (FK from TRUONG_THPT (MA_THPT))	VARCHAR(20)				NULL
MA_LOP_CHUYEN (FK from LOP_CHUYEN (MA_LOP_CHUYEN))	VARCHAR(5)				NULL
SO_BAO_DANH	VARCHAR(10)			x	NULL
PHONG THI	VARCHAR(10)				NULL
PHONG THI CHUYEN	VARCHAR(10)				NULL

Table 4.16. Table TRANG\_THAI\_CSDL

Column name	Data type	PK	NN	UQ	Default
MA_TT	INT	x	x		
TEN_TRANG_THAI	VARCHAR(255)		x	x	
KIEU_DU_LIEU	VARCHAR(255)				NULL
GIA_TRI_BOOLEAN	TINYINT(1)				NULL
GIA_TRI_TIMESTAMP	TIMESTAMP				NULL
GIA_TRI_CHUOI	VARCHAR(255)				NULL
MO_TA	VARCHAR(255)				NULL
TG_CAP_NHAT	TIMESTAMP				CURRENT_TIMESTAMP

Table 4.17. Table TRUONG\_THCS

Column name	Data type	PK	NN	UQ	Default
MA_THCS	VARCHAR(20)	x	x		
TEN_THCS	VARCHAR(255)		x		
MA_PHUONG_XA <i>(FK from PHUONG_XA (MA_PHUONG_XA))</i>	INT		x		

Table 4.18. Table TRUONG\_THPT

Column name	Data type	PK	NN	UQ	Default
MA_THPT	VARCHAR(20)	x	x		
TEN_THPT	VARCHAR(255)		x		
DIA_CHI	VARCHAR(255)				NULL
MA_PHUONG_XA <i>(FK from PHUONG_XA (MA_PHUONG_XA))</i>	INT		x		0
CHI_TIEU	INT		x		0
THPT_CHUYEN	TINYINT(1)		x		0
TS_NGOAI_TPCT	TINYINT(1)		x		0
STT_THPT	INT		x		0

# CHAPTER 5: SYSTEM IMPLEMENTATION

## 5.1. Web application

### 5.1.1. Functions for Guest users

The interface of the web when users come to it for the first time is shown in Figure 5.1 below. The interface includes a background image illustrating the website and the exam time notification. At the bottom of the background image is information about important milestones in the registration process and the expected exam schedule. In the header of the interface, there are 5 buttons, which are 5 main pages and functions for guest users: Home, Search admission result (*Tra cứu kết quả*), Admission numbers (*Chỉ tiêu tuyển sinh*), Admission documents (*Văn bản về kỳ thi*) and Login (*Đăng nhập*).

The screenshot shows the homepage of the 'HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN' (Online Admission System for 10th-grade Secondary Schools). The top navigation bar includes links for 'Tra cứu kết quả', 'Chỉ tiêu tuyển sinh', 'Văn bản về kỳ thi', and 'Đăng nhập'. The main content features a photograph of students in a classroom taking an exam. Overlaid text reads 'KỲ THI TUYỂN SINH LỚP 10 THPT NĂM HỌC 2026-2027' and 'Dự kiến tổ chức đầu tháng 6/2026'. Below this, a section titled 'CÁC MỐC THỜI GIAN QUAN TRỌNG' displays four key milestones with corresponding images: 'Nhận hồ sơ đăng ký' (Month 4/2026), 'Điều chỉnh nguyện vọng' (Month 5/2026), 'Thi tuyển' (Early June 2026), and 'Công bố kết quả' (Mid-June 2026). At the bottom, a table titled 'LỊCH THI TUYỂN SINH LỚP 10 THPT NĂM HỌC 2026-2027' provides the exam schedule for various subjects and times.

Ngày thi	Buổi thi	Bài thi	Thời gian			
			Làm bài	Phát đề thi	Tính giờ làm bài	Hết giờ làm bài
Thông báo sau	Sáng	Toán	120 phút	07 giờ 25 phút	07 giờ 30 phút	09 giờ 30 phút
	Chiều	Môn thi thứ ba (xác định sau)	60 phút	13 giờ 55 phút	14 giờ 00 phút	15 giờ 00 phút
Thông báo sau	Sáng	Ngữ văn	120 phút	07 giờ 25 phút	07 giờ 30 phút	09 giờ 30 phút
Thông báo sau	Sáng	Các môn chuyên	150 phút	07 giờ 25 phút	07 giờ 30 phút	10 giờ 00 phút

Figure 5.1. The homepage web interface

In the footer of the interface, beside the information of the Department of Education and Training of the city, there is also a map that represents the address of the office, as shown in Figure 5.2 below.

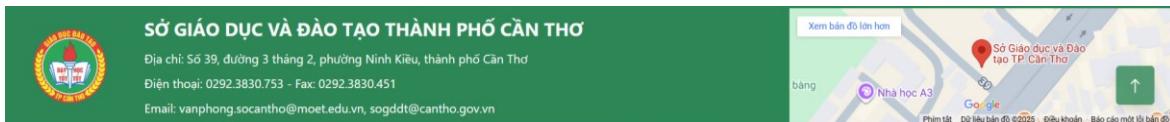


Figure 5.2. The footer of the web interface

When users click on the Search Admission Result button, the interface of this function is shown in Figure 5.3 below. To search the admission result, users need to choose the high school in the first dropdown and choose the search type in the second dropdown. There are 3 search types, which are searching by student ID, searching by students' full name, and searching by candidate number. After that, users type the search content in the textbox. After choosing and typing, users need to click on the reCAPTCHA button to verify that "I'm not a robot" before clicking on the Search (*Tìm kiếm*) button to find the admission result.

Figure 5.3. Search Admission Result interface

If there is only one student whose information matches the user's search requirement, it will show the full result of this student, with the student's full name, secondary school, scores of each subject, extra scores, and total score. It will also show whether the student has passed the examination and been admitted to any high school included in his/her choices, as shown in Figure 5.4 below.

The screenshot shows the search results for a single student. At the top, there is a header with the logo of the Cà Mau Provincial Education and Training Department, followed by the text 'HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN'. Below the header are navigation links: 'Tra cứu kết quả', 'Chỉ tiêu tuyển sinh', 'Văn bản về kỳ thi', and 'Đăng nhập'. A search bar labeled 'Tim kiếm' is present. The main content area displays the title 'KẾT QUẢ THI TUYỂN SINH LỚP 10 THPT - NĂM HỌC 2026-2027'. Below this, it says 'Thí sinh: Trần Thị Thanh (Trường THCS Lương Thế Vinh)'. A table provides detailed scores for the student:

Điểm Toán:	9.00
Điểm Ngữ văn:	7.25
Điểm môn thứ 3:	9.25
Điểm công Uy tín:	0.00
Điểm cộng Khuyến khích:	0.00
<b>Tổng điểm (thang điểm 30):</b>	<b>25.50</b>
Điểm môn chuyên:	9.00
Điểm cộng Khuyến khích (thi chuyên):	0.00
<b>Tổng điểm chuyên (thang điểm 50):</b>	<b>43.50</b>

A green box at the bottom right contains the message: 'Chúc mừng bạn đã trúng tuyển' and 'Nguyễn vẹn 1 - Trường THPT Chuyên Lý Tự Trọng'.

Figure 5.4. The Search Result interface with only one student

If there is more than one student whose information matches the user's search requirement, it will show the list of students with the overview information of each student. Users then need to choose one of them to show the student's detailed result they want to see, as shown in Figure 5.5 below.

The screenshot shows the search results for multiple students. At the top, there is a header with the logo of the Cà Mau Provincial Education and Training Department, followed by the text 'HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN'. Below the header are navigation links: 'Tra cứu kết quả', 'Chỉ tiêu tuyển sinh', 'Văn bản về kỳ thi', and 'Đăng nhập'. A search bar labeled 'Tim kiếm' is present. The main content area displays the message 'Tim thấy 12 thí sinh thỏa mãn. Vui lòng chọn thí sinh để xem chi tiết:'. Below this, a table lists 12 students:

Mã học sinh	SBD	Họ và tên thí sinh	Xem chi tiết
M51	270018	Phạm Thị Thanh	Xem chi tiết
M20	270015	Trần Thị Thanh	Xem chi tiết
M12	270017	Phạm Thị Thanh	Xem chi tiết
M11	270011	Lê Đăng	Xem chi tiết
M10	270014	Lê Văn	Xem chi tiết
099323451001	270009	Hoàng Hữu	Xem chi tiết
093211002012	270019	Dương Thanh	Xem chi tiết
092211392345	270013	Phan Tuấn	Xem chi tiết
0944	270020	Nguyễn Hoàng Thanh	Xem chi tiết

Figure 5.5. The Search Result page with more than one student

When users click on the Admission Numbers button, the interface of this function is shown in Figure 5.6 below. On this page, users will see the admission number of each high school in Can Tho City according to the official documents of the Department of Education and Training of Can Tho City. Each card contains the high school's name, address, the number of students registered at this school, and the admission number of this school.

SƠ GIẢO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ  
HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN

Trả cứu kết quả Chi tiêu tuyển sinh Văn bản về kỳ thi Đăng nhập

## THÔNG TIN CHỈ TIÊU CÁC TRƯỜNG THPT

### I. Chỉ tiêu của các trường THPT công lập trên địa bàn TP Cần Thơ

(Các trường THPT chuyên xem chi tiết ở phía dưới)

<b>THPT Châu Văn Liêm</b> <b>Địa chỉ:</b> 58 Ngõ Quyền, phường Ninh Kiều, TP Cần Thơ Số lượng đăng ký: <b>6/602</b> chỉ tiêu	<b>THPT Lưu Hữu Phước</b> <b>Địa chỉ:</b> Khu vực 15, phường Ô Môn, TP Cần Thơ Số lượng đăng ký: <b>0/365</b> chỉ tiêu	<b>THPT Nguyễn Việt Hồng</b> <b>Địa chỉ:</b> 568 đường 3/2, khu vực 1, phường An Bình, TP Cần Thơ Số lượng đăng ký: <b>0/440</b> chỉ tiêu
<b>THPT Thới Lai</b> <b>Địa chỉ:</b> Ấp Thới Thuận A, xã Thới Lai, TP Cần Thơ Số lượng đăng ký: <b>0/495</b> chỉ tiêu	<b>THPT Thới Nốt</b> <b>Địa chỉ:</b> Phường Thới Nốt, TP Cần Thơ Số lượng đăng ký: <b>0/460</b> chỉ tiêu	<b>THPT Hà Huy Giáp</b> <b>Địa chỉ:</b> Ấp Thới Bình, xã Cờ Đỏ, TP Cần Thơ Số lượng đăng ký: <b>0/348</b> chỉ tiêu

Figure 5.6. Admission Numbers interface

Also, with some high schools for gifted students, the admission number is divided by specialized subjects, as shown in Figure 5.7 below.

### II. Chỉ tiêu của các trường THPT chuyên trên địa bàn TP Cần Thơ

Trường THPT Chuyên Lý Tự Trọng (phường Cái Răng)

<b>Chuyên Toán</b> Số lượng đăng ký: <b>6/70</b> chỉ tiêu	<b>Chuyên Tin học</b> Số lượng đăng ký: <b>2/35</b> chỉ tiêu	<b>Chuyên Vật lý</b> Số lượng đăng ký: <b>5/35</b> chỉ tiêu	<b>Chuyên Hóa học</b> Số lượng đăng ký: <b>2/35</b> chỉ tiêu
<b>Chuyên Sinh học</b> Số lượng đăng ký: <b>2/35</b> chỉ tiêu	<b>Chuyên Ngữ văn</b> Số lượng đăng ký: <b>2/35</b> chỉ tiêu	<b>Chuyên Lịch sử</b> Số lượng đăng ký: <b>1/35</b> chỉ tiêu	<b>Chuyên Địa lý</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu
<b>Chuyên Tiếng Anh</b> Số lượng đăng ký: <b>1/70</b> chỉ tiêu	<b>Chuyên Tiếng Pháp</b> Số lượng đăng ký: <b>1/70</b> chỉ tiêu		

Trường THPT Chuyên Vị Thanh (phường Vị Thanh)

<b>Chuyên Toán</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu	<b>Chuyên Tin học</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu	<b>Chuyên Vật lý</b> Số lượng đăng ký: <b>1/35</b> chỉ tiêu	<b>Chuyên Hóa học</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu
<b>Chuyên Sinh học</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu	<b>Chuyên Ngữ văn</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu	<b>Chuyên Lịch sử</b> Số lượng đăng ký: <b>1/35</b> chỉ tiêu	<b>Chuyên Địa lý</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu
<b>Chuyên Tiếng Anh</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu			

Trường THPT Chuyên Nguyễn Thị Minh Khai (phường Sóc Trăng)

<b>Chuyên Toán</b> Số lượng đăng ký: <b>1/70</b> chỉ tiêu	<b>Chuyên Tin học</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu	<b>Chuyên Vật lý</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu	<b>Chuyên Hóa học</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu
<b>Chuyên Sinh học</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu	<b>Chuyên Ngữ văn</b> Số lượng đăng ký: <b>0/35</b> chỉ tiêu	<b>Chuyên Lịch sử</b> Số lượng đăng ký: <b>0/18</b> chỉ tiêu	<b>Chuyên Địa lý</b> Số lượng đăng ký: <b>1/17</b> chỉ tiêu
<b>Chuyên Tiếng Anh</b> Số lượng đăng ký: <b>1/70</b> chỉ tiêu			

Figure 5.7. Admission Information of High School for the Gifted

When users click on the Admission Documents button, the interface of this function is shown in Figure 5.8 below. When users choose one of the documents shown, it will show a window to show the document details. Users can also open this document in a new tab by clicking on the Open document (*Mở văn bản*) button.

Figure 5.8. Admission Documents interface

When users click on the Login button, the interface of this function is shown in Figure 5.9 below. Users need to have an account given by teachers or administrators of the Department of Education and Training. Users need to log in by typing their username and password of their account, then click on the reCAPTCHA button to verify “I’m not a robot” before logging in by pressing the Login (*Đăng nhập*) button. If the username and password are matched, users will be redirected to the page according to their role; otherwise, it will show an error message, and users need to retype their username and password.

Figure 5.9. Login interface

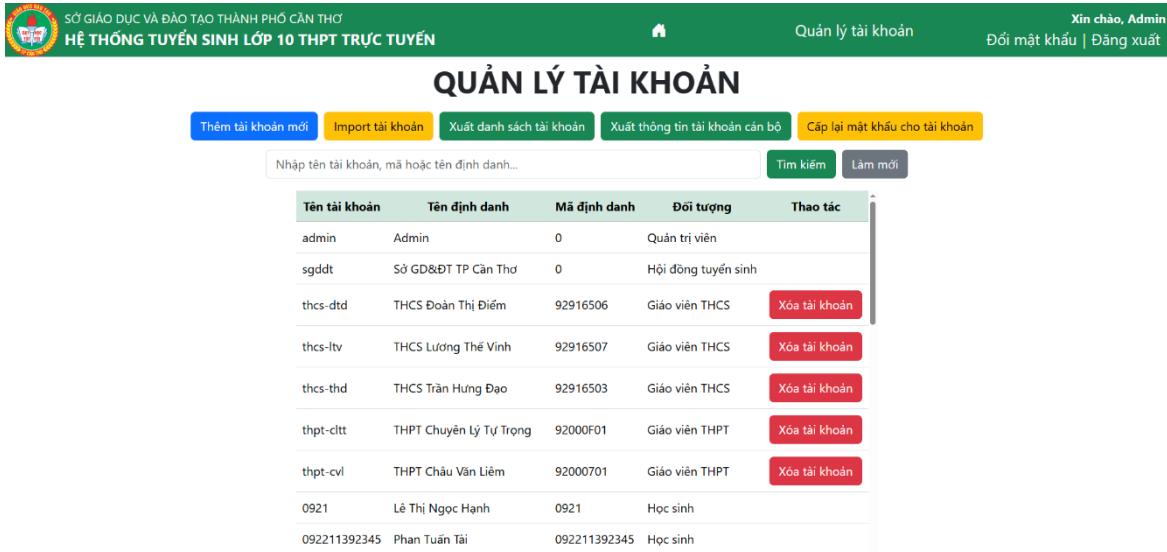
### 5.1.2. Functions for Administrators

The Administrator's homepage after logging in is shown in Figure 5.10 below. Administrators have one main subsystem, which is Account Management (*Quản lý tài khoản*).



