

Online Printing Access for Business Utility using Android

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Abstract— The project purpose is to implement a new printing system. The target of project is to deploy a new mobile printing application that provide print services anywhere and everywhere. The application is an android base application which is user friendly as well. The main aim of the project is to provide print services to travellers who are at some unknown location. A printer with Android connectivity can really simplify printing tasks allowing user to print directly from Android mobile devices quickly and efficiently. A traveller who is unaware of the nearby printing shops at some unknown location can make use of this application. By registering into the application the user will create its login id and password, after that the system will fetch the location of the user and will find all the nearby printers registered with the application and provide it to user. User can choose the printer accordingly and can upload the document. Once the printing is done user will be notified and can collect the documents accordingly. The security of the confidential document will also be preserved, When user prints document, user gets option for security of data. If user chooses security of data then user has to enter user name with password. At the printer side, job will be held on printer till the user unlocks the document through password. With this technique user will not only be aware about security solutions but also user will secure data.

Keywords: Online Printing, Mobile Printing, Android

I. INTRODUCTION

Printing hasn't changed significantly during the years when other technologies have been evolving. Printers have received new features and additional functionalities, but the basic printing has remained the same. User prints a document and expects to receive the same looking printout from the printer. Nowadays all smart personal printers are replaced by bigger multifunction printers which are then shared by several other people. It's easy to pick-up someone else's print jobs - even by mistake.

Quocirca's research from 2013 revealed that 62% of organizations had one or more data breaches through printing because documents were left unsafely on the printer. And the cost of data breach study made by IBM and Ponemon Institute (2016) reveals that each lost or stolen record containing sensitive and confidential information costs in average 158 dollars and that the average data breach costs four million dollars in total [3]. Capability to print documents securely using delayed print or additional release pin code has been on MFP's for years, but those are very little known features and require additional effort and time from the user. The project goal is to implement a new printing solution. This new solution should increase data security for printing and reduce unnecessary printing by enabling secure release functionality using ID cards. The second goal of the project is to enable guest printing.

II. OBJECTIVES

The main objective of this application is to provides users with ease of printing on the go. It will decrease their dependency of having a printer at home. This application is useful for travelers who have no clue about nearby printing shops. This app will cover about 500 meters from the user's position and will list all the registered printing shops. The user just has to select the printer according to his/her convenience and upload the document so that the selected printer can print the document given by user and user just has to collect it on the way. Payment can be through online or payment while collecting document.

III. FEATURES

Print on the go and saving time: Suppose a user is on your way to his/her presentation when an email from the office pops up on his/her smartphone. All 50 copies of his/her handouts had a major typo. The error's been fixed, the revised document is attached, but he/ she also need the handouts reprinted. Also user's laptop battery is dead, and has less than an hour to get new copies made. With this application it will be quite easy for such users. Printing will be as simple as buying candy from a store. Using his/her smartphone (or tablet with an internet connection), simply upload documents to nearby printing shop and watch for a confirmation. This app will increase the automation and will save a lot of time.

Prevention of private data copy: Print from pen drive or using email id is so risky now a days. An individual's pen drive have many other sensitive information stored, these information can be misused and add on is problem of virus getting inserted into the pen drive can corrupt it. And while entering password for accessing email is also a risk what if someone just memorize it and then try to access our account. These all problems can be avoided with the use of this application. There would be no need of using pen drives or email id's just uploading the documents and getting it printed with complete security.

User friendly: When people download an app, they usually look for things such as design, functionality, and efficiency. These fine qualities are never more present than in the app's interface. You can create an app that is artfully designed and visually stunning, but if no one can figure out to how to move beyond the home screen, it's not going to sell well. No matter how flashy an app looks, what most people want is an app that does exactly what they need it to do. At the same time, consumers enjoy things that are easy on their eyes. Little tricks might actually create interest for your app. And in an increasingly crowded marketplace, your app needs all the help it can get. This app will be easy to use as our aim is to ease the printing process. This application can be used by a school going kid to an aged. The application will only require 4 easy steps:

- 1) Creating an account
- 2) Login

- 3) Selecting store for printing
- 4) Making payment

IV. PROBLEM STATEMENT

Printing is a process for reproducing text and images using a master form or template. All the users have faced a situation where he/she needs to print document urgently but isn't aware of any printing shops around, Or when a user don't have a pen drive handy to store his/her documents and provide it to the printing shop. During such time this application will be useful enough. This application will help user to print their document from anywhere and everywhere. This application will help the travelers to print their documents in urgency.

