

Digital ID Card Creation Using Robotics Process Automation

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Abstract -

In Order to Create a Digital ID Card, we need data on students whose Digital ID cards we are creating. For the Collection of Data, students need to fill the Admission Form provided to them at the time of Admission. All the Data will be saved in the Database or the Data Excel Sheets from where Automation can access the data. Robotics Process Automation (RPA) will create Digital ID cards for all the students at the same time by Accessing data from Databases or Data Excel Sheets. The digital ID card will be sent to their provided Email Address and can be accessible right after. The ID card will contain all the necessary information of students such as contact detail, personal detail, and college information digitally. The ID card will also contain a QR Code, The QR Code on the ID card can be scanned for attendance at all entry levels of Classroom, Library, and other College Premises. Students will get all the academic Notifications and fees regarding queries within their email which can be done by Robotics Process Automation (RPA). Robotics Process Automation will also create online classes and notify within student calendar or Email.

1.INTRODUCTION -

In this project, we are going to create a Digital ID card for College Students using Robotic Process Automation (RPA). Robotic Process Automation (RPA) is the technology that allows the automation of the task in exactly the way a human does. In other words, we can say that RPA is a software program that imitates human actions while interacting with a computer application and accomplishing the automation of given work. We will take Data of newly Admitted Students in College from Excel Sheet / Database then API and BOT will Create Digital ID cards for all the respective students. This BOT will send their ID card immediately to their given e-mail using automation which can be accessible right after. The ID card Generated will consist of a Photograph, all contact information, and also a QR Code which will consist of all the information within it.[1] QR Codes can be used for recording the attendance of students and keeping records of books issued by students from the library. QR Code generated will be accessible within all the college premises such as classrooms, library, etc.[2]

The ID card is said to be the summary of any student indeed. It is highly essential for an educational institute to provide ID cards to each and every student of it. An ID card is generally

considered to be the summary of a student's information. The project "Advanced QR coded Student ID Card Generation" is being created to decrease the effort of humans as we know before people use the handwritten ID card. The ID is a purely automated solution and it will help to generate student ID cards easily. It is a special type of software that will be used to make an advanced ID card with a QR code instead of the bar code. It is specially made for developing countries like Bangladesh, Pakistan, Sri Lanka. Our ID card produced software that captures both student pictures and QR codes of individual students.[3]

2.FEATURES OF DIGITAL ID CARD

With digital student ID cards, students don't need to carry their plastic student ID with them at all times. A digital student ID card can be used for visual verification, to prove your affiliation with a particular school. When integrated with other systems, it can be used to check in to classes and events, pay for fees, access campus buildings, and more. Students can also opt-in to receive important messages and alerts from their college via push notifications. Students will get all the necessary notifications like college notices and fees paid information through their email, notification, and SMS. The ID card will consist of an expiry period, after the expiry of the card it will not be further used on any college premises. The Expiry period of ID will be set according to the course chosen by the student and it can be further increased and reduced by the college authority accordingly. A Chatbot will be created for all the queries of students, which will be connected to their Digital ID Card. The digital ID card can give secure access to Classrooms, corridors, events, and the Library of the College by scanning and validating the QR code with a known database of students. It allows students to safely store, recover ID cards remotely, in the case of a lost or replacement device. In an emergency, a digital ID card can be used to quickly make sure all Students/Teachers are present and identify who is missing. Students never have to worry about losing their ID cards again. IDs can be easily accessed or removed from any of their devices. College administrators can issue digital student IDs as transit or bus passes for their campus shuttle which can be accessed through the QR code of their cards. No network connection is needed to use digital ID cards that have been stored on the device of the Students and Teachers.

College can remotely manage all active ID cards or can remotely add, update, remove and temporarily disable any issued IDs. College can also send push notifications through the ID card of the student about any seminars or special events in the College. Colleges can also issue temporary ID cards or guest passes that have preset expiration dates. Colleges can

also generate links of Exam form filling through ID cards so that students can fill the forms with ease. If a student has issued a book from the library in that case Library Administration can send a notification to the student to submit the book before the due date and if the student failed to submit the book on time, then late fees notification can be sent to the student with the amount to be paid. Online Invoices and digital copies of the Receipt can be sent to the student's email through the ID card. While on campus, students not only fill their minds but also their stomachs. Students can load their cards with meal credits, allowing them to use their IDs like debit cards at vending machines and in dining halls.