Figure 5.10. Administrator's homepage

The homepage of the Account Management subsystem is shown in Figure 5.11 below. In this page, the main content includes a search box for users to find accounts that have a similar name or ID. There is also a table showing the list of accounts according to the user's keyword. If the search box is empty, it will show all accounts existing in the system. If there are no accounts that match the keyword, it will show the message that no accounts exist. Users can also refresh the search box to show the full accounts list as the default.



Tên tài khoản	Tên định danh	Mã định danh	Đối tượng	Thao tác
admin	Admin	0	Quản trị viên	<button>Xóa tài khoản</button>
sgddt	Sở GD&ĐT TP Cần Thơ	0	Hội đồng tuyển sinh	<button>Xóa tài khoản</button>
thcs-dtd	THCS Đoàn Thị Điểm	92916506	Giáo viên THCS	<button>Xóa tài khoản</button>
thcs-ltv	THCS Lương Thế Vinh	92916507	Giáo viên THCS	<button>Xóa tài khoản</button>
thcs-thd	THCS Trần Hưng Đạo	92916503	Giáo viên THCS	<button>Xóa tài khoản</button>
thpt-clt	THPT Chuyên Lý Tự Trọng	92000F01	Giáo viên THPT	<button>Xóa tài khoản</button>
thpt-cvl	THPT Châu Văn Liêm	92000701	Giáo viên THPT	<button>Xóa tài khoản</button>
0921	Lê Thị Ngọc Hạnh	0921	Học sinh	
092211392345	Phan Tuấn Tài	092211392345	Học sinh	

Figure 5.11. Account Management homepage

Administrators can also delete accounts by clicking on the Delete account (*Xóa tài khoản*) button. After clicking, it will show a confirmation dialog as Figure 5.12 below. If users want to delete this account, they can click on the Delete (Xóa) button to confirm. (Administrators can only delete accounts of Secondary School and High School Officials for safety reasons.)

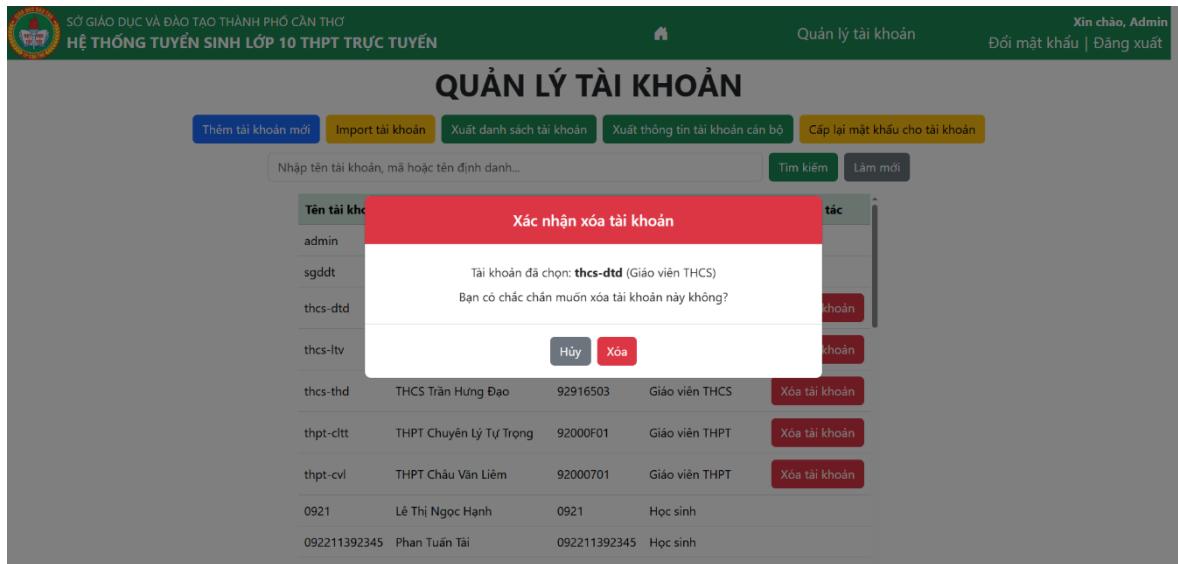


Figure 5.12. Confirmation dialog for deleting an account

Besides, administrators can also add new accounts in 2 ways: adding a new account manually, or using an Excel file to import multiple accounts at a time. If administrators want to add a new account manually, they can click on the Add new account (*Thêm tài khoản mới*) button to go to the Add Account page. The interface of this page is shown in Figure 5.13 below. To add a new account, users need to provide the username and the user type (including 2 types: Secondary School Officials and High School Officials). With each type, the system will then show a list of schools that satisfy the user type that users have chosen. After that, the user can click on Add account to confirm. If the account can be added, a default password will be provided for this user, and it will show a success message to administrators.

Figure 5.13. Add Account page

If users want to import accounts, after clicking on the Import accounts (Import tài khoản) button, a dialog will be shown as Figure 5.14 below. To import accounts, administrators need to install Excel templates first by clicking on the Install template here (*Tải file mẫu tại đây*) button. After that, they can type on that template to add new accounts with 3 pieces of information: Username, user type, ID, before importing into the dialog above and clicking “Import” (*Thực hiện import*). After that, it will show how many accounts have been imported successfully and how many errors are in the Excel file they have imported.

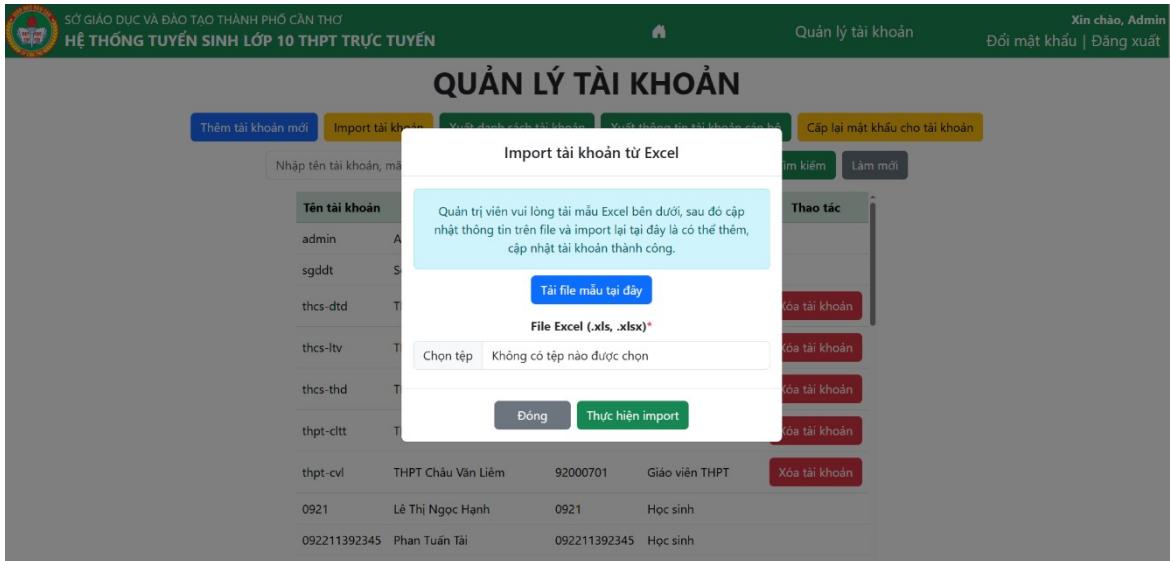


Figure 5.14. Dialog for importing accounts

To export account information, administrators can also use 2 functions, which are Export account list (*Xuất danh sách tài khoản*) and Export official’s accounts (*Xuất thông tin tài khoản cán bộ*). The Export account list function will export all accounts in the system with only simple information about those accounts, such as username, identification name, ID number, and role, while the Export officials’ accounts function will export all accounts with default passwords for officials to log in to the system. This is an important function because administrators need to transfer this file to all officials in Can Tho City and give them an account to connect to this system and perform other tasks related to admission.

Administrators can also reset the password for users by clicking on the Reset password (*Cáp lại mật khẩu cho tài khoản*) button. After clicking, it will show a dialog as Figure 5.15 below. They will need to type the username of the account that users want to reset the password and click the Reset password (*Cáp lại mật khẩu*) button to reset the password. When the process finishes, it will show the new password for administrators, and they will send this new password to users.

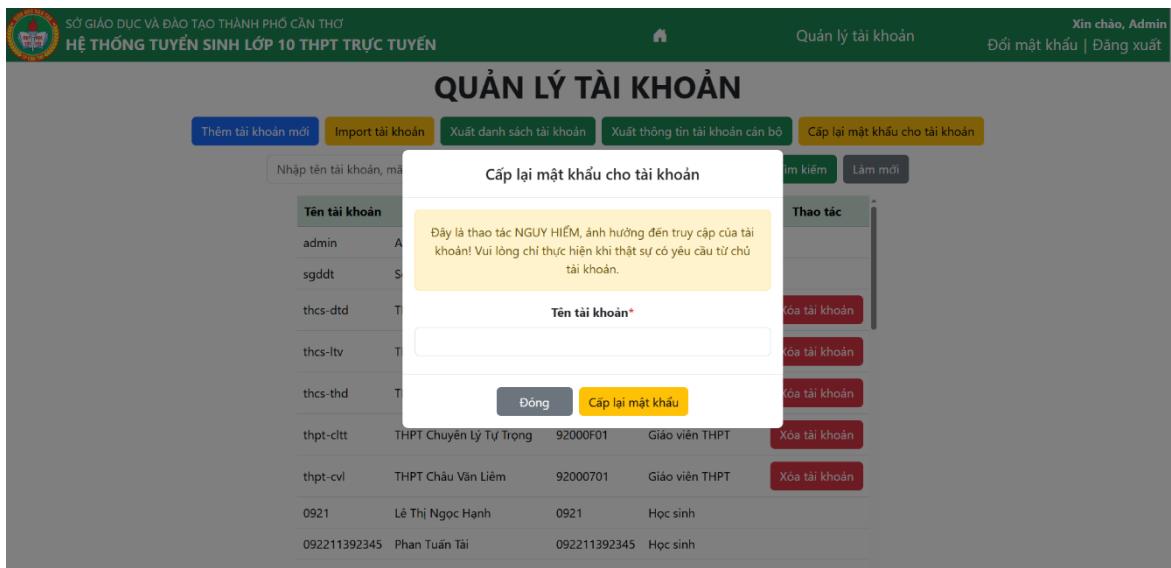


Figure 5.15. Reset password dialog

Administrators can also change their current password by clicking on the Change password (*Đổi mật khẩu*) button on the header of the page. The interface for this function is shown in Figure 5.16 below. Administrators need to type their current password, the new password and the confirmation of their new password before clicking on the Save button. After clicking the button, a message will be shown to notify users that their password has been changed successfully.

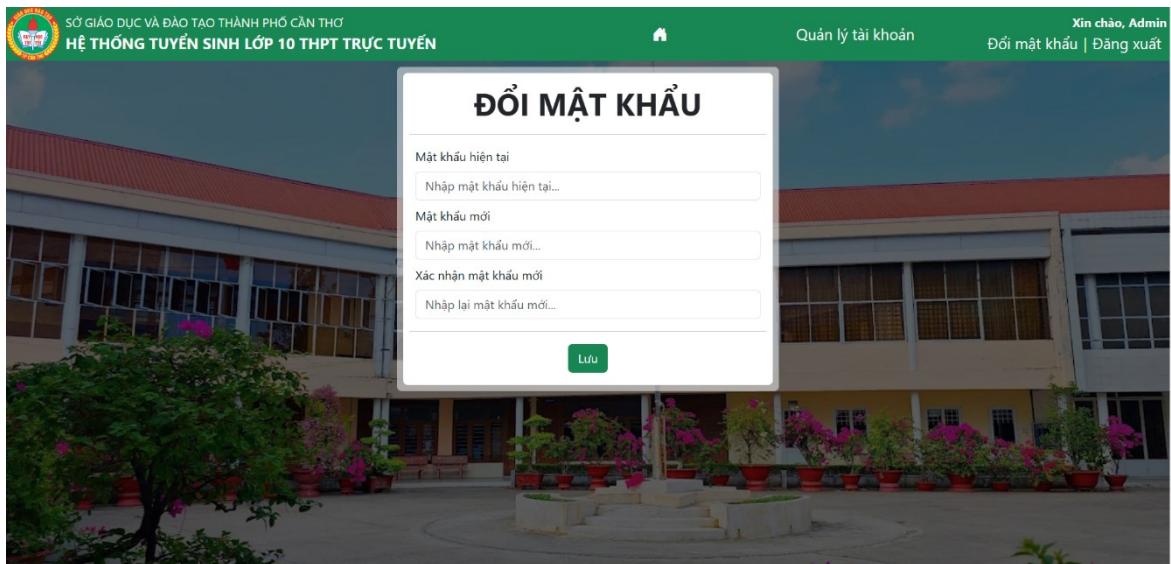


Figure 5.16. Change Password page

### 5.1.3. Functions for Admissions Council Officials

The Admissions Council Official's homepage after logging in to the system is shown in Figure 5.17 below. Admissions Council Officials have two main subsystems, which are Student Management (*Quản lý thí sinh*) and State Management (*Quản lý trạng thái*).



Figure 5.17. Admissions Council Official's homepage

The homepage interface of the Student Management subsystem is shown in Figure 5.18 below. In this page, the main content includes a search box for users to find students by student ID, candidate number, or the student's full name. There is also a table showing the list of students according to the user's keyword. By default, it will show all students and their scores in the system. If there are no students whose information matches the keyword, it will show the message that no student exists. Officials can also refresh the search box to show the full candidate list as the default.

SỞ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ		Quản lý thí sinh		Quản lý trạng thái		Xin chào, Sở GD&ĐT TP Cần Thơ Đổi mật khẩu   Đăng xuất							
HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN													
<b>QUẢN LÝ KẾT QUẢ THI THÍ SINH</b>													
Nhập MSHS, số báo danh hoặc họ và tên để tìm kiếm...													
<a href="#">Cập nhật SBD, phòng thi thí sinh</a>		<a href="#">Import điểm thí sinh</a>		<a href="#">Xuất bảng điểm kỳ thi</a>		<a href="#">Chạy hệ thống xét tuyển</a>							
<a href="#">Xuất bảng kết quả tuyển sinh</a>		<a href="#">Tim kiếm</a>		<a href="#">Làm mới</a>									
Số báo danh	Họ và tên học sinh	Điểm Toán	Điểm Ngữ văn	Điểm môn thứ 3	Điểm môn chuyên	Thao tác							
010001	Nguyễn Văn Dũng	9.00	9.25	8.00	-	<a href="#">Cập nhật điểm</a>							
010002	Nguyễn Văn Hùng	9.50	9.75	8.75	-	<a href="#">Cập nhật điểm</a>							
010003	Phan Văn Long	9.00	8.00	9.00	-	<a href="#">Cập nhật điểm</a>							
010004	Trần Văn Long	9.25	8.00	9.00	-	<a href="#">Cập nhật điểm</a>							
010005	Phan Văn Tài	-	-	-	-	<a href="#">Cập nhật điểm</a>							
010006	Hoàng Ngọc Thuận	9.25	9.75	8.75	-	<a href="#">Cập nhật điểm</a>							
270002	Nguyễn Thị Bình	8.50	7.50	9.25	8.50	<a href="#">Cập nhật điểm</a>							
270004	Lê Thị Ngọc Hạnh	7.25	6.75	8.25	7.25	<a href="#">Cập nhật điểm</a>							

Figure 5.18. Student Management homepage

To update the student's score, each student needs to have a candidate number. This can be done by clicking on Setting candidate number and exam room for students (*Cập nhật số báo danh, phòng thi thí sinh*). It will sort the student list by the high school students who have registered, then by their name to set the candidate number and exam room for all students registered in Can Tho City. After that, users can click on the Update score (*Cập nhật điểm*) button of the students they want to update. The interface of this function is shown in Figure 5.19 below.

