Parent Notification System

A Mini-Project Report
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in

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by

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ABSTRACT

This research studies how to convey a student's attendance to the parents and make the process easy on the teacher/ professor. The purpose of this research is to design and build a student attendance reporting application using WhatsApp gateway for parents to know the state of students in the college

and can help users in the present process. Using the Whatsapp Gateway is beneficial as it is free of cost and the most popular cross platform messaging service. In the first stage, The teacher will input the compiled attendance sheet, Then in the next stage there will be a slide toggle to select which students are to be sent what message. Both Student or Parent are now not required to come to college for this purpose but they will be notified about their attendance status and will be able to know if they are safe and within the criteria or are not. Students will now think twice before bunking a class because now they know that parents are directly contacted in the case of poor attendance.

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CHAPTER 1

INTRODUCTION

1.1 Problem Introduction

- One of the teacher's activities during the class meeting is to record student attendance or commonly called list of presence.
- Student attendance can also be used as a means of information in terms of disciplinary by students' parents to knowing their children's school attendance and thus foster parent's trust and assurance towards the school
- Teachers in the college setting should not be responsible for the student's irresponsible decisions but in most cases they feel responsible for the students and try to contact their parents .
- In particular, they always face the problem of students taking lab classes lightly and missing them over their other plans, be it important or for leisure purposes.
- This lack of seriousness is a big problem for both teachers and the students, which unfortunately leads to teachers to depend on informing the parents of teachers.
- This problem is easily solved during the time they take attendance of the students, as by having the database present to automatically message the parents.
- Although in my personal opinion students should have the strings to control his/her life in their own hands and this programme is for students who do not have any regards to their future and need direct guidance from their parents.
- But this is hopefully taken into consideration by teachers as Over Guidance oftenly is worse than no guidance at all.

1.1.1. Motivation

- Motivation for this project in this domain for me is that I cannot face the sad reality of students, who don't understand the actual gravity of subjects and make wrong decisions.
- For me, not all but some selected classes holds a greater preference than other classes and these classes are not to be bunked on. ● These decisions may change based on person to person and should be take by that individual alone but some decisions are better taken by person who's more experienced than we are
- Many students may miss out on the opportunity to actually get the hands-on feeling in the classes like labs.
- In which whatever is learned in the class is actually being implemented on the system and how to use those concepts in the real world.
- The same students then exclaim that they are not understanding anything and everything is hard but in actuality their wrong decisions are to blame.
- This project is for them to be forced to learn even if reluctantly but this can actually make at least 15% of non attending students to actually listen and grasp the actual concepts.

1.1.2. Project Objective

- The eventual objective of the project is to provide ease of use to the teacher so that they can make decisions so that the parents of the students may or may not get the message about the absence of their child.

- This project is so that the students are pressured to take classes that are actually important to their future and have a great value in this technical course.
- Objective of this project is to let the students be aware of such consequences to their careless behavior towards classes and their importance.

1.1.3. Scope of the Project

- This project can be expanded to hold and provide with more information and insights to the marks and other parameters that could be fed via professors but in my opinion skills are more important than marks scored.
- Scope of the project can also be expanded if every teacher is connected to the same network so that attendance detail from every teacher can be fetched such that the compilation of attendance can be done easily.
- Also the weekly attendance remainder can be sent to students to take leaves in accordance with their overall attendance and if they are not hurting their attendance below the criteria.
- It can also be expanded with the fingerprint system in which students are expected to input their attendance with scanning thumbprint and then the teacher would not have to write the attendance into a register and the attendance will be more accurate.
- The attendance feature is then used to actually know if students are reaching the school or are bunking the school without any permission.

1.2. Related Previous Work

- ❖ DreamClass[3]
  - ➢ It is a full fledged Student Management System which aims to compute every data related to a student and the efficient workflow of administration and provides the stats for the quality of the teaching that a particular student is getting.
  - ➢ It has a totally different aim from the aim of my project, that is to

create a system that not only maintains the attendance data but the marks data and activity data of the students.

➢ Under the subset of multiple functionality it offers there is attendance maintenance and notification system in which schools may opt in to let the parents know when the student is skipping classes.

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❖ Getting parents involved in child's school[2]

➢ In this paper, the aim is to make a software system that will take input from a dedicated UI and then send the notification to the parents every month. The technology used is very old and outdated.

➢ In the operation of the system union of many different databases is taken in order to do the work that may not be needed in my opinion. ➢ Due to the nature of SMS Gateway, the percentage of people who give

attention to SMS messages is very low and the gateway is paid so every message costs the institution money.

❖ Student Attendance Reporting System Using WhatsApp[4]

➢ In this paper, the aim is to make a software system that will take input from a dedicated UI and which is developed for Android devices. ➢ It is designed in a way so that "Picket Teacher" who are teachers for miscellaneous tasks will be able to input the attendance of every student every day and also mention if the student is on the leave after taking proper permission.

➢ The database is also tailor made for the project and according to their research after the first release of the application, it is very well received but the UI seems to be very restrictive.

