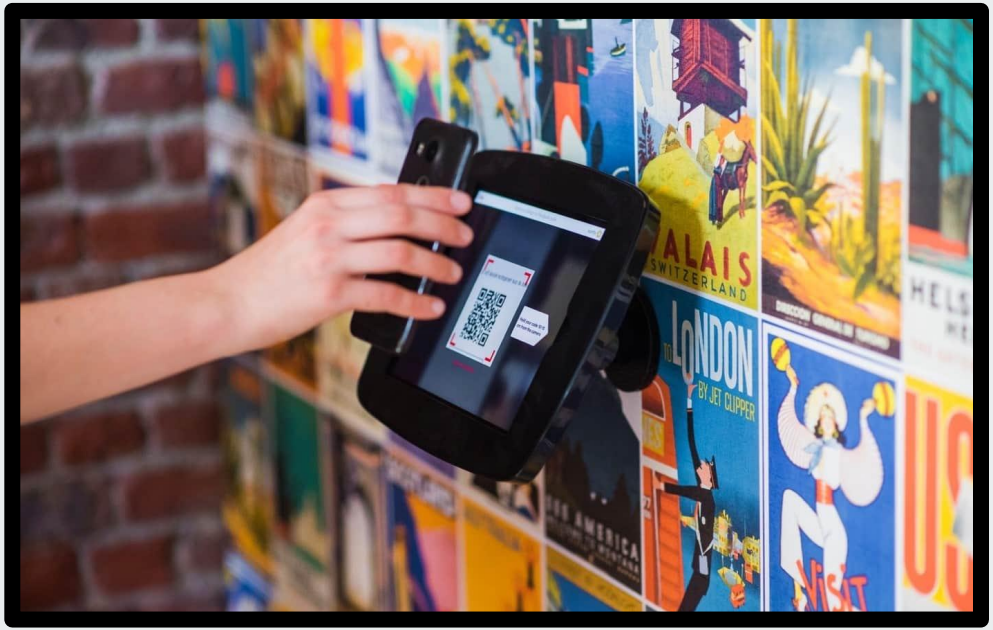
Entry - Exit system using QR code



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Outline

Abstract

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Abstract

Abstract: QR code has become a popular technology in pandemic. There are several reasons QR codes are gaining popularity, but perhaps the most obvious reason is that they are contactless, touchless, and easy-to-use; all must-have attributes in a post-pandemic world. QR codes have become so famous that now every new smartphone comes with a built-in QR code reader, so users no longer need to download a separate app to scan a code. So we came up with an idea of using qr code to simplify the process of student entry/exit records.

Introduction

Motivation for the work

- While students enter or exit the university they enter their details manually.
- It would consume a lot of time and effort to maintain those records manually.
- We built an app that records student details automatically in an Excel sheet by scanning their respective QR codes and it will be useful to retrieve the students info for further reference.

Real-world Applications

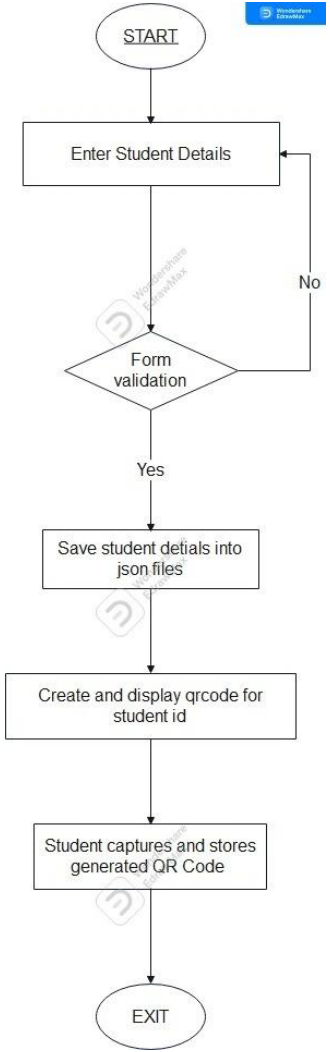
The project itself is a real world application that can be used

- To store the entry and exit details of students in universities.
- This system can be used in business organizations too.

