**OPTICAL CHARACTER RECOGNITION**

A PROJECT REPORT

Submitted By

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**Reg.No:SJC17MCA-013**

to

the APJ Abdul Kalam Technological University

in partial fulfillment of the requirements for

the award of the degree

*of*

**MASTER OF COMPUTER APPLICATIONS**



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**MAY, 2020**

**DECLARATION**

I undersigned hereby declare that the project report “OPTICAL CHARACTER RECOGNITION”, submitted for partial fulfilment of the requirements for the award of degree of Master of Computer Applications of the APJ Abdul Kalam Technological University, Kerala is a bonafide work done by me under supervision of **Mrs. Rinu Mathew**. This submission represents my ideas in my own words and where ideas or words of others have been included, I have adequately and accurately cited and referenced the original sources. I also declare that I have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title of any other University.

**Place: Palai GEETHU THOMAS**

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**CERTIFICATE**

This is to certify that the report entitled **“OPTICAL CHARACTER RECOGNITION”** submitted by **“GEETHU THOMAS” , Reg.No:SJC17MCA-013”** to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications is a bonafide record of the project work carried out by her under our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

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Head of the Department

*Viva-voce held on*:.................................................

**External Examiner 1: External Examiner 2:**

**ACKNOWLEDGEMENT**

If words are considered as symbols of approval and tokens of acknowledgment, then let words play the heralding role in expressing my gratitude. To bring something into existence is truly a work of God. I would like to thank God for not letting me down and showing me the silver lining in the dark clouds.

I would like to thank **Dr. J David**, Principal, St. Joseph’s College of Engineering & Technology for his support and encouragement. I convey my heartfelt thanks **to Dr. T.D** **Jainendrakumar** (Head of the Department - Master of Computer Applications, St. Joseph’s College of Engineering & Technology,) for providing an opportunity for the project presentation. It is my pleasure to express my gratitude to the project coordinator **Mr. Alex Jose**, Asst.professor, Department of Computer Applications, St. Joseph’s College of Engineering & Technology whose support and constructive criticism has led to the successful completion of the task.

With the biggest contribution to this report, I would like to thank **Mrs. Rinu Mathew**, Department of Computer science and Applications who had given me full support in guiding me with stimulating suggestions and encouragement to go ahead in all the time of the this work.

I would also thank my institution and faculty, my family and friends without whom this project would have been a distant reality.



**GEETHU THOMAS**

**ABSTRACT**

The project is about Optical Character Recognition. It is a process of classifying optical patterns with respect to alphanumeric or other characters. Optical character recognition process includes segmentation, feature extraction and classification. Text capture converts Analog text based resources to digital text resources. And then these converted resources can be used in several ways like searchable text in indexes so as to identify documents or images.

As the first stage of text capture a scanned image of a page is taken. And this scanned copy will form basis for all other stages. The very next stage involves implementation of technology Optical Character Recognition for converting text content into machine understandable or readable format.

OCR analysis takes the input as digital image which is printed or hand written and converts it to machine readable digital text format. Then OCR processes the digital image into small components for analysis of finding text or word or character blocks. And again the character blocks are further broken into components and are compared with dictionary of characters.

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**INTRODUCTION**

* 1. **PROJECT OVERVIEW**

Mobile applications grew in less than two decades to achieve the status of the largest information repository in human history. By providing efficient, fast, consistent and authentic tools in the form of internet and mobile applications, information technology is penetrating human life and is playing an important role in changing lives of so many people around the globe. Today many traditional industrial firms are moving towards utilizing information technology including mobile applications. Mobile applications run banking transactions, air traffic, and emergency room equipment. With this increasingly wide range of technology, both the hardware and software elements of the system can have failures which may result in catastrophic effects.

Nowadays, there is an enormous demand in storing any information available on papers, such as books or newspapers in mobile phones. There is an existing way to store information by scanning the desired text, but it will be stored as an image that won't help for further processing. For instance, if we store scanned text images, we can't read the text word by word, or line by line; the text in these scanned images can't be reused unless we rewrite the whole content by ourselves. For this reason, we need an Optical Capture Recognition (OCR). Scanned documents are great.