1.3. Organization of the Report.

It provides the short description of the work reported in each chapter. 7

CHAPTER 2

LITERATURE SURVEY

(LITERATURE SURVEY FORMAT FOR NON-WEB BASED PROJECTS)

● I learned many different techniques and perspectives of people to solve this problem and I'm motivated to add value in this problem by introducing my own way of solving this problem. The survey also indicates how important it is to integrate the programme with the new technologies as some problems which used SMS gateway, their institutions have to pay for messages that now they don't have to with Whatsapp Gateway. This shows that the code must be written in a way that it is easily upgradable in a way new technology can be integrated into it further down the time of its usage. Also the thing to learn from this study is that I have to make this project for the niche of attendance as then scaling the project will only mean losing the focus on the main aspect, making the program that is incomplete and imperfect.

2.1. Attendance Monitoring and Access Control System[1]

- This paper discusses different methods for attendance monitoring and access control based on the level of security and the solution that would provide for any industry in need of an attendance monitoring system.
- For the applications with primary level of security, RFID tags are used and for the applications with intermediate level of security, fingerprint based biometric is used. RFID tags are used to provide authenticated access and timely database storage of the user details who access it.

2.2. Getting parents involved in child's school: using attendance application system based on SMS gateway[2]

- In this paper, the aim is to make a software system that will take input from a dedicated UI and then send the notification to the parents using SMS messages and the gateway is paid so every message costs the institution money.
- In the operation of the system union of many different databases is taken in order to do the work that may not be needed in my opinion. Due to the nature of SMS Gateway, the percentage of people who give attention to messages is very low.

2.3. Get parents notified with your Student Attendance Management System[3]

- It is a full fledged Student Management System which aims to compute every data related to a student and the efficient workflow of administration and provides the stats for the quality of the teaching that a particular student is getting.
- It offers many different functionalities ie Admission Management, Class Management, Student Management, Parent Portal, Attendance Management etc

2.4. Student Attendance Reporting System Using WhatsApp Gateway[4]

- It provides an android application, designed with the substitute teacher who handles the miscellaneous tasks of the teachers that are employed in Indonesia to input the data from the attendance sheet to the application.
- It uses the most recent messaging gateway and got very good feedback from the clients with "90% score indicating user's feel of ease while using the system".

2.5. Attendance Management System through Fingerprint [5]

- This paper proposed an idea of recording attendance using biometrics (fingerprint) for tracking attendance and storing the data using LAN. This paper provides a brief description about the usage, accessibility, accuracy, affordability and acceptance of biometric (fingerprint verification) systems.
- In this system the data is fetched from the individual in the form of fingerprint and then it is verified with the data that was stored prior and marks the attendance of an individual. Finally the database is also obtained. This method provides high accuracy results and consumes less time but it is not cost-effective.

2.6. Student Attendance Management System [6]

- The system is a Web-based application developed for daily student attendance in departments within the university. It facilitates access to the attendance of a particular student in a particular class.
- This system will also help in generating reports and evaluating the attendance eligibility of a student. The system is not only improving the work efficiency, students' study and development, but also can save human and material resources.

CHAPTER 3

SYSTEM DESIGN AND METHODOLOGY

The project requires no boundation of the operating system but it must have a web browser downloaded and a .xlsx file editor. The tasks are done on the system itself but they do not require any significant processing power.

In the first stage of the project, there will be no networking with other teachers but until then low end systems can easily run the programme without using any more power.

But as the new updates will be rolled out, the featureset will increase with some features plans such as, asking for the daily input from the professor about the attendance information and compiling the attendance percentage of each student without asking for the compiled attendance.

Features for future updates will include the connectivity of other teachers to the same cloud service and then compiling attendance of every student and sending the messages with the permission of the class mentor.

3.1 Functional Requirements

❖ User Story 1: As a Teacher, I must be able to input the file and detention criteria.
  ➢ Functional requirements:
    ■ HTML page that will ask for the file.
    ■ Correct file with .xlsx is uploaded then next step is unlocked.
    ■ Now the detention criteria percentage is asked in the form.
    ■ And then the file is sent for processing on the GCC.
❖ User Story 2: Teachers need to view who and how many students fall under the criteria .
  ➢ Functional requirements:
    ■ A new file is created in order to visualize the names of students.
    ■ Any student who is not intended, the message sent to them can be deleted at this stage.
❖ User Story 3: Teachers need to send those messages to the parents to the students selected in the above file.
  ➢ Functional requirements:
    ■ The file is then provided to the python script that sends the messages.
    ■ The system is then advised to let alone with some degree of supervision if any error occurs during the dispatchment of

messages.

3.2 Product Functions

The product functions using Javascript and HTML, and then it messages the parents whose child is not meeting the criteria set by the teacher.

The first version is going to be very simple with only one purpose: to send the messages to the parents of the students at the whim of the teacher hence there will be limited functionality.

The function that will be present will be to control the students who will be receiving the messages and change the messages.

3.2 Assumptions and Dependencies

Assumption taken during the designing of the project is that the parents have the account on the whatsapp with the number that they have submitted during the registration in the college documents.

Also that the parents do actually read messages received on the whatsapp messenger application and respond accordingly, for that they are required to be connected to the internet if not all the time but at least once a day.

Dependency of the project is that the information provided to the college documents and fed to the teachers is true and is working as if the parents are still using the phone number provided.

Also that the teacher is connected to the internet during the dispatching of the messages, and does have a whatsapp account themselves to be able to send the messages.

