Air University (Multan Campus)

Dept. Comp. Sci. – BSCS V Fall'17

Func. And Non Func. Requirments and Use Cases of

Walk-in Attendance

Software Engineering – Term Project

By

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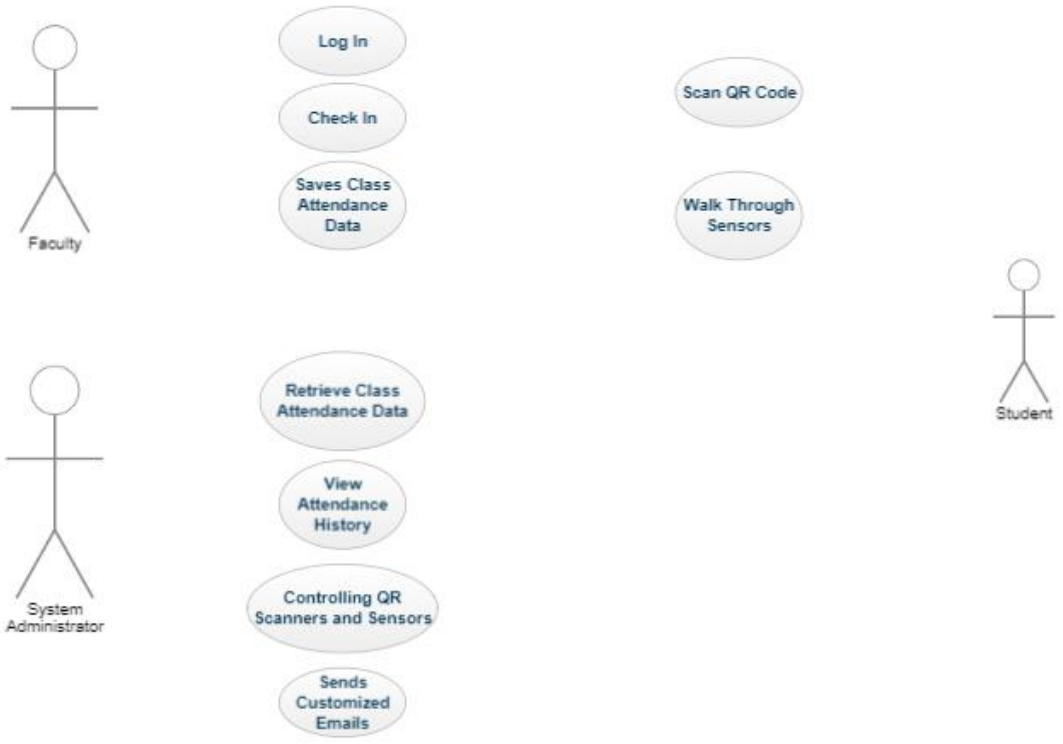
The Actors:

- ✓ **Primary Actors:**
  - System administrator.
  - Faculty.
- ✓ **Secondary Actors:**
  - Students.

Scenarios:

- ✓ **Student Scenarios:**
  - Student uses his/her Student's card to walk-into the class.
  - Walking sensor will count him/her in the strength of the class.
- ✓ **Faculty Scenarios:**
  - Faculty uses his/her Faculty card to walk-into the class.
  - Faculty starts the lecture timers for attendance system.
  - Faculty views class attendance for his/her classes.
  - Faculty inputs information (manually check-in for student who forgot Student's card/or remove improper check-in).
  - Faculty saves the attendance data for their class into the database.
- ✓ **System Administrators:**
  - System Administrator controls the specific attendance devices (QR Reader and walking sensors) with specific classrooms.
  - System Administrator views Students, Faculty and Classes information.
  - System Administrator sends email about the attendance log for each student.

UML Diagram:


Faculty
Log In
Check In
Saves Class Attendance Data
Scan QR Code
Walk Through Sensors
Student
System Administrator
Retrieve Class Attendance Data
View Attendance History
Controlling QR Scanners and Sensors
Sends Customized Emails

Use Cases according to the Actors:

- ✓ **System Administrators:**
    - Control of QR scanner and sensor.
    - Log into the system.
    - Viewing the Attendance history.
    - Retrieving the class attendance data.
    - Sending customized emails to the students.

