



Attendance Tracker 2.0

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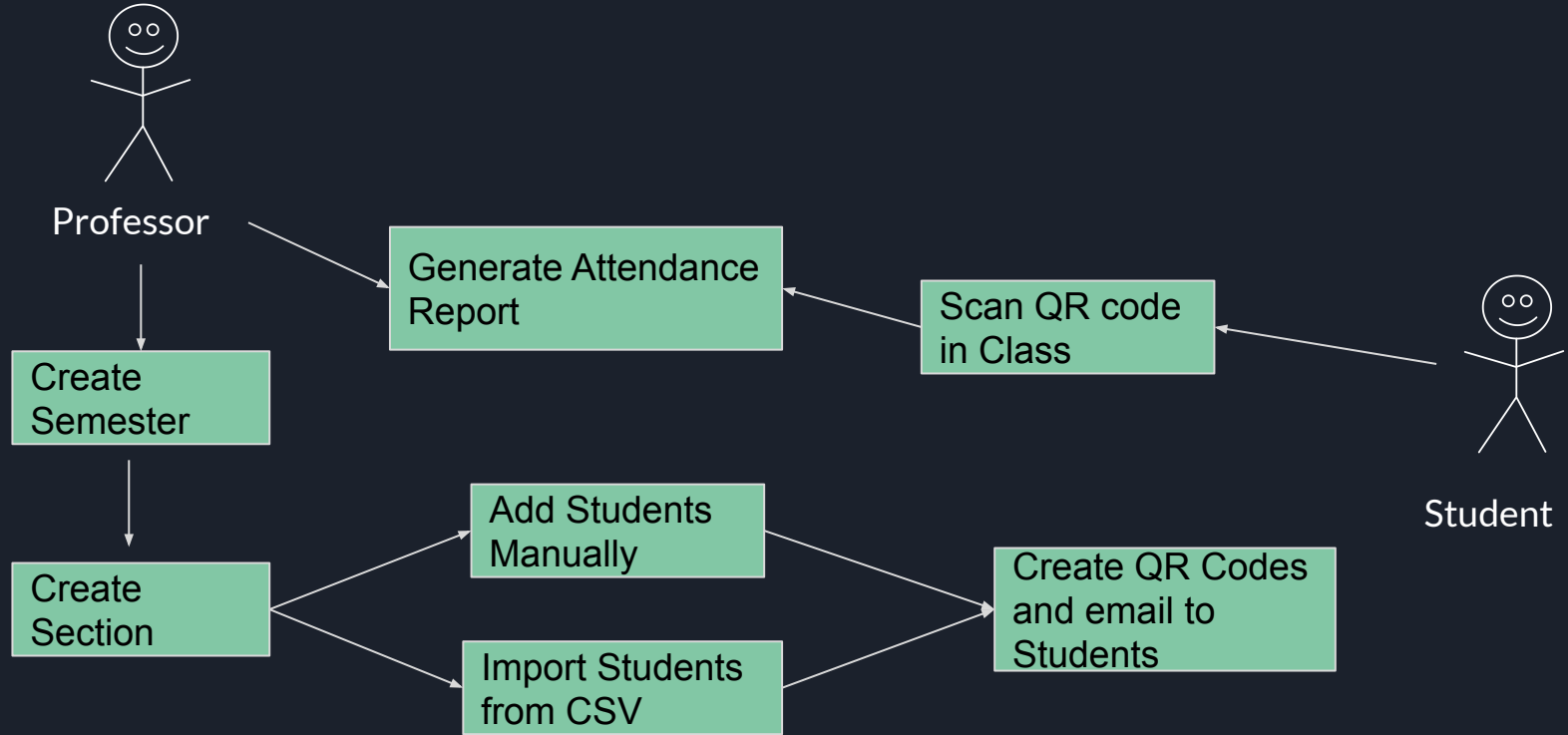
In collaboration with
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Rushitaa Dattuluri
Sanjay Sureshkumar



Project Proposal

- Develop an Android app to track attendance of students at PFW classes
- The instructor must be able to create multiple different courses and sections for each courses
- Lists of students for classes must be possible to import from CSV files
- Attendance will be recorded based on scanning of QR codes

Schematic of the software design





Functional Requirements

- User Account Authentication
- Management of multiple Courses
- Import Student Information from csv file
- Batch QR code generation
- Continuous QR scanning
- Error detection
- Automated report generation