3.3.1 System Design

1. Input Interface

a. It is the interface in which the teacher will input the attendance of the students, first it'll ask for the class and the name of every student in that class will be shown to the teacher.

b. They will get the option to input the attendance and then the attendance percentage of the student of that class will be written. c. Teacher then can select if they want to send the message or not and set the limit from which if a student has less percentage then his/her parent will receive a message.

2. Message Template

a. In this area the teacher can write, edit or select from different sample messages that he/she can send to the parents of the student.

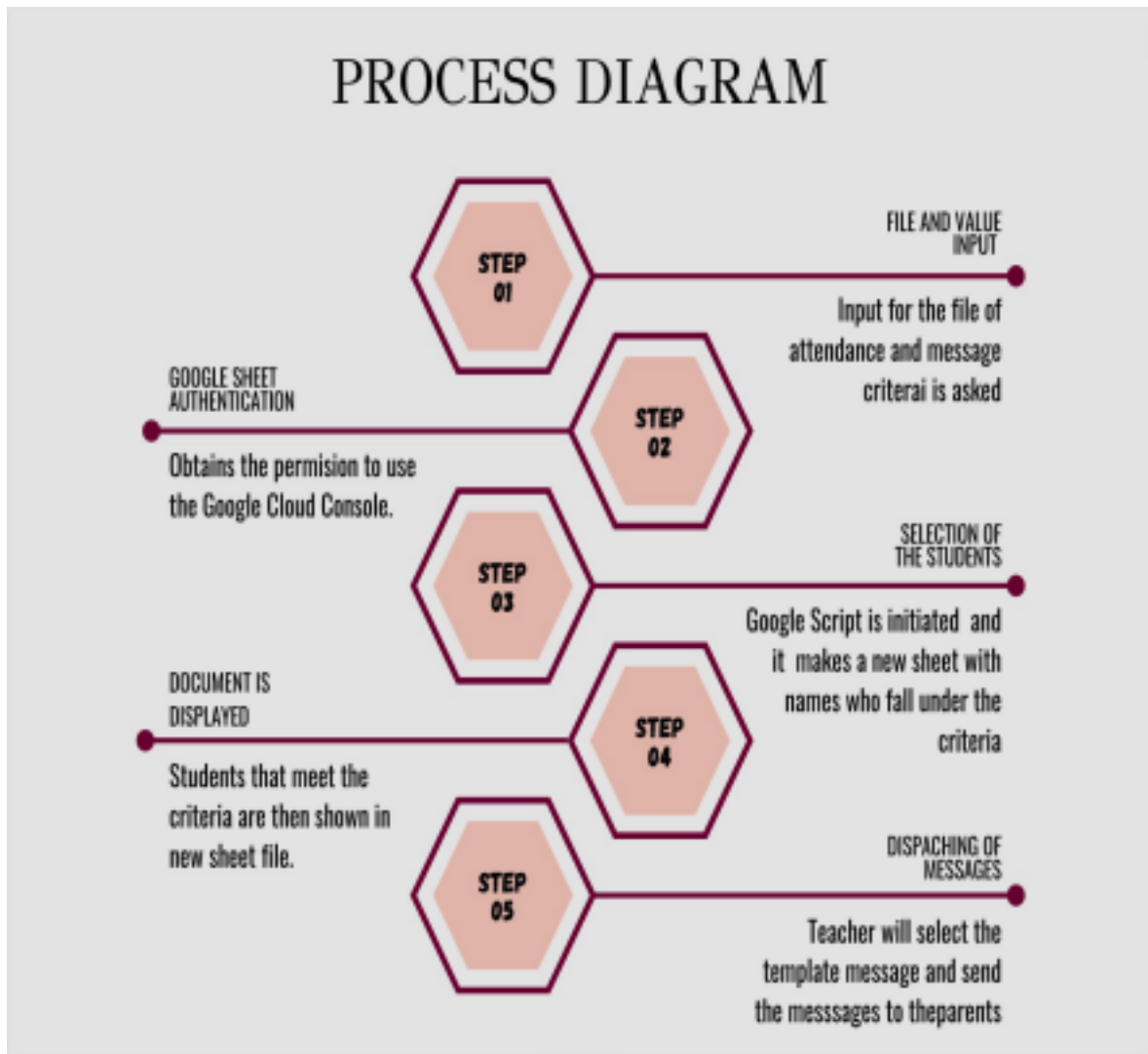b. There will be to verify what message is to be sent to what student and at what time should it be sent at.

PROCESS DIAGRAM

STEP 01

FILE AND VALUE INPUT

Input for the file of attendance and message criterai is asked

STEP 02

GOOGLE SHEET AUTHENTICATION

Obtains the permision to use the Google Cloud Console.

STEP 03

SELECTION OF THE STUDENTS

Google Script is initiated and it makes a new sheet with names who fall under the criteria

STEP 04

DOCUMENT IS DISPLAYED

Students that meet the criteria are then shown in new sheet file.

STEP 05

DISPACHING OF MESSAGES

Teacher will select the template message and send the messsages to theparents

Fig 3.1: Process Diagram
In this diagram, the steps taken are written
as follows.

3.3.2 Technical Design

A. Set up the front-end: A basic HTML page will ask the user to upload the .xlsx file and it will allow the user to browse through their computer and select the file in question. Also it will ask for the percentage criteria below which the student names are to be displayed.

B. The back-end Operation: A server-side programming language such as Node.js, Python, or PHP will handle the file upload and communicate with the Google sheet API. We will be using Node.js and Python.