SỞ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ  
HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN

Quản lý thí sinh    Quản lý trạng thái    Xin chào, Sở GD&ĐT TP Cần Thơ  
Đổi mật khẩu | Đăng xuất

## CẬP NHẬT ĐIỂM THÍ SINH

Số báo danh	270002
Họ và tên thí sinh	Nguyễn Thị Bình
Điểm Toán	8.50
Điểm Ngữ văn	7.50
Điểm môn thứ 3	9.25
Điểm môn chuyên	8.50

**Khôi phục**   **Cập nhật điểm**

Figure 5.19. Update Student's Score page

The interface will show the student's information and his/her current score. Officials can update the score by changing any of their scores in each text box before clicking on the Update score (*Cập nhật điểm*) button to save. (Note that if students have not chosen any High school for the Gifted, the Specialized score (*Điểm môn chuyên*) will be disabled, so users cannot modify this score.)

Besides updating scores manually, users can also import scores from an Excel file. Users can export the current scoreboard by clicking on Export exam scoreboard (*Xuất bảng điểm kỳ thi*) to use as a template to update scores. After that, officials can update the file, then import by clicking on the Import scores (*Import điểm thí sinh*) button. A dialog will be shown as Figure 5.20 below. Users then choose the file they have updated and click on Import (*Thực hiện import*) to start the process. After finishing, it will show the result, including the number of successful students who have been updated and the number of errors while importing.

SỞ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ  
HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN

Quản lý thí sinh    Quản lý trạng thái    Xin chào, Sở GD&ĐT TP Cần Thơ  
Đổi mật khẩu | Đăng xuất

## QUẢN LÝ KẾT QUẢ THI THÍ SINH

Cập nhật SBD, phòng thi, điểm thi, điểm trung bình, điểm xét tuyển

Nhập MSHS, số báo danh

Import điểm thí sinh từ Excel

Quý Thầy/Cô vui lòng tải bảng điểm thí sinh về trước (ở nút Xuất bảng điểm ra Excel), đây là mẫu bảng điểm chuẩn dùng để nhập điểm cho thí sinh. Sau đó quý Thầy/Cô cập nhật điểm trên bảng điểm đó và import lại tại đây là có thể cập nhật điểm cho thí sinh thành công.

Điểm môn chuyên    Thảo tác

File Excel (.xls, .xlsx)\*

Chọn tệp | Không có tệp nào được chọn

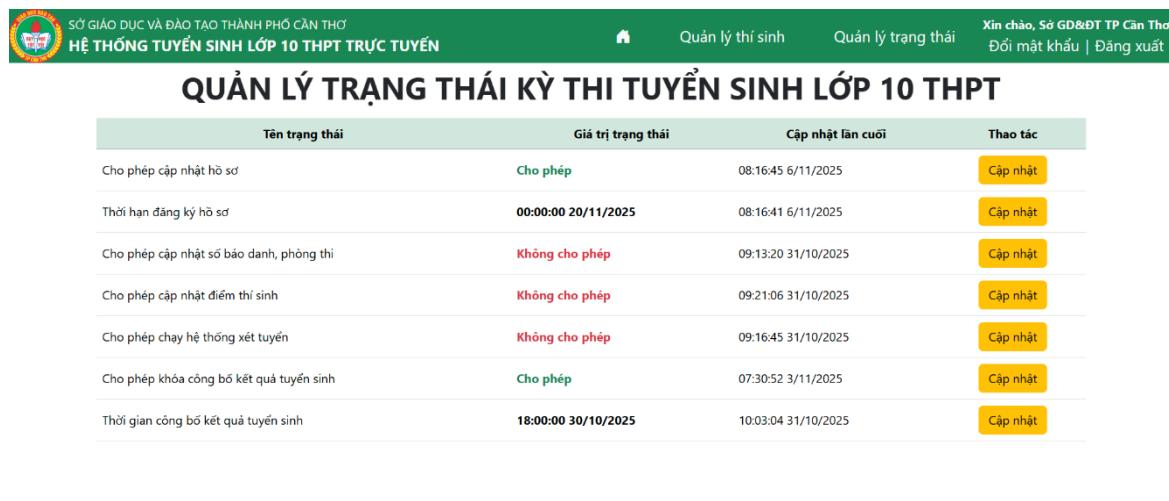
Đóng    Thực hiện import

Số báo danh	Họ và tên học sinh	Điểm môn chuyên	Thảo tác
010001	Nguyễn Văn Dũng	-	<b>Cập nhật điểm</b>
010002	Nguyễn Văn Hùng	-	<b>Cập nhật điểm</b>
	Phan Văn Long	-	<b>Cập nhật điểm</b>
	Trần Văn Long	-	<b>Cập nhật điểm</b>
010003	Phan Văn Tài	-	<b>Cập nhật điểm</b>
010004	Hoàng Ngọc Thuận	-	<b>Cập nhật điểm</b>
270002	Nguyễn Thị Bình	8.50	<b>Cập nhật điểm</b>
270004	Lê Thị Naoc Hanh	7.25	<b>Cập nhật điểm</b>
		7.50	<b>Cập nhật điểm</b>
		6.75	<b>Cập nhật điểm</b>
		8.25	<b>Cập nhật điểm</b>
		7.25	<b>Cập nhật điểm</b>

Figure 5.20. Import Student's Score

Officials can also click on Run the admission system (*Chạy hệ thống xét tuyển*), which will run the admission process by looping through each student's choices (including five choices) and then assign them to the suitable high school according to their scores, the choices order, and the admission number of each school. After finishing, it will show a message to notify that the admission process has been finished. After that, they can click on Export admission result (*Xuất bảng kết quả tuyển sinh*) to install the detailed result of all students in Can Tho City.

The State Management subsystem homepage is shown in Figure 5.21 below. The interface will show some important states of the admission process. Some of them will be expressed as a Boolean state, while others will be expressed as a Timestamp state.

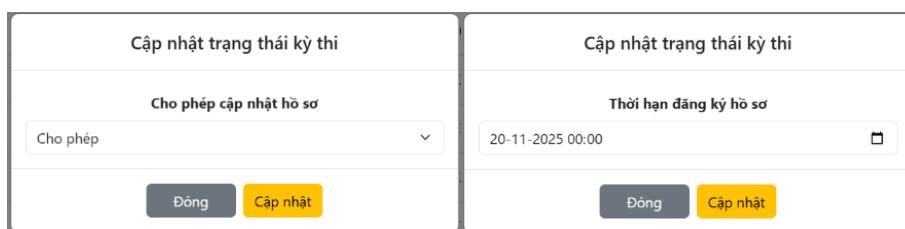


The screenshot shows a web-based application for managing admission states. At the top, there is a header with the logo of the Ministry of Education and Training of Can Tho City, followed by the text "SỞ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ" and "HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN". To the right of the header are links for "Quản lý thí sinh", "Quản lý trạng thái", "Xin chào, Sở GD&ĐT TP Cần Thơ", "Đổi mật khẩu | Đăng xuất", and a home icon. Below the header is a main title "QUẢN LÝ TRẠNG THÁI KỲ THI TUYỂN SINH LỚP 10 THPT". The main content is a table with four columns: "Tên trạng thái" (State Name), "Giá trị trạng thái" (State Value), "Cập nhật lần cuối" (Last Update), and "Thao tác" (Action). The table lists seven rows of data:

Tên trạng thái	Giá trị trạng thái	Cập nhật lần cuối	Thao tác
Cho phép cập nhật hồ sơ	<b>Cho phép</b>	08:16:45 6/11/2025	<b>Cập nhật</b>
Thời hạn đăng ký hồ sơ	<b>00:00:00 20/11/2025</b>	08:16:41 6/11/2025	<b>Cập nhật</b>
Cho phép cập nhật số báo danh, phòng thi	<b>Không cho phép</b>	09:13:20 31/10/2025	<b>Cập nhật</b>
Cho phép cập nhật điểm thí sinh	<b>Không cho phép</b>	09:21:06 31/10/2025	<b>Cập nhật</b>
Cho phép chạy hệ thống xét tuyển	<b>Không cho phép</b>	09:16:45 31/10/2025	<b>Cập nhật</b>
Cho phép khóa công bố kết quả tuyển sinh	<b>Cho phép</b>	07:30:52 3/11/2025	<b>Cập nhật</b>
Thời gian công bố kết quả tuyển sinh	<b>18:00:00 30/10/2025</b>	10:03:04 31/10/2025	<b>Cập nhật</b>

Figure 5.21. State Management homepage

If users want to update the state, they can click on the Update (*Cập nhật*) button of the state that officials want to update. A dialog will be shown as Figure 5.22 below, depending on the state type of data. With a Boolean state, users will choose from a dropdown value they want to assign now, while with a Timestamp state, users will type or choose the date and time for the state, before clicking the Update (*Cập nhật*) button to save. (Note that this state will be important for all user types, because some functions will be hidden or cannot be done if the state is not validated.)



The screenshot shows two side-by-side update dialogs for different state types. Both dialogs have a title "Cập nhật trạng thái kỳ thi" and a "Đóng" (Close) button at the bottom left.

- Left Dialog (Boolean State):** The title is "Cập nhật trạng thái kỳ thi". It contains a dropdown menu labeled "Cho phép cập nhật hồ sơ" with the option "Cho phép" selected. At the bottom are "Đóng" and "Cập nhật" buttons.
- Right Dialog (Timestamp State):** The title is "Cập nhật trạng thái kỳ thi". It contains a date and time input field set to "20-11-2025 00:00" with a calendar icon. At the bottom are "Đóng" and "Cập nhật" buttons.

Figure 5.22. Update State dialogs (for Boolean and Timestamp states)

Officials can also change their current password by clicking on the Change password (*Đổi mật khẩu*) button on the header of the page. This function is similar to the function of Administrators, which has been presented in part 5.1.2 above.

### 5.1.4. Functions for Secondary School Officials

The Secondary School Official's homepage after logging in is shown in Figure 5.23 below. Secondary School Officials have one main subsystem, which is Student Management (*Quản lý học sinh*).



Figure 5.23. Secondary School Official's homepage

The homepage of the Student Management subsystem is shown in Figure 5.24 below. In this page, the main content includes a search box for officials to find students who have a similar name or ID. There is also a table showing the list of students according to the user's keyword. By default, it will show all students registered in the user's secondary school. If there are no students that satisfy the keyword, it will show the message that no students exist. They can also refresh the search box to show the full list of students as the default. With each student, officials can choose the Detailed Information (*Xem chi tiết*) function to see the detailed profile of this student, the Update (*Cập nhật*) function to update the student profile, or the Delete student (*Xóa*) function to delete this student from the list.

MSHS		Họ và tên học sinh	Giới tính	Ngày sinh	Nơi sinh	Nguyên vọng cao nhất	Thao tác		
0921	Lê Thị Ngọc	Hạnh	Nữ	11/07/2011	Cần Thơ	<b>NV1:</b> THPT Chuyên Lý Tự Trọng (Chuyên Toán)	Xem chi tiết	Cập nhật	Xóa
0944	Nguyễn Hoàng Thanh	Tùng	Nam	15/02/2011	Cần Thơ	<b>NV1:</b> THPT Chuyên Lý Tự Trọng (Chuyên Vật lý)	Xem chi tiết	Cập nhật	Xóa
M01	Nguyễn Văn	An	Nam	01/01/2011	Cần Thơ	<b>NV1:</b> THPT Chuyên Nguyễn Thị Minh Khai (Chuyên Toán)	Xem chi tiết	Cập nhật	Xóa
M02	Nguyễn Thị	Bình	Nữ	01/01/2011	Cần Thơ	<b>NV1:</b> THPT Chuyên Lý Tự Trọng (Chuyên Vật lý)	Xem chi tiết	Cập nhật	Xóa
M03	Nguyễn Văn	Cường	Nam	01/01/2011	Cần Thơ	<b>NV1:</b> THPT Chuyên Vị Thanh (Chuyên Lịch sử)	Xem chi tiết	Cập nhật	Xóa
M04	Nguyễn Văn	Dũng	Nam	01/01/2011	Cần Thơ	<b>NV2:</b> THPT Châu Văn Liêm	Xem chi tiết	Cập nhật	Xóa
M05	Nguyễn Thị Trúc	Em	Nữ	01/01/2011	Cần Thơ	<b>NV1:</b> THPT Chuyên Lý Tự Trọng (Chuyên Tiếng Anh)	Xem chi tiết	Cập nhật	Xóa

Figure 5.24. Student Management homepage

The Detailed Information page is shown in Figure 5.25 below. This page will show the detailed information of a student studying in the user's secondary school. The structure of this page includes 3 parts, which are similar to the actual register form of the Department of Education and Training.

Figure 5.25. Detailed Information page

The Update page is shown in Figure 5.26 below. This page will show all detailed information about a student, and officials can also update the student's information that they want to modify by clicking on textboxes and form fields. After modifying, officials click on the Update profile (*Cập nhật hồ sơ*) button to confirm.

Figure 5.26. Update Students page

When officials click on the Delete students button, it will show a dialog as shown in Figure 5.27 below. If they want to delete this student, they can click on the Delete (*Xóa*) button to confirm; otherwise, they can click on the Undo (*Hủy*) button to close the dialog.

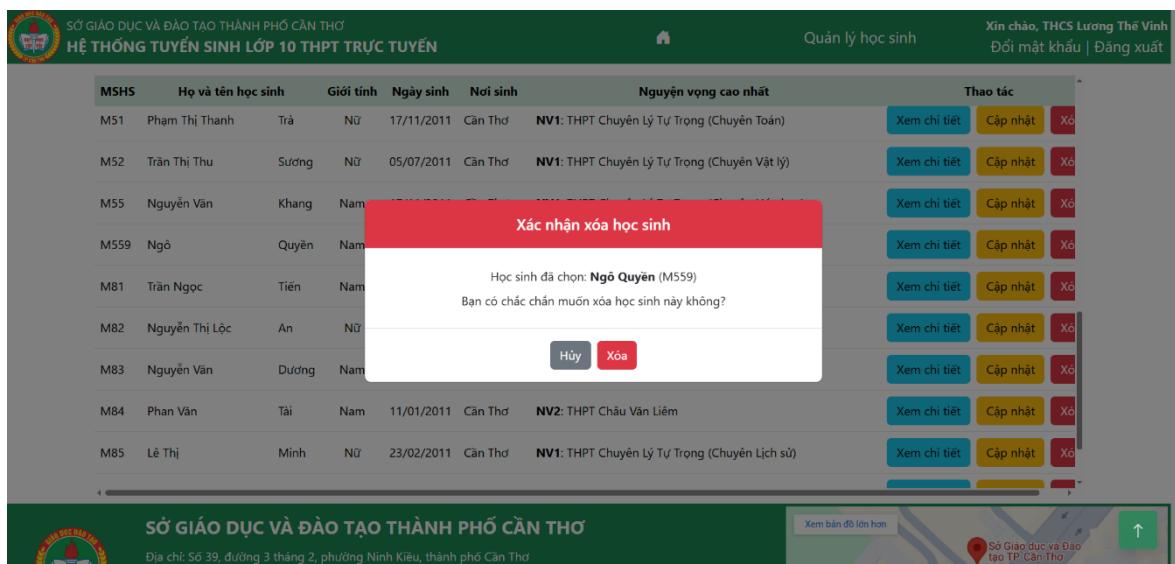


Figure 5.27. Confirmation dialog to delete a student

Besides the above functions used for each student, officials can also use some functions in the button row above the search box. If they want to add new students to the list, there are four ways to do that: Initiate student profile (*Khởi tạo hồ sơ*), Import initial student profile (*Import hồ sơ khởi tạo*), Add student profile (*Thêm hồ sơ đầy đủ*), and Import student profile (*Import hồ sơ*).