Non-Functional Requirements

- Reliability
- Maintenance security
- Usability, low overall processing time of the system
- Data localization, positioning and balancing different directories



Project Constraints

- Must be written in Java
- Must be a continuation of the project developed in earlier semesters
- Professors must be able to run it on android devices
- Databases of student names and emails as well as attendance must be saved
- Must be able to continually scan QR codes for attendance
- Must be able to generate batches of QR codes and send them via email to students



Software team

Team Member	Role	Responsibilities
Nicolas Vana	Project leader/Developer	Organize project tasks and track project progress. Develop modules
Afroza Haque	Developer	Develop and test modules necessary for project completion
Leandro de Almeida	Developer	Develop and test modules necessary for project completion



Software Development Overview

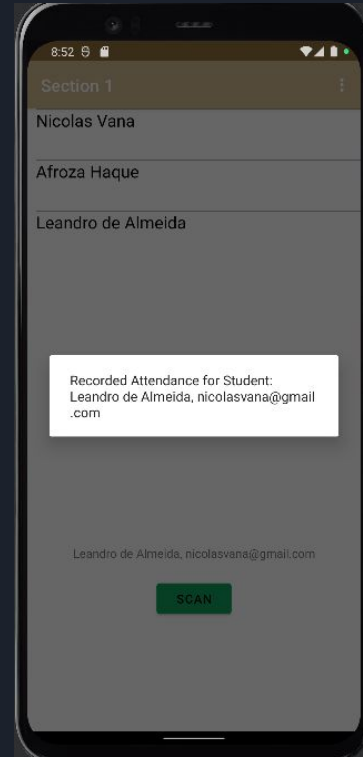
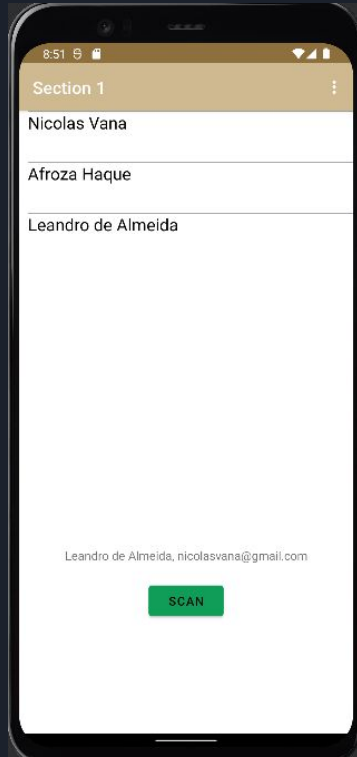
- What was already done as of attendance tracker 1.0:
 - Creation of semesters and sections, and inclusion on databases
 - Manual addition of students, and inclusion on databases
 - Most of the visual aspects of the application
- What we have done:
 - Continuous QR code scanning
 - Batch QR code generation and emailing
 - Adding students via csv files
 - Report generation and creation of CSV files for each report
 - Change of the app's color scheme to PFW colors
- What is left to do:
 - Database refactoring or overhaul
 - Instructor authentication
 - Customization of QR codes generated