C. Handle the file upload: A Node.js package like Multer to handle the file upload. Multer makes it easy to receive and process files in Node.js.

D. Authenticate with the Google sheet API: Obtaining authentication credentials and set up the necessary permissions to use the Google sheet API. This will involve creating a project in the Google Cloud Console and enabling the Google Drive API.

E. Use the Google sheet API to open the file: Once you have authenticated with the Google sheet API, you can use the API to create a new Google Doc and upload the contents of the .xlsx file. The library googleapis is used to interact with the Google sheet API.

F. Display the document to the user: Finally, the user is redirected to the Google sheet page that displays the newly created document with attendance percentage below the value given.

G. Dispatching the Messages: Input will be taken from the teachers on the messages that will be sent to the students as well as parents.
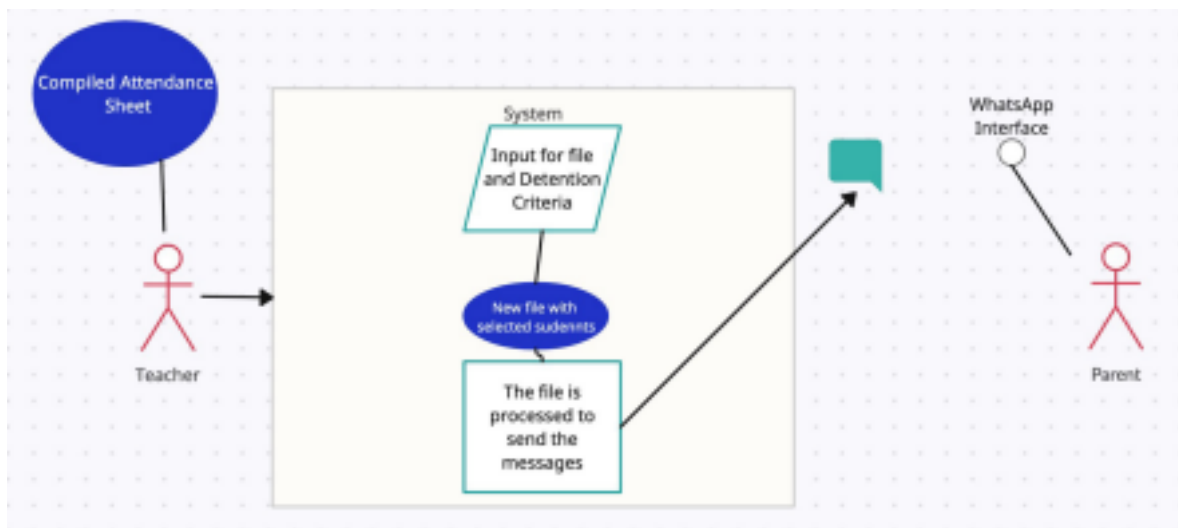
3.4 Use Case Diagram

Fig 3.2 : Use Case Diagram

In this diagram, two users are shown interacting with the system, in which one is the teacher proving the input to the system