The Initiate Student Profile page is shown in Figure 5.28 below. Officials can add some initial information about the student (student ID, full name, gender, date of birth, birthplace, secondary school) and then click on the Submit button to confirm.

Figure 5.28. Initiate Student Profile page

The Add Student Profile page is shown in Figure 5.29 below. Users will type in all textboxes with (\*) showing that this is a mandatory field and needs to be typed before submitting. After typing in all fields, users can click on the Add profile (*Thêm hồ sơ*) button to confirm and add a new student to the system.



Figure 5.29. Add Student Profile page

Besides adding manually, users can also import a student profile by using two import buttons: Import Initial Student Profile (*Import hồ sơ khởi tạo*) and Import Student Profile (*Import hồ sơ*). The Import Initial Student Profile dialog is shown in Figure 5.30 below. With this function, officials need to install the template by clicking the Install template here (*Tải file mẫu tại đây*) button and add initial information of students before importing and uploading that file back to this dialog, then click on the Import (*Thực hiện import*) button to confirm. After importing, it will show the number of students' profiles imported successfully and errors while importing.

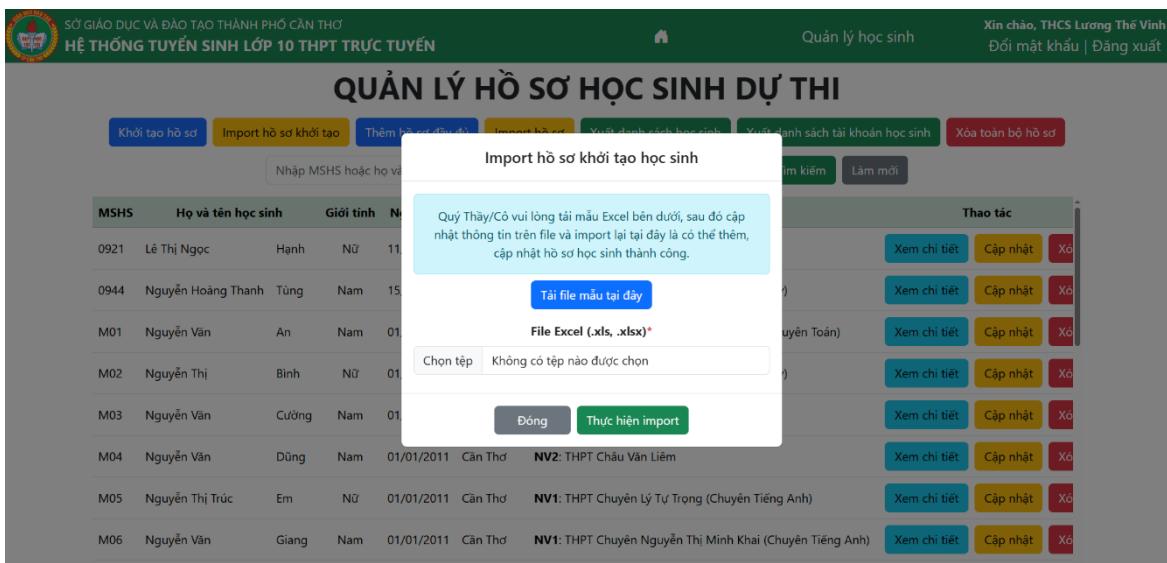


Figure 5.30. Import Initial Student Profile dialog

The Import Student Profile dialog is shown in Figure 5.31 below. With this function, officials need to install the template by clicking Install template here (*Tải file mẫu tại đây*) and then add information about students in an Excel file before importing and uploading that file back to this dialog. Besides that, officials should upload a ZIP file including students' avatars and upload that also in this dialog (this is optional) and click on the Import (*Thực hiện import*) button to confirm. After

importing, it will show the number of students' profiles imported successfully and the errors while importing. This function can also be used for updating multiple students at a time because it will only need to update existing students in the list and add them if they do not exist in the list.

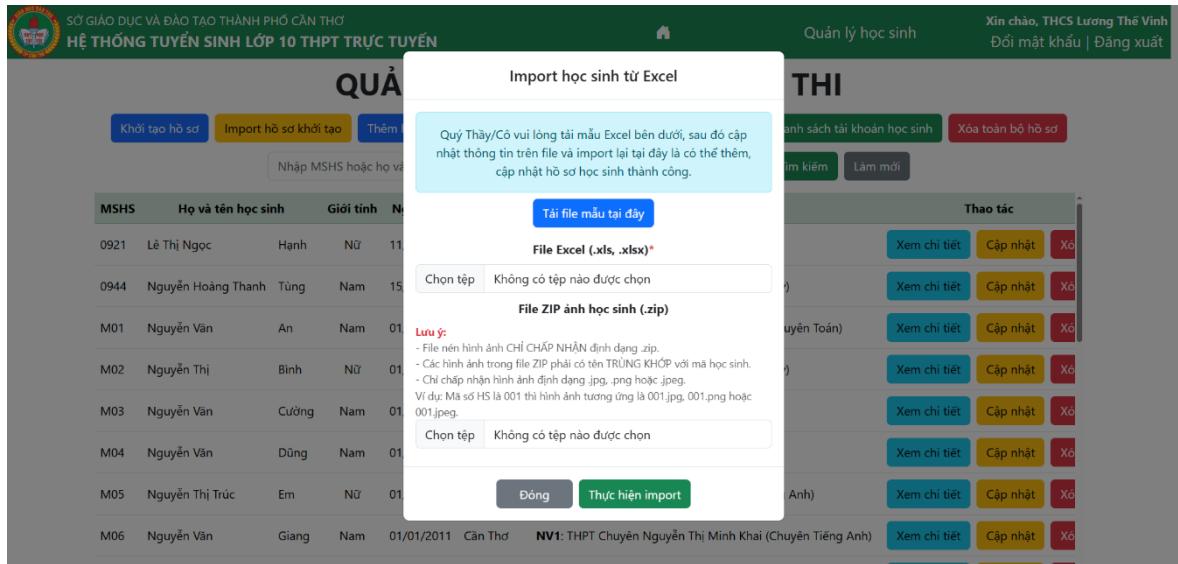


Figure 5.31. Import Student Profile dialog

Officials can also use two functions to export data, which are Export student list (*Xuất danh sách học sinh*) and Export student's account (*Xuất danh sách tài khoản học sinh*). The difference between those functions is that while Export student list will export all detailed information of all students this secondary school is managing, Export student's account will only export the student's account list and the default password for each account. Officials can use this function to give accounts for students to connect to this system and modify information if they need to update.

Officials can also use the Delete all students (*Xóa toàn bộ hồ sơ*) function to delete all students in their secondary school. This function's dialog after clicking on this button is shown in Figure 5.32 below. If they want to delete all, they can click on the Delete (*Xóa*) button to confirm, or click on Undo (*Hủy*) to close the dialog.

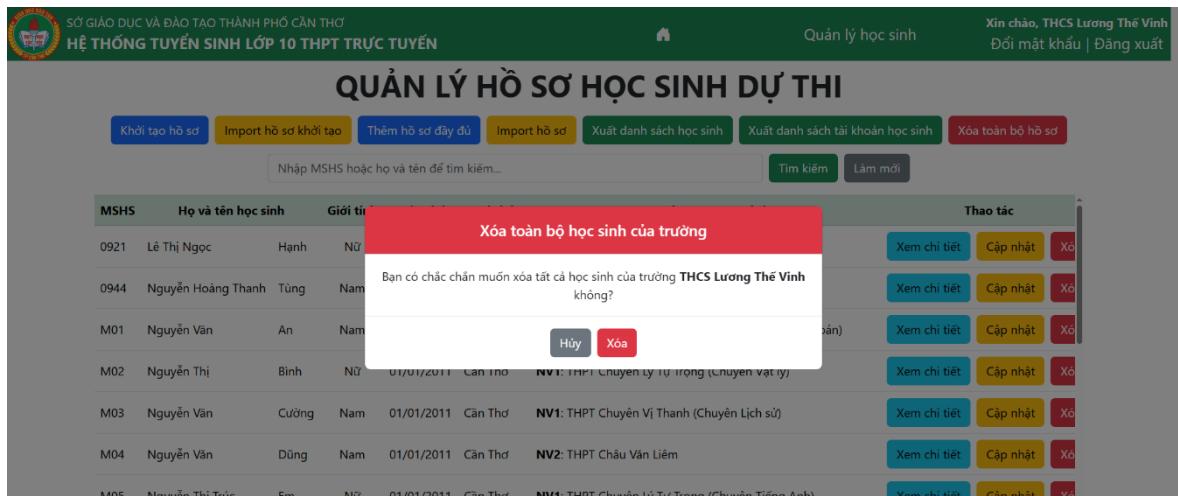


Figure 5.32. Delete All Students dialog

Officials can also change their current password by clicking on the Change password (*Đổi mật khẩu*) button on the header of the page. This function is similar to the function of Administrators, which has been presented in part 5.1.2 above.

### 5.1.5. Functions for High School Officials

The High School Official's homepage after logging in is shown in Figure 5.33 below. High School Officials have two main subsystems: Profile Management (*Quản lý hồ sơ*) and Candidate Management (*Quản lý thí sinh*). The Candidate Management subsystem is only available for high schools that admit students in both Can Tho City and outside Can Tho City; other high schools will not have this function.



Figure 5.33. High School Official's homepage

The Profile Management subsystem homepage is shown in Figure 5.34 below. The main content of this page includes a search box for users to find students (outside Can Tho City) with a similar name or ID. There is also a table showing the list of students according to the user's keyword. If the search box is empty, it will show all students registered in the user's secondary school. If there are no students that match the keyword, it will show a message that no students exist. Officials can also refresh the search box to show the full list of students as the default. With each student, officials can choose the See detailed information (*Xem chi tiết*) function to see the detailed profile of this student, the Update (*Cập nhật*) function to update the student's profile, or the Delete student (*Xóa*) button to delete this student from the list. The difference is that the table will show a column named Secondary school (*Trường THCS*), which is the place to show the full secondary school name and the address of this school for retrieving information.

 SỞ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ <b>HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN</b>	<a href="#">Quản lý hồ sơ</a> <a href="#">Quản lý thí sinh</a> <a href="#">Xin chào, THPT Chuyên Lý Tự Trọng</a> <a href="#">Đổi mật khẩu</a>   <a href="#">Đăng xuất</a>																																																																
<b>QUẢN LÝ HỒ SƠ HỌC SINH NGOÀI TP CẦN THƠ DỰ THI</b>																																																																	
<a href="#">Thêm hồ sơ mới</a> <a href="#">Import hồ sơ</a> <a href="#">Xuất danh sách học sinh</a> <a href="#">Xuất thông tin tài khoản học sinh</a> <a href="#">Xóa toàn bộ hồ sơ</a>																																																																	
<input type="text" value="Nhập MSHS hoặc họ và tên để tìm kiếm..."/> <a href="#">Tim kiếm</a> <a href="#">Làm mới</a>																																																																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #e0f2e0;"> <th style="text-align: left; padding: 5px;">MSHS</th> <th style="text-align: left; padding: 5px;">Họ và tên học sinh</th> <th style="text-align: left; padding: 5px;">Giới tính</th> <th style="text-align: left; padding: 5px;">Ngày sinh</th> <th style="text-align: left; padding: 5px;">Nơi sinh</th> <th style="text-align: left; padding: 5px;">Trường THCS</th> <th style="text-align: left; padding: 5px;">Lớp chuyên</th> <th style="text-align: left; padding: 5px;">Thao tác</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">092211392345</td><td style="padding: 5px;">Phan Tuấn Tài</td><td style="padding: 5px;">Nam</td><td style="padding: 5px;">07/12/2011</td><td style="padding: 5px;">Đồng Tháp</td><td style="padding: 5px;">THCS Nguyễn Chí Thành (Phường Cao Lãnh, Tỉnh Đồng Tháp)</td><td style="padding: 5px;">Chuyên Sinh học</td><td style="text-align: center; padding: 5px;"> <a href="#">Xem chi tiết</a>    <a href="#">Cập nhật</a>    <a href="#">Xóa</a> </td></tr> <tr> <td style="padding: 5px;">093211002011</td><td style="padding: 5px;">Châu Thanh Quang</td><td style="padding: 5px;">Nam</td><td style="padding: 5px;">17/11/2011</td><td style="padding: 5px;">Cà Mau</td><td style="padding: 5px;">THCS Trần Huỳnh (Phường Bạc Liêu, Tỉnh Cà Mau)</td><td style="padding: 5px;">Chuyên Vật lý</td><td style="text-align: center; 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MSHS	Họ và tên học sinh	Giới tính	Ngày sinh	Nơi sinh	Trường THCS	Lớp chuyên	Thao tác																																																										
092211392345	Phan Tuấn Tài	Nam	07/12/2011	Đồng Tháp	THCS Nguyễn Chí Thành (Phường Cao Lãnh, Tỉnh Đồng Tháp)	Chuyên Sinh học	<a href="#">Xem chi tiết</a> <a href="#">Cập nhật</a> <a href="#">Xóa</a>																																																										
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093211002013	Trần Hùng	Nam	01/03/2011	An Giang	THCS Ngô Quyền (Phường Rạch Giá, Tỉnh An Giang)	Chuyên Toán	<a href="#">Xem chi tiết</a> <a href="#">Cập nhật</a> <a href="#">Xóa</a>																																																										
099323451001	Hoàng Hữu Nam	Nam	10/01/2011	Cà Mau	THCS Phan Bội Châu (Phường Tân Thành, Tỉnh Cà Mau)	Chuyên Tin học	<a href="#">Xem chi tiết</a> <a href="#">Cập nhật</a> <a href="#">Xóa</a>																																																										
HSNT092345	Lâm Tuấn Khanh	Nam	09/11/2011	Cần Thơ	THCS Bình Đức (Phường Bình Đức, Tỉnh An Giang)	Chuyên Toán	<a href="#">Xem chi tiết</a> <a href="#">Cập nhật</a> <a href="#">Xóa</a>																																																										
HSNT373200	Nguyễn Thị Ngọc Trâm	Nữ	07/05/2011	Cần Thơ	THCS Bình Minh (Phường Bình Minh, Tỉnh Vĩnh Long)	Chuyên Ngữ văn	<a href="#">Xem chi tiết</a> <a href="#">Cập nhật</a> <a href="#">Xóa</a>																																																										

Figure 5.34. Profile Management homepage

The Detailed Information page is shown in Figure 5.35 below. This page will show the detailed information of a student studying in the user's secondary school, with the structure of 3 parts, similar to the actual register form of the Department of Education and Training.

 SỞ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ <b>HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN</b>	<a href="#">Quản lý hồ sơ</a> <a href="#">Quản lý thí sinh</a> <a href="#">Xin chào, THPT Chuyên Lý Tự Trọng</a> <a href="#">Đổi mật khẩu</a>   <a href="#">Đăng xuất</a>
CHI TIẾT HỒ SƠ HỌC SINH	
<b>Phân 1: Thông tin cá nhân học sinh</b>	
Ánh học sinh 	
Mã số học sinh: 092211392345 Họ và tên học sinh: Phan Tuấn Tài Giới tính: Nam Ngày sinh: 07/12/2011 Nơi sinh: Đồng Tháp Dân tộc: Kinh Địa chỉ thường trú: Phường Cao Lãnh Chỗ ở hiện nay: Phường Cao Lãnh	
Học sinh trường THCS: THCS Nguyễn Chí Thành (Phường Cao Lãnh, Tỉnh Đồng Tháp) (Ngoài TP Cần Thơ)	
<b>Phân 2: Kết quả học tập cấp THCS</b>	

Figure 5.35. Detailed Information page

The Update Student page is shown in Figure 5.36 below. This page shows all detailed information of a student, and officials can also update information that they want to modify by clicking on textboxes and form fields. After modifying, officials click on the Update profile (*Cập nhật hồ sơ*) button to confirm.