The Android mobile operating system is the world's most popular device operating system. Many users not only use it for personal productivity and personal apps, but they use it as their primary mobile business device. By downloading the Android mobile printing app user will have immediate access to thousands of registered printers around them. The mobile printing app provides access to printers by: Search by location: Use your device's Location Services to locate nearby printers, or search specific geographic locations.

Search for secured printers: Configure the mobile app with server and user account information and you can restrict your search to those printers you are authorized to access.

With quick printing this app will also provide security, Printing from this application will be secure for the user as authentication process will be followed for confidential documents. This app will also provide binding of papers, lamination etc. according to users requirements.

V. METHODOLOGY USED

This project is based on Object Oriented Approach. Object Oriented Methodology (OOM) is a system development approach encouraging and facilitating re-use of software components. With this methodology, a computer system can be developed on a component basis which enables the effective re-use of existing components and facilitates the sharing of its components by other systems.

This application follows object oriented methodology which totally uses object instead of procedure. An object contains encapsulated data and procedures grouped together to represent an entity. The 'object interface' defines how the object can be interacted with. An object-oriented program is described by the interaction of these objects. Different types of object oriented Diagrams are used in application.

A. Use Case Diagram

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different usecases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well. The use cases are represented by either circles or ellipses.

B. Class Diagram

In software engineering, a class diagram in the Unified Modelling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects. The class diagram is the main building block of object-oriented modeling.

C. Block Diagram

Block diagram is a diagram of a system in which the principal parts or functions are represented by blocks connected by lines that show the relationships of the blocks. They are heavily used in engineering in hardware design, electronic design, software design, and process flow diagrams.

D. Database Schema

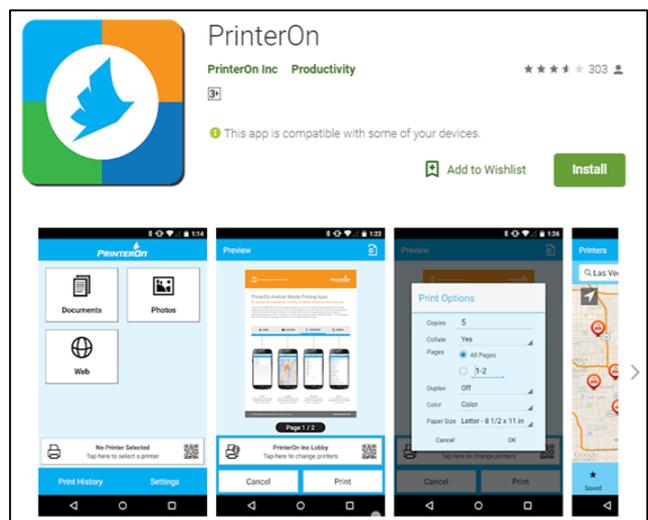
Schema is a collection of database objects associated with one particular database username. This username is called the schema owner, or the owner of the related group of objects. You may have one or multiple schemas in a database[6].

VI. LITERATURE SURVEY

A literature survey or a literature review in a project report is that section which shows the various analyses and research made in the field of your interest and the results already published, taking into account the various parameters of the project and the extent of the project. It is the most important part of your report as it gives you a direction in the area of your research. It helps you set a goal for your analysis - thus giving you your problem statement.

This is an android based application which provides users with the ease of printing their documents on the go. It will decrease their dependency of having a printer at home. This application is useful for travelers who have no clue about nearby printing shops. And will display list of all registered printing shops. Literature survey or literature review refers to the content getting from the books which is related to the topic or given project. It should be referred from the some research paper which is related to the topic which is given to the student. Therefore, there are surveyed and reviewed printer on app, HPepint app ,HP mobile printing app. Studied apps are:

A. Printeron APP:



There is one app that is PrinterOnApp. With PrinterOn cloud printing solutions; you only need to download the PrinterOn-enabled printers around your office printer. The mobile Quick PrinterOn provides several methods to quickly locate a specific printer. This app can release any print job from the Quick Print Android mobile printing app from any printer that is part of a Secure Release Anywhere™ pool regardless of submission method. Jobs can be submitted via web, app, email or desktop. PrinterOn maintains a directory that contains entries for every PrinterOn enabled cloud printing location worldwide. With the PrinterOn mobile printing apps, you can search this directory to locate and select a cloud printer [1].