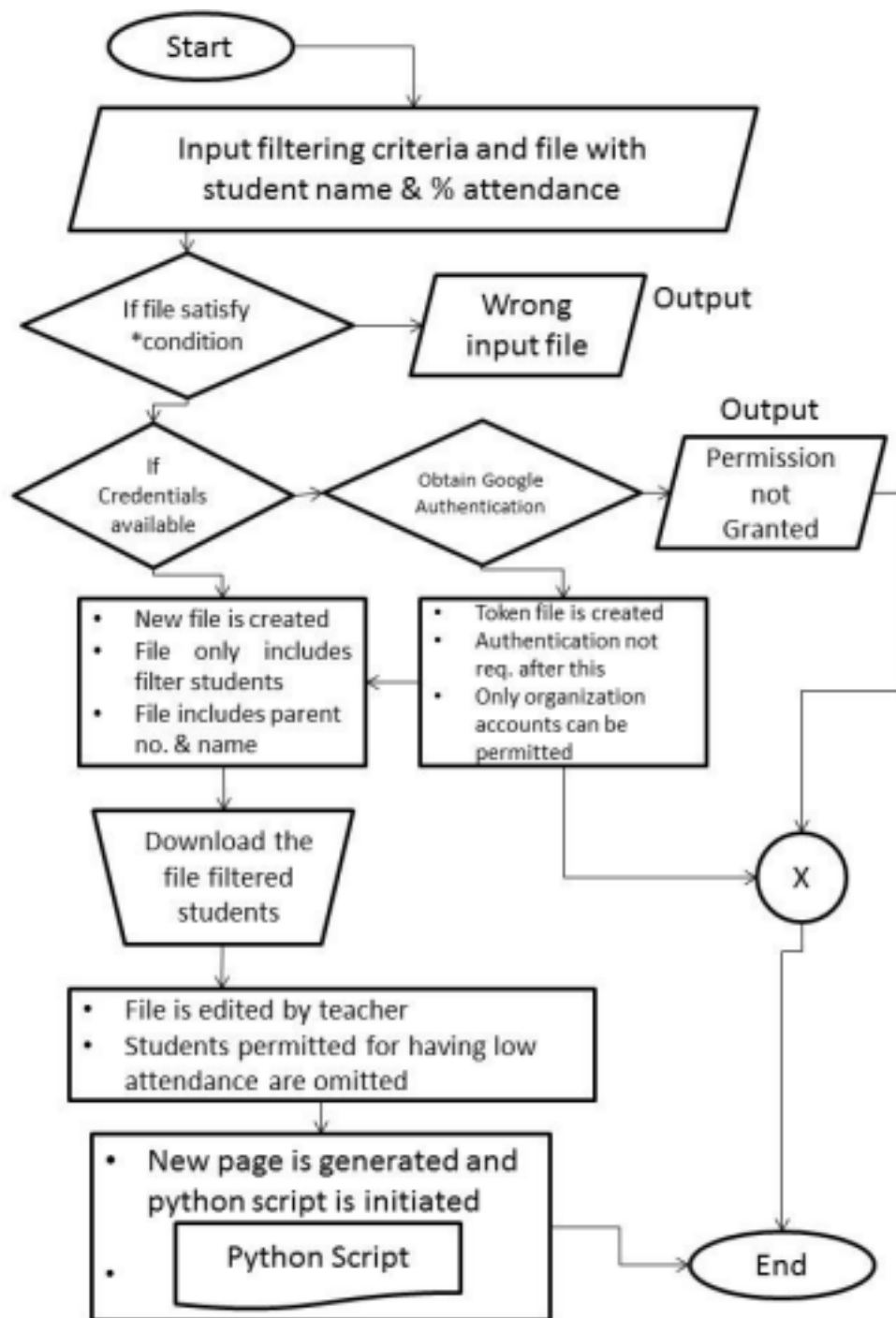**3.5 Flow Chart of the Project**

Fig 3.3 FlowChart of Main File
*Condition : File must be of .xlsx extension
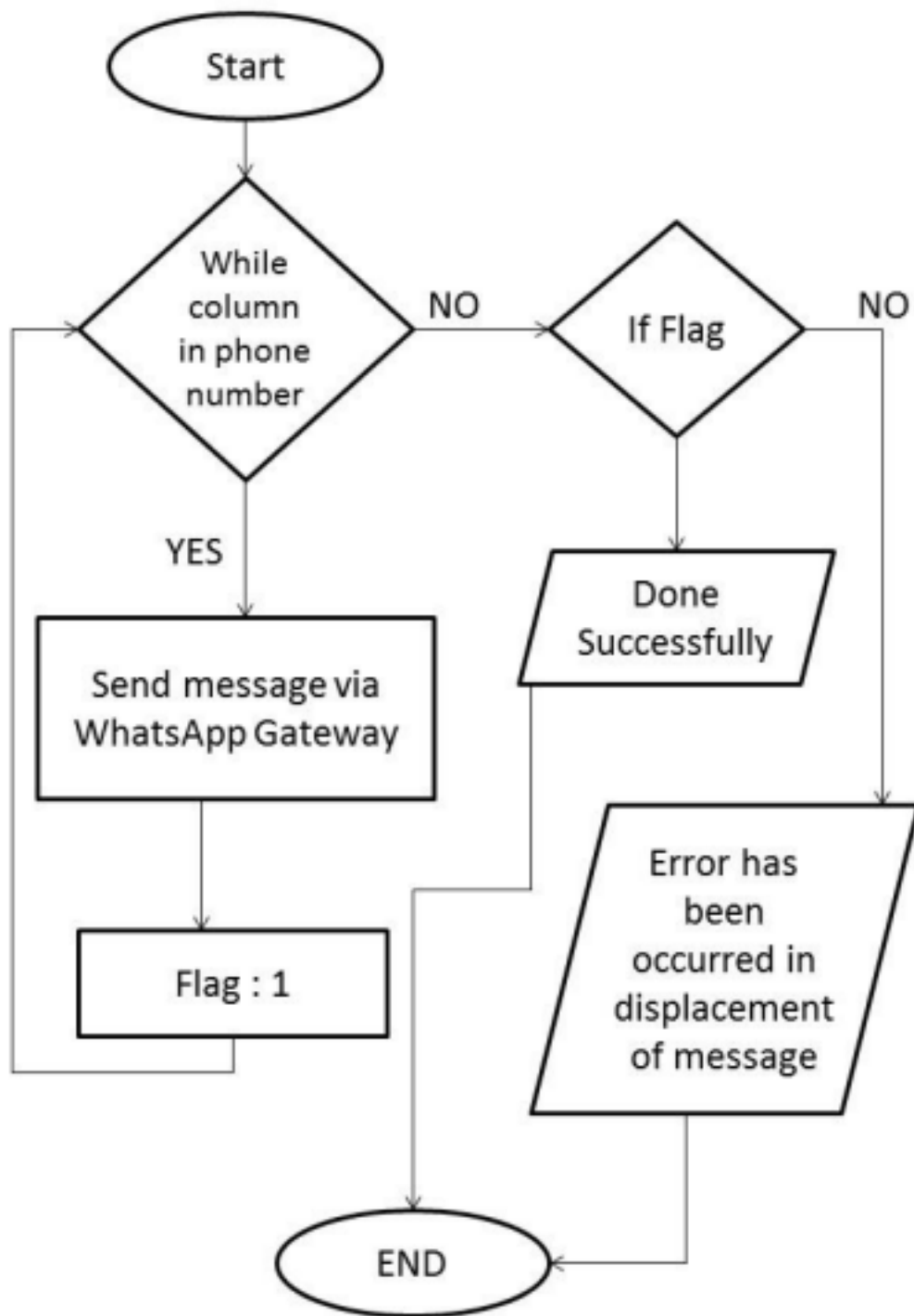Must have student roll number and attendance percentage

Fig4.4 : Python Script
This is responsible for the dispatchment of the messages to the parents of the student

CHAPTER 4

IMPLEMENTATION AND RESULTS

4.1. Software and Hardware Requirements

- The programme requires the compute unit to have python3.10 interpreter installed,
- It must have Streamlit and Google Authenticator downloaded, ● The system must be connected to the internet, and must have an organization account.
- The whatsapp must be logged into the desktop.

