Touchless Attendance System using QR Code and Power Apps

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Abstract: In this era of technology smartphones plays a significant role in our day-to-day life. Now-a-days smartphones can solve most of the problems very quickly and easily. It has made a life of every person simple and easier with different social apps, commercial apps, problem solving apps, apps for education and marketing etc. Followed by the technology the project proposed a system that will handle a problem for recording the attendance. The proposed system is a couple of two applications, one for generating the QR code by entering the student details and designing power apps for generating the attendance in CSV or XLS format. The teacher will need to scan the QR code of particular student to confirm their attendance. The paper discusses how the system verifies the student validity to eliminate false registration. The aim is to provide a touchless attendance system for office purpose, school purpose, college purpose.

Keywords: Spreadsheets, Power apps, Share point, .excel, .CSV file.

1. Introduction

Power Apps is Microsoft's answer to building business heavy applications without a ton of coding involved. It is a feature that allows professionals to create real and highly powerful apps without the need to write a single line of code.

When all other applications stop performing, Power Apps keep going forward. It allows non-developers to create and customize applications using Azure Functions. With the power of visual tools, Power Apps allows users to create applications that can solve big and small problems alike.

A quick response (QR) code is a type of barcode that can be read easily by a digital device and which stores information as a series of pixels in a square-shaped grid. QR codes are frequently used to track information about products in a supply chain and often used in marketing and advertising campaigns. QR codes are considered an advancement from older, uni-dimensional barcodes, and were approved as an international standard in 2000 by the International Organization for Standardization (ISO). QR codes were designed by DENSO WAVE in Japan and first came into use in 1994. Although the term "QR code" is a registered trademark, the technology itself has not been patented and is therefore available for anyone to use.

Fig. 1. QR code

2. Background Study

Manual System:
Prior to the age of technology, manual attendance was the most common method of tracking attendance. The employee's time is recorded in a Register or an MS-Excel or in a book, depending on how it is recorded.

Timesheets:
The sheets document when tasks are started and finished by employees. As a result, the employer will receive a detailed breakdown of the tasks the employee accomplished during his or her entire tenure. Information like this is used to estimate time and manage resources.

Biometric Attendance:
The purpose is to verify and identify the employee to the employer within an organization using a biometric device.

This template is captured and stored on a smart card or database of a biometric machine so that it can be used for the purpose of verifying a user's (employee's) identity. Consequently, users are identified by their biometric characteristics alone, without the use of smart cards, usernames, or other identification methods.

3. System Design and Architecture

Power apps:
Power Apps is Microsoft's answer to building business heavy applications without a ton of coding involved. It is a feature that allows professionals to create real and highly

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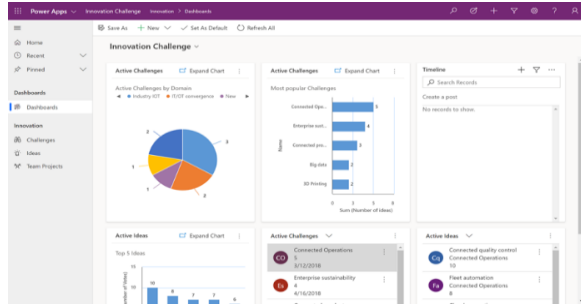powerful apps without the need to write a single line of code.

Fig. 2. Power apps

Canvas apps:

Canvas apps are a great option when you want to build an app from a blank canvas. You start by choosing the screen size: tablet or mobile, then you have a blank screen from which to build. You can interact with data in your app by adding data sources. Drag and drop various controls and add the desired functionality by writing Excel style formulas. Canvas apps provide you complete flexibility when building your apps.

