Shop4Notes – A Service to Purchase and Manage the Orders for Academic Notes

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Abstract—This paper presents the general overview of the steps involved in the implementation of the service Shop4Notes. Shop4Notes is used to link the customers with Shop Proprietors of photocopy centers. Students usually tend to waste their productive time in the photocopy center waiting for their notes to be printed. Due to the limited number of photocopy machines, a large crowd is accumulated at peak times such as exams making it difficult for the shop proprietor to manage the orders and the crowd. The misuse of the situation at rush hours to avoid making the payment for the order can be avoided. The Shop4Notes service addresses the above problems. It also enables the shop proprietor to manage orders efficiently.

Keywords—Shop4Notes, Students, Shop Proprietor;

I. INTRODUCTION

The importance of mobile phones in our everyday life is undeniable and unending. This is so because there is ongoing tremendous transformation, where mobile phones are no longer the ordinary communication device it used to be. It has become a colossal point for individuals and businesses alike. This is made possible through the development of mobile applications. Presently, the use of mobile applications can be seen in areas such as communication, education, social media, business, shopping and banking.

The most commonly used operating system, Android is developed for smartphones and tablets. It is based on Linux kernel and uses Dalvik Virtual Machine (DVM) for executing Java byte code [1]. Some features of Android are:
- Highly customizable nature
- Reasonable price
- High degree of ease due to presence of PC like apps
- Hardware and Software features
- Full control over OS

The Web Application enables the shop proprietor to manage orders efficiently.

The customer can then place the order for desired notes and pay using an online wallet. The Web Application provides the Shop Proprietor with features to manage users and process orders efficiently. This in turn reduces the waiting time of the customers thereby making their entire process hassle free and time efficient.

It can be noticed from the further sections that, in a customer-vendor business, Shop4Notes will play a major role in linking the customer and the vendor with high flexibility and availability. By implementing online payments, the transaction is also made to be more accurate and seamless which also promotes cashless transactions, a professed role of Digital India.

II. LITERATURE SURVEY

Previously, customers were required to go to the Photocopy center and wait in queue to order for notes. Once ordered, the customer would have to wait to receive the printed notes. Manual cost calculation can sometimes be inaccurate.

A Survey was conducted at the stationery shop, “St. Joseph Xerox Center” outside the college, “St. Joseph Engineering College”

Issues found:
- Long queues
- Long waiting time
- Non Payment issues

The objective of Shop4Notes is to provide on-the-spot information about various notes available and its cost, payment methods, etc. at the customer’s fingertips.

Shop4Notes application has the following features:
- Maintains a history of purchased notes
- Provides information regarding available notes
- Request to print miscellaneous documents
- Online Payment

The advantages of Shop4Notes are:
- Easy to use
- Customer satisfaction
- Time-efficient application
- Secure online payment transactions
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- Reduces the waiting time of students to obtain notes
- Efficient management of customers at the photocopy center
- Minimal development cost

III. PROPOSED WORK

In the proposed work, the customer views the list of notes to be purchased using the application. After selecting the desired subject, a web service is invoked which creates a connection with the database. Once the connection is established, the customer is provided with information about the notes available for that subject. The customer can add desired notes to the cart and then place an order. The assumptions for the project are-

- Photocopy center has a computer to access the Shop4 notes website on the server
- The shop proprietor has uploaded all the notes for different subjects
- User has installed the Shop4Notes app with internet access

A. Web Service

A Web service is used to connect any device that is active in the internet to another and to establish communication between them. The most commonly used protocol is HTTP. Here, a web service is required to establish communication between an Android device/Website and the database through the server to exchange information.

Shop4Notes is based on REST - Representational State Transfer protocol which is an architectural style for providing standards that enable computer systems to communicate on the internet [3]. REST has following architectural properties-

- Client-server
- Stateless
- Layered System
- Cacheable
- Self-descriptive messages
- Resource identification

B. Database

The database is constructed using phpMyAdmin which is based on MySQL. The database has six tables-

- Subjects- Subject information for various courses in each semester is stored here.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Data Type</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scode</td>
<td>Varchar</td>
<td>7</td>
<td>Not Null</td>
</tr>
<tr>
<td>Sname</td>
<td>Varchar</td>
<td>45</td>
<td>Not Null</td>
</tr>
<tr>
<td>Sem</td>
<td>Int</td>
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</tr>
<tr>
<td>Sbranch</td>
<td>Varchar</td>
<td>2</td>
<td>Not Null</td>
</tr>
</tbody>
</table>

