Online Fee Payment Application

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*Abstract***:** *We propose an online fee payment application using which we can pay the college fees from any desirable location. The application will run on the web which makes it portable and accessible from any environment.It acts as an interface between the user and third party e-commerce applications such as Paypal,instamojo, other net banking sites through which the transaction process takes place.The application will also keep track of payment dues and previous payment records for reference.The application provides the students an option to buy any necessary supplements such as files, journals, paper supplements in addition to the fees payment.*

*Index Terms***:** *application, fee payment, gateway, student.*

I. INTRODUCTION

We observe that the fee payment process in colleges is a traditional system which relies heavily on manual work of entry for the student records. This creates a problem of many mistakes while manual work. Also, it is very time consuming and may not be the best and full proof system. Our application aims at providing a simpler way to pay the fees over the internet thus making it portable and user friendly. The system avoids some regular problems such as standing in long queues, maintaining the hard copies of the receipt and the risk of losing those receipts.

II. LITERATURE SURVEY

Currently there are no systems present in the market which provide online fee payment systems for colleges as we intent to provide in our proposed system. [2] But there are many e-cash payment systems which allow transactions to be done with the help of the internet with the help of virtual banks. Some of these approaches require a network infrastructure and third party payment servers to process transactions; others allow the direct exchange of "value" between remote transacting parties without requiring on-line third-party payment servers. Some of these e-payment systems are as described below.

A. Digital Cash

Digital Cash is an Amsterdam based firm that makes stored value cards for electronic transactions, in Holland. In the proposed arrangement, customers would use local currency to buy equivalent amount of digital cash from a bank. Bank's computer would instruct special software on user's own PC to issue that amount of money. Instructions would be coded strings of numbers included in e-mail messages. Users would spend their electronic cash by sending these strings to sellers. String is untraceable in the sense the bank can only say if the number is valid, not to whom it was issued, so this framework would offer anonymity [1].

B. Virtual Holdings

First Virtual Holdings, a California company that has built a credit-card payment system which relies on a private e-mail network to circumvent Internet security problems, began operating on the Internet in the fall of 1994. Both buyer and seller must have accounts with First Virtual Holdings. When buyer wishes to purchase an item over the Internet, buyer gives seller buyer's account number. Seller ships product. Seller e-mails lists of purchases to First Virtual. First Virtual e-mails buyers to confirm transactions. It is reported that once buyer confirms, First Virtual charges buyer's conventional credit card and money is transferred to seller's account. If buyer does not confirm, First Virtual withholds settlement [3].

III. PROPOSED WORK

There are various modules involved in the Online Fee Payment Application. This section gives a full description of the modules and the actors involved in the process. The modules are:

A. Admin Module

Technically there is no such admin login in the application or interface as all the database will be checked by the college staff. So the office department can be said as the admin module. Even though validation algorithms will be in place to keep an eye for legit transaction, office staff can double check the transactions with the primary database whenever they want.

B. Login Module

This module will enable users to login into the system. Once the details of user are verified he/she is navigated to the menu where they can decide the type of functionality they want to perform with the application.

C. Payment Module

Once the user selects what kind of payment he wants to do, few more options will be asked to the user to fill accordingly. Once he selects all the choices, payable amount will be displayed. Then user can pay the amount using any of the methods of payment provided. Authentication of the payment will be done by payment gateway.

D. Receipt Generation Module

Once the system receives the successful transaction acknowledgement by payment gateway, app will generate the receipt and will update the database status as payment done in the main database.

E. Print Receipt Module

Once the transactions are done, the application provides the feature for the user to provide receipts for having records or simply saving them on their application profile for future references.

The various factors involved in the system are:

A. Students

Once the student gets admitted in the college, his details are filled in the main database. Student name and Student roll number can initially be used as his respective username and password, with the option to change it in the future if he/she wishes to. Students then simply log into the system application and start using the services. The important details of Internet banking can be saved on the payment gateways that we make use of in our applications. The student needs to login first before using these necessary credentials.

B. Administrator

The first job of Administrator (in our case the office staff) is to make sure that the Online Fee payment is secure and that the databases are not tampered with. The most important work done by Administrator is updating the website frequently. These updates contain the names of all students who have made the payments and those who are yet to. As the databases are also having pre-defined amounts for tuition fees for each semester. So it is the responsibility of the Admin to keep that up to date.

C. Payment Gateway

Payment gateway does the main operation of the fee payment system. It provides an interface between the student and the college. The student issues a request for payment of fees or any other monetary action. That request is processed by the payment gateway for the validity of the process and then it is given permission for further action to the banks which complete the transaction from their own side. After the banks complete the transaction, they issue an object back to the payment gateway as a notification. Then the gateway gives the notification back to the student whether the transaction has been successful or unsuccessful.