They let us archive stacks of paper into folder, taking up far less space and being infinitely easier to organize, move, and copy. What's not so great is finding content stored away inside one of our hundreds of scanned documents. By default, they're little more than a picture of our document—and if we want to find info inside them, we will have to open each one and read it for ourselves. Or, we could let our device do the heavy lifting for us, by turning your image into text and letting us search through our scanned 7 documents as easily as we search through any other documents. That's what OCR—Optical Character Recognition—does. It uses our computer's smarts to recognize letter shapes in an image or scanned document, and turn them into digital text we can copy and edit as needed.

Optical Character Recognition, or OCR, is a technology that enables us to convert different types of documents, such as scanned paper documents, PDF files or images captured by a digital camera or phone into editable and searchable data. This technology is very useful since it saves time without the need of retyping the document. It can perform the action in few minutes.

**I.2 ABOUT THE ORGANIZATION**

Srishti Innovative is a leading, Technology Services Company for Web, Mobile and Solutions. We are a **Deloitte Technology Fast 50 India Company for 2014**and rankamong**Deloitte Technology Fast 500 APAC 2014 and 2014 Red Herring Top 100 for Asia.** We are experts in mobile and web technology and create exceptional, brand led digital experiences. Srishti provides solutions for B2E, B2B and B2C through process driven approach, rapid application development and proven agile work flow methodology .Founded in 2007, our in-house team of domain experts and tech engineers has delivered 1700+ applications across Web, Cloud and iOS, Android, Windows, Blackberry platforms.

We are an ISO 9001:2008 certified company. We have worked with over 850 global clients across key industries - Healthcare, Financial Services, Retail, Travel, Media and Entertainment. We have offices in India and US.Here at Srishti, we take our watchwords - **“**Quality beyond Contract” very seriously and you will find it exemplified in all realms of our work. We understand that Quality demands Discipline, rigorous Effort, Commitment, Creativity and a Unique Work Methodology.

We take a consultative approach to creating tangible value and competitive advantage for our clients. We help you navigate through the labyrinth of technology building blocks like Smart Devices, NFC, Augmented Reality, Proximity-alert and Responsive Design guiding your web and mobile strategy to success while delivering stable, secure and scalable solutions for your business.Srishti Innovative aims to cut through the noise with pinpoint delivery of solutions and be always relevant to our clients. Our clients are able to increase efficiencies across the board by being more responsive and productive with on the go business readiness.

We have years of expertise in designing world class web and mobile solutions tailor-made to your unique business requirements and go-to market strategy. With design and development expertise in diverse platforms, best-of-breed tools and techniques, combined with industry best practices, we offer scalable end-to-end application development solutions.Our professional and thorough approach to project planning gets your app idea right on track from the word go and maximizes returns on your investment.

We bring unparalleled expertise, technological knowhow and industry proven practices to the table driving engagement and higher monetization for our clients. Our strong process framework has evolved out of our rich experience in executing various projects of different sizes, complexity and domains. To be competitive in today’s fast moving marketplace, organizations need to drive innovation in every part of their business. As a result, more and more companies are embracing agile work flow as a viable development methodology that produces results and offers customer value faster.

Agile focuses on evolutionary development that is iterative, dynamic and encourages collaboration with the customer. With Agile software development, adaptability and flexibility are more highly valued than heavy documentation or rigid plans and end-users are expected to work closely with developers every step of the way. Whether it’s undertaking new application development or transitioning an existing legacy system, Srishti Innovative has the Agile Development experience and expertise you can trust to deliver fast results.

**Services:**

**1.**Mobile Application Development;

World class mobile applications on iOS, Android, Windows and Blackberry platforms that inspire users, transform businesses and promise engaging experiences.

**2.**Web Development Solutions & Consulting;

Full service web solutions that include mobile optimized websites, eCommerce Solutions and web portals and complex content management system.

**3.**Enteprise Applications & Mobility Solutions;

Unleash the potential of your business with on the go enterprise-class applications and mobility solutions.

**4.**Cloud Enabling Services;

Today’s dynamic market conditions require businesses to be more agile and responsive. Cloud technology gives the ability to swiftly develop and deploy IT services and applications to improve the way your business gets done.

**CHAPTER II**

**SYSTEM ANALYSIS**

**II.1 INITIAL INVESTIGATION**

The initial investigation is conducted in order to gather more information about the existing system. At the stage of initial investigation many problems are raised about the existing system. The first problem is to collect the data from dataset. Another major difficulty is lack of time. A lot of time will be spending for installing the necessary module needed for downloading the data. These difficulties can be easily handled in the proposed system. android easily handle built-in modules.