- Notes- Information regarding different notes of each subject is stored here.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Data Type</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Primary Key</td>
</tr>
<tr>
<td>Name</td>
<td>Varchar</td>
<td>40</td>
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</tr>
<tr>
<td>Subjectid</td>
<td>Int</td>
<td>5</td>
<td>Not Null</td>
</tr>
<tr>
<td>Unit</td>
<td>Int</td>
<td>1</td>
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</tr>
<tr>
<td>Pagenos</td>
<td>Int</td>
<td>3</td>
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</tr>
<tr>
<td>Cost</td>
<td>Int</td>
<td>4</td>
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</tr>
<tr>
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</tr>
<tr>
<td>Description</td>
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<td>Not Null</td>
</tr>
</tbody>
</table>

- Customer- This table maintains the Customer information i.e., id, name, phone number which will be used during online payment.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Data Type</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Primary Key</td>
</tr>
<tr>
<td>Cname</td>
<td>Varchar</td>
<td>20</td>
<td>Not Null</td>
</tr>
<tr>
<td>Cemail</td>
<td>Varchar</td>
<td>20</td>
<td>Not Null</td>
</tr>
<tr>
<td>Password</td>
<td>Varchar</td>
<td>20</td>
<td>Not Null</td>
</tr>
<tr>
<td>Cphone</td>
<td>Varchar</td>
<td>10</td>
<td>Not Null</td>
</tr>
<tr>
<td>Cbranch</td>
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<td>20</td>
<td>Not Null</td>
</tr>
<tr>
<td>Csem</td>
<td>Varchar</td>
<td>5</td>
<td>Not Null</td>
</tr>
</tbody>
</table>

- Order- This table maintains customer information about his purchases, total cost, session id and information that is required to generate the invoice.

<table>
<thead>
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<th>Attributes</th>
<th>Data Type</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>CID</td>
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</tr>
<tr>
<td>Date</td>
<td>Datetime</td>
<td>20</td>
<td>Not Null</td>
</tr>
<tr>
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</tr>
<tr>
<td>Status</td>
<td>Varchar</td>
<td>20</td>
<td>Not Null</td>
</tr>
</tbody>
</table>

- Order_details- This table maintains information about the notes included in an order.

<table>
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</thead>
<tbody>
<tr>
<td>SI</td>
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<td>11</td>
<td>Primary Key</td>
</tr>
<tr>
<td>Ordererno</td>
<td>Int</td>
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<td>Not Null</td>
</tr>
<tr>
<td>NotesID</td>
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<td>11</td>
<td>Not Null</td>
</tr>
<tr>
<td>Copies</td>
<td>Int</td>
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<td>Not Null</td>
</tr>
<tr>
<td>Status</td>
<td>Varchar</td>
<td>20</td>
<td>Not Null</td>
</tr>
</tbody>
</table>
Admin- This table contains information about the Shop proprietor such as username, email and password.

<table>
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<th>Attributes</th>
<th>Data Type</th>
<th>Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Username</td>
<td>Varchar</td>
<td>10</td>
<td>Primary Key</td>
</tr>
<tr>
<td>Email</td>
<td>Varchar</td>
<td>40</td>
<td>Not Null</td>
</tr>
<tr>
<td>Password</td>
<td>Varchar</td>
<td>20</td>
<td>Not Null</td>
</tr>
</tbody>
</table>

Fig. 1 and Fig. 2 below indicates the various data transaction that takes place at the user and the admin’s end respectively.

Fig. 1: Data Flow Graph for Customer

IV. IMPLEMENTATION DETAILS

Implementation plays an important role in the application development.

A. Software Requirements

- IDE: Android Studio 3.1.1
  Android Studio is the official integrated development environment for Google’s Android operating system, designed specifically for Android development.
- Compiler: Intel C++ Compiler(ICC)
  The Intel C++ Compiler for Android is configured as default compiler for x86 targets in the NDK build system during installation.

B. Programming Languages

- Java
- SQL
- PHP
- HTML/CSS
- XML

C. Hardware Requirements

At the User’s end -
An Android phone with
- Minimum 100MB of storage space
- Minimum 512MB of RAM
A touch screen functionality with good touch sensitivity

At the Shop Proprietor’s end –

- A computer with minimum 1GB of RAM and compatible web browser support along with internet connectivity
- A printer

D. Working

The customer views the list of notes to be purchased using the application. After selecting the desired subject, a web service is invoked which creates a connection with the database. Once the connection is established, the customer is provided with information about the notes available for that subject. The customer can add desired notes to the cart and then place an order.

User:

When the user selects a subject, the preview of the available notes along with its cost is fetched using a PHP script and displayed on the page. The metadata is communicated between the app and the server in JSON format. The ‘Change Sem/Branch’ feature displays the branch and semester options to choose from. Upon confirming the selection, a PHP script is executed on the server which sends the subjects and notes details to the App to update the Homepage, according to the branch and semester selected by the user. The ‘Your Orders’ page executes a PHP script on the server to fetch the orders that have been placed by the user. The ID of the user is used to access the orders from the ‘Orders’ table and this information is sent to the App in JSON format. The page then displays the list of orders of the user. The details of the notes added to the cart are stored in the database local to the App. Upon opening the ‘Cart’, the cart details are fetched from the local database and the notes are displayed in a list with an option to increase/decrease the number of copies for each note. The order placed by the customer is updated in the ‘Orders’ table of the database using a PHP script. The details of every order i.e., the list of notes and their IDs are stored in the ‘Order Details’ table.

When the user clicks the ‘Sign Out’ option, the Shared preference on the App is deleted and the user is redirected to the Login page.

Admin:

The Homepage of the website displays the list of all the orders placed by the users. A PHP script is used to fetch all the orders from the database and display it on the Homepage of the Website. Notes of a particular subject can be viewed by selecting the semester and branch. A PHP script fetches the notes from the ‘Notes’ table in the database and displays them on the ‘View Notes’ page sorted by the Unit numbers.

Upon uploading the pdf file of a notes, a PHP script stores the file in the file system and stores its path and other entered data in the ‘Notes’ table in the database. The ‘Manage Users’ page of the website uses a PHP script to fetch the details of the customers from the ‘Customer’ table and displays it. The ‘delete’ button will delete the entry of the particular user from the ‘Customer’ table, thereby deleting the User details. When the admin Logs out of the website, the session data is destroyed and he/she is redirected to the Log in page.

The Shop Proprietor and the Customer access the server through their respective applications for available notes, customer information and order details (Fig. 3). The interface for the Shop Proprietor is a website while the customer uses the mobile application. The file system saves the notes, website source code, scripts used by the application, thumbnails and sample of notes used by the mobile application. The Database stores the information about the notes, customers, admin, subjects of every branch in every semester and the order details. These hardware requirements are required to run the operating system as well as other software required for the development and deployment of “Shop4Notes” application. The app uses following concepts for UI:

- Fragments
- Navigation drawer
- Shared preference

A fragment is a portion of the user interface in an activity of an android app (Fig. 3). This app uses fragments for subject list, notes list, the cart and placed orders.
Navigation drawer is a sliding menu that transitions from the left edge of the screen. In this app, it shows the main options for navigation (Fig. 4).

Android provides many ways to store application data. One of the ways is called shared preference. The main reason for using this feature is that it does not require application data to be retrieved from the server’s database [2]. Instead it uses the device’s SD card to cache the user data and app data.

V. CONCLUSION

“Shop4Notes” is a service that provides the users with an Android mobile application for students to order notes online, and a Web service for the Shop Proprietor to process the orders, hence creating a direct link between the Shop Proprietor of the Photocopy center and the customers. With the implementation of this project, the crowd accumulated at the Photocopy Center will be reduced, thus making it easier for the Shop Proprietor to manage customers. Integration of payment gateways for online payment makes the transaction accurate and seamless, consequently promoting cashless transactions. Thus in a customer-vendor business “Shop4Notes” plays a major role mediating between the customer and vendor with high flexibility and availability.
In the future, this project can be carried further by enabling auto-printing of notes on receiving orders from verified users and adding delivery service on a pre-set minimum purchase.

VI. REFERENCES