3. TECHNOLOGY

A. Robotics Process Automation

Robotic Process Automation is the technology that allows anyone today to configure computer software, or a "robot" to emulate and integrate the actions of a human interacting within digital systems to execute a business process. RPA robots utilize the user interface to capture data and manipulate applications just like humans do. They interpret, trigger responses, and communicate with other systems in order to perform a vast variety of repetitive tasks. The main goal of the Robotics Process Automation process is to replace repetitive and boring clerical tasks performed by humans, with a virtual workforce. RPA does not require the development of code, nor does it require direct access to the code or database of the applications. Only substantially better: an RPA software robot never sleeps and makes zero mistakes. RPA bots are easy to set up, use, and share. If you know how to record video on your phone, you'll be able to configure RPA bots. It's as intuitive as hitting record, play, and stop buttons and using drag-and-drop to move files around at work.

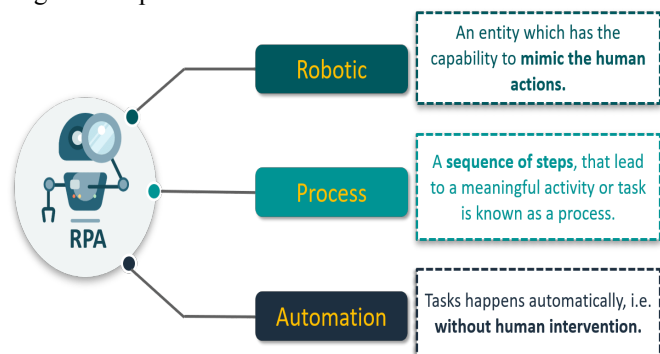


Figure 1: RPA

If "machine learning" sounds like the beginning of a bleak dystopian future – think The Terminator mixed with The Matrix – then "robotic process automation" must be the phase when the machines rise up to rule humankind with ruthless efficiency. Fortunately, robotic process automation (RPA) involves nothing of the sort, except perhaps for the efficiency part. There aren't really even any robots involved in this automation software. "In layman's terms, RPA is the process by which a software bot uses a combination of automation, computer vision, and machine learning to automate repetitive, high-volume tasks that are rule-based and trigger-driven." "Robotic process automation is nothing but instructing a machine to execute mundane, repetitive manual tasks. If there is a logical step to performing a task, a bot will be able to replicate it." "RPA is an advanced form of business process automation that is able to record tasks performed by a human on their computer, then perform those same tasks without human intervention. Essentially, it is a virtual robot copycat."

"Put simply, the role of RPA is to automate repetitive tasks that were previously handled by humans. The software is programmed to do repetitive tasks across applications and systems. The software is taught a workflow with multiple steps and applications."

B. UI Path Studio

UI Path is a tool of RPA Technology. UiPath is a complete software solution that enables you to automate your back office repetitive tasks. It converts tedious tasks into complete UI automation, thus, making your work easier and faster. UiPath Workflow Designer comes with a visual way of setting up automation using flowcharts and diagrams. It allows you to create a Workflow that will help you model the processes of your business operations. They are a great way to set up automation with little or no knowledge about programming.



Figure 2: UI Path

UiPath Studio is advanced automation software that gives everyone, from business users to advanced RPA developers, the right automation canvas to build great software robots and organizations the right governance tools to manage them all. UiPath Studio is a simple drag and drops software to design automation with ease. Record your workflow; skip the error-prone manual programming. Grab pre-built automation activities from the UiPath marketplace to help you build automation faster and easier.