Using these module, the data can automatically pre-processed and automatically cleaning the hashtags, hyperlink and non- English words. Using this system, users can easily analyse the data from dataset. Thus this system can reduce manual effort to a greater extend. Preliminary investigation is a problem solving developer. It does various feasibility studies. In the studies, a rough figure system activities can be obtained from the decision about the strategies to be followed for effective system study and analysis can be taken.

**II.2 EXISTING SYSTEM**

An initial investigation is conducted to identify the problem of the current system. The main objective of this investigation is problem identification. In order to understand the organization setup, a background analysis of the present system is highly necessary, as the part of this I search various papers for designing a new system. The study of the existing system is a pre-requisite for developing any software system. The study of the system reveals many features of the existing system. This gives analyst an insight into the working of the system and helps the developer to design an appropriate system, which will eliminate the many limitations present in the existing system.

**II.3 PROPOSED SYSTEM**

As the proposed system is a Android application where the users can perform all the arrangements easily and efficiently. This system provides a searching facility to the user based on their demands.To overcome the drawbacks of the existing system, the proposed system has been evolved. The system provides with the best user interface. The efficient reports can be generated by using this proposed system. In this system there are mainly two moduls, admin and users.

The proposed system computerization is developed using SQL server as back-end and Android as user module and php as admin module. This languages is managed, safe environment for application, development and execution. The software is developed as a simulated system and the complex procedures are avoided to make the system easy to use. The proposed system is user friendly and has simplicity and security. In the proposed system the data redundancy can be avoided to certain extend and the data consistency can be maintained. The record keeping and searching process are easy.

**II.3.1 Advantages of the Proposed System**

* The proposed system provides accurate data.
* The proposed system is very much faster than existing system.
* Less time consuming and more efficient.
* Simple user interface to reduce processing.
* Eliminate chances for errors and reduce effort.

**II.3.2 Features of the Proposed System**

The various features of proposed system are as follows:

* Access to the system and database as per user identification the maximum security ensured.
* Integrity reliability and integrity of data User friendly and flexible in all aspects
* Data entry updates is quite easy
* Effective table manipulation as facilitated by the rich SQL Good validation checking
* Easy maintenance
* Removes chances of leakage of information. Provides a better record keeping system
* All these forms the major aspects and advantages of the proposed system. Provision is made for effective improvements of maintenance are needed at any stage.
* Removes chances of leakage of information.

All these form the major aspects and advantages of the proposed system. Provision

is made for effective improvements of maintenance are needed at any stage.

# II.4 FEASIBILITY STUDY

During system analysis, a feasibility study of the proposed system was carried out to see whether it was beneficial to the organization. The main aim of the feasibility study is to determine whether it would be financially and technically feasible to develop the product. While evaluating the existing system, many advantages and disadvantages raised. Analyzing the problem thoroughly forms the vital part of the system study.

Problematic areas are identified and information is collected .The benefits of this site are users can easily interact and get the services without much complexity. It helps to make it possible that more users can interact with the site at a time. Feasibility study is to determine whether the proposed system is technically, economically and behaviourally feasible in all respects.The main aim of feasibility study is to evaluate alternative site and propose the most feasible and desirable site for development. If there is no loss for the organization then the proposed system is considered financially feasible.

A feasibility study is carried out to select the best system that meets performance requirements. The feasibility study activity involves the analysis of the problem and collection of all relevant information relating to the product such as the different data items which would be input to the system, the processing required to be carried out on these data, the output data required to be produced by the system as well as various constraints on the behaviour of the system. In this scenario, problems are identified.

Essential data are being gathered for the existing problems. It is necessary that this analysis familiarizes the designer with objectives, activities, and the function of the organization in which the system is to be implemented. The feasibility study was divided into four:- Technical, Economical, Operational and behavioural . It is summarized below:-

**II.4.1 TECHNICAL FEASIBILITY**

According to feasibility analysis procedure the technical feasibility of the system is analyzed and the technical requirements such as software facilities, procedure, inputs, are identified. While considering the problems of existing system ,it is sufficient to implement the new system. The proposed system can be implemented to solve issues in the existing system. It includes the evaluation of and how it meets the proposed system. This system use Android front end technology and sql as back end technology.