Quản lý hồ sơ

Quản lý thí sinh

Xin chào, THPT Chuyên Lý Tự Trọng  
Đổi mật khẩu | Đăng xuất

## CẬP NHẬT HỒ SƠ HỌC SINH

(Học sinh ngoài địa bàn thành phố Cần Thơ)

### Phần 1: Thông tin cá nhân học sinh

Ảnh học sinh	<input type="button" value="Chọn tệp"/> Chọn tệp	Không có tệp nào được chọn
	<input type="checkbox"/> Xóa ảnh hiện tại	
<b>Lưu ý về việc upload hình ảnh:</b> - Nếu không upload ảnh mới, hệ thống mặc định giữ nguyên hình ảnh hiện tại. - Nếu muốn xóa hình ảnh hiện tại (và không tải ảnh mới), vui lòng chọn "Xóa ảnh hiện tại". - Nếu tải ảnh mới, mặc định khi lưu ảnh mới sẽ thay thế ảnh hiện tại, không cần chọn "Xóa ảnh hiện tại" nữa.		
Mã số học sinh	092211392345	
Họ và tên học sinh*	Phan Tuấn Tài	
Giới tính*	Nam	Nữ

Figure 5.36. Update Student page

The confirmation dialog when officials click on the Delete students button is shown in Figure 5.37 below. If officials want to delete this student, they can click on the Delete (*Xóa*) button to confirm; otherwise, they can click on the Undo (*Hủy*) button to close the dialog.

QUẢN LÝ HỒ SƠ HỌC SINH NGOÀI TP CẦN THƠ DỰ THI						
MSHS	Họ và tên học sinh	Giới tính	Nơi sinh	Tỉnh	Chuyên	Thao tác
092211392345	Phan Tuấn Tài	Nam	Nguyễn Văn Cửu	Thị trấn Cái Răng	Chuyên Ngữ	<input type="button" value="Xem chi tiết"/> <input type="button" value="Cập nhật"/> <input type="button" value="Xóa"/>
093211002011	Châu Thành Quang	Nam	Nguyễn Văn Cửu	Thị trấn Cái Răng	Chuyên Toán	<input type="button" value="Xem chi tiết"/> <input type="button" value="Cập nhật"/> <input type="button" value="Xóa"/>
093211002012	Đương Thành Tùng	Nam	Nguyễn Văn Cửu	Thị trấn Cái Răng	Chuyên Ngữ	<input type="button" value="Xem chi tiết"/> <input type="button" value="Cập nhật"/> <input type="button" value="Xóa"/>
093211002013	Trần Hùng	Nam	01/03/2011	An Giang	THCS Ngô Quyền (Phường Rạch Giá, Tỉnh An Giang)	<input type="button" value="Xem chi tiết"/> <input type="button" value="Cập nhật"/> <input type="button" value="Xóa"/>
099323451001	Hoàng Hữu Nam	Nam	10/01/2011	Cà Mau	THCS Phan Bội Châu (Phường Tân Thành, Tỉnh Cà Mau)	<input type="button" value="Xem chi tiết"/> <input type="button" value="Cập nhật"/> <input type="button" value="Xóa"/>
HSNT092345	Lâm Tuấn Khanh	Nam	09/11/2011	Cần Thơ	THCS Bình Đức (Phường Bình Đức, Tỉnh An Giang)	<input type="button" value="Xem chi tiết"/> <input type="button" value="Cập nhật"/> <input type="button" value="Xóa"/>
HSNT373200	Nguyễn Thị Ngọc Trâm	Nữ	07/05/2011	Cần Thơ	THCS Bình Minh (Phường Bình Minh, Tỉnh Vĩnh Long)	<input type="button" value="Xem chi tiết"/> <input type="button" value="Cập nhật"/> <input type="button" value="Xóa"/>

Xác nhận xóa học sinh

Học sinh đã chọn: Phan Tuấn Tài (092211392345)  
 Bạn có chắc chắn muốn xóa học sinh này không?

Figure 5.37. Confirmation dialog to delete a student

Besides some functions used for each student, High School Officials can also perform some functions in the button row above the search box. If they want to add new students to the list, they can add by using 2 functions: Add new profile (*Thêm hồ sơ mới*) or Import profile (*Import hồ sơ*). With the Add new profile function, the interface is shown in Figure 5.38 below. Officials will type in all textboxes with (\*) to show that this is a mandatory field and needs to be typed before submitting. After typing in all fields, users can click on the Add profile (*Thêm hồ sơ*) button to confirm and add a new student to the system.

Figure 5.38. Add Student Profile page

Besides adding manually, users can also import a student's profile by using Import profile (*Import hồ sơ*). The dialog interface of Import profile is shown in Figure 5.39 below. With the Import profile function, officials need to install the template by clicking Install template here (*Tải file mẫu tại đây*) and then add information of students in an Excel file before importing and uploading that file back to this dialog. Besides that, officials should upload a ZIP file including students' avatars and upload that also in this dialog (this is optional) and click on the Import (*Thực hiện import*) button to confirm. After importing, it will show the number of students' profiles imported successfully and errors while importing. This function can also be used for updating multiple students at a time because it will only need to update existing students in the list and add them if they do not exist in the list.

Figure 5.39. Import Student Profile dialog

High School Officials can also use 2 functions to export data, which are Export student list (*Xuất danh sách học sinh*) and Export student's account (*Xuất thông tin tài khoản học sinh*). The difference between those functions is that while Export student list will export all detailed information of all students this secondary school is managing, Export student's account will only export the student's account list and the default password for each account. Officials can use this function to give accounts for students to connect to this system and modify information if they need to update.

The confirmation dialog when officials click on the Delete all students (*Xóa toàn bộ hồ sơ*) button is shown in Figure 5.40 below. If they want to delete all students, they can choose the Delete (*Xóa*) button, or they can click on the Undo (*Hủy*) to close the dialog.

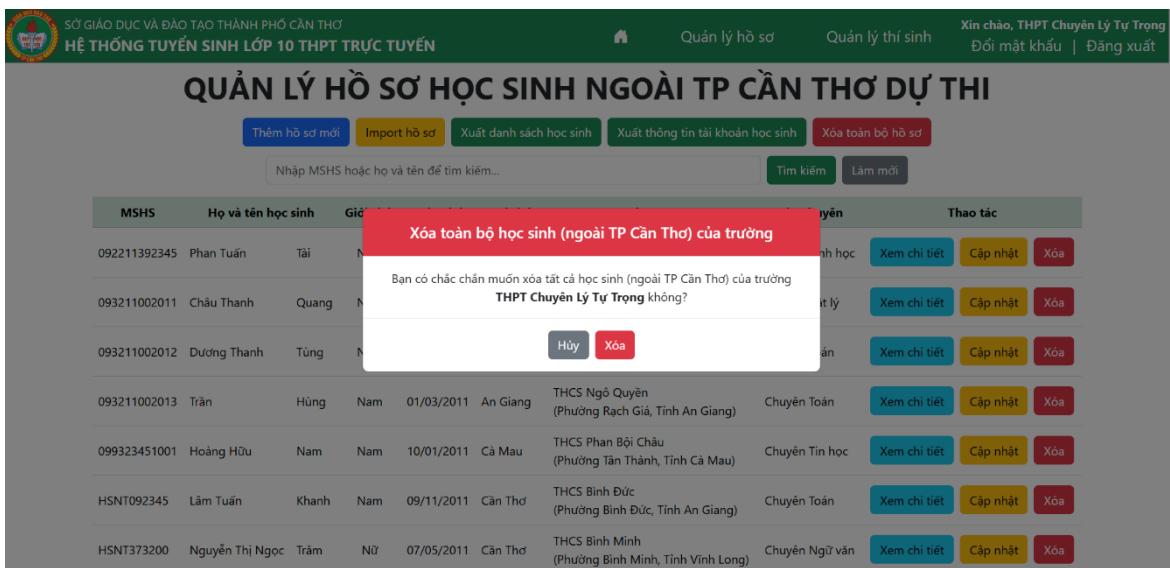


Figure 5.40. Confirmation dialog for deleting all students

The homepage of the Candidate Management subsystem is shown in Figure 5.41 below. On this page, officials can see the full list of students who will participate in the examination at the current high school. The table includes student ID, candidate number, exam room, and other personal information of students. To help officials find students more conveniently, a search box will help them find students by Student ID or their full name. If the search box is empty, it will show all students participating in this school. Otherwise, it will filter according to the user's keyword. Also, it has a refresh (*Làm mới*) button, which will delete the keyword in the search box and go back to the full list of students.

DANH SÁCH THÍ SINH DỰ THI TẠI TRƯỜNG									
(Số báo danh, phòng thi sẽ được sở GD&ĐT cấp sau khi kết thúc thời gian đăng ký)									
<input type="button" value="Xuất danh sách thí sinh"/> <input type="button" value="Xuất kết quả tuyển sinh"/> <span style="margin-left: 20px;">Nhập MSHS hoặc họ và tên để tìm kiếm...</span> <input type="button" value="Tim kiem"/> <input type="button" value="Làm mới"/>									
MSHS	Số báo danh	Phòng thi	Phòng thi chuyên	Họ và tên học sinh	Giới tính	Ngày sinh	Nơi sinh	Học sinh trường THCS	Ghi chú
M82	270001	2701	2705	Nguyễn Thị Lộc	An	Nữ	07/09/2011	Cần Thơ	THCS Lương Thế Vinh
M02	270002	2701	2701	Nguyễn Thị	Bình	Nữ	01/01/2011	Cần Thơ	THCS Lương Thế Vinh
M05	270003	2701	2702	Nguyễn Thị Trúc	Em	Nữ	01/01/2011	Cần Thơ	THCS Lương Thế Vinh
0921	270004	2701	2701	Lê Thị Ngọc	Hạnh	Nữ	11/07/2011	Cần Thơ	THCS Lương Thế Vinh
093211002013	270005	2701	2704	Trần	Hùng	Nam	01/03/2011	An Giang	THCS ngoài TP Cần Thơ
M55	270006	2701	2707	Nguyễn Văn	Khang	Nam	17/11/2011	Cần Thơ	THCS Lương Thế Vinh
HSNT092345	270007	2701	2701	Lâm Tuấn	Khanh	Nam	09/11/2011	Cần Thơ	THCS ngoài TP Cần Thơ
M85	270008	2701	2702	Lê Thị	Minh	Nữ	23/02/2011	Cần Thơ	THCS Lương Thế Vinh
099323451001	270009	2701	2702	Hoàng Hữu	Nam	Nam	10/01/2011	Cà Mau	THCS ngoài TP Cần Thơ

Figure 5.41. Candidate Management page

Officials can also export the student list by clicking on the Export candidate list (*Xuất danh sách thí sinh*) button to export the student list into an Excel file. This file will include the full list of students and the list of each exam room, which is simple for officials and teachers of high schools to print and determine the number of rooms they need to allocate for the exam. Also, they can click on Export admission result (*Xuất kết quả tuyển sinh*) to install the detailed result of all students participating in the admission exam in their high school.

Officials can also change their current password by clicking on the Change password (*Đổi mật khẩu*) button on the header of the page. This function is similar to the function of Administrators, which has been presented in part 5.1.2 above.

### 5.1.6. Functions for Students

The Student's homepage after logging in is shown in Figure 5.42 below. Students have two main subsystems: Student Information (*Thông tin học sinh*) and Result (*Kết quả*).



Figure 5.42. Student's homepage

The homepage of the Student Information is shown in Figure 5.43 below. In this page, the detailed information of this student will be shown in 3 parts, similar to the Admission Form of the Department of Education and Training.

SƠ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ  
HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN

Thông tin học sinh      Kết quả      Xin chào, Nguyễn Văn An (M01)  
Đổi mật khẩu | Đăng xuất

## CHI TIẾT HỒ SƠ HỌC SINH

Cập nhật thông tin      Xuất phiếu đăng ký

**Phần 1: Thông tin cá nhân học sinh**

Ảnh học sinh

Mã số học sinh M01  
Họ và tên học sinh Nguyễn Văn An  
Giới tính Nam  
Ngày sinh 01/01/2011  
Nơi sinh Cần Thơ  
Dân tộc Kinh  
Địa chỉ thường trú P. Ninh Kiều  
Chỗ ở hiện nay P. Ninh Kiều  
Học sinh trường THCS THCS Lương Thế Vinh (Phường Tân An)

Figure 5.43. Student Information homepage

Students can also modify information by clicking on the Update information (*Cập nhật thông tin*) button to go to the Update information page, with the interface as Figure 5.44 below. On this page, it will show all detailed information about a student, and they can update the information that they want to modify. After modifying, they can click on the Update profile (*Cập nhật hồ sơ*) button to confirm.

SƠ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ  
HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN

Thông tin học sinh      Kết quả      Xin chào, Nguyễn Văn An (M01)  
Đổi mật khẩu | Đăng xuất

## CẬP NHẬT HỒ SƠ HỌC SINH

**Phần 1: Thông tin cá nhân học sinh**

Ảnh học sinh Chọn tệp Không có tệp nào được chọn  
  
 Xóa ảnh hiện tại

Lưu ý về việc upload hình ảnh:  
- Nếu không upload ảnh mới, hệ thống mặc định giữ nguyên hình ảnh hiện tại.  
- Nếu muốn xóa hình ảnh hiện tại (và không tải ảnh mới), vui lòng chọn "Xóa ảnh hiện tại".  
- Nếu tải ảnh mới, mặc định khi lưu ảnh mới sẽ thay thế ảnh hiện tại, không cần chọn "Xóa ảnh hiện tại" nữa.

Mã số học sinh M01  
Họ và tên học sinh\* Nguyễn Văn An  
Giới tính\*  Nam  Nữ  
Ngày sinh\* 01-01-2011

Figure 5.44. Update Information page

Also, students can use the Export Admission Form (*Xuất phiếu đăng ký*) function to export the admission information into a Word file, as shown in Figure 5.45 below. Students can use this Word file to print and give it to the Officials.

*Figure 5.45. The Admission Form after exporting*

The Result homepage is shown in Figure 5.46 and Figure 5.47 below (if the Department of Education and Training has allowed showing the admission results). The result includes student information (name, secondary school), the scores of all subjects, the extra score, and the total score. Also, it will show whether students have been admitted to any school in their choices in the last column.

SỞ GIÁO DỤC VÀ ĐÀO TẠO THÀNH PHỐ CẦN THƠ  
HỆ THỐNG TUYỂN SINH LỚP 10 THPT TRỰC TUYẾN

Thông tin học sinh

Kết quả

Xin chào, Nguyễn Văn An (M01)  
Đổi mật khẩu | Đăng xuất

## KẾT QUẢ TUYỂN SINH LỚP 10 THPT NĂM HỌC 2026-2027

Thí sinh: **Nguyễn Văn An** (Trường THCS Lương Thế Vinh)

Điểm Toán:	8.75
Điểm Ngữ văn:	9.00
Điểm môn thứ 3:	5.00
Điểm cộng Uu tiên:	0.00
Điểm cộng Khuyến khích:	0.00
<b>Tổng điểm (thang điểm 30):</b>	<b>22.75</b>
Điểm môn chuyên:	8.75
Điểm cộng Khuyến khích (thi chuyên):	0.00
<b>Tổng điểm chuyên (thang điểm 50):</b>	<b>40.25</b>

Chúc mừng bạn đã trúng tuyển

**Nguyễn vọng 1 - Trường THPT Chuyên Nguyễn Thị Minh Khai**

*Figure 5.46. Admission Result page (with successful message)*



## KẾT QUẢ TUYỂN SINH LỚP 10 THPT NĂM HỌC 2026-2027

Thí sinh: **Nguyễn Văn An** (Trường THCS Lương Thế Vinh)

Điểm Toán:	8.75
Điểm Ngữ văn:	9.00
Điểm môn thứ 3:	5.00
Điểm cộng Ưu tiên:	0.00
Điểm cộng Khuyến khích:	0.00
<b>Tổng điểm (thang điểm 30):</b>	<b>22.75</b>
Điểm môn chuyên:	8.75
Điểm cộng Khuyến khích (thi chuyên):	0.00
<b>Tổng điểm chuyên (thang điểm 50):</b>	<b>40.25</b>

Rất tiếc, bạn đã không trúng tuyển nguyện vọng nào.  
Nếu bạn thấy có sai sót về điểm bài thi, vui lòng liên hệ hội đồng thi để được hướng dẫn phúc khảo bài thi.