A. ADVANTAGES OF AUTOMATION

RPA can complete tasks more quickly than humans, and it's able to do so at a lower cost. As a result, organizations can expect productivity boosts without seeing a commensurate increase in costs that would have occurred had they hired new workers to do the same volume of work within the same allotment of time. RPA doesn't make lots of errors like humans can sometimes do, RPA software also provides a comprehensive audit trail so organizations can see what was done. RPA often enables an organization to more easily accommodate business process changes, Workers can often make quick adjustments within the RPA software, which tends to be lightweight and flexible, rather than request IT staffers carve out time and resources to revise the underlying business systems. The RPA software robots follow the existing security, quality, and data integrity standards to access the end-user system in the same manner as human beings. These software robots also prevent disruption of any kind and maintain functionality and protection. RPA does not require a special kind of knowledge, such as coding, programming, or deep IT skills. RPA software is user-friendly, easy to understand, and easy to use. This RPA feature refers to the ability to gain and apply knowledge as skills. Robots first obtain the data and then convert it into information and transform the information into actionable intelligence for the users. Artificial intelligence and cognitive intelligence are the common features of RPA

solutions that help bots to improve decision-making over the period. One of the biggest advantages of RPA from a development perspective is debugging. Some RPA tools need to be stopped running while making changes and replicating the process. The rest of the RPA tools allow dynamic interaction while debugging. It allows developers to test different scenarios by changing the values of the variable without starting or stopping the running process.

B. DISADVANTAGES OF AUTOMATION

If a robot can work faster with a more consistent rate, then it is assumed that there will be no need for human input. It is the main concern for the employees, and this results in a major threat to the labor market. However, this thinking is not accurate. RPA is still in the stage of innovation, and so it can present challenges that may result in unwanted outcomes. Therefore, it isn't easy for organizations to decide whether they should invest in robotic automation or wait until its expansion. Many organizations believe that to work with RPA, the staff must have significant technical knowledge of automation as robots may require programming skills and an awareness of how to operate them. It further forces organizations to either hire a skilled staff or train existing employees to expand their skills. People are usually habitual, and any change in the organization may cause stress to the employees. People who are involved in new technology will get new responsibilities, and they will have to learn new concepts of a specific technology. It is always best to choose tasks that are repetitive, rules-based, and do not require human judgment. The non-standard processes are difficult to automate, and human interaction is required to complete such processes. So, there are limited tasks that you can automate with RPA. Some problems aren't a good fit for RPA, especially when the stakes are high. For example, if you need to handle your purchase invoices, it's likely a better idea to use software that is able to understand and manage the data correctly from the start.

4. IDENTITY CARD & GENERATION

We can define an identity document as the document and it will help to make the proper verification of the personal identity of a person. The ID is also known as ID or the portion of identification or the paper of any person. It is a small standard size card and is usually called the identity card that can be easily kept in a pocket or inside a wallet. A card can show data of the identification of any person including names (first name, surname, last name), age, address, a portrait photograph to have the color of body, hair, and eyes. These types of identification are used commonly in place of school for the student, companies for the employees. Therefore, it can be said that a student ID card is the card of identification that is used for holding specific characteristics of students.

As we can compare the traditional ID of any developing country then it will only contain all the details with handwritten and anyone can make the fake ID card easily. When an administrator makes an ID card with his or her handwriting then it can be filled with errors and mistakes. Sometimes they made the mistake of writing wrong names with spelling and so on. Here is an example of our previous ID card that students use in Bangladesh- In this automated system the card generation process is completely done by the computer with the help of the 2014 First International Conference on Systems Informatics, Modelling and the information of the students is stored in the database and by this time the student ID card can be provided by the administration.

5. QR CODE

A passenger was traveling from Epping (London, UK) to Stratford (London, UK). Suddenly he saw an advertisement in the newspaper Metro and at the corner of the advertisement, he saw a square-shaped QR code. Then we installed Semacode (rectangular code for scanning) and then scanned QR code then it goes to the link of the website of marks and spencer: www.marksandspencer.com Another example can be given when a student is at the library of UEL (University of East London). For the library services, the QR code is attached with the booking PC of the library. QR code (Quick Response Code) is said to be the two-dimensional bar code (2D) and it is a special type of matrix barcode which was made for the automotive factories purpose. But soon after the system then became more familiar and popular and everywhere it is being used because of its large storage capacity and fast readability. The QR code is made up of the black modules on a pure white background and the black modules are kept like a square pattern. For the data input the binary, kanji symbols, or alphanumeric symbols can be used for the encoded information.