Below are a couple of examples of a mobile canvas app built by Heathrow Airport.
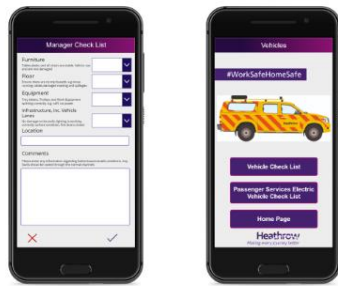
Fig. 3. Canvas

Model-driven apps:

Model-driven apps build from data in Microsoft Dataverse. Power Apps will build you a great looking, fully functional app to act upon and interact with this data. With model-driven apps, there is no need to worry about choosing the app size; it is responsive, meaning it works on mobile or tablet with no extra work by you. You define the relationships, forms, views, business rules, and more at the data layer, inside of the Dataverse, giving you enough control to get your business result without writing all of the formulas yourself.

Below is an example of a fundraiser donations tracking model-driven app.
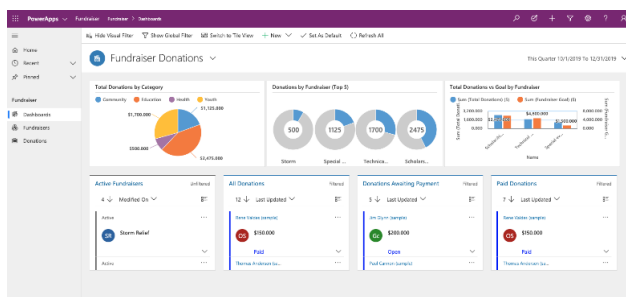

Fig. 4. Model driven apps

Excel Sheet:

The details of the students are given in excel sheet as like the student's name Roll number as shown below.
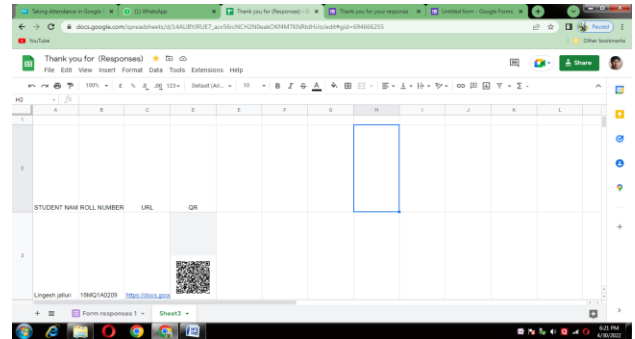

Fig. 5. Student details

In this sheet, the student details are added with their roll number in case we can add their sur name etc.

QR Code Generation:

The QR code is generated According by using the syntax of

```
<img src='https://chart.googleapis.com/chart?chs=300x300&cht=qr&chl=$code&choe=UTF-8'>
```

The QR code is generated According to the details as shown below.

Fig. 6. QR code

4. Scanning App Using Power Apps

The Scanning App is designed by using Power App by using the Microsoft Account.

When you sign in to Power Apps, the site offers you various options for creating your own apps, opening apps that you or others have created, and performing related tasks. These tasks range from the most simple, such as identifying the license or licenses that give you access, to more advanced capabilities like creating custom connections to specific data sources.

The App is designed by creating the app using power apps by creating the blank app as shown below
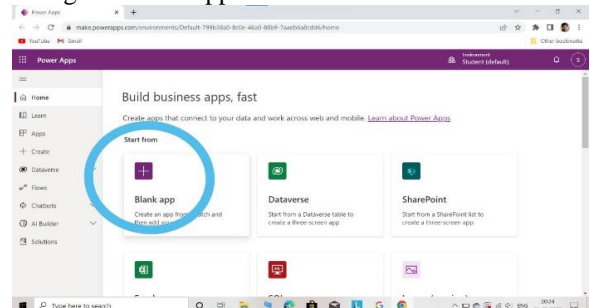
Selecting the Blank app and click on create.
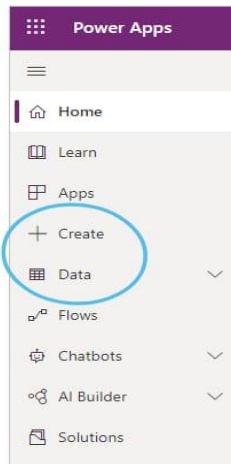