*Figure 5.47. Admission Result page (with failure message)*

Students can also change their current password by clicking on the Change password (*Đổi mật khẩu*) button on the header of the page. This function is similar to the function of Administrators, which has been presented in part 5.1.2 above.

## 5.2. Mobile application

### 5.2.1. Functions for Guest users

When users open the mobile application, a welcome page will show as Figure 5.48a below. After that, if users have not logged in to any roles, it will redirect users to the homepage of the application, as shown in Figure 5.48b below. The interface also includes a background image illustrating the website and the exam time notification. At the bottom of the background image is information about important milestones in the registration process and the expected exam schedule. At the bottom of the interface, there is a navigation bar including five buttons, which are five main pages and functions for guest users: Home (*Trang chủ*), Search admission result (*Tra cứu*), Admission numbers (*Chi tiêu*), Admission documents (*Văn bản*), and Login (*Đăng nhập*).

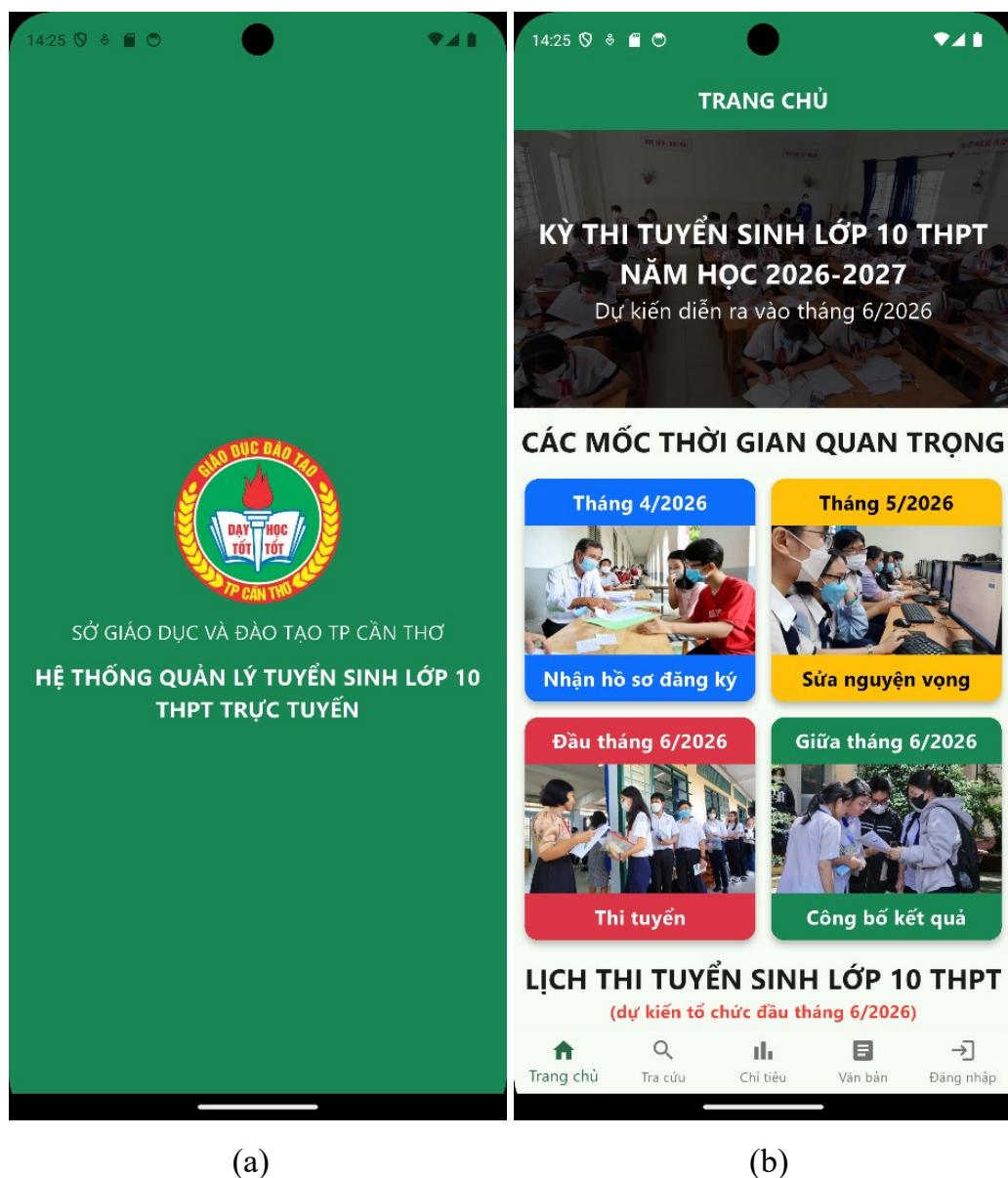


Figure 5.48. Welcome page and homepage of the mobile application

The Search Admission Result page is shown in Figure 5.49 below. To search the admission result, users need to choose the high school in the first dropdown and choose the search type in the second dropdown. There are three search types: Search by Student ID, Search by Student Full name, and Search by Candidate number. After that, users type the search content in the textbox. After choosing and typing, users need to click on the reCAPTCHA button (*Xác thực reCAPTCHA*) to verify that “I’m not a robot”, before clicking on the Search (*Tra cứu kết quả*) button to find.

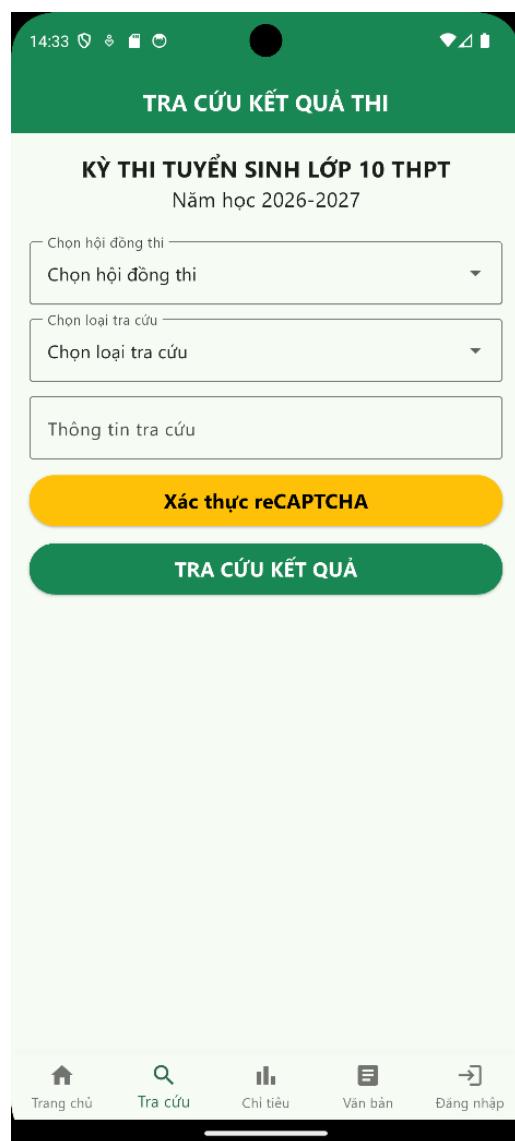


Figure 5.49. Search Admission Result interface of the mobile application

If there is only one student who matches the user's search requirement, it will show the full result of this student, with the student's full name, secondary school, score of each subject, extra scores, and total score. It will also show whether the student has passed the examination and been admitted to any high school included in his/her choices, as shown in Figure 5.50a below. If there is more than one student who matches the user's search requirement, it will show the list of students with the overview information of each student. Users then need to choose one of them to show the detailed result of the student they want to see, as shown in Figure 5.50b below.

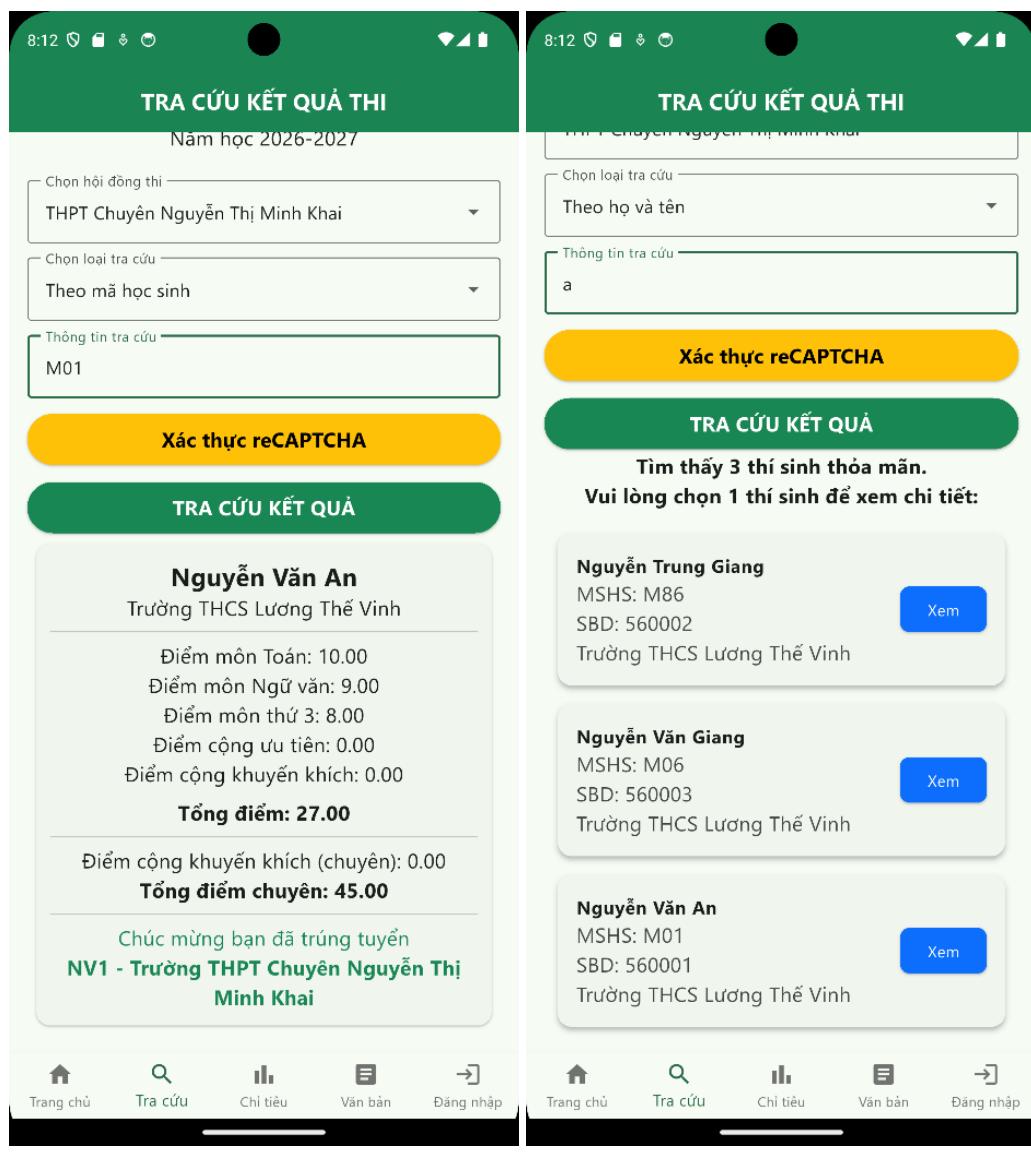


Figure 5.50. The result interface after typing information

When users click on the Admission Numbers button, the interface is shown in Figure 5.51a below. On this page, users will see the admission number of each high school in Can Tho City according to the official documents of the Department of Education and Training of Can Tho City. Each card contains the high school's name, address, the number of students registered to this school, and the admission number of this school. Also, with some High Schools for the Gifted, the admission number is divided by specialized subjects, as shown in Figure 5.51b below.



Figure 5.51. Admission Numbers interface of the mobile application

When users click on the Admission Documents button, the interface is shown in Figure 5.52 below. When users choose one of the documents shown, it will show a window to show the details of this document. Users can also open this document in another app by clicking on the Open document in another app (*Mở bằng ứng dụng khác*) button.

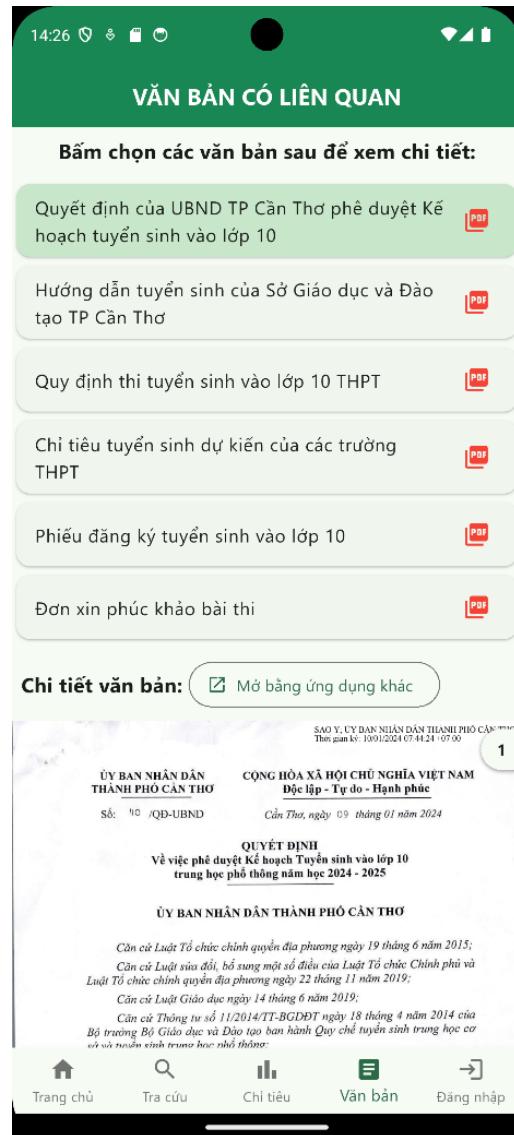


Figure 5.52. Admission Documents interface of the mobile application

When users click on the Login button, the interface is shown in Figure 5.53 below. In this interface, users need to have an account given by teachers or administrators of the Department of Education and Training. Users need to log in by typing their username and password for their account, then click on the reCAPTCHA button (*Xác thực reCAPTCHA*) to verify “I’m not a robot” before logging in by pressing the “Login” (*Đăng nhập*) button. If the username and password match, users will be redirected to the page according to their role; otherwise, it will show an error message, and users need to retype their username and password.