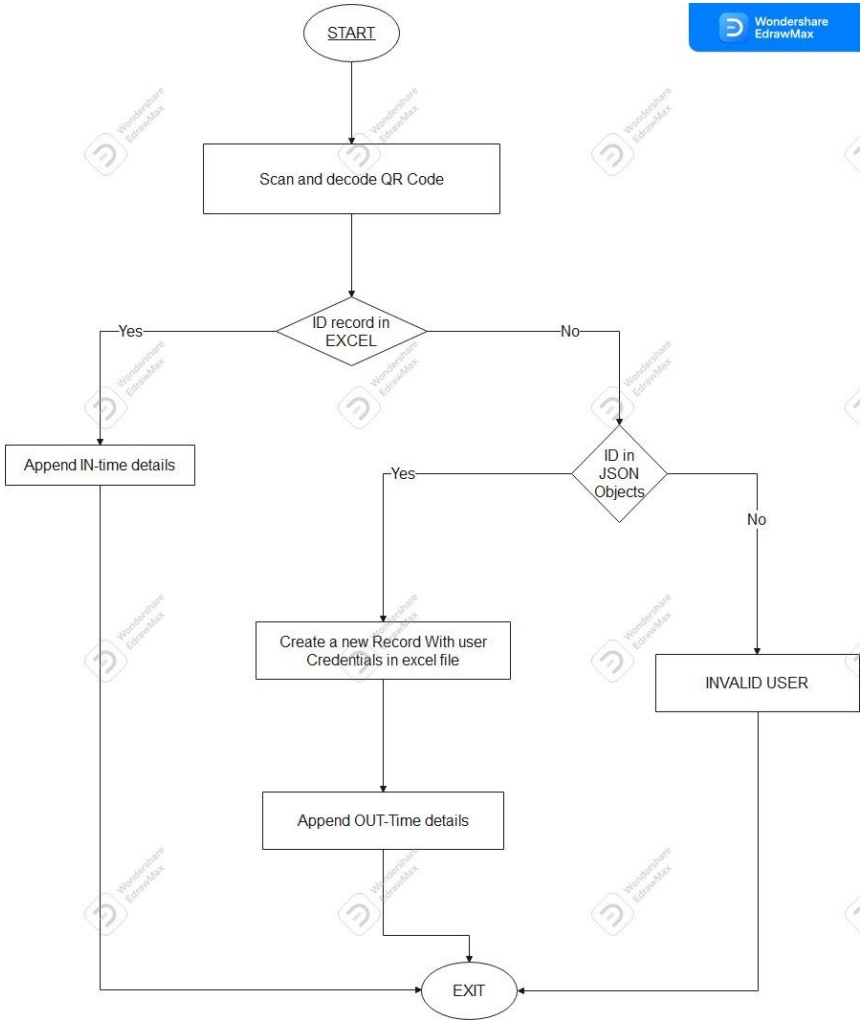
Related works

- Some public events require guests other than the invited to scan QR code and enter their details manually before entering.
- Now-a-days online transactions are being made using QR codes which is both quick and convenient.

Flowchart for Registration



Flowchart for Entry/Exit



Components involved in registration

Student details:-Student details are entered manually into form.

Form validation:-In this phase details entered by student are validated by the system.

Save details into json:-After student details are validated they will be stored in json file.

Create & display QR:-A QR is created for student ID and displayed on screen.

Student captures and stores the generated QR .

Components involved in Entry/Exit

Scan & Decode QR:-Scan the generated QR and retrieve the student details.

ID record in excel:-In this phase system checks whether the ID is existed in excel file.

Append in time:-Append in time to student details if the id record already existed in excel

ID in json:-If ID record not in excel, checks whether the student ID is in json.

Invalid User:-If student ID not in json file system gives invalid user message.

Create new record in excel:-If ID present in json create new student record in excel.

