REPORT MODULE

1. Description:

The ReportPage class is a crucial component of the ReportModule package in the system. It serves as a user interface for generating reports based on user input, specifically roll numbers. Additionally, it incorporates webcam functionality for scanning QR codes, providing a convenient and efficient way to input roll numbers.

1.1 Webcam Functionality*:*

The inclusion of webcam functionality in the ReportPage module serves as a valuable tool for enhancing the user experience and enriching the report generation process. By leveraging the capabilities of the Webcam library, the module provides users with a real-time view of their surroundings through the webcam feed.

The utilization of the default webcam on the user's system allows for the capture of live video, which is then displayed within a designated panel using the WebcamPanel class. This visual representation provides users with an interactive interface that brings an additional level of engagement to the report generation process.

By offering a real-time view, users can visually confirm the proper functioning of their webcams, ensuring that the captured video accurately reflects their surroundings. This visual feedback not only instills confidence in the report-generation process but also allows users to make informed decisions based on what they see in real-time.

1.2 QR Code Scanning:

The ReportPage module incorporates QR code scanning functionality, which significantly enhances the user experience by providing a seamless and efficient method for inputting roll numbers. This feature eliminates the need for users to manually enter roll numbers, reducing the chances of input errors and streamlining the report generation process.

The module leverages the MultiFormatReader class from the zxing (Zebra Crossing) library to enable continuous scanning of the webcam feed for QR

codes. The zxing library is a widely-used open-source library that specializes in QR code encoding and decoding. By utilizing this powerful library, the module ensures accurate and reliable QR code scanning capabilities.

When a QR code is detected within the webcam feed, the MultiFormatReader class decodes its content, which typically includes the roll number information. The extracted roll number is then displayed in a designated text field within the user interface, providing immediate feedback to the user.

The integration of QR code scanning provides numerous benefits. First and foremost, it enhances user convenience by simplifying the roll number input process. Instead of manually typing in lengthy roll numbers, users can quickly and effortlessly scan QR codes using their webcams, saving time and effort.

1.3 Report Generation:

The ReportPage module enables efficient and accurate report generation based on user input. It reads entry data from a CSV file, filters it based on the provided roll number, and generates a new CSV file with the filtered information.

The process involves reading the data from the CSV file and extracting each line for further processing. The method then filters the data by checking for a match with the provided roll number. Only the relevant data is included in the report.

Once the filtering process is complete, the method writes the filtered data to a new CSV file. Visual feedback is provided to the user, displaying success or error messages based on the outcome of the report generation.

This report generation functionality significantly improves efficiency and accuracy. It eliminates the need for manual sorting and searching, saving users time and effort. The generated reports are precise and tailored to the user's requirements.

The visual feedback enhances the user experience by providing real-time updates on the report generation status. Users can take appropriate actions based on the outcome, ensuring a seamless and reliable process.

2. Motivation:

The motivation behind the development of the Report Module in this project is to facilitate the reduction of mess fees by providing a comprehensive reporting system. The module aims to address the following points:

2.1 Efficiency:

By generating reports, the module enables a streamlined process for tracking and managing mess fees. It automates the generation of reports, eliminating the need for manual calculations and paperwork. This saves time and effort for both the mess administrators and the students.

2.2 Transparency:

The Report Module promotes transparency by providing detailed reports on mess fee transactions. It allows students to access their reports, enabling them to monitor their mess fee payments and identify any discrepancies. This transparency builds trust between the students and the mess administration.

2.3 Accountability:

The module holds both the students and the mess administrators accountable for their financial transactions. It ensures that all mess fee payments are accurately recorded and accounted for. Any errors or discrepancies can be easily identified through the generated reports, enabling prompt resolution.

2.4 Financial Analysis:

The reports generated by the module provide valuable insights into the mess fee collection and expenditure. Mess administrators can analyze the data to identify trends, track revenue, and make informed decisions regarding mess fee reduction strategies. This financial analysis helps optimize the mess budget and reduce costs without compromising the quality of services.

2.5 Convenience:

The Report Module offers a user-friendly interface for generating reports. Students can easily access their reports and view their payment history. The module also allows for quick and hassle-free report generation for mess administrators, enabling them to efficiently manage and monitor mess fee transactions.