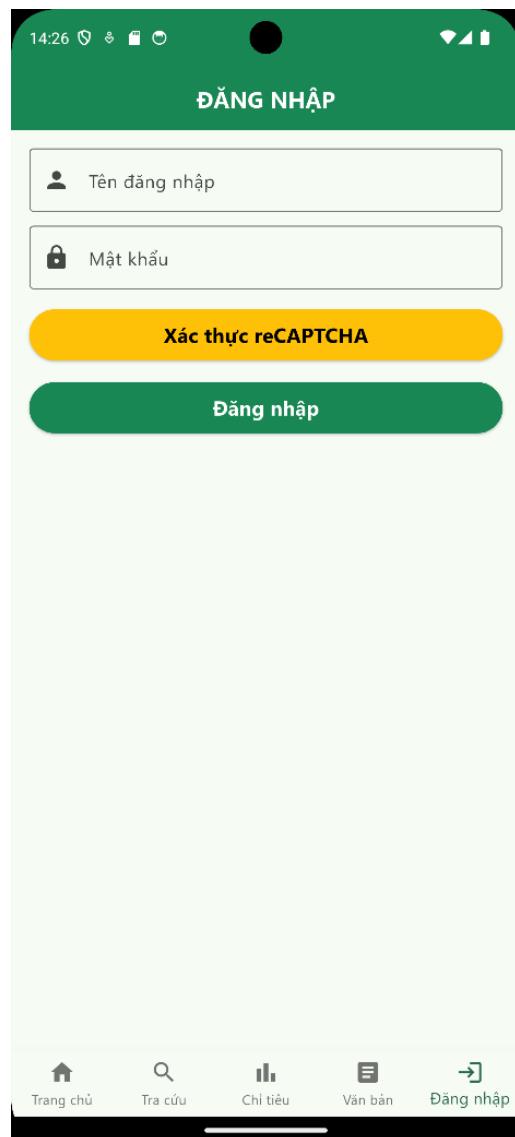


Figure 5.53. Login interface of the mobile application

### 5.2.2. Functions for Administrators

The Administrator's homepage is shown in Figure 5.54 below. In the mobile application, administrators have 2 main functions: Account Management (*Quản lý tài khoản*) and Change Password (*Đổi mật khẩu*).

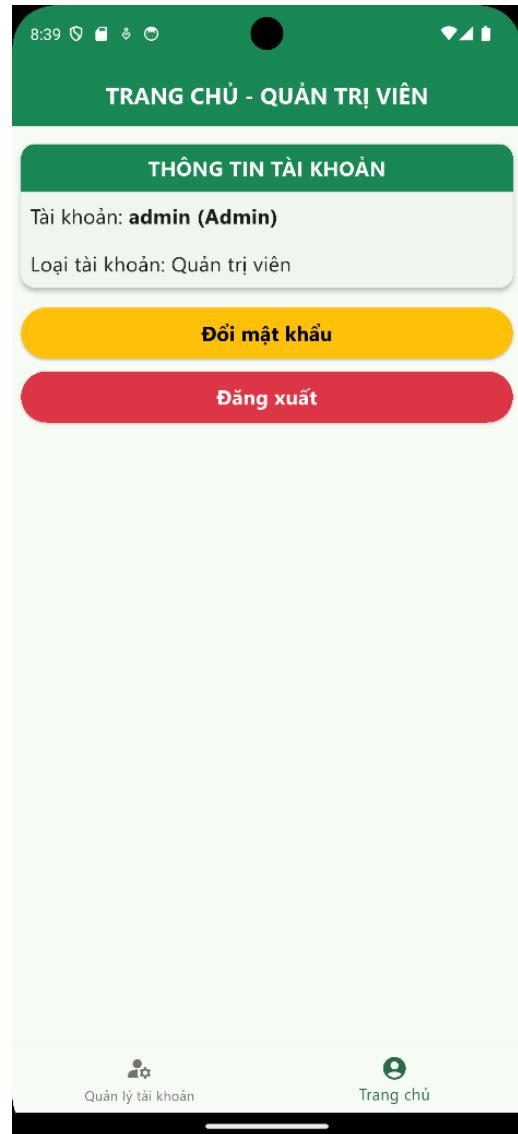


Figure 5.54. Administrator Homepage

The Account Management page is shown in Figure 5.55 below. In the mobile application, Admins can see the list of accounts existing in the system. Admins can also search for accounts by keyword by typing in the search box near the top of the page. For safety reasons, admins cannot modify or add new accounts using the mobile application; all sensitive activities will be done in the web application.



Figure 5.55. Account Management page

The Change Password page is shown in Figure 5.56 below. To change the password, users need to type their current password, the new password, and the confirmation of the new password. After that, users need to click on Change password (*Đổi mật khẩu*) to complete the process. If the process has been finished successfully, it will show a message to notify users and redirect to the homepage of current users.

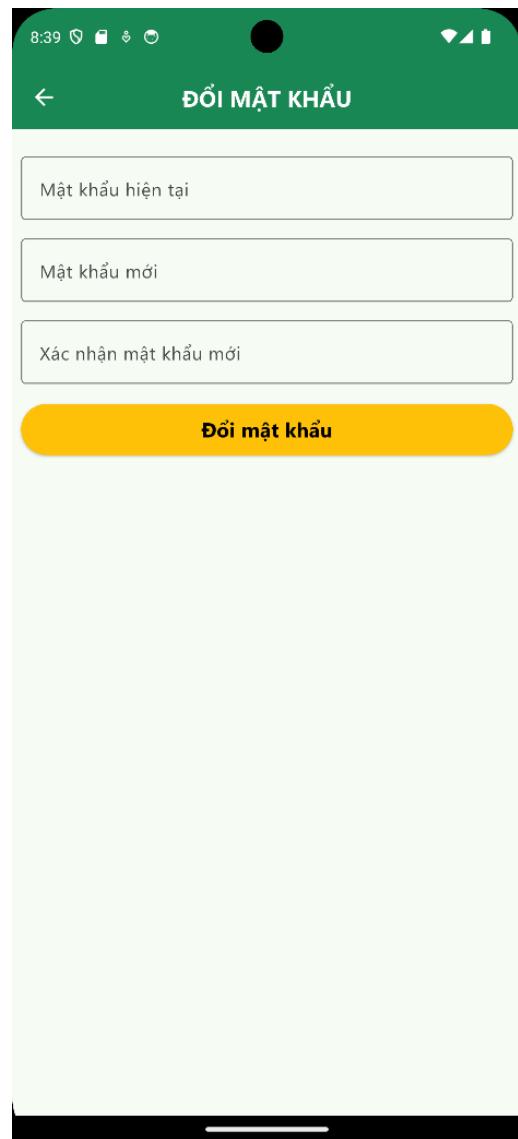


Figure 5.56. Change Password page

### 5.2.3. Functions for Admissions Council Officials

The Admissions Council Official's homepage after logging in is shown in Figure 5.57 below. In the mobile application, Admissions Council Officials have 3 main functions: Candidate Management (*Quản lý thí sinh*), State Management (*Quản lý trạng thái*) and Change Password (*Đổi mật khẩu*).

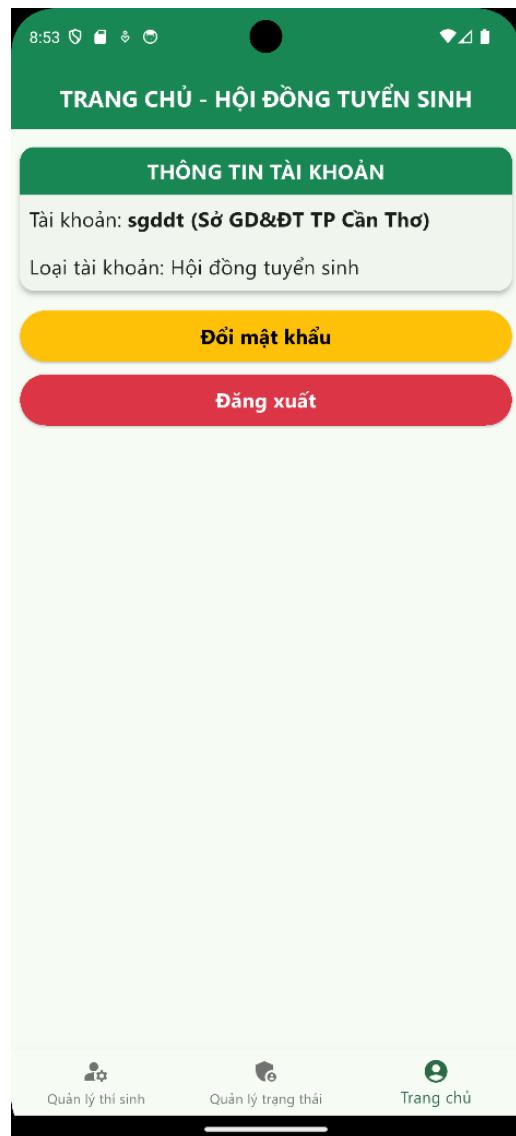


Figure 5.57. Admissions Council Official's homepage

The Candidate Management page is shown in Figure 5.58a below. In the mobile application, officials can see the list of candidates in the examination and their scores. Officials can also update scores of each student by clicking the Update score (*Cập nhật điểm*) button at the bottom of each student's card. The interface of the Update Score function is shown in Figure 5.58b below. Officials can modify scores of a student by modifying in the textboxes before clicking on Update score (*Cập nhật điểm*) to complete the process.

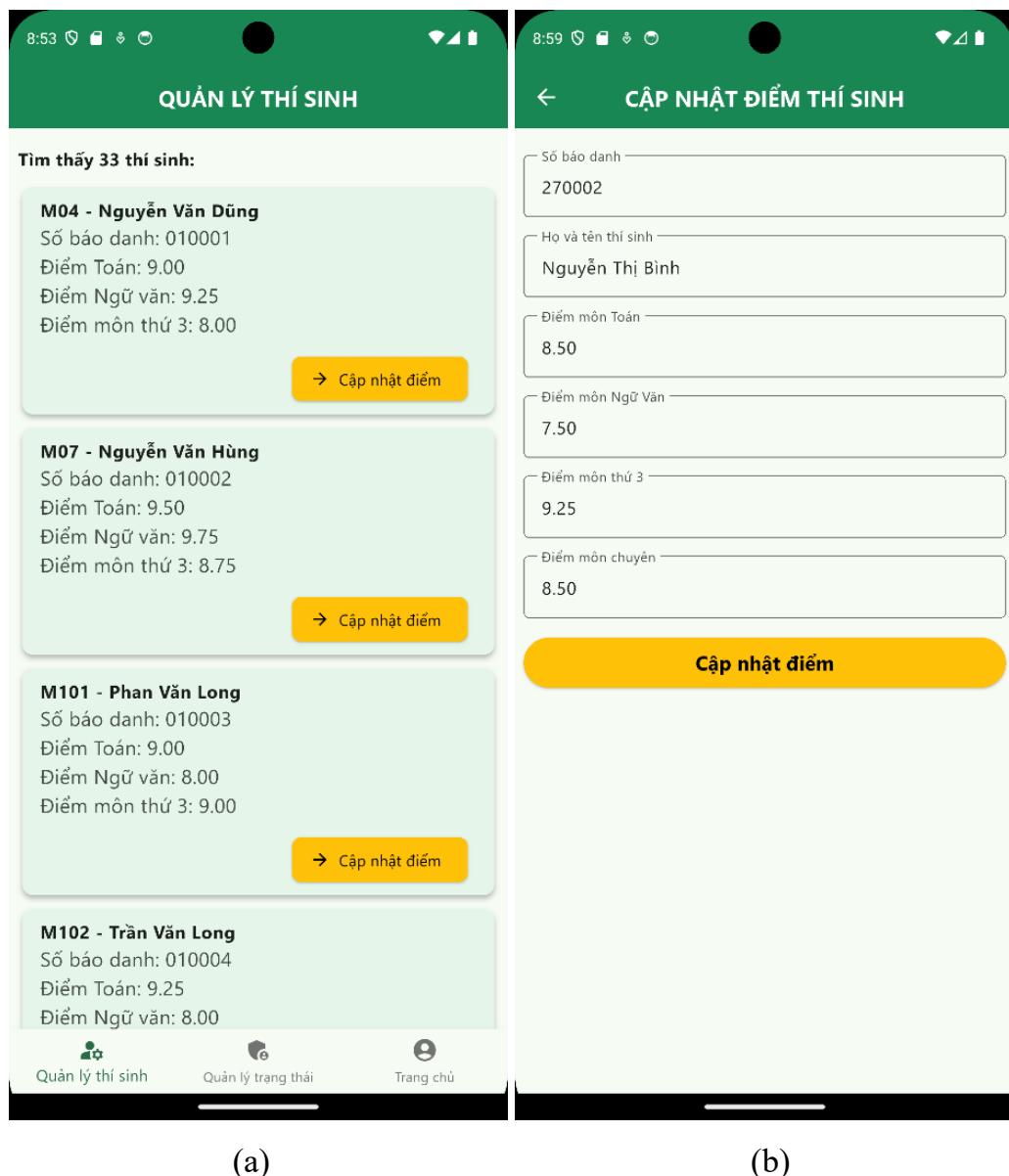


Figure 5.58. Candidate Management and Update Score page

The State Management page is shown in Figure 5.59 below. In the mobile application, officials can see the full list of admission states, including the current value of the state and the last time the state was updated. Officials can also update a state by clicking on the “Update state” (*Cập nhật trạng thái*) button at the bottom of each state’s card.



Figure 5.59. State Management page

The dialog to update state is shown in Figure 5.60a (with Boolean state) and Figure 5.60b (with Timestamp state) below. With a Boolean state, users can choose one of two states provided in the dropdown, then select Save to update the state. With a Timestamp state, users need to click on the box containing the current timestamp state, then choose the date and time in order, as shown in Figure 5.61a and Figure 5.61b below, before clicking on the Save button after finishing choosing the new timestamp.



Figure 5.60. Update State dialog

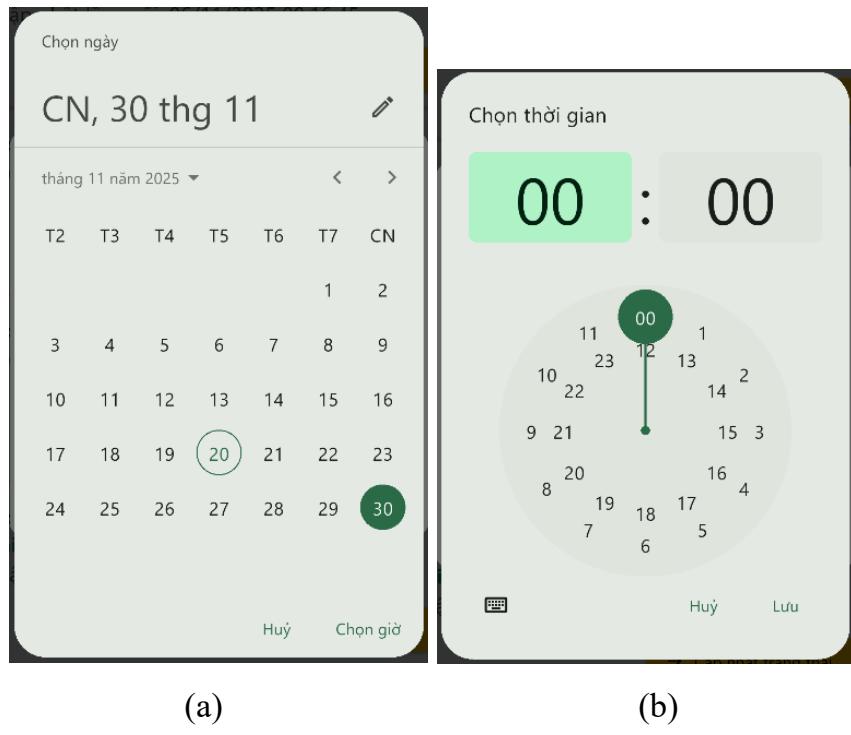


Figure 5.61. Timestamp modifying (date and time)

Officials can also change their password by clicking on the Change Password button on their homepage. This function is similar to the function of Administrators, which has been presented in part 5.2.2 above.

#### 5.2.4. Functions for Secondary School Officials

The Secondary School Official's homepage after logging in is shown in Figure 5.62 below. In the mobile application, Secondary School Officials have 2 main functions, which are Student Management (*Quản lý học sinh*) and Change Password (*Đổi mật khẩu*).