IV. DESIGN

The design of the system can be depicted very clearly using the class diagram, activity diagram and sequence diagram which contain all the actors and modules that comprise the entire system. They are as follows:

Fig1. Sequence Diagram

The sequence diagram depicts all the various classes and their interactions. The actor involved in the fee payment process is the student while the objects involved are the mobile app, database and the payment gateway. The overall process is described as follows:

Firstly the student logs in the application using the id and password. The application program will validate the student details using the database entries. If the authentication is complete the student can either choose to view his previous payment records to refer a receipt, or he can select to pay the fees of any of the options. [4] If the user selects the pay option, the app generates a gateway object which will proceed further. Then the choice of payment is stored in the object and returned to the gateway server. The gateway then re authenticates the account details. After transaction the control is returned to the app which generates the online receipt of the entire transaction for the user.
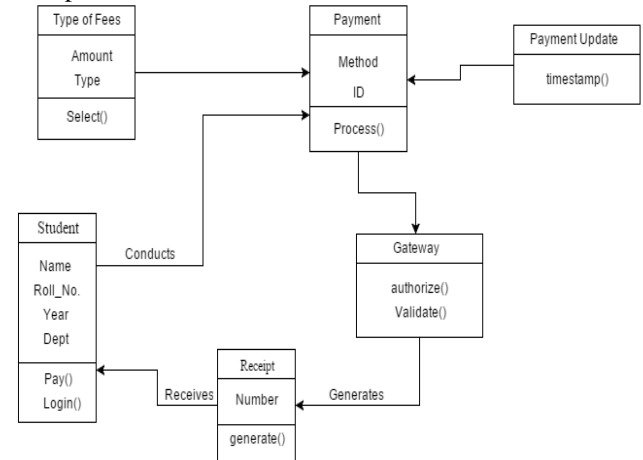

Fig 2.Class Diagram

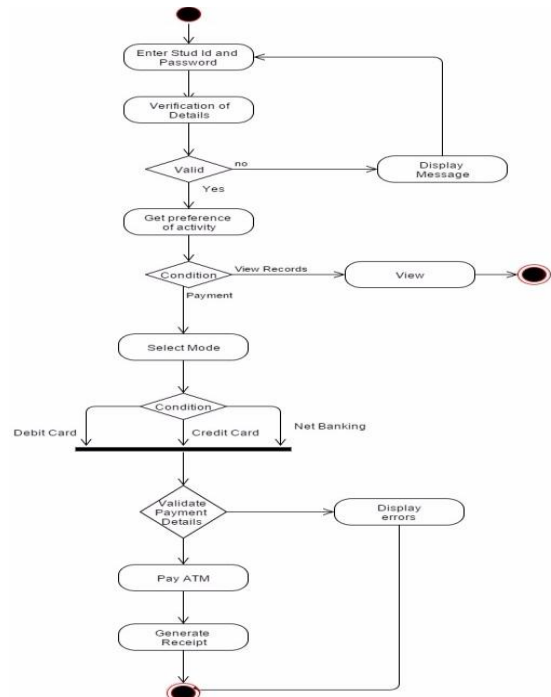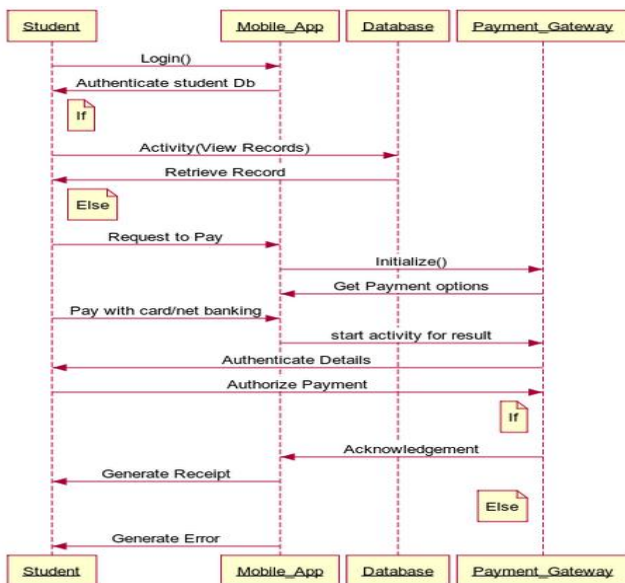The activity diagram of the system appears as follows.