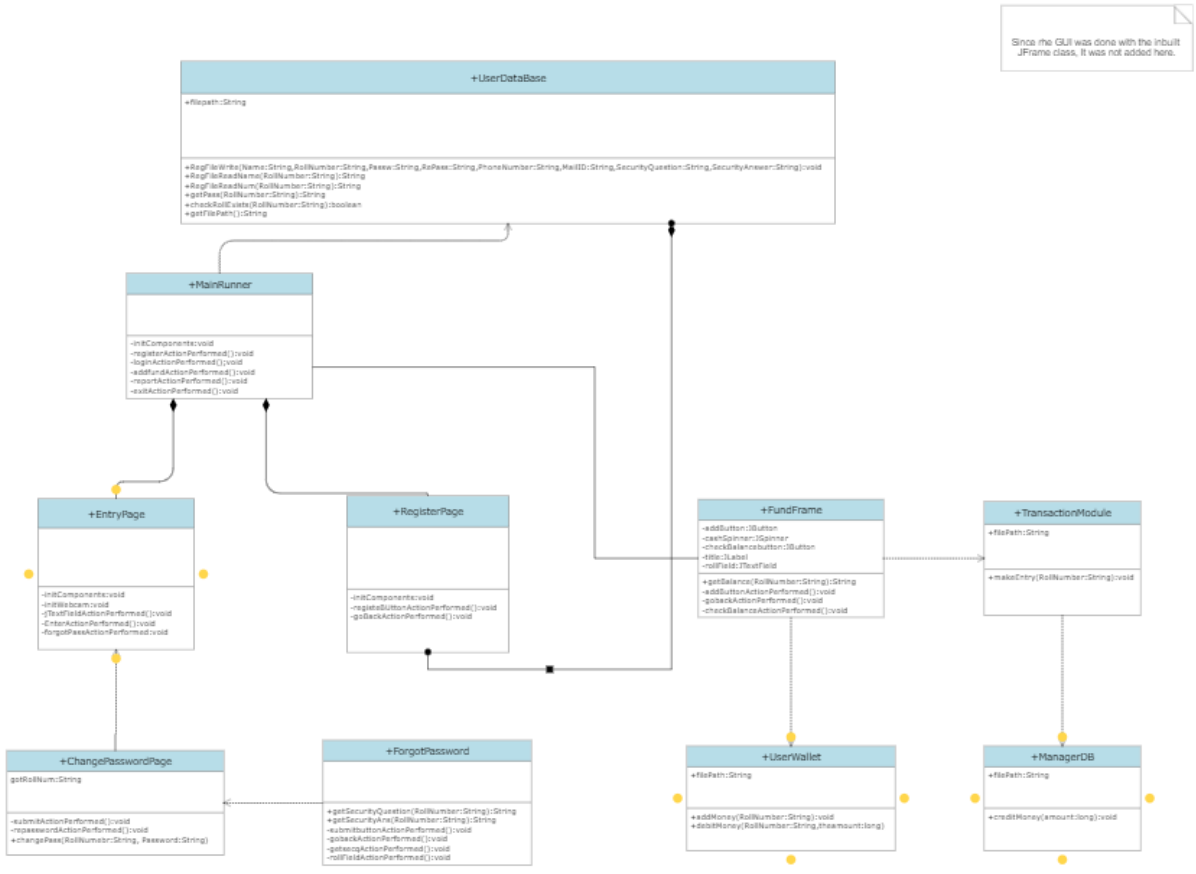
3. Relevance to other modules:

3.1 Relevance with User Management:

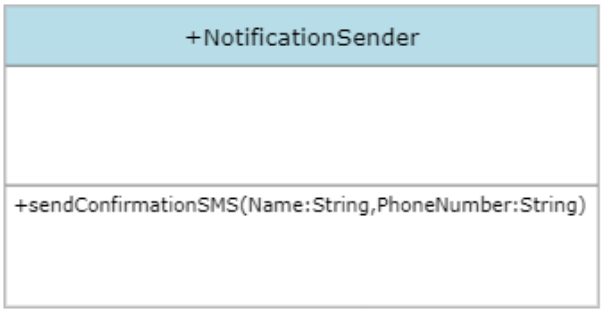
The Report Module integrates with the user authentication module, ensuring that only authorized users can access and generate reports. This helps maintain data security and confidentiality. It takes data from the user management module.

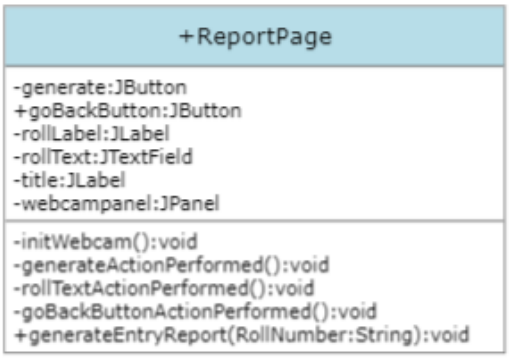
4. Appendix:

Class diagram of the whole project:



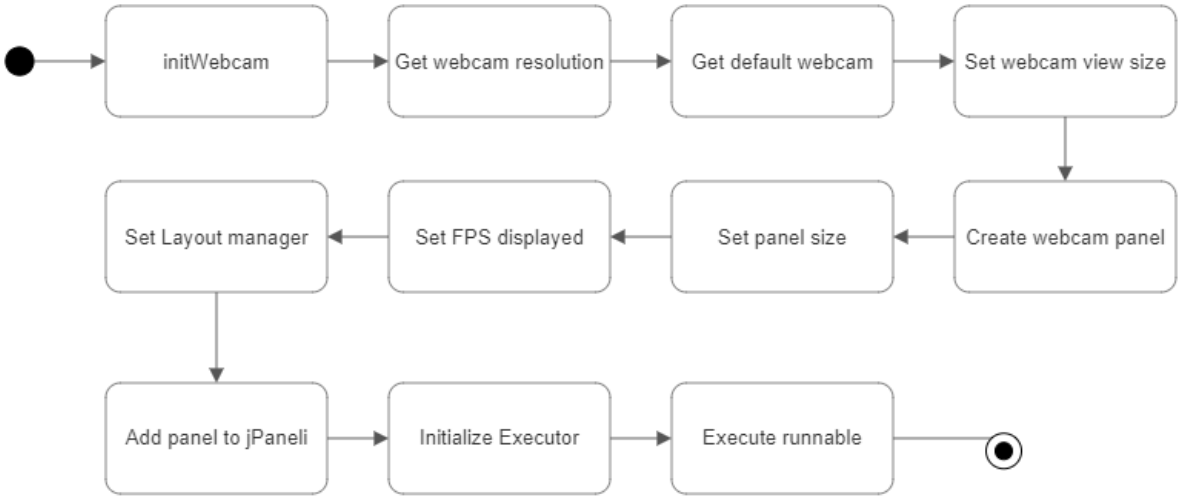
Class diagram of the module:



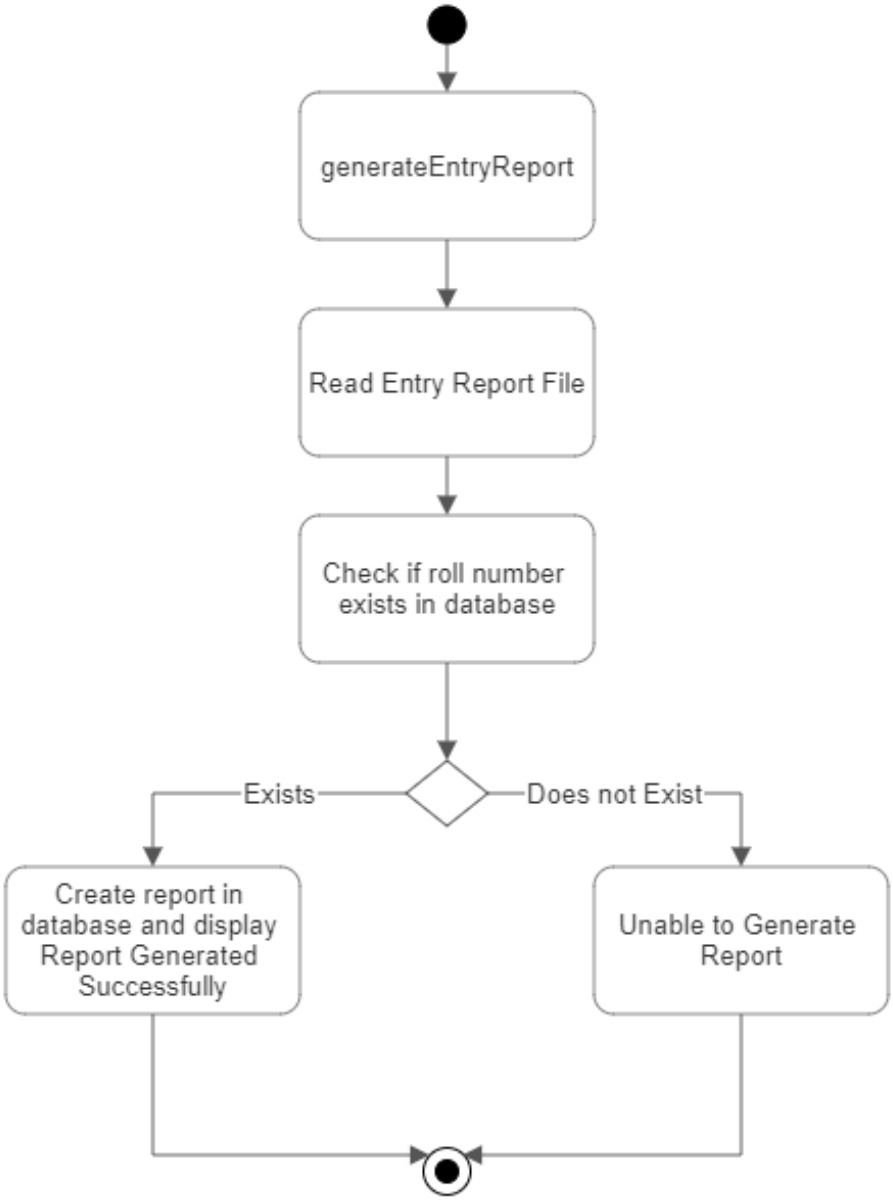


Activity diagrams of each function:

initWebcam:



generateEntryReport:



Sequence diagrams of the module:

Report Page sequence: