

FLASH PAY PAYMENT APPLICATION FOR MOBILE DEVICES

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Abstract — This paper describes the development of web and mobile applications and a sample design of a payment application called FlashPay. This application is developed using various front-end and back-end tools such as HTML, CSS, JS, Angular, Node.js and SQL. It also includes about the cross platforms on which Android, IOS and Web applications can be developed. An application is a type of software that can be installed and run on a tablet, mobile phone, computer and other devices. The general public has begun the transition from traditional payment systems to digital payment systems that provide security and convenience. In this application, number of services are available, so the user can easily select the services and benefit from them. FlashPay is an android application that allows you to pay invoices and recharge your mobile phone. This paper will introduce you to the detailed design of this application.

Keywords: Front-end, back-end, angular, HTML, CSS, JS, node.js, SQL.

I INTRODUCTION

In today's digital age, internet use has skyrocketed. Customers are increasingly adopting digital options that might save them time when it comes to banking. Digital payment solutions are often simpler, more convenient, and enable clients to make purchases from anywhere. Application development is the process of making mobile apps that can run on any mobile platform, like Android and iOS. The "front end" of an application comprises all the elements and information that a user interacts with, such as drop-down menus, sliders, navigation bars, and lists. Front-end builders are similar to interior designers in that they construct the overall ambiance, appearance, and feel of a space so that from the moment a person enters, everything is in its proper place [1].

Back-end development is also called "development on the server side." It's everything that customers don't see, like what goes on behind the scenes when something moves on a website. The back-end of an online site could be a group of servers, applications, and databases. The code written by back-end builders lets browsers talk to databases and store statistics in them [2].

According to Sanghita Roy and Dr. Indrajit Sinha (2014), the Indian e-payment system has evolved significantly, but much more has to be done to promote its utilization. Nonetheless, cash is used in 90% of transactions. For the purposes of the research, the technology acceptance model was applied. They observed that four variables contribute to the system's strengthening: innovation, incentives, consumer convenience, and the legal framework. The relevance of mobile payment and the usage of the Internet/WAP as a payment system was explored by Liébana-Cabanillas [3].

In [4], Zandi M (2017) said that confidence in electronic transactions impacts the use of digital wallet systems. Because of electronic payment systems, consumers are now better protected against fraudulent purchases. Furthermore, retailers feel more confident with assured payment, urging customers to adopt, who feel more comfortable making purchases when they can pay with a card and get an incentive in exchange.

II TOOLS

FRONT-END DEVELOPMENT TOOLS

➤ HTML

Hypertext Markup Language is a language used to design the structure of a web page. Web browsers convert these HTML files acquired from an internet server into multimedia net pages.

Hypertext refers to the links which are used to connect different Internet pages together, both within a single Internet page or multiple web pages. HTML is used to create structured pages which include headings, paragraphs, lists, links, quotes, and other elements.

The elements of HTML are separated using tags. The `` and `<input>` tags are used to introduce images and content to the web page. Other tags such as `<p>` tag is used to include paragraphs in the web page.

➤ CSS

Cascading Style Sheets are used to beautify a web page. It consists of colors and fonts making our web page more eye-catching to the users. CSS is used to create style sheets for various web pages. Various style sheets included are In-line styling, Internal style sheet and External style sheet.

The Inline styling is used within a HTML file, it is used in between opening tags to style a particular section of a web page. The Internal style sheet is used in the head tag of a HTML file, where all the stylings are included between opening and closing `<style>` tag. The External style sheet is a separate file saved as `.css`, it contains all the stylings need to applied to the web page. The path of this file is included in the head tag of the HTML file.

➤ JAVASCRIPT

JavaScript is a programming language that is used with HTML and CSS. It provides interaction between user and a web page.

It is an object-oriented, cross-platform scripting language. It is used for making websites interactive such as clickable buttons, popup menus etc. It has a standard library of objects including Array, Date and Math. It also includes various language elements such as operators, control statements and structures, etc.

Although JavaScript is widely used for creating web pages, it is also used in many non-browser applications as well.

➤ ANGULAR

Angular is a single-page application development platform and framework for Type Script. The origins of Angular are murky. To create the original version of this framework, the developers employed JavaScript (AngularJS). All subsequent versions of Angular were built using Type Script by the Angular developers (due to the number of bugs in the first version).

Web app development with Angular comes in four flavors: PWAs (Progressive Web Apps), animations on the user interface, web and mobile apps, and web-based business applications.

Angular (as a programming platform) has more essential structures. These are some of the structures: Modules, Components, and Templates.

BACK-END DEVELOPMENT TOOLS

➤ NODE.JS

Node.JS is an open-source, cross-platform tool that works in a JavaScript runtime environment. This tool is popular for almost all types of projects. Outside of the browser, the Node.JS runs V8 JavaScript engine, which is literally the heart of Google Chrome. This makes Node.js very fast and flexible.

The Node.JS application runs in a single process instead of creating a new thread for each sent request. Node.JS includes a set of asynchronous I/O primitives that prevents the blocking of JavaScript written code. Node.JS libraries are written using a non-blocking paradigm, so blocking behaviour is more exceptional than the usual type.

➤ SQL

SQL is a programming language used for managing data in a relational database management system. This is mostly useful when working with structured data and working with relationships between entities and variables. It is quite flexible to use, users can create, edit and delete databases at their own ease. This query language was adopted as the ANSI standard in 1986 and as the ISO standard in 1987.

Perform operations like inserting data, updating, deleting, etc.

III METHODOLOGY

The application that is discussed in this article is Flash Pay, a digital payment application. The Ionic Platform was utilized to construct the Flash Pay application, and the languages used were HTML, CSS, JavaScript, and the Angular framework.

Ionic is a hybrid framework application that is used for HTML5-based mobile app development. Hybrid applications are basically small web pages that run in the browser shell in an application. Consider Ionic to be the front-end UI framework, it manages the look and feel of your project as well as the UI interactions. Ionic provides features, elements and layouts compared to a responsive framework. The overall flowchart of the work is shown in Fig.1.

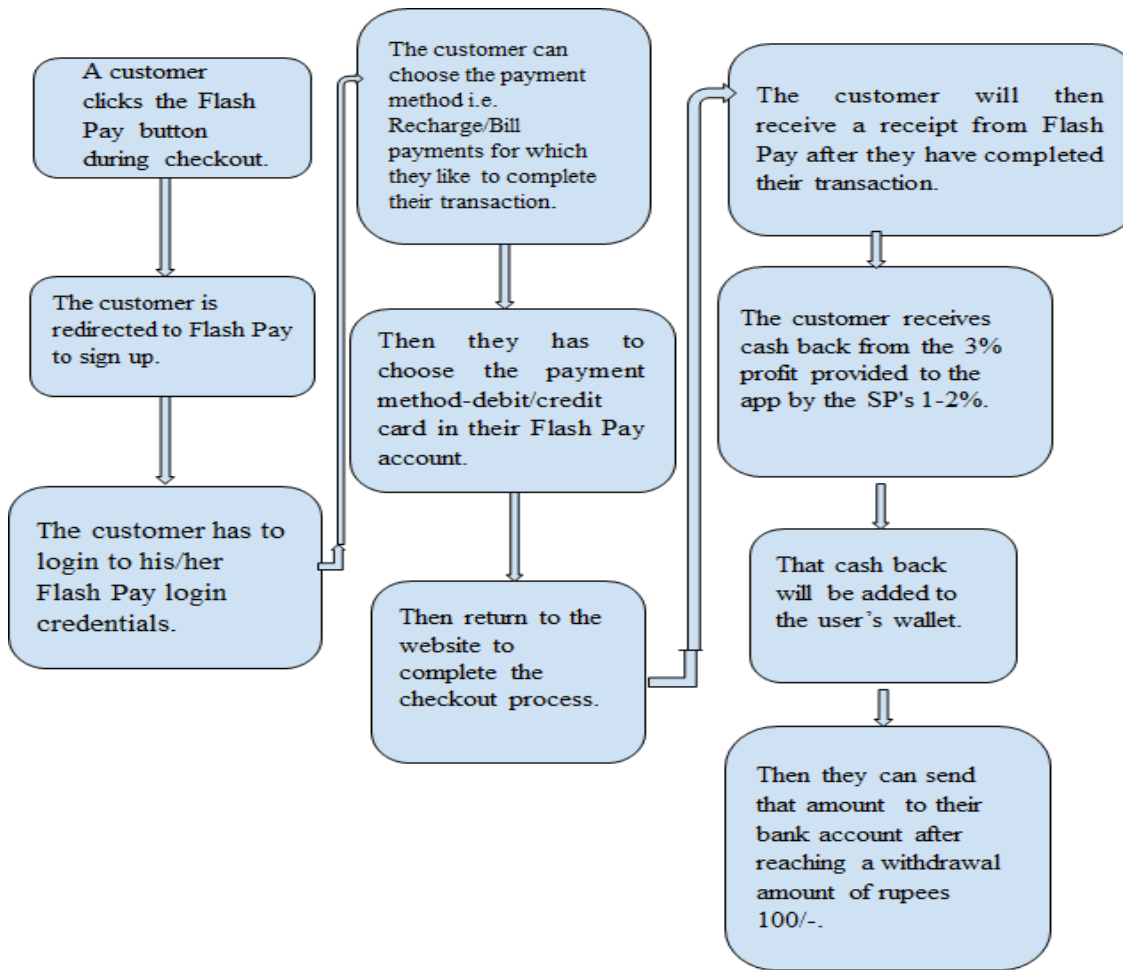


Fig.1. Flow chart of the work

LOGIN PAGE:

The user must register for the following process. The registration screen will display the full name, email ID, and mobile number create a password and click the sign-up button as depicted in Fig.2. Now account will be created. If the user already has an account then click on the sign-in button. If the user has forgotten their password, the registered email ID will display the "Forgot Password " link. You can use this link to update your password.

HOME PAGE:

In the wake of signing in, the user will be diverted to the home page as depicted in Fig.3.. There are choices on the home page for re-energizes and charging. Users can choose a choice and afterward divert to the payment choices page to deal with the additional process.

Flash pay is provided with mobile recharge, DTH recharge as shown in Fig.4, electricity payments, and a wallet for storing the amount received as a cashback.

PAYMENT:

After that, the user can choose the service provider and the available plans according to his/her interest and continue the payment for Recharging or Billings by preferred payment methods which include Card, UPI, Net Banking, Wallet, etc.

WALLET:

Digital wallets are online payment methods that typically take the form of an app. The wallet securely stores virtual debit and credit card versions, so you don't need to enter your payment information or carry a physical card to make payments. The earned cashback from recharges and bill payments are stored in the wallet.

PROFILE:

The app provides a profile fragment where the user can provide the details like an address, city, state, pin code, profile picture, phone number, and gender and these details can also be updated.

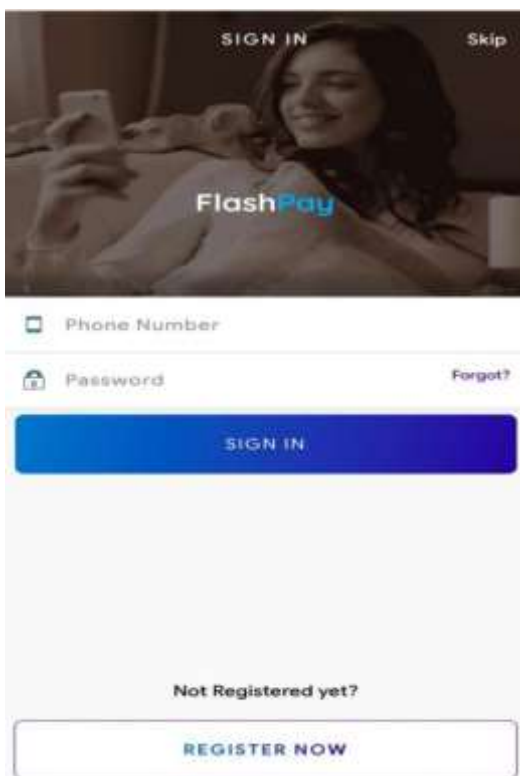


Fig. 2. Login page

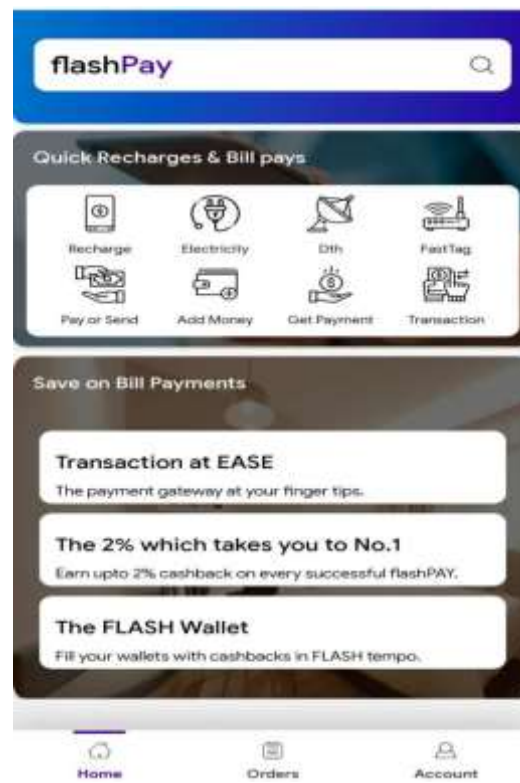


Fig. 3. Home page

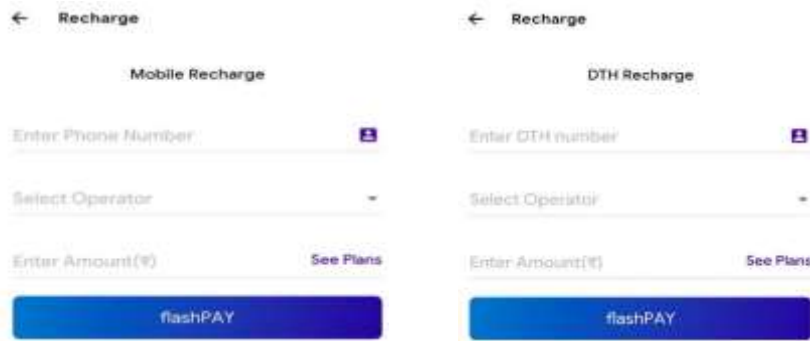


Fig. 4. Recharge and DTH payments

IV RESULTS

After the payment process is completed successfully a notification will be shown in my orders that are successfully Recharged as shown in Fig.5 and also receives a cashback of a certain amount as shown in Fig.6 and the amount will be stored in the wallet which can be useful for further recharges.

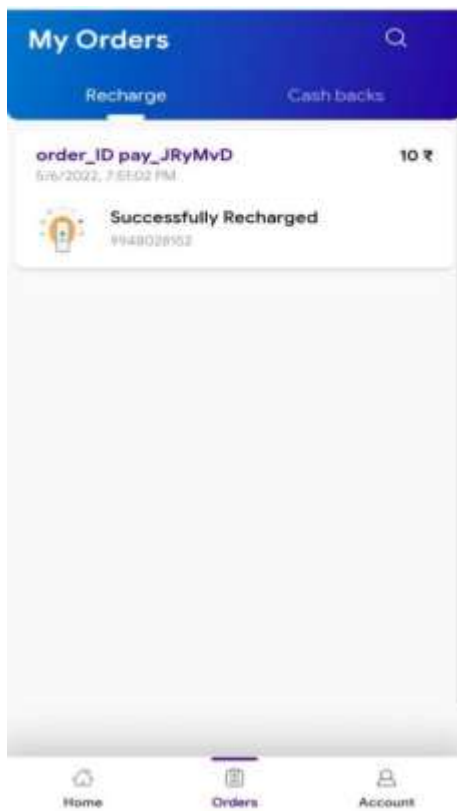


Fig.5. Receiving the Order

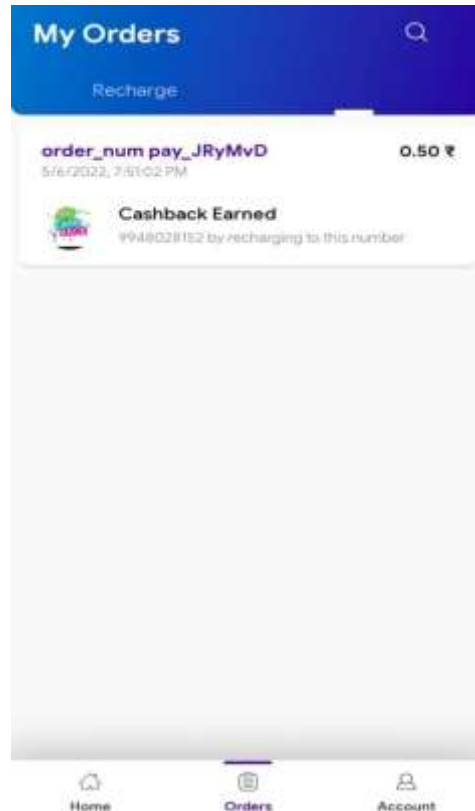


Fig.6. cashback earned

V CONCLUSION

This paper deals with the development of web and mobile applications that work on mobile, personal computer and tablets on a basic level to intermediate level. A detailed description of front-end development, back-end development, ionic frameworks are explained and a sample payment application design is attached on a basic level to intermediate level. There is a tremendous opportunity for the Digital Payment Services. Under the study of Digital Payment, it is clear that Digital Payment transaction is growing rapidly everywhere. Digital payment is increasing everywhere because it provides secure and easy transactions. Flash pay is a digital payment application development that ensures a guaranteed cashback for every successful payment. It facilitates recharges and bill payments this makes payment easier and faster.

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