**II.4.2 ECONOMIC FEASIBILITY**

Economic analysis is most frequent used for evaluating of the effectiveness of the candidate system. More commonly known as cost/benefit analysis the procedure is to determine the benefit and saving that are expected from a candidate system and compare them with the existing system. Except for the initial capital amount and the amount after each financial year, no other huge amount is needed. The expenses can be handles by any participants. So, the system is economically feasible.

This feasibility involves some questions such as whether the firm can afford to build the system, whether its benefits should substantially exceed its costs, and whether the project has higher priority and profits than other projects that might use the same re- sources. Here there is no problem. This firm has fully equipped hard ware, and fully fledged software, so no need to spend money on these issues. And as the client and the developer are one, there is no further problem in economic issues.

**II.4.3 OPERATIONAL FEASIBILITY**

Methods of processing and presentation are all according to the needs of clients since they can meet all user requirements here. The proposed system will not cause any problem under any circumstances and will work according to the specifications mentioned. Hence the proposed system is operationally feasible .People are inherently resistant to change and computer has been known to facilitate changes. The system operation is the longest phase in the development life cycle of a system. So, Operational Feasibility should be given much importance. This system has a user-friendly interface. Thus it is easy to handle.

**II.4.4 BEHAVIORAL FEASIBILITY**

In today’s world, computer is an inevitable entity. As per the definition of behavior design, many valid points are recognized in this study. This system behaviour changes according to different environment. In order to ensure proper authentication and authorization and security of sensitive data of the admin or employers, login facilities are provided. These are the main feasibility studies tested in this application.

**CHAPTER III**

**SYSTEM ANALYSIS AND DESIGN**

**III.1 SOFTWARE REQUIREMENT SPECIFICATION**

The primary goal of the system analyst is to improve the efficiency of the existing system. For that study of specification of the requirement is very essential. For the development of the new system, a preliminary survey of the existing system will be conducted. An investigation is done whether the up gradation of the system into an application program could solve the problems and eradicate the inefficiency of the existing system. This gives an idea about the system specifications required to develop and install the project ”OPTICAL CHARACTER RECOGNITION”.

The System Requirements Specification is based on the System Definition. The requirement specifications are primarily concerned with functional and performance aspect of a software product and emphasis are placed on specifying product characteristics implying how the product will provide those characteristics. One of the most difficult tasks is selecting software, once the system requirement is find out then we have to determine whether a particular software package fits for those system requirements. This selection summarizes the application requirement.

**III.1.1 SOFTWARE REQUIREMENT**

* OPERATING SYSTEM – WINDOWS7/8/10
* WEB SERVER – GODADDY
* FRONT END – ANDROID
* BACK END – SQL

**III.1.2 HARDWARE REQUIREMENT**

* CPU – INTELCORE i3-3220
* HARD DISKSPACE - 500 GB
* RAM - 2GB
* DISPLAY - 19 STANDARD RATIO LCDMONITOR
* KEYBOARD - 99-104 KEYS
* CLOCK SPEED - 1.99 GHZ

**III.2 SYSTEM DESIGN**

Designing the system in an effective way leads to the smooth working of any software’s. System design is the process of developing specification for a candidate system that meet the criteria established in the system analysis. Major step in the system design is the preparation of the input forms and output reports in a form applicable to the user. The main objective of the system design is to use the package easily by any computer operator. System design is the creative act of invention, developing new inputs, and database, off-line files, method, procedure and output for processing business to meet an organization objective. System design builds information gathered during the system analysis. This system is designed neatly so that user will never get ambiguity while using the system.

**III.2.1 NON-FUNCTIONAL REQUIREMENTS**

**Performance Requirements**

For the efficient performance of the application, network must have high bandwidth so that the task of centralized management does not lead to network jam. Also the hard diskcapability must be high so that data can be effectively stored and retrieved.

**Security Requirements**

Security requirements of this application involves authentication using user name and password so that invalid users are restricted from data access. For the security of data, periodic database backups must be performed so that we can recover data in the case of data loss.

**III.3 UNIFIED MODELING LANGUAGE [UML]**

UML is a way of visualizing a software program using a collection of diagrams. The notation has evolved from the work of Grady Booch, James Rumbaugh , Ivar JAcobson and the Rational Software Corporation to be used for object-oriented design, but it has since been extended to cover a wider variety of software engineering projects. Today, UML is accepted by the Object Management Group (OMG) as the standard for modelling software development.UML stands for Unified Modeling Language.