Fig. 7. Creating the blank app

Fig. 8. To create an app

Designing of the App:

The app is created in the PC in which we have to add the Scanning Button, Gallery Pages for to add the Date and time By Adding the Subtitle, Image, Body in the App as shown below.
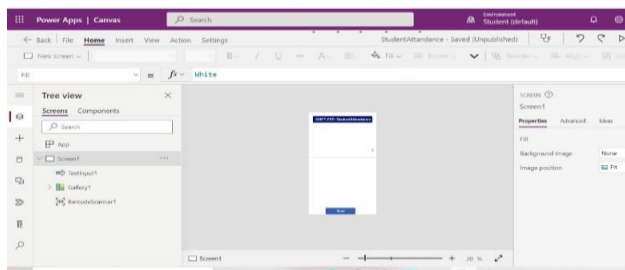

Fig. 9.

Therefore, The App is created in which it shows an rows and columns in which we should add rows of Title, who to be scanned and when to be scanned There the output is as shown below:
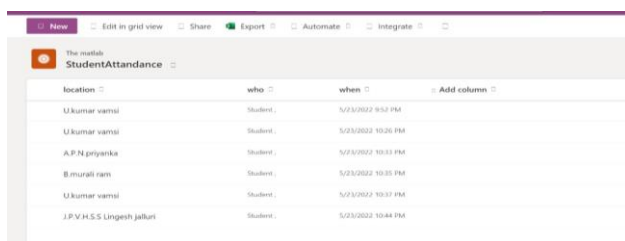

Fig. 10.

Excel Sheet Export:

The details exported to the .CSV File or in the .excel file, by clicking on the Export As shown below:
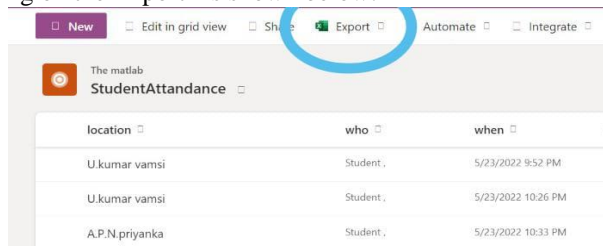

Fig. 11.

5. Result

This is the ID card which we provide to the student for scanning to provide the attendance.

Fig. 12. ID card to scan

The output is exported out to the .CSV File and .Excel File. The output is in the format as shown below.
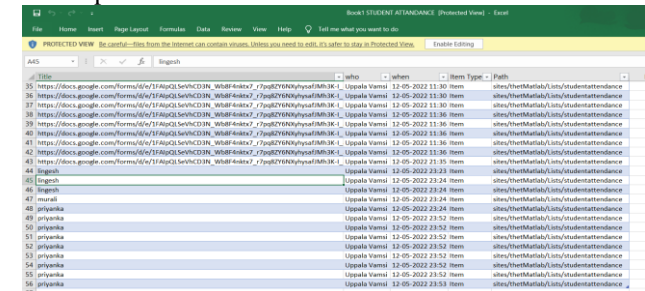

Fig. 13. Result

6. Conclusion and Future Work

A. Conclusion

These days are required to keep up with the latest technologies, especially in the field of education. Educational Institutions have been looking for ways to enhance the educational process using the latest technologies. Looking at the existing situation, we have thought of using the mobile technology to efficiently benefit from the complete time assigned to the lecture. Time taken by instructors to take time, especially when classes are big.

The QR code Attendance system gives a clear visual of the attendance without confusion and prevention of the spread of virus.

B. Future Work

Using this QR Code as a reference, the system can be expanded to include various other options which could include location tagging feature like capturing the QR code of a person present only in the surroundings of the permittable area of the system and storing it onto the Excel.

References

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