Technologies & Libraries

Tools/Technologies

Python

Computer Vision

Libraries

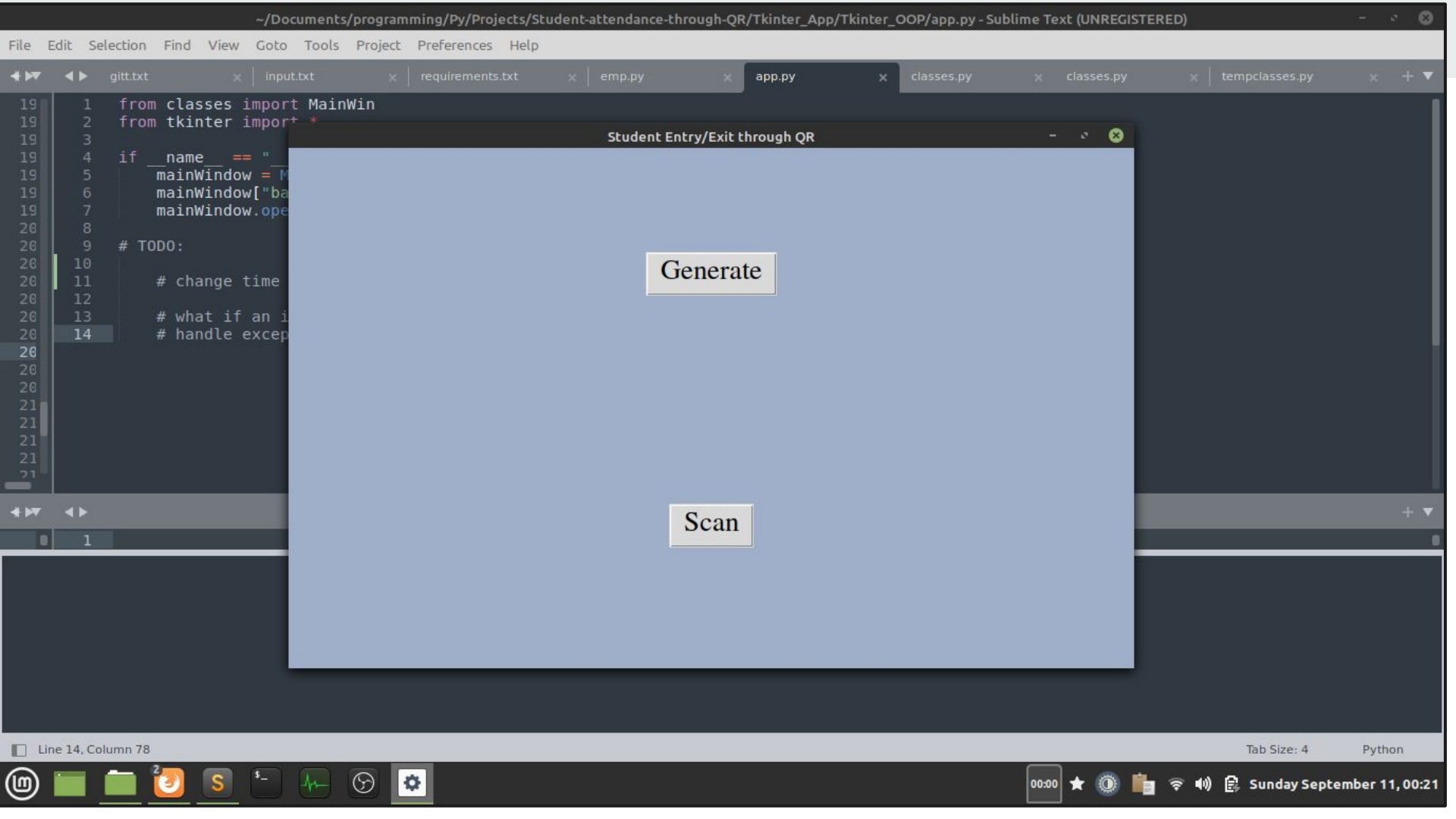
Opencv**,** json, tkinter, datetime, qrcode, pandas, numpy, Pillow.