UML 2.0 helps extend the original UML specification to cover a wider portion of software development efforts including agile practices .Improved integration between structural models like class diagrams and behavior models like activity diagrams.The original UML specified nine diagrams; UML 2.x brings that number up to 13. The four new diagrams are called: communication diagram, composite diagram, interaction overview diagram and timing diagram. It also renamed state chart diagrams to state machine diagrams, also known as state diagrams.

**Types of UML diagrams**

The current UML standards call for 13 different types of diagrams: class, activity, object, use case, sequence, package, state, component, communication, composite structure, interaction overview, timing and deployment. These diagrams are organized into two distinct groups: structural diagrams and behavioral or interaction diagrams.

**Structural UML diagrams**

* Class diagram
* Package diagram
* Object diagram
* Component diagram
* Composite structure diagram
* Deployment diagram

**Behavioral UML diagram**

* Activity Diagram
* Sequence diagram
* Use case diagram
* State diagram
* Communication diagram
* Interaction overview diagram
* Timing diagram

**III.3.1 Use case Diagram**

To model a system the most important aspect is capture the dynamic behaviour. To modify a bit in details, dynamic behaviour of the system when it is running or operating. So only behaviour is not sufficient to model a system rather dynamic behaviour is more important than static behaviour. In UML there are five diagrams available to model dynamic nature and use case diagram is one of them. Now as we have to discuss that the use case diagram is dynamic in nature there should be some internal or external factors for making the interaction.

These internal and external agents are known as actors. So use case diagram consists of actors, use case and their relationships. The diagram is used to model the system of an application. A single use case diagram captures a particular functionality of a system.