4.2. Assumptions and dependencies

Assumption taken during the designing of the project is that the parents have the account on the whatsapp with the number that they have submitted during the registration in the college documents.

Also that the parents do actually read messages received on the whatsapp messenger application and respond accordingly, for that they are required to be connected to the internet if not all the time but at least once a day.

Dependency of the project is that the information provided to the college documents and fed to the teachers is true and is working as if the parents are still using the phone number provided.

Also that the teacher is connected to the internet during the dispatching of the messages, and does have a whatsapp account themselves to be able to send the messages.

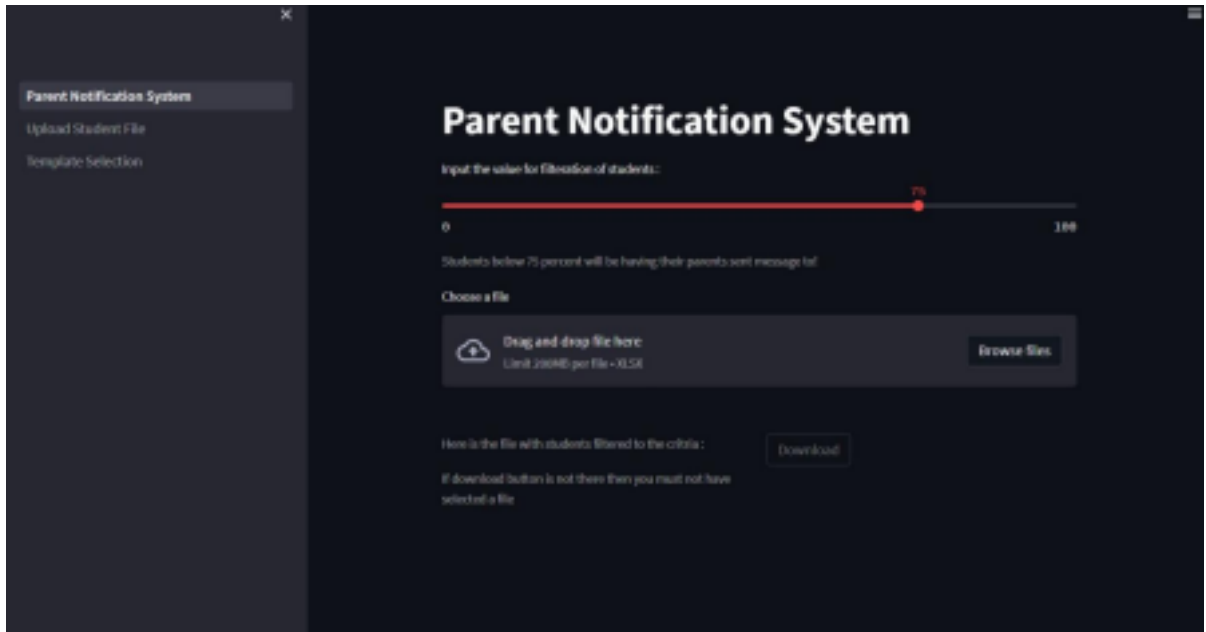## 4.3. Implementation Details

4.3.1. Snapshots Of Interfaces

Fig 4.1: Home page of the Web page

In this page, the teacher uploads the attendance file with the filtration criteria set by the user, The filtered data file can be downloaded.
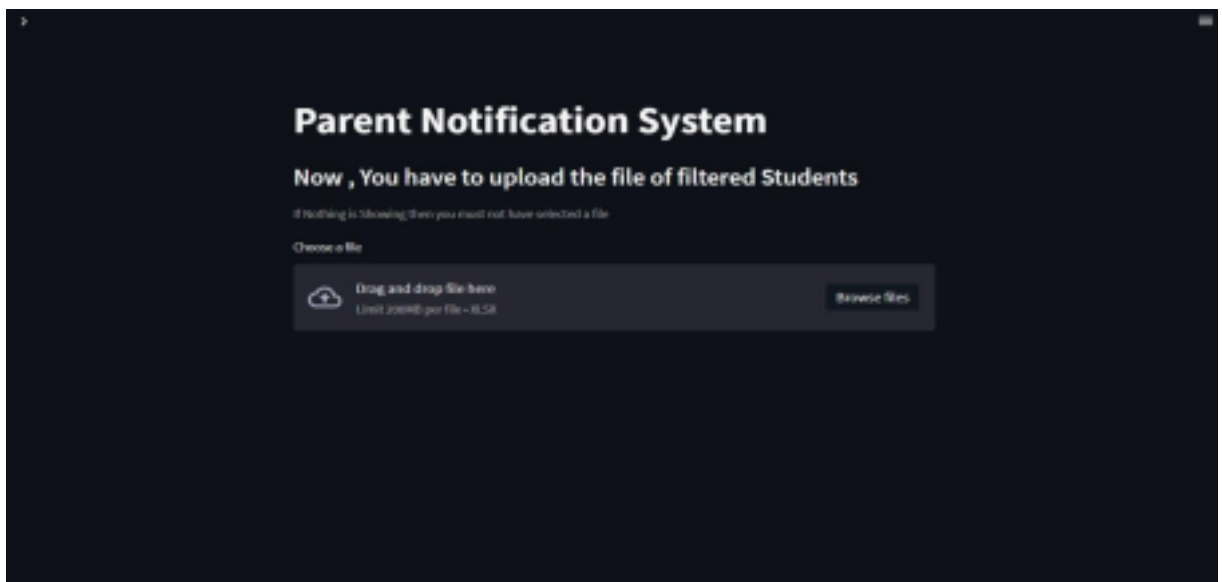