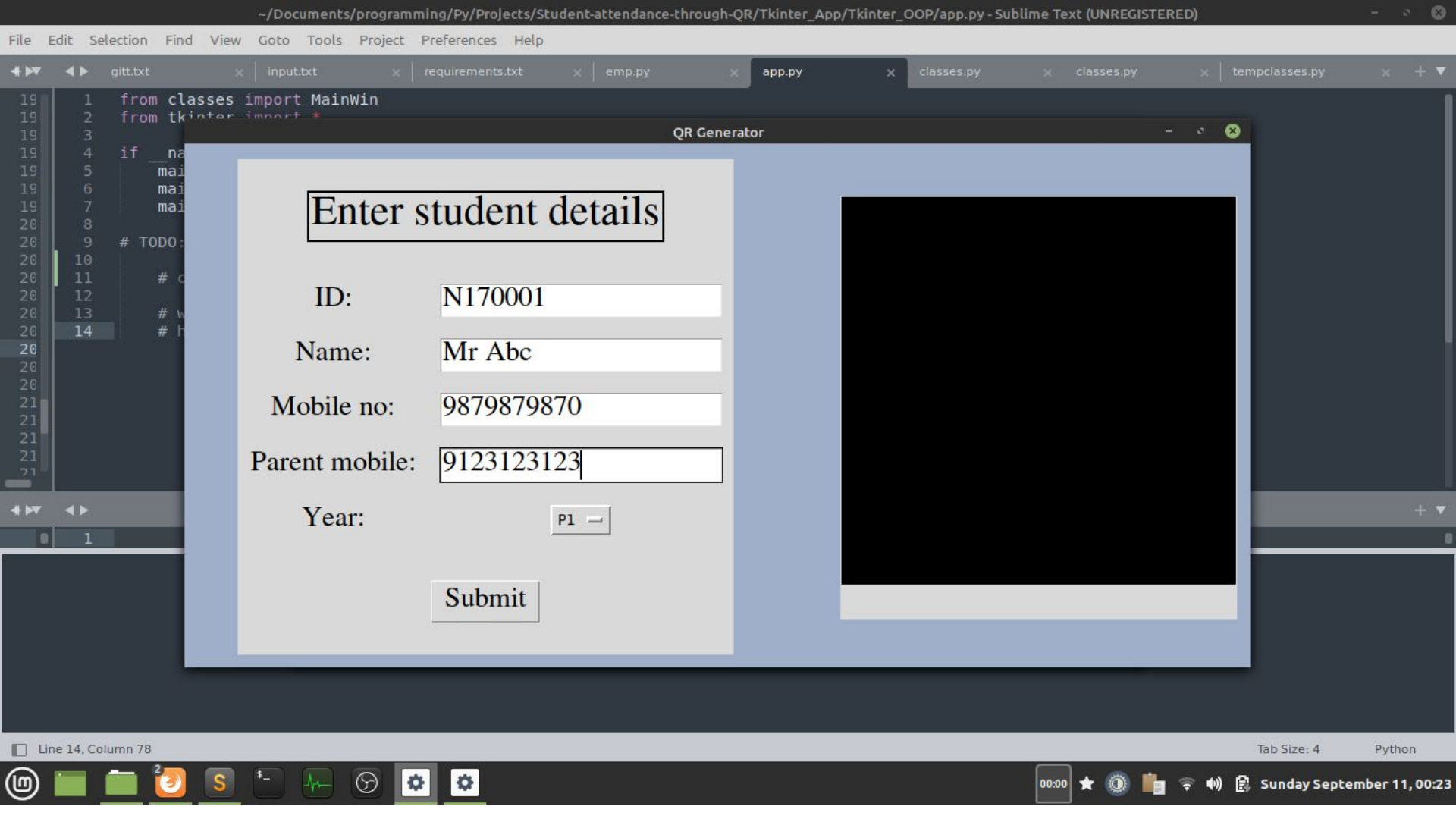
System hardware

A laptop/PC with webcam support

At least 4GB of RAM and i5 processor for smooth operation

Screenshots


~/Documents/programming/Py/Projects/Student-attendance-through-QR/Tkinter_App/Tkinter_OOP/app.py - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
gitt.txt
input.txt
requirements.txt
emp.py
app.py
classes.py
classes.py
tempclasses.py
from classes import MainWin
from tkinter import *
if __name__ == "__
mainWindow = M
mainWindow["ba
mainWindow.ope
TODO:
change time
what if an i
handle excep
Student Entry/Exit through QR
Generate
Scan
Line 14, Column 78
Tab Size: 4
Python
Sunday September 11, 00:21