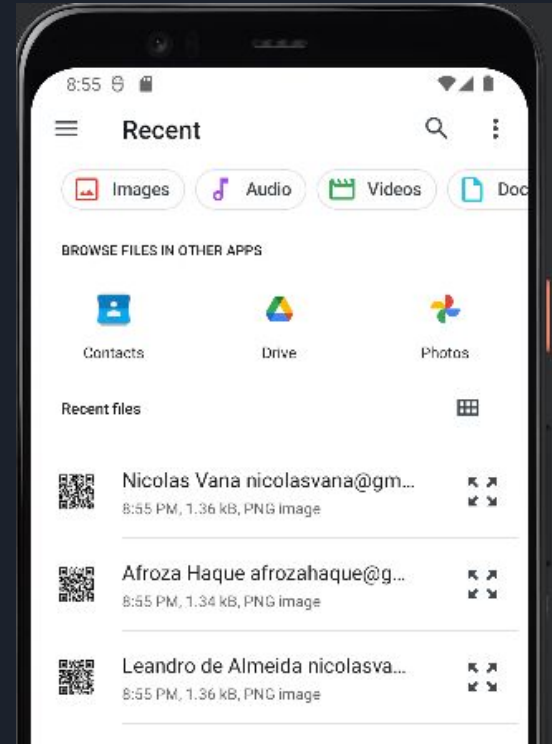
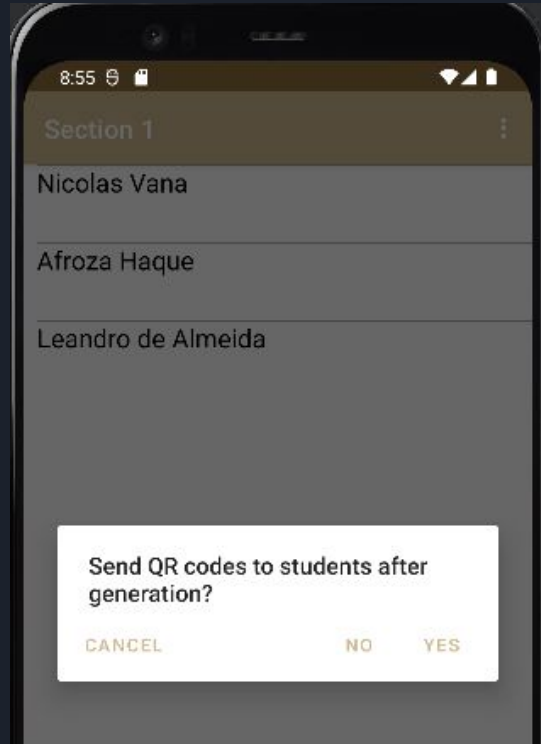
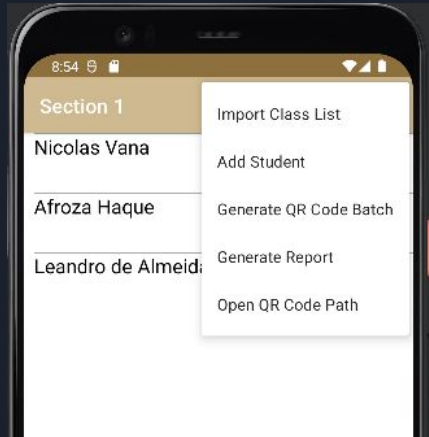
Software Testing

- Most of the tests carried out were unit tests and integration tests
- Throughout development as each new feature was introduced, the developer doing that task was also expected to test if the new feature was working as expected and if it did not break other features previously created
- The other teammates were also expected to report bugs found on modules developed by someone else
- Code reviews were made after each commit made by a team member

Continuous QR code Scanning



Batch QR code generation



Batch QR code email distribution



attendance.tracker.pfw@gmail.com

to me ▾

Hello Nicolas Vana,



Attached is the QR Code you will use to check into class.