- ✓ **Faculty:**
    - Check-in the class.
    - Log into the system.
    - Saves the attendance.
    - Viewing the attendance history.
    - Retrieving the class attendance data.

- ✓ **Students:**
    - Check-in the classroom.

Descriptive Use Cases:

- ✓ **For Administrator:**

    - **Use-Case#1: Control of QR scanner and sensors:**

Use case Title: Control of QR scanner and sensor.

Primary Actor: System Administrator.

Pre-condition:

1. User must have electricity and internet connection.
2. The system should be programmed according to the given purpose.

Trigger: To use automatic attendance system.

Scenario:

1. The system shall accepts the ON command from the user.
2. The system shall provide daily system report to the user.

Exceptions:

1. The electricity goes out un-expectedly.
2. The system is unable to detect hardware.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system's desktop application.

Secondary Actors:

- Faculty

Channel to the secondary actors:

The system's desktop application.

- **Use-Case#2: Log into the system.**

Use case Title: Administrator logs in the system.

Primary Actor: System Administrator.

Pre-condition:

1. User must have electricity and internet connection.
2. The system is programmed for the given purpose.

Trigger: To use automatic attendance system.

Scenario:

1. The user starts the PC.
2. The user selects the system application to open.
3. The user enters his or her username.
4. The user enters his or her password.
5. The system authenticates the username & password.
6. The system shall give access to user for the main menu.

Exceptions:

1. Electricity goes out which results in the loss of user connection.
2. The system is unable to detect the devices or the database.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system's desktop application.

Secondary Actors:

- Faculty

Channel to the secondary actors:

The system's desktop application.

- **Use-Case#3: Viewing the attendance history.**

Use case Title: Viewing the attendance history.

Primary Actor: System Administrator.

Pre-condition:

1. User must have electricity and internet connection.
2. The system must be programmed according to the given scenario.

Trigger: To use automatic attendance system.

Scenario:

1. The system shall allow the user to access the main menu.
2. The user selects the “View the attendance history” option from the menu.
3. The system displays a menu of classes.
4. The user selects the required class data from the menu.
5. The system shall display the required class attendance data.
6. The user selects “Ok” button after reviewing the data.
7. The system returns back to the main menu.

Exceptions:

1. The system is not able detect the device and the database.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system’s desktop application.

Secondary Actors:

- Faculty

Channel to the secondary actors:

The system’s desktop application.

- **Use-Case#4: Retrieving the class attendance.**

Use case Title: Retrieving the class data.

Primary Actor: System Administrator.

Pre-condition:

1. User must have electricity connection.
2. The system must be programmed according to the given scenario.

Trigger: To use automatic attendance system.

Scenario:

1. The system displays the main menu of the application.
2. User selects the “Retrieve the class attendance data” option from the main menu.
3. The system displays the class menu for user to select the required class.
4. User selects the required class.
5. The system shall display the class attendance according to lecture numbers.
6. User selects the “Print” option to print the data.
7. The system shall print the given data.

Exceptions:

2. The system is not able detect the device and the database.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system’s desktop application.

Secondary Actors:

- Faculty

Channel to the secondary actors:

The system’s desktop application.

- **Use-Case#5: Sending Customized emails to the students.**

Use case Title: Sending Customized emails to the students.

Primary Actor: System Administrator.

Pre-condition:

1. User must have electricity and internet connection.
2. The system must be programmed according to the given scenario.

Trigger: To use automatic attendance system.

Scenario:

1. The system displays the main menu.
2. The user selects “Viewing the attendance data” option from the menu.
3. The system shall display the class menu.
4. The user selects the required class.
5. The system displays the class attendance data.
6. The user selects the student with red marked boxes.
7. The system displays the attendance details of the selected student.
8. The user selects “Send a warning email” button.
9. The system displays the email before sending it.
10. The user selects “Send” button.
11. The system returns to class attendance menu.

Exceptions:

3. The system is not able detect the device and the database.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system’s desktop application.

Secondary Actors:

- Faculty

Channel to the secondary actors:

The system’s desktop application.

- ✓ **Faculty:**

- **Use-Case#1: Checks-in.**

Use case Title: Check into the class.

Primary Actor: Faculty.

Pre-condition:

1. User must have electricity connection,
2. The system must be programmed for the given scenario.

Trigger: To use automatic attendance system.