A. ADVANTAGES OF QR CODE

When it is online then it can read anything and all is done with the help of the camera and sensor of the cell phone. With a QR reader such as a QR reader or Sema Code, the QR code can easily give the link of the details of the product. One can easily download the QR code reader by downloading it online and it is totally free. The camera needs not be lined up to read the QR code in a particular way. People may think that the scanner must have to be lined up correctly which is wrong. But point to be noted that 7777777777 the user's hands must be stable for a couple of minutes and then the QR code will show the link.

B. DISADVANTAGES OF QR CODE

Users must have a camera phone and the right kind of software installed into their mobile phone. The problem is only the work can be done using a smartphone that can take and read images of QR codes. Many people have mobile phones with cameras but the cameras are unable to read and the phone does not support QR reading software. Smartphones are comparatively more expensive than that the other phones available in the market. Young people are aware of technology and they are using it but it is a real problem for people above 40 and they are not interested in spending money on the technology and also, they do not know how to use them properly.

C. DIFFERENCE BETWEEN QR CODE AND BARCODE

A Bar Code can be defined as the generic that is used for the information of visual display and it will be as the series of bars or lines. QR Code or quick response was made for the method of gathering more information into a specific area for the use of inventory controls and shipping purposes. The basic ability of these types of codes is to gather vertical information horizontally to get Japanese characters and it is necessary for the Denso to have a higher solution. QR Codes can contain the number of alphanumeric characters of 4000 and this will be good for new marketing opportunities. Bar codes are cheaper (the price of 1 bar code is less than half pence) but the QR code is totally free. One can make one's own QR Code using the QR Code generator or JSERVELET Programmed. Therefore, the main difference between barcode and QR code is the storing capacity where QR code contains more information than that of bar code. Also, a QR code is cheaper than a barcode.

6. ARCHITECTURE

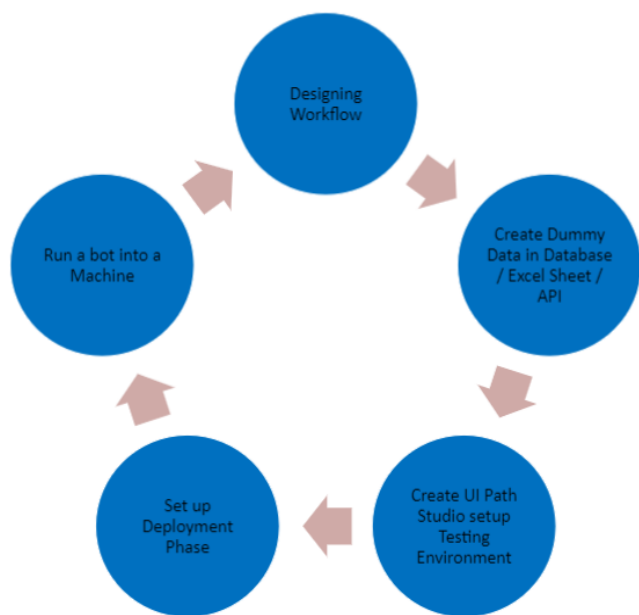


Figure 3: Architecture

7. DESIGN

A student ID card generally deals with the fields: Students Name, Class Roll Number, Registration, Number, Session, Name of the department, Hall name. To demonstrate the administrative requirements, we need to meet the administration the following parameters: Basic student information, The feature, Add/remove department name and hall name, take student snap from a real-time video streaming, Checking the printable form, editing the total amount of information, going to the printing process, find student information using a unique ID number.