Best regards,
Dr. Khalifa



attendance.tracker.pfw@gmail.com

to me ▾

Hello Leandro de Almeida,

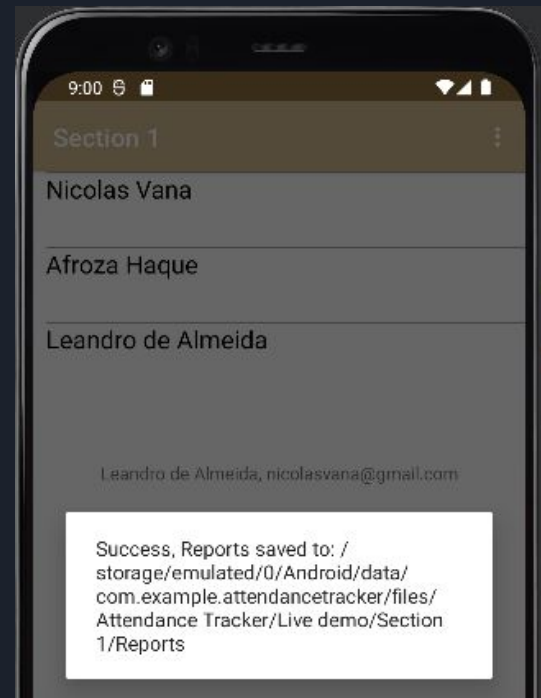
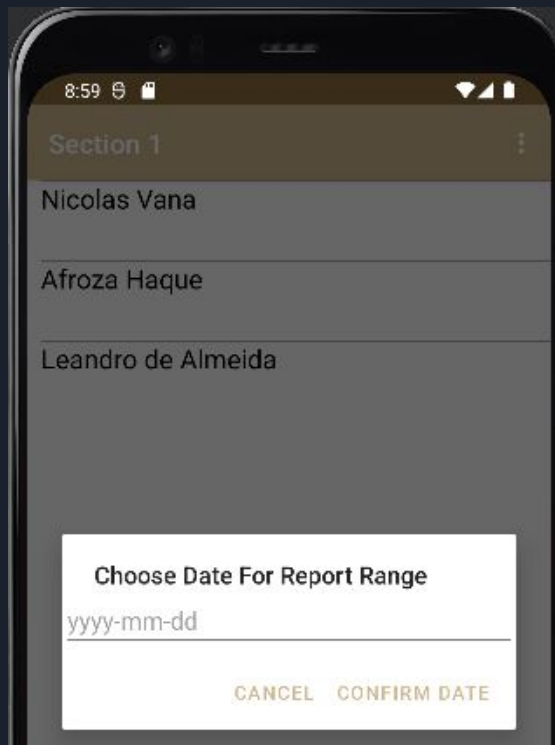
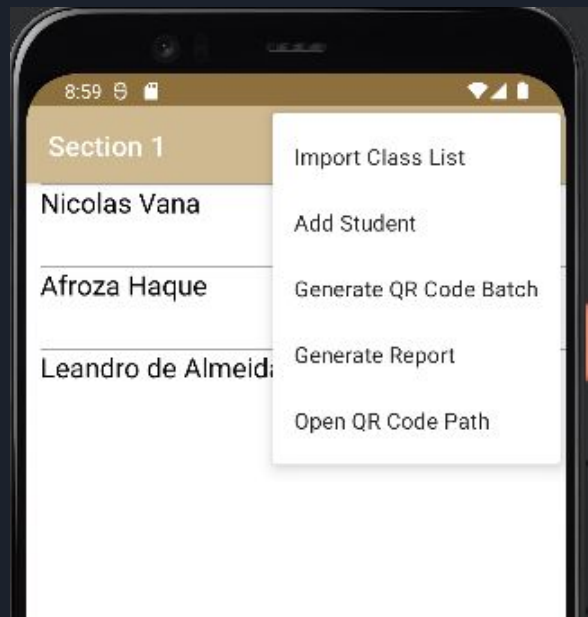


Attached is the QR Code you will use to check into class.

Best regards,
Dr. Khalifa



Report generation





Report generation

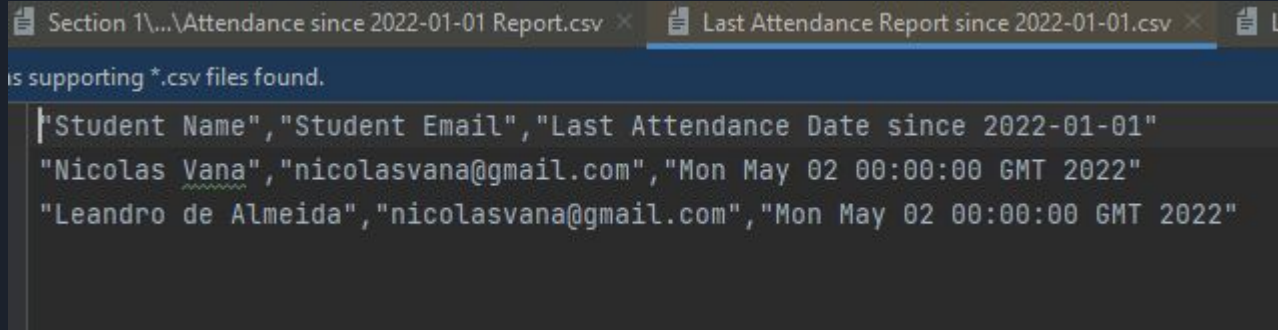
```
"Student Name","Student Email","Date"  
"Nicolas Vana","nicolasvana@gmail.com","2022-05-02"  
"Leandro de Almeida","nicolasvana@gmail.com","2022-05-02"  
"Nicolas Vana","nicolasvana@gmail.com","2022-04-29"  
"Nicolas Vana","nicolasvana@gmail.com","2022-04-25"
```

All attendance report

```
"Student Name","Student Email","attendance since 2022-04-28"  
"Nicolas Vana","nicolasvana@gmail.com","2022-05-02"  
"Leandro de Almeida","nicolasvana@gmail.com","2022-05-02"  
"Nicolas Vana","nicolasvana@gmail.com","2022-04-29"
```