**Use case Diagram objects:**

* Actor
* Use case
* System
* Package Actor

**Actor**

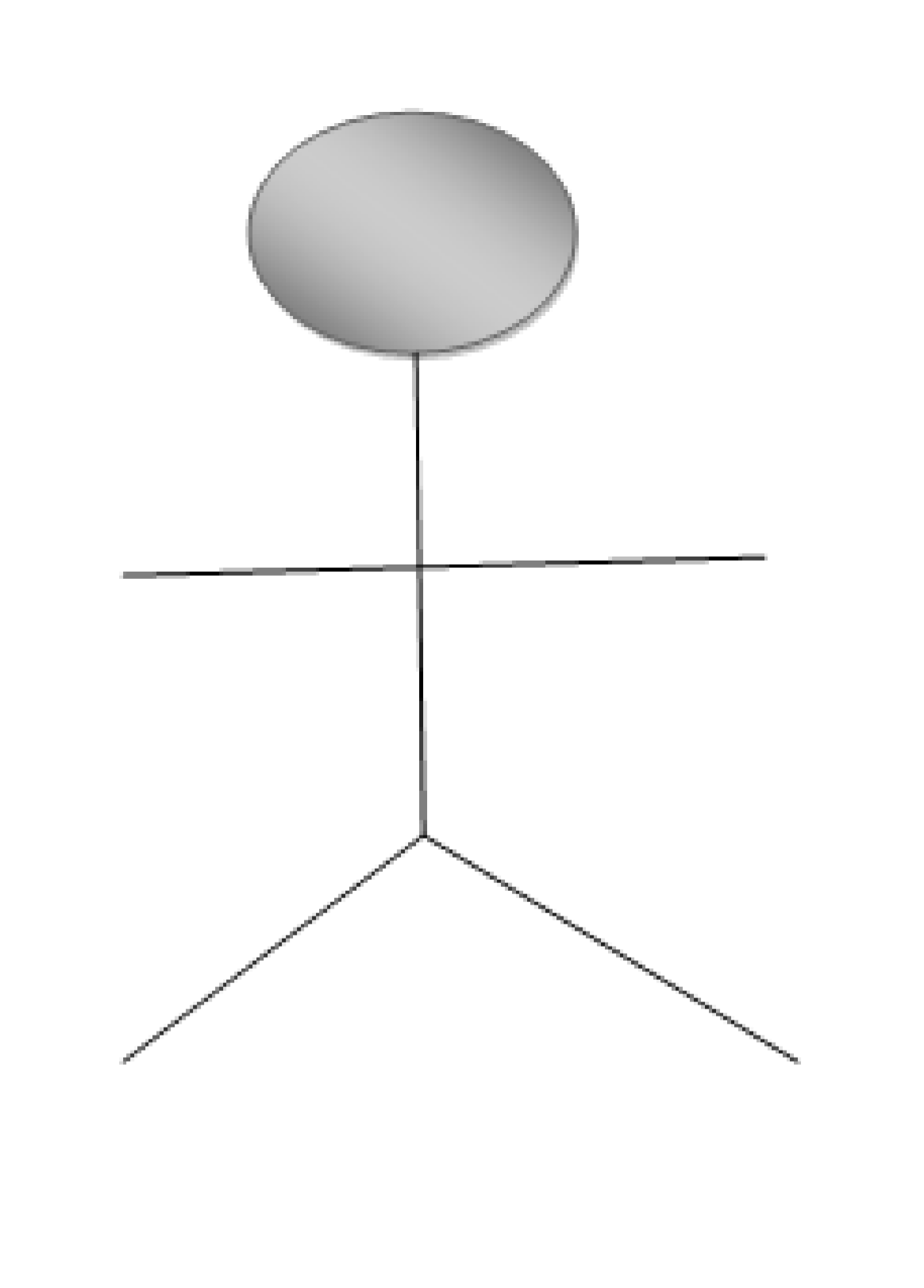


Figure III.1: Actor

Actor is a use case diagram in an entity that performs a role in one given system. This could be a person, organization or an external system usually drawn like skeleton.

**Use case**

A use case represents a function or an action within the system. It’s drawn as an oval and named with the function.



Figure III.2: Use Case

**System**

System is used to define the scope of the use case and drawn as a rectangle. This is an optional element but useful when your visualizing large systems. For example you can create all the use cases and then use the system object to define the scope covered by your project. Or you can even use it to show the different areas covered in different releases.

**Package**

Package is another optional element that is extremely useful in complex diagrams. Similar to use class diagrams, packages are used to group together use cases.

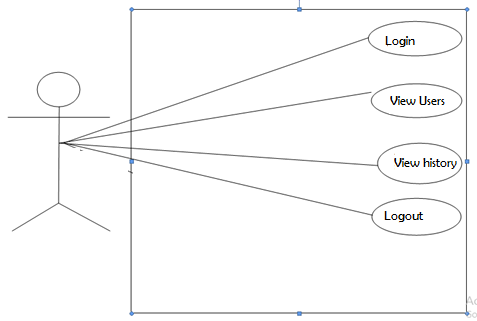


Fig11.1: Use case diagram for admin

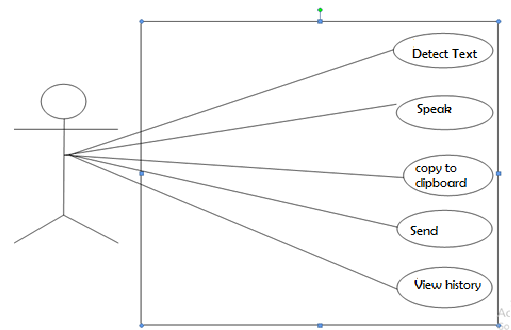


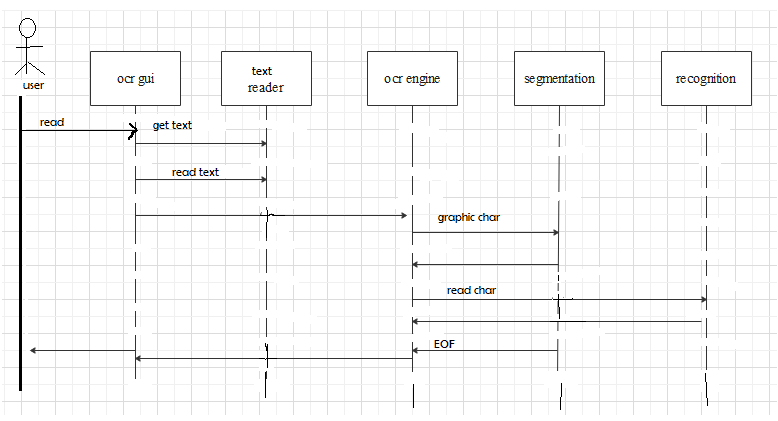
Fig11.2: Use case diagram for User

**III.3.2 Sequence Diagram**

UML sequence diagrams are used to represent or model the flow of messages, events and actions between the objects or components of a system. Time is represented in the vertical direction showing the sequence of interaction of the header elements .Sequence Diagrams are used primarily to design, document and validate the architecture, interfaces and logic of the system by describing the sequence of actions that need to be performed