Fig 4.2 : Upload Edited File page

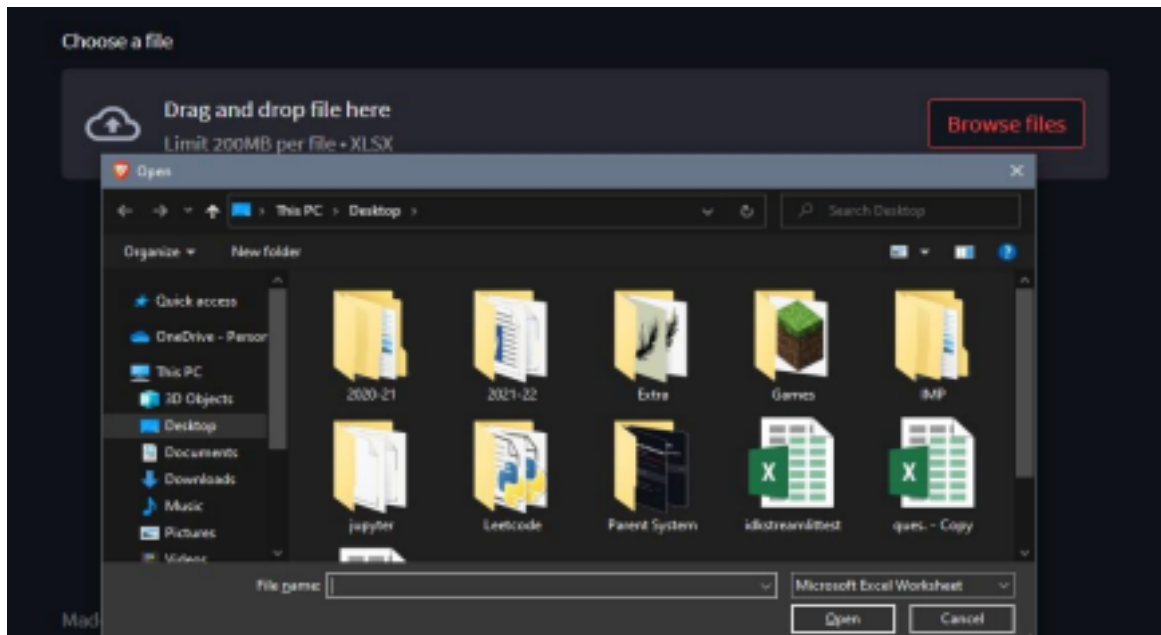In this page, the edited student file is uploaded by the teacher

Fig4.3 : Choosing File Preview

This is the file selection viewed in windows, it also works on a MacOS and Linux as well.

Fig4.4 : Selecting the template

Here the user is provided with option to select form
the templates or write its own