Scenario:

- **Extended Use-Case#1.1: Scan QR code:**

Scenario:

1. The user uses University Card for QR reader device to scan.
2. The system authenticates the QR code and allows the user to walk through the sensors.

- **Extended Use-Case#1.2: Walk through the sensors:**

Scenario:

1. The user walks through the sensors.
2. The system counts the person as “Present.”

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system’s desktop application.

Secondary Actors:

- Administrator.

Channel to the secondary actors:

The system’s desktop application.

- **Use-Case#2: Log into the system.**

Use case Title: Administrator logs in the system.

Primary Actor: Faculty.

Pre-condition:

1. User must have electricity and internet connection.
2. The system is programmed for the given purpose.

Trigger: To use automatic attendance system.

Scenario:

1. The user starts the PC.
2. The user selects the system application to open.
3. The user enters his or her username.
4. The user enters his or her password.
5. The system authenticates the username & password.
6. The system shall give access to user for the main menu.

Exceptions:

1. Electricity goes out which results in the loss of user connection.
2. The system is unable to detect the devices or the database.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system's desktop application.

Secondary Actors:

- Administrator.

Channel to the secondary actors:

The system's desktop application.

- **Use-Case#3: Saving the attendance history.**

Use case Title: Saving the attendance history.

Primary Actor: Faculty.

Pre-condition:

1. User must have electricity and internet connection.
2. The system must be programmed according to the given scenario.

Trigger: To use automatic attendance system.

Scenario:

1. The system shall allow the user to access the main menu.
2. The user selects the required class data from the menu.
3. The system shall display the “DONE” message.
4. The user selects “Ok” button after reviewing the data.
5. The system returns back to the main menu.

Exceptions:

1. The system is not able detect the device and the database.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system’s desktop application.

Secondary Actors:

- Administrator.

Channel to the secondary actors:

The system’s desktop application.

- **<u>Use-Case#4: Viewing the attendance history.</u>**

Use case Title: Viewing the attendance history.

Primary Actor: Faculty.

Pre-condition:

1. User must have electricity and internet connection.
2. The system must be programmed according to the given scenario.

Trigger: To use automatic attendance system.

Scenario:

1. The system shall allow the user to access the main menu.
2. The user selects the “View the attendance history” option from the menu.
3. The system displays a menu of classes.
4. The user selects the required class data from the menu.
5. The system shall display the required class attendance data.
6. The user selects “Ok” button after reviewing the data.
7. The system returns back to the main menu.

Exceptions:

1. The system is not able detect the device and the database.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system’s desktop application.

Secondary Actors:

- Administrator.

Channel to the secondary actors:

The system’s desktop application.

- **Use-Case#5: Retrieving the class attendance.**

Use case Title: Retrieving the class data.

Primary Actor: Faculty.

Pre-condition:

1. User must have electricity connection.
2. The system must be programmed according to the given scenario.

Trigger: To use automatic attendance system.

Scenario:

1. The system displays the main menu of the application.
2. User selects the “Retrieve the class attendance data” option from the main menu.
3. The system displays the class menu for user to select the required class.
4. User selects the required class.
5. The system shall display the class attendance according to lecture numbers.
6. User selects the “Print” option to print the data.
7. The system shall print the given data.

Exceptions:

1. The system is not able detect the device and the database.

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system’s desktop application.

Secondary Actors:

- Administrator

Channel to the secondary actors:

The system’s desktop application.

- ✓ **Students:**

- **Use-Case#1: Checks-in.**

Use case Title: Check into the class.

Primary Actor: Students.

Pre-condition:

1. User must have electricity connection,
2. The system must be programmed for the given scenario.

Trigger: To use automatic attendance system.

Scenario:

- **Extended Use-Case#1.1: Scan QR code:**

Scenario:

1. The user uses University Card for QR reader device to scan.
2. The system authenticates the QR code and allows the user to walk through the sensors.

- **Extended Use-Case#1.2: Walk through the sensors:**

Scenario:

1. The user walks through the sensors.
2. The system counts the person as “Present.”

Frequency of Use:

Multiple times in University hours.

Channel to the Actors:

Through the system’s desktop application.

Secondary Actors:

- Administrator.
- Faculty.

Channel to the secondary actors:

The system’s desktop application.