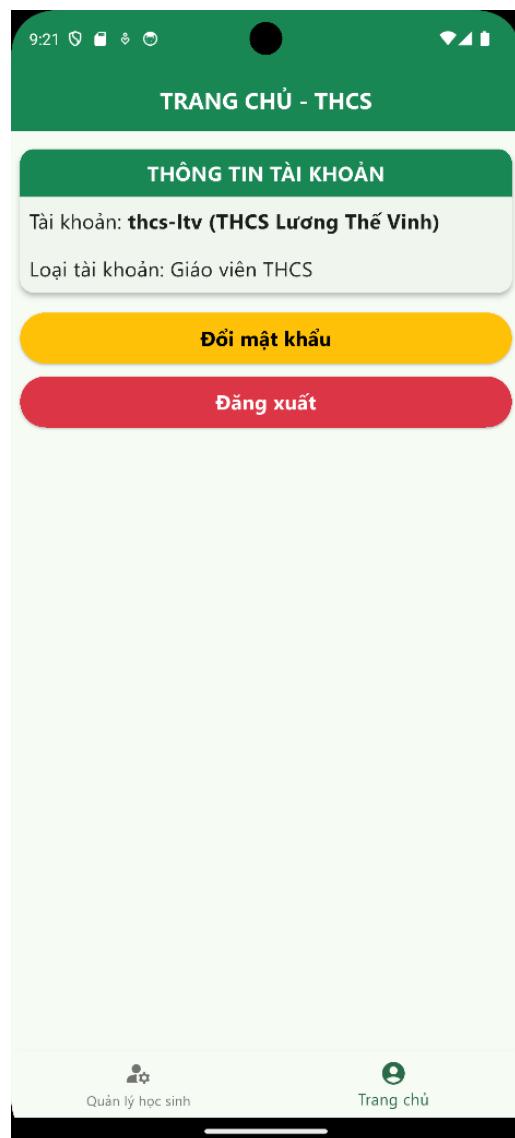
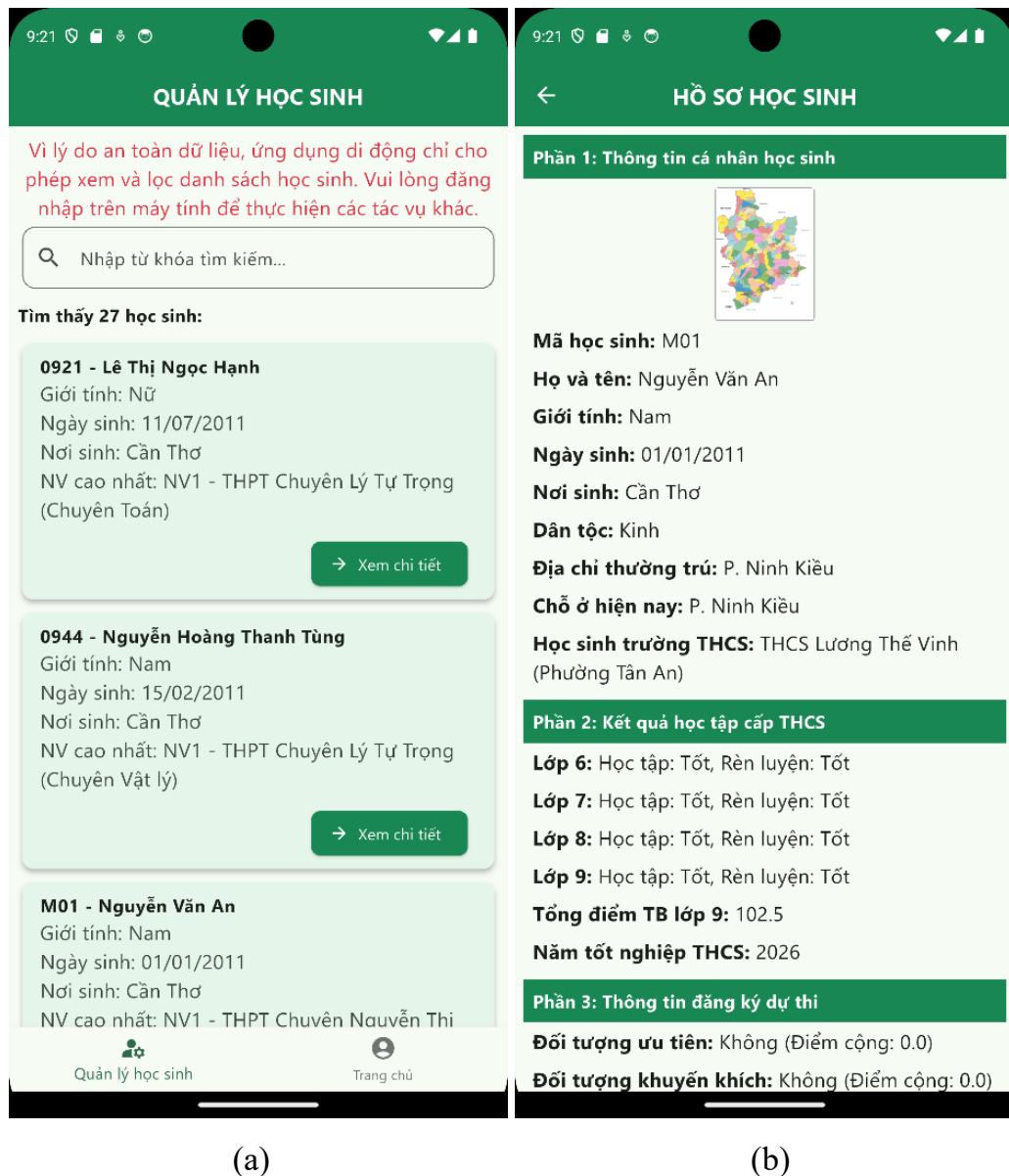


Figure 5.62. Secondary School Official's homepage

The Student Management page is shown in Figure 5.63a below. In the mobile application, officials can see the full list of students in their secondary school, with the overview profile of each student. Officials can also see detailed information about each student by clicking on the Detailed Information (*Xem chi tiết*) button to see their detailed information, as shown in Figure 5.63b below. The detailed information is divided into 3 main parts, similar to the Admission Form structure given by the Department of Education and Training. Officials can also search for students by keyword by typing in the search box. For safety reasons, if officials want to modify or add new students, they need to use the web application instead.



*Figure 5.63. Student Management and Student Detailed Information page*

Officials can also change their password by clicking on the Change Password button on their homepage. This function is similar to the function of Administrators, which has been presented in part 5.2.2 above.

### 5.2.5. Functions for High School Officials

The High School Official's homepage after logging in is shown in Figure 5.64 below. In the mobile application, High School Officials have 3 main functions: Student Management (*Quản lý học sinh*), Candidate Management (*Quản lý thí sinh*) and Change Password (*Đổi mật khẩu*).

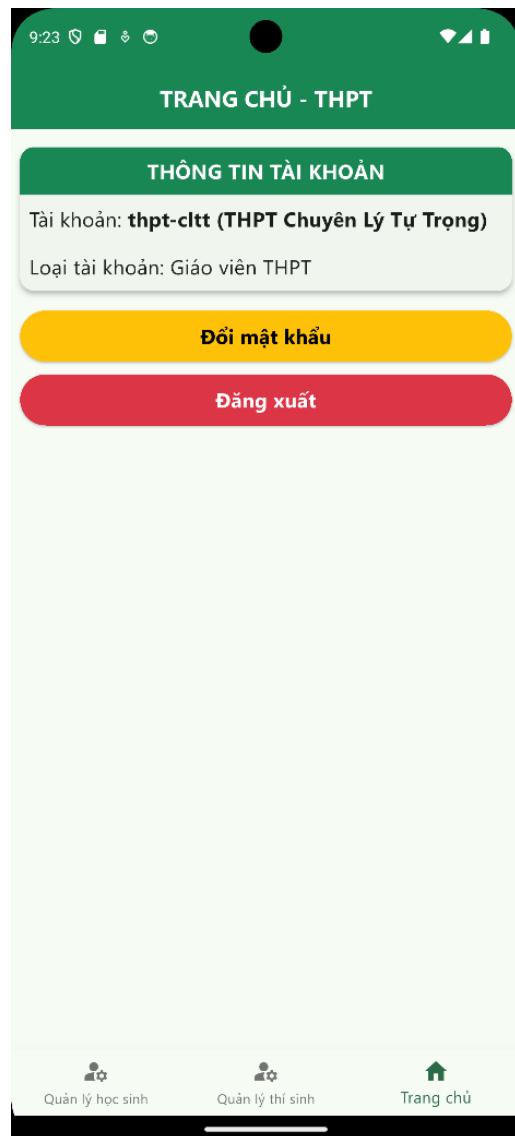


Figure 5.64. High School Official's homepage

The Student Management page is shown in Figure 5.65a below. On this page, officials can see the list of students (outside Can Tho City) registering in their high school, including the overview and some important information about each student. Officials can also search for students by keyword using the search box near the top of the page. Also, if they want to see more information about a student, they can click on Detailed information (*Xem chi tiết*). The interface of this function is shown in Figure 5.65b below. For safety reasons, if officials want to modify or add new students, they should use the web application instead.



**(a)**



**(b)**

Figure 5.65. Student Management and Detailed Information page

79

The Candidate Management page is shown in Figure 5.66 below. On this page, officials will see the list of candidates participating in the admission exam in their high school (students who choose the highest choice, which is their high school), including candidate number, student ID, full name, exam room, and some personal information. All information related to the exam will be updated by the Department of Education and Training, so officials will not modify anything on this page. Officials can also search for candidates by keyword using the search box.

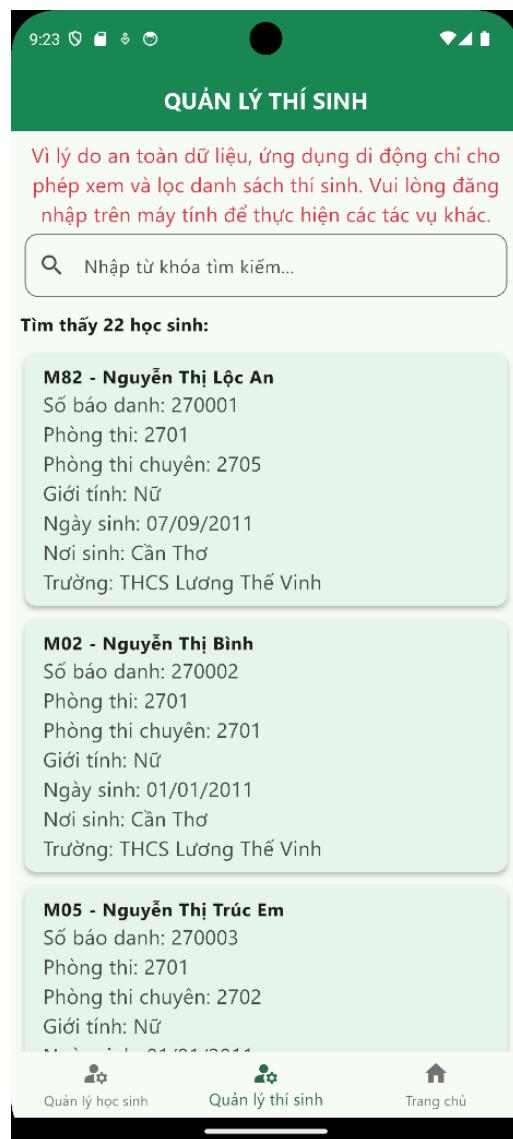


Figure 5.66. Candidate Management page

Officials can also change their password by clicking on the Change Password button on their homepage. This function is similar to the function of Administrators, which has been presented in part 5.2.2 above.

### 5.2.6. Functions for Students

The Student's homepage after logging in is shown in Figure 5.67 below. In the mobile application, students have 2 main functions: Student Information (*Thông tin học sinh*) and Change Password (*Đổi mật khẩu*).

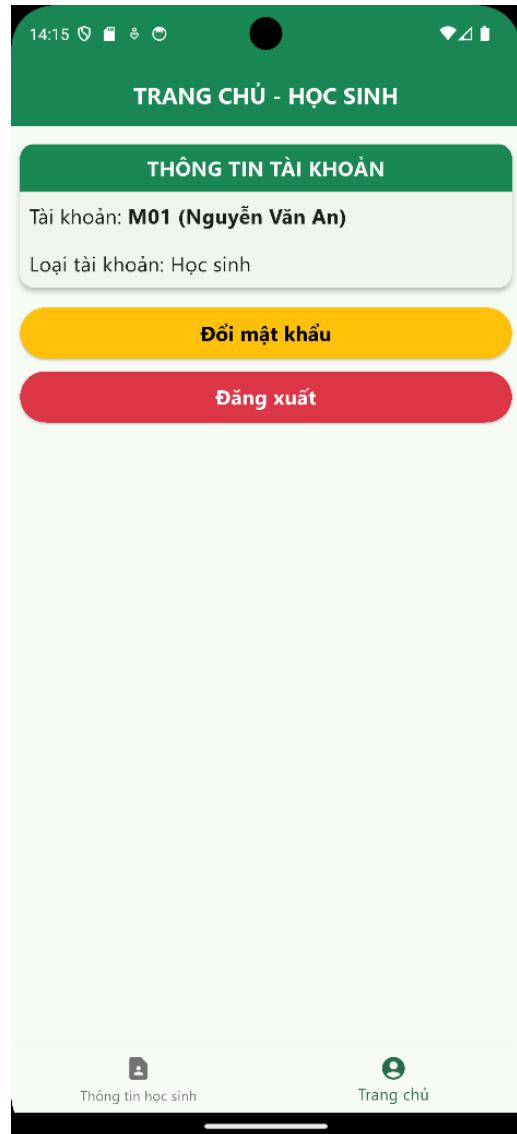


Figure 5.67. Student's homepage

To go to the Student Information page, users click on the first button on the footer. The interface of this function is shown in Figure 5.68 below. In this page, the detailed admission information of this student will be shown and divided into 3 parts, similar to the Admission Form structure of the Department of Education and Training. For safety reasons, if students want to update their information or print the Admission Form, they need to go to the web application instead of the mobile application.



Figure 5.68. Student Information page

Students can also change their password by clicking on the Change Password button on their homepage. This function is similar to the function of Administrators, which has been presented in part 5.2.2 above.

## CHAPTER 6: CONCLUSION

### 6.1. Conclusion

In this thesis, I have finished developing a grade 10 admission system for Can Tho City, with four main subsystems: Subsystem for managing admission records; Subsystem for managing candidate exam information; Subsystem for managing scores and announcing admission results; Subsystem for managing and controlling exam status and 6 main user groups, including Guest users, Administrators, Admissions Council Officials (in the Department of Education and Training), Secondary School Officials, High School Officials and Students. All functions have been tested carefully to avoid errors during production.

One of the most important contributions of the thesis topic is that this application can replace the old admission system of three cities and provinces: Can Tho City, Hau Giang Province, and Soc Trang Province, to become the common system for the new Can Tho City, with the data and information merged from those cities and provinces. Also, this application has been advised, evaluated, and commented on by some officials working in some secondary schools, high schools in Can Tho City, and in the Department of Education and Training, so it will suit the needs of the majority of the main users of the system.

### 6.2. Future work

Besides the result and contributions above, this application also has some points that need to be updated to fulfill the requirements and meet the needs of different user groups, such as:

- Creating and exporting more documents relating to the admission exam, especially the admission benchmarks for each High School and each specialized class in High Schools for the gifted.
- Creating interactive and easy-to-use dashboards for statistical purposes for officials in the Department of Education and Training and officials in Secondary Schools and High Schools.
- Improving the user interface and experience to suit a wider range of users with varying levels of technological proficiency.
- Designing an AI chatbot to help users interact and ask questions about the information related to the admission process in Can Tho City.

To improve this application, one of the most important factors is the valuable advice and comments from officials of the Department of Education and Training. These will ensure that this application is usable and it will bring benefits to all user groups in real life.

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