Attendance since report

Report generation

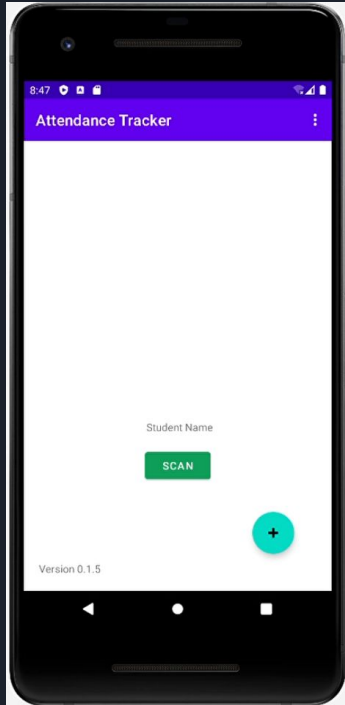


The screenshot shows a web browser with two tabs. The active tab is titled "Last Attendance Report since 2022-01-01.csv". The page content displays a CSV file with the following data:

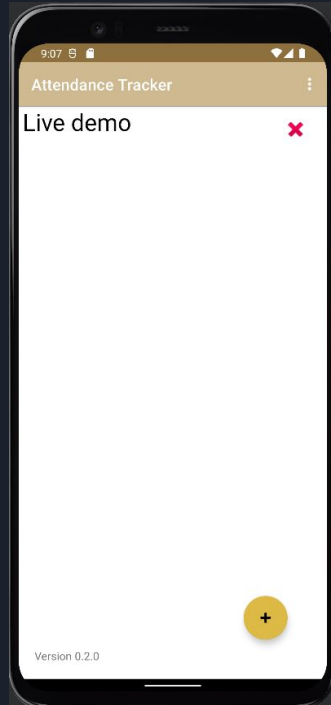
Student Name	Student Email	Last Attendance Date since 2022-01-01
Nicolas Vana	nicolasvana@gmail.com	Mon May 02 00:00:00 GMT 2022
Leandro de Almeida	nicolasvana@gmail.com	Mon May 02 00:00:00 GMT 2022

Last attendance report

Color Scheme Change



Before



After

```
//PFW-specific colors, provided by https://brand.pfw.edu/visual-elements
//Primary palette
<color name="Golden"    >#FFCFB991</color>
<color name="Black"    >#FF000000</color>
<color name="White"    >#FFFFFFF</color>

//Black-supporting palette
<color name="Footprints">#FF555960</color>
<color name="Storm"    >#FF6F727B</color>
<color name="Fog"      >#FF9D9795</color>
<color name="Tusk"     >#FFC4BFC0</color>

//Gold-supporting palette
<color name="Summit"    >#FFDAAA00</color>
<color name="Clay"      >#FF8E6F3E</color>
<color name="Tassel"    >#FFDDB945</color>
<color name="Rumble"    >#FFEED99F</color>
```




Live Demo



Tools

- Java and Android Studio to Develop the app
- ZXing library to generate QR Codes
- Bitbucket to store code and documentation
- TinyDB to save data



Risk vs Solution

- Tight Schedules – Project management tool Jira
- Device incapable of scanning QR code - Install external QR code scanner
- Technical difficulties due to lack of industry experience – Learning new tools and concepts to complete the project



Project Learning Outcomes

- Project Management
- Importance of teamwork
- Converting the requirements to product
- Learnt more about software development and testing
- Application of software engineering concepts like UML diagrams, cohesion, coupling etc.
- Understanding Android development frameworks
- Usage of Android Studio as a facilitator for building Android applications



Project Management

- We have used Jira software to keep track of project progress and of the tasks to be completed
- Division of tasks was based on group assessment of the difficulty of each task
- Weekly meetings were carried out in order to re-assess and re-distribute tasks if required
- There were no hardware or software costs associated with this project



Questions?



References

- [1] A. Nuhi, A. Memeti, F. Imeri, and B. Cico, “Smart Attendance System using QR Code,” 2020 9th Mediterr. Conf. Embed. Comput. MECO 2020, pp. 8–11, 2020, doi: 10.1109/MECO49872.2020.9134225.
- [2] K. Navin, A. Shanthini, and M. B. Mukesh Krishnan, “A mobile based smart attendance system framework for tracking field personals using a novel QR code based technique,” Proc. 2017 Int. Conf. Smart Technol. Smart Nation, SmartTechCon 2017, pp. 1540–1543, 2018, doi: 10.1109/SmartTechCon.2017.8358623.



Thanks!

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