8. IMPLEMENTATION

For the implementation of the system, we need to do three important steps: system construction, support plan, and software user interface. In the System Construction, it is required to validate a new system for acceptance of the whole system. The system also needs to be tested carefully.

A. INSTALLATION

Microsoft Windows 7, and Windows 10 versions are easily compatible with installing the UI Path software. To support the plan, three parts are included: back-end implementation, front-end implementation, and last of all is the combination of the front and back-end implementation. The back-end implementation is for storing the data as the user does not know the number of tables in the database. In the front-end implementation of the system, the front-end user can read the data, and also they can modify or enter data without any concept of database.

B. SOFTWARE USER INTERFACE

In the software user interface, we can show the user interfaces of the whole project.

C. STARTING UP SCREEN

Here we can see that into the data entry part we can add the name, roll, registration number, session, department, and hall of the student. There is a capture option for taking pictures and below there are the other buttons available- save, browse for QR code, print, and close. By clicking the browser for QR code we can get the QR code. All the information can be stored by clicking save and can be printed by the print option.

D. CAPTURING PICTURES OF STUDENTS

Capturing image of the student Once we click the capture option then we can take the live picture of the student and then it can be saved into the box of the image.

E. BROWSING FILE QR CODE & GENERATING ID

Screenshots capture a student's image. We can browse for QR codes to get a picture of it. All the data was taken here and then we can see the format of the ID card including the picture, QR code, and other details of the student.

F. SAVE TO DATABASE

After providing all information, capturing an image, and generating the ID demo the following interface appeared and once the procedure had been completed then the ID card was ready to print. Capturing student's images & printing orders.

G. SCAN QR CODE OF STUDENT

The QR code was made from www.smartytags.com. By opening an account, we made a QR code for individual students and it was linked to the website.

www.qrcodesample.webs.com. The link website is our educational sample website where administrators will have student's secured data access using login details. The website will only show the general information of a student on the homepage currently and student's data can be shown using an SQL server. But in the future, in order to access data from anywhere, there will be some work by using Windows Azure when it is available in Bangladesh. Moreover, we can make our own QR Code using SERVLET programmed. Now if someone scans the above QR code then it will give the following seen output on the iPhone Fig. 15. Print screen shows a web link for QR Code (Left) & our QR Code (Right). Here we can see all the details of students by using the phone. Therefore, the implementation of the advanced QR code automated student ID card has been done successfully.

9. EVALUATION

Data will be then collected and will be analyzed to get the best result from the requirements of the users of the system. Then we can compare our ID card with other market available ID cards and compare all the facilities as well, see Table I. Therefore, it can be said that a QR code is much better than anything to make the ID card perfect.

A. COMPARING QR ID CARD & OTHER ID

Subject Traditional ID card Normal ID card QR ID card Type of ID card Handwritten Barcode ID card QR ID card Cost Free Not Free Frees can speed of barcode from smartphone Do not have any facility 2.5 seconds 3 seconds Price of each code no code .05 pence 0 pence Swapping speed to open security gate Not valid 3 seconds. 1.5 seconds. Information in each code Does not have any Hundreds of characters only 5000 characters Picture taking option No yes.

10. OUTPUT



Figure 4: Output

11. CONCLUSION

By viewing all of the above analysis and result it can be said that the product is a GUI-based system with high efficiency. After completing the project, we can make the surety of overcoming the problems of the existing system. Advanced QR-coded Student ID card generation is being made computerized to increase efficiency and reduce the error of human beings. All records and data are stored in Microsoft SQL Server management studio express database and from which respective data can be deleted and retrieved easily. Editing is also made flexible as the authority only needs to give the required information and then print an ID card with the image of the student with real-time video streaming and an added QR code is introduced that contains detailed information of the student which can be scanned in a single second using the smartphone. The computerization of Advanced QR Coded Student Identity Card Generation will not only reduce human stress but also improve human stress and advanced systems with the modern QR code and all the things can be gotten for free. Getting the modern technologies free is a great advantage for developing countries as they can introduce the system to their many different and different educational institutions. At present in India, some institutions have started using the Digital ID card system and benefit greatly.

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