Fig 3.Activity diagram

6

V. IMPLEMENTATION

The working of the entire system can be explained with help of screenshots as following. Firstly the user needs to enter with the correct details to enter the application for fee payment. The application was hosted on a domain using [6].
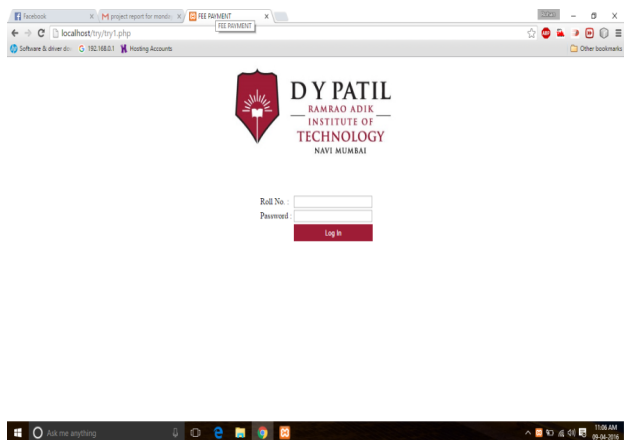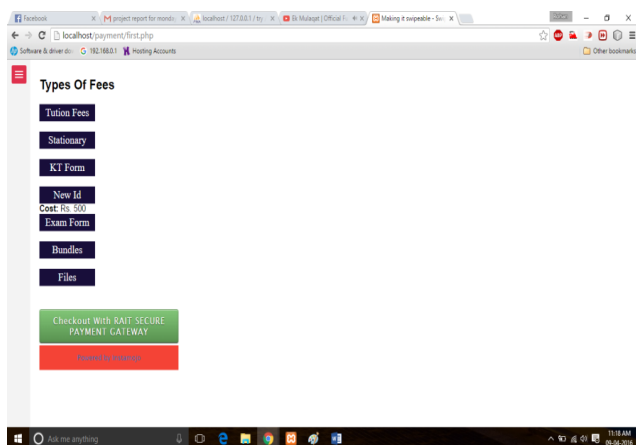

Fig 4. Application Homepage

Fig 5. Logged in page

Upon login the user can perform any of the above operations as per requirement. After selecting any option the transaction will be forwarded to the payment gateway used in the application. The payment gateway used in the system is Instamojo as it does not have any annual maintenance cost and the transaction cost is minimal in comparison to other gateways. The user fills the Payment information at the Processing time. [5] Prefilling the form contains HMAC-SHA1 verification and verifying the integrity check of the transferred information over network.
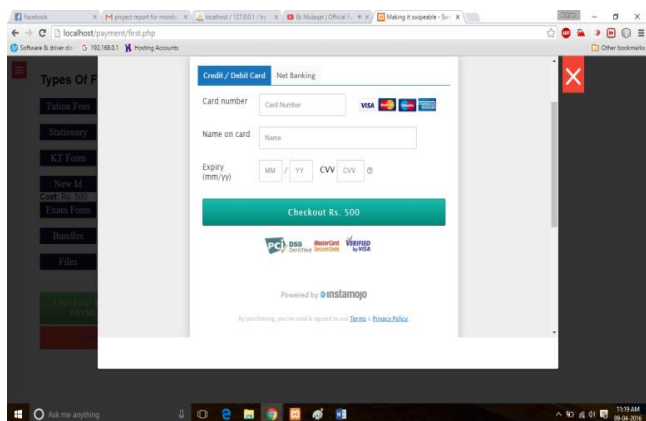

Fig 6. Inputting Payment details

The gateway now provides the user with the option for credit/debit and net banking payment options to proceed with. In case of a different student being presented based on the provided details, the user can cancel the transaction by clicking the Red Cross on top right side. The OTP or 3D password is used by the acquirer bank, to check the validity of the transaction and the genuineness of the user, that he /she is doing the transaction in full authority and clear judgement.

Fig7. Receipt generation

After the transaction is successful, the gateway sends the user a receipt invoice copy which can be saved for future use.

VI. CONCLUSION

The main purpose of the system is to provide an easy, hassle free mode of fee payment for the students. It has a future scope in many different industries such as hospitals, railways, hotels, offices etc. The application is also open to any modifications which can be introduced by the students, college faculty in the future. Problems that the students and their sponsor faced regarding paying fees to the university were identified and solved successfully.

ACKNOWLEDGMENT

REFERENCES

1. The Electronic Mall". GS Brown. 30 April 2010. 17 June 2013.
2. Burgess, S; Sellitto, C; Karanasios, S (2009), Effective Web Presence Solutions for Small Businesses: Strategies and Successful Implementation, IGI Global.
3. nma.com/papers/FirstVirtual.pdf.
4. https://en.wikipedia.org/wiki/E-commerce.
5. https://www.shopify.in/tour/ecommerce-website.