There are steps to print using PrinterOn mobile app:

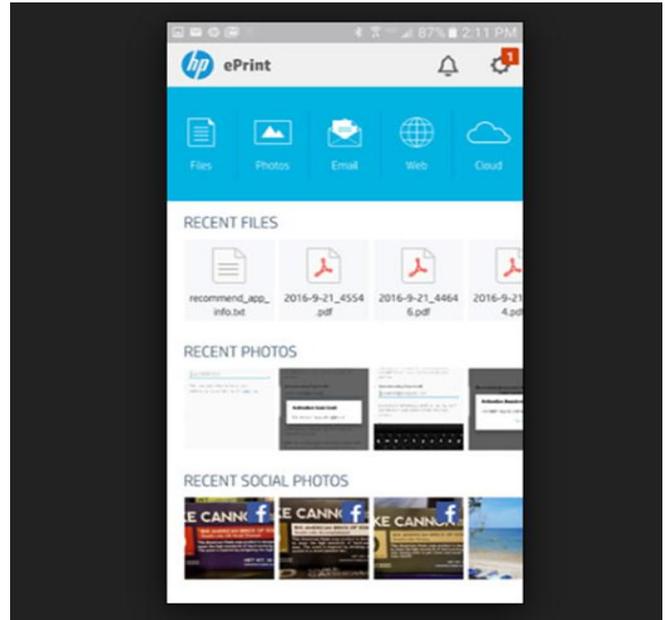
- 1) Download and Install the PrinterOn App
- 2) Configure the PrinterOn App
- 3) Send a Document to the Printer
- 4) Release Your Printout
- 5) Pick Up Your Document

B. HP Print Service Plugin



Print with AirPrint::AirPrint is a mobile printing solution built into Apple devices that works with HP Printers. There is no need to setup, download, or install anything. How it works: Printing with AirPrint is simple. Just make sure your device and printer are connecting to the same network and follow the steps below. Choose your content: Open the page or photo you want to print and tap the 'Share' button. Select print icon: Swipe screen to reveal print button on bottom row, then tap the print icon. Print and enjoy: Confirm the correct printer and prints setting are selected. Tap 'Print' and collect your pages[5].

C. HP Eprint



HP ePrint(free) was one of the first web based services, if not the first to let you print through cloud to specific printers from a particular vendor HP in this case. The ePrint Web site, HP ePrint Center, assigns the printer an email address. You print by sending files as email attachments, a trick that can come in handy occasionally for almost anyone. That makes ePrint worth exploring if you already have a printer that supports it. More important, if you need cloud printing on a regular basis, and are considering an HP printer, you'll want to know if ePrint can do what you need it to do before buying the printer. The short answer is that it may or may not.

1) PROS:

Lets you print by emailing files to supported HP printers. Can print from anywhere and from any device with email.

2) CONS:

Prints limited number of file formats. Doesn't print all files in the formats it supports. HP ePrint lets you print by sending files directly to the printer as email attachments, but there are some important limitations on what it can print.

Online printing access for business utility using android:

This application overcomes many disadvantages of the above applications. Disadvantages such as necessity of email-id are overcome. As the motto is to provide printing on the go, so when a user is at some unknown location he must be unaware of the printing shops as well as their email-id, so it makes it comfortable for the user to print from any location. HPePrint cannot accept all file formats, this application will accept all file formats. This application accepts all format files for printing which is one of the disadvantages of HP ePrint[4].

VII. SYSTEM REQUIREMENTS

A. Functional Requirements

- 1) Lists of all nearby Xerox centers within a certain radius. This app will cover about range of 500 meters and will list all printing shop within that area

- 2) Selection of a particular nearby Xerox center to upload the documents. Once the user find the print shop according to his convenience he/she will select the particular shop and upload the documents which are to be printed.
- 3) Calculates the total amount for all the documents uploaded by the user.
- 4) Dashboard will display the details of all the upcoming orders for each Xerox center.
- 5) Xerox owner then will dispatch the documents for printing.