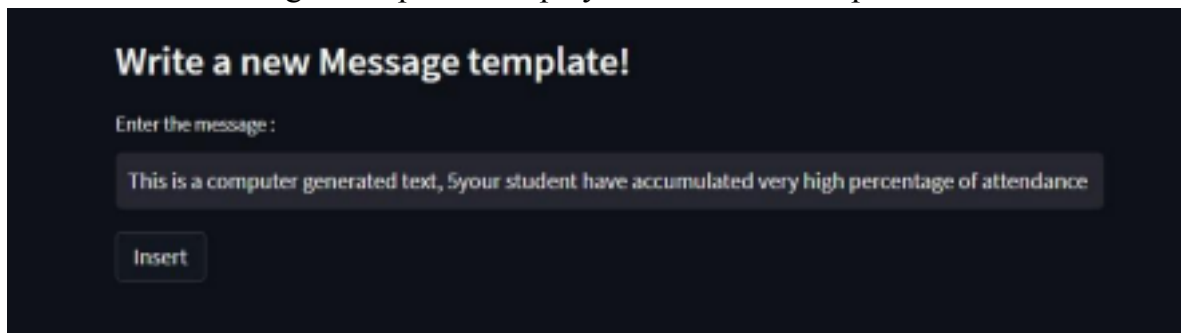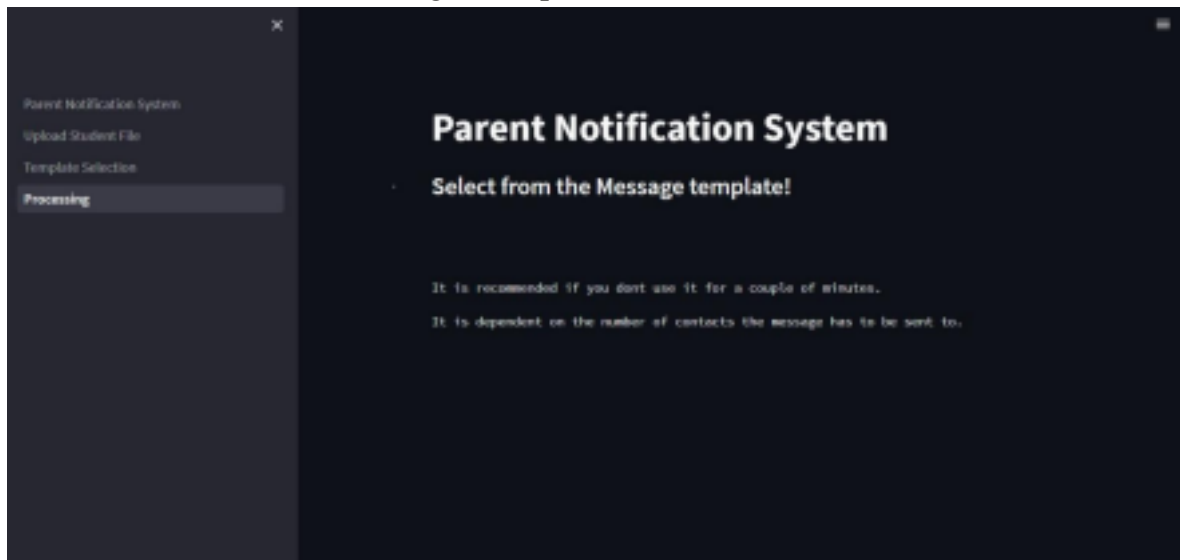Fig4.5 : Options Displayed of Default Template

Fig4.6 : Option to insert user
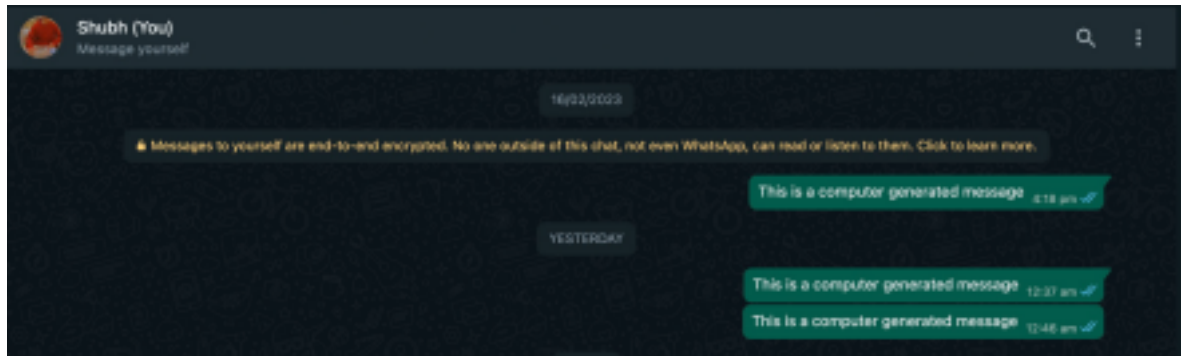

Fig4.7 : Final Page

In this page the messages is dispatched to the parents and teacher is advised to leave the computer alone for few minutes

4.3.2. Results

This is the Whatsapp interface to which message has been sent to

CHAPTER 5

CONCLUSION

5.1. Comparison with existing State-of-the-Art Technologies

❖ Whats App

❯ In this project whatsapp is the best option from every other alternative because it has the biggest user base, and almost everyone seems to use it on daily basis so the messages will be effective.

❖ StreamLit

❯ This library helps the developer tp develop efficient web applications without any hassle and also helps with the hosting on the local host as well as on the interwebs.

5.2. Future Directions

Some potential future developments could include:

1. Integration with other systems: The student attendance system could be integrated with other school management systems, such as the student information system or gradebook, to provide a more comprehensive view of the student's academic performance.

2. Automated notifications: Rather than relying on teachers to manually send attendance notifications to parents, the system could be programmed to send automated notifications to parents based on the student's attendance record.

3. Personalized communication: The system could be designed to provide personalized communication to parents based on their preferences, such as the frequency and format of notifications.

4. AI-powered analytics: The system could be equipped with artificial intelligence (AI) algorithms that can analyze attendance data to identify patterns and trends. This can

help teachers and parents identify students who are frequently absent or tardy, and take proactive measures to address the issue.

5. Smart devices integration: The system could integrate with smart devices such as smartwatches or fitness trackers to track student attendance automatically based on their physical presence within school premises.

6. Voice assistants integration: The system could also incorporate voice assistants, such as Amazon Alexa or Google Assistant, to allow parents to access attendance information or receive notifications through voice commands.

7. Secure data sharing: The system could ensure secure data sharing between parents and teachers, to avoid any breach of data privacy.

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TABLE 9.12. Comparison Of Various Data Structures.

Operatio n

Search Delete Insert

Sequential List		
O(log n) O(n)		
O(n) O(1) O(l		
O(n) O(1) O(l		

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