~/Documents/programming/Py/Projects/Student-attendance-through-QR/Tkinter_App/Tkinter_OOP/app.py - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
gitt.txt
input.txt
requirements.txt
emp.py
app.py
classes.py
classes.py
tempclasses.py
from classes import MainWin
from tkinter import *
if __na
mai
mai
mai
TODO:
c
w
h
QR Generator
Enter student details
ID:
N170001
Name:
Mr Abc
Mobile no:
9879879870
Parent mobile:
9123123123
Year:
P1
Submit
Line 14, Column 78
Tab Size: 4
Python
00:00
Sunday September 11, 00:23

~/Documents/programming/Py/Projects/Student-attendance-through-QR/Tkinter_App/Tkinter_OOP/app.py - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

gitt.txt | input.txt | requirements.txt | emp.py | app.py | classes.py | classes.py | tempclasses.py

```
1  from classes import MainWin
2  from tkinter import *
3
4  if __na
5      mai
6      mai
7      mai
8
9  # TODO:
10
11     # c
12
13     # w
14     # h
```

QR Generator

Enter student details

ID: N170001

Name: Mr Abc

Mobile no: 9879879870

Parent mobile: 9123123123

Year: P1

Submit

QR code for N170001.png

Line 14, Column 78 Tab Size: 4 Python

Sunday September 11, 00:23

QR Scanner

Scan

Student details

ID:

Name:

Mobile no:

Parent mobile:

Year:

Time:

Submit

Sunday September 11, 00:24

QR Scanner

Scan

Student details

ID:	N170001
Name:	Mr Abc
Mobile no:	9879879870
Parent mobile:	9123123123
Year:	P1
Time:	15:57:33

Submit

Sunday September 11, 15:57

2022-09-11_P1_Nzd_.xlsx - LibreOffice Calc

File Edit View Insert Format Styles Sheet Data Tools Window Help

A1 ID

	A	B	C	D	E	F	G	H	I	J	K
1	ID	Name	Mobile	Parent	Year	Out time	In time				
2	N170001	Mr Abc	9879879870	9123123123	P1	15:57:33	-				
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											

Added record

Sheet1

Sheet 1 of 1 | PageStyle_Sheet1 | English (India) | Average: ; Sum: 0 | 130%

Sunday September 11, 15:58

QR Scanner

Scan

Student details

ID:	N170001
Name:	Mr Abc
Mobile no:	9879879870
Parent mobile:	9123123123
Year:	P1
Time:	15:59:52

Submit

Sunday September 11, 16:00

2022-09-11_P1_Nzd_.xlsx - LibreOffice Calc

File Edit View Insert Format Styles Sheet Data Tools Window Help

Calibri 11

A1 ID

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	ID	Name	Mobile	Parent	Year	Out time	In time						
2	N170001	Mr Abc	98798798	91231231	P1	15:59:52	16:00:43						
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													

Intime Added

Sheet1

Sheet 1 of 1 PageStyle_Sheet1 English (India) Average: ; Sum: 0 130%

Sunday September 11, 16:00

Conclusion

Successfully resolved the issue of data retrieval of students for Entry exit system using QR code by making use of python-3 language and computer vision technologies.

Using the proposed system, we can decrease the time and effort it takes to record the people entering or exiting manually.

Future scope

This system can be enhanced further by following below steps:

- Instead of inserting Student ID directly into QR code, we can insert it in encrypted form and then generate QR so that Student ID is not leaked to others.