B. Non Functional Requirement

- 1) Reliability: This application needs internet service. So, it cannot be used without internet.
- 2) Portability: This application cannot be used in older versions of android operating systems. Application used only specific android system.
- 3) Usability: This application is very simple and easy to use. Anyone can use this application without difficulty.

C. Hardware and Software Requirements:

1) Software Requirements:

a) API Level:

API Level is an integer value that uniquely identifies the framework API revision offered by a version of the android platform.

- Minimum : API level 15
- Maximum : API level above 15
- Operating System: Windows 7, 8,10
- Android Emulator:- SDK Version : 2.2 and above
- Mobile Emulator Software:- PDA Net Version 4.18
- Front-End:- Android Java , Android XML
- Back-End:- SQLite Database

b) Hardware Requirements:

- 1) Printer
 - 2) Monitor set
 - 3) Recommended Memory
- Android studio : Windows 4GB

VIII. FUTURE SCOPE

- Confidential documents security:
- Online payment
- Advance Editing documents
- Include scanner in application

IX. DESIGN

A. Block Diagram

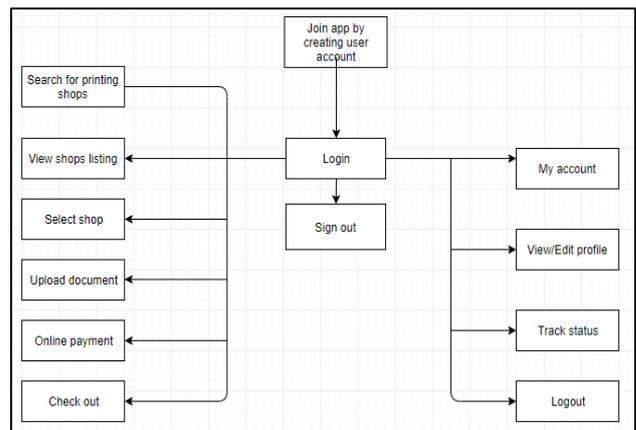


Fig. 1: User end block diagram

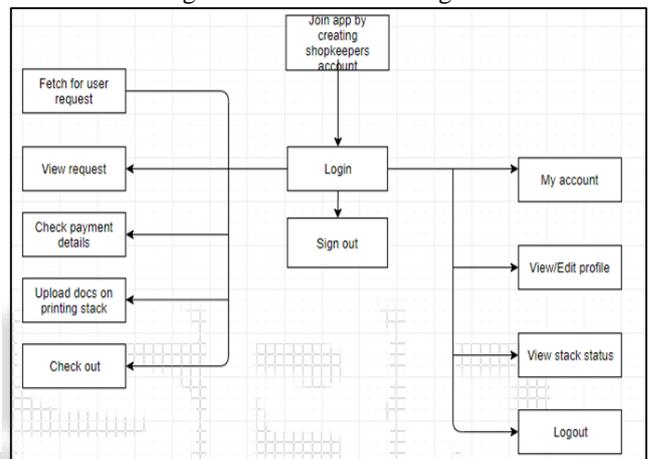


Fig. 2: Shopkeeper's end block diagram

B. Flowchart

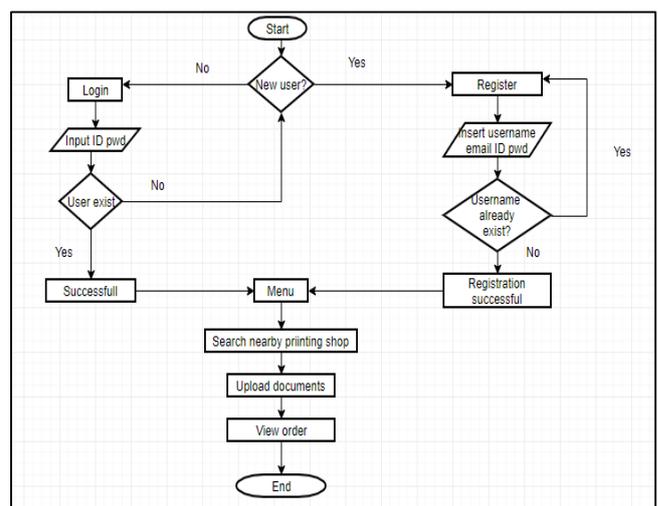


Fig. 3: Flow chart for user interface

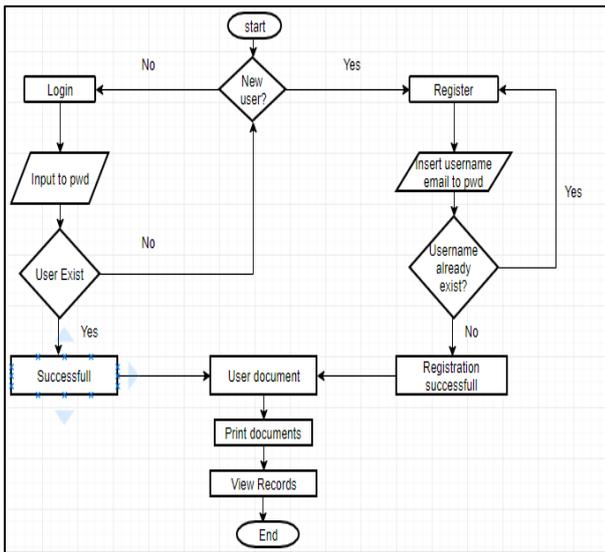


Fig. 4: Flow chart for shopkeeper's interface:

C. Database Schema

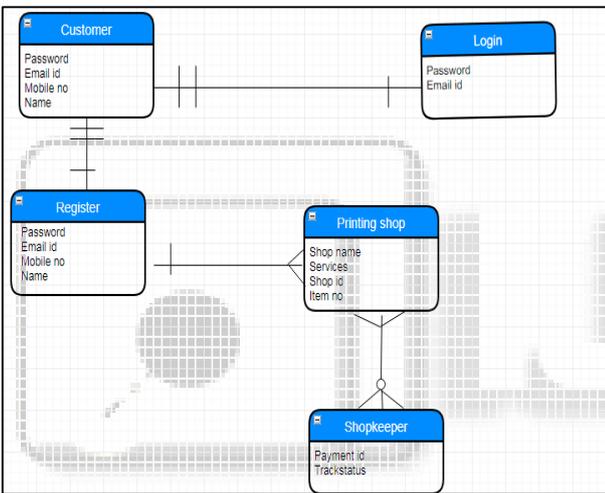


Fig. 5: System's Database schema

D. Class Diagram

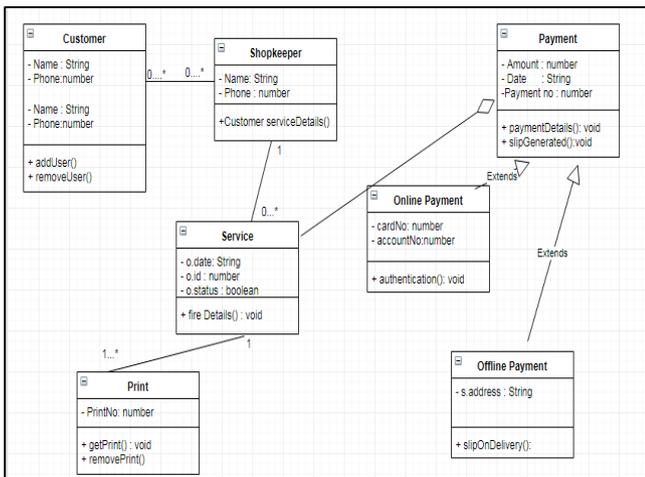


Fig. 6: System's class diagram

E. Use Case Diagram

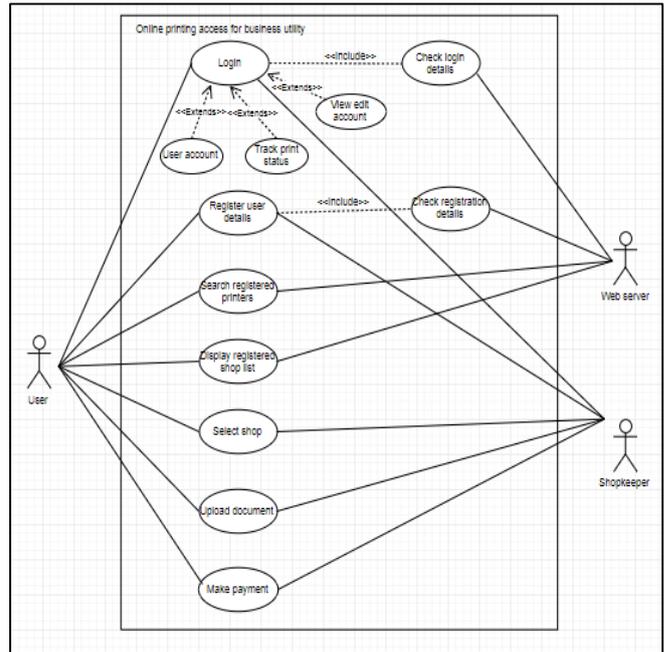


Fig. 7: system's use case diagram

F. Activity Diagram

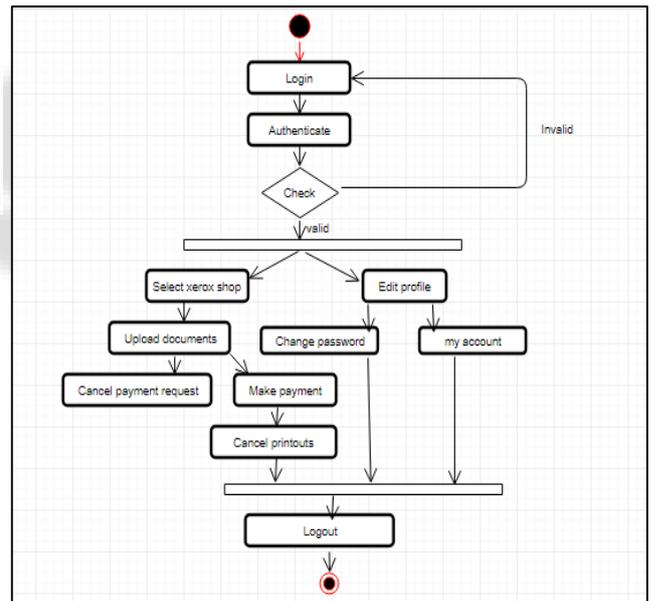


Fig. 8: User-side Activity Diagram

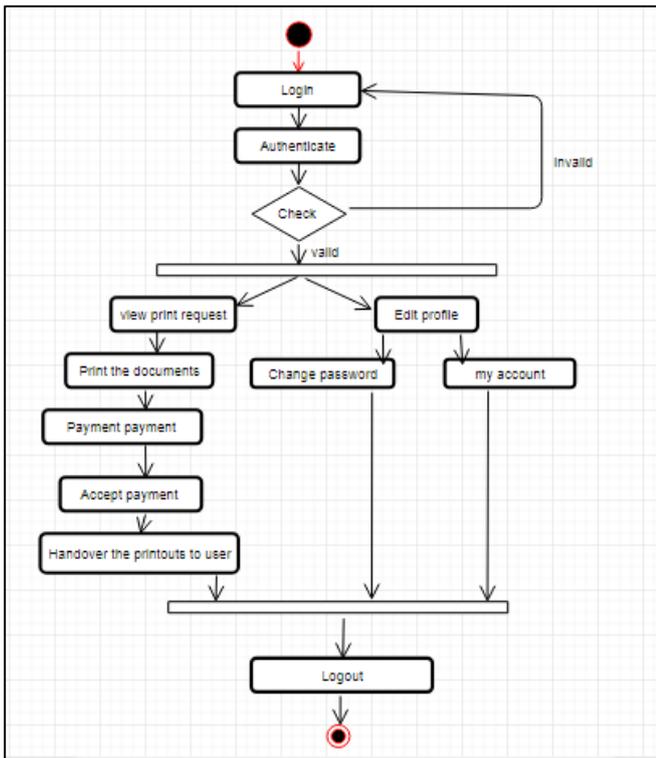


Fig. 9: Shopkeeper-side activity diagram

G. Sequence Diagram

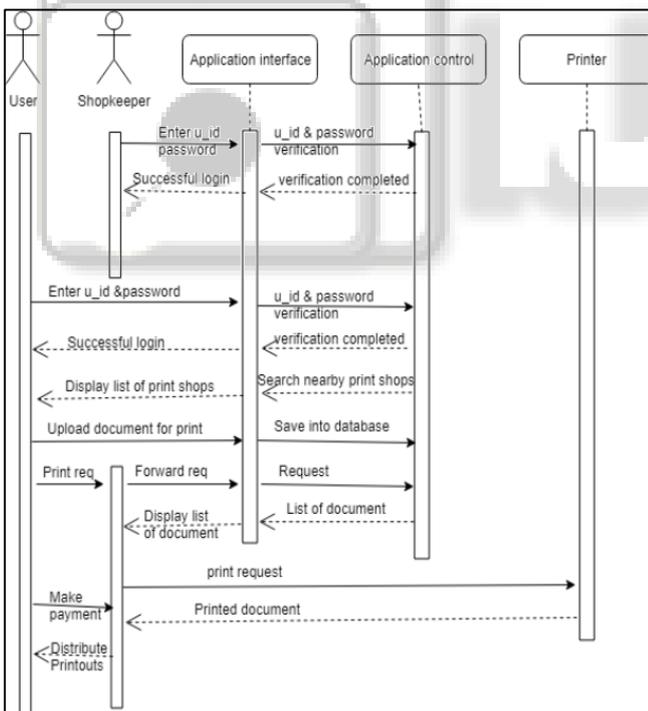


Fig. 10: Sequence diagram

X. IMPLEMENTATION

In first figure we can login using email id and password if we are old customer otherwise simply do the registrations and then login.

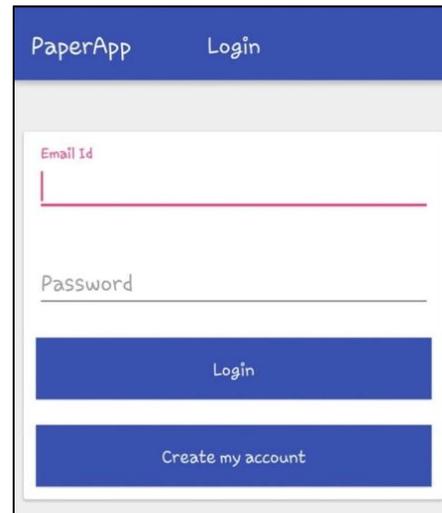


Fig. 11: User login



Fig. 12: New User Registration

Then it shows the list of nearby printing shops for printing & simply upload documents afterward.

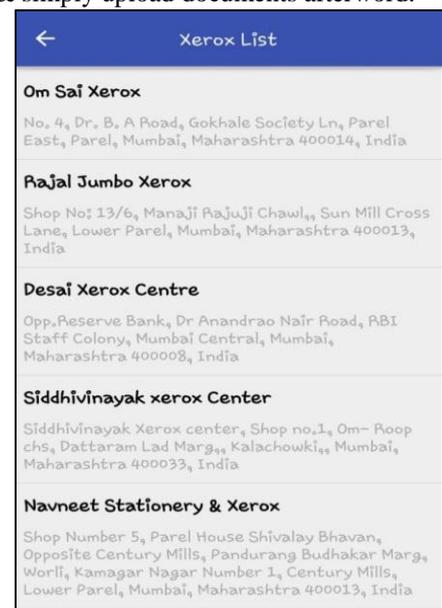


Fig. 13: Near by Xerox shops list.

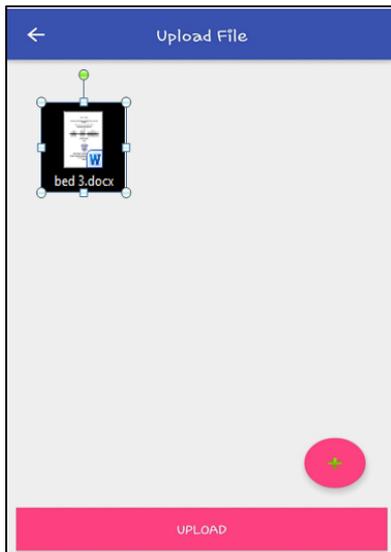


Fig. 14: Uploaded documents

XI. CONCLUSION

Hence this app aims to eliminate the dependency of having a printer at home. Hassle free printing with ease of use, and also provide us with many benefits such as saving time and protecting hardware storage devices. This is an android based application which provides users with the ease of printing their documents on the go. It will decrease their dependency of having a printer at home. This application is useful for travellers who have no clue about nearby printing shops. And will display list of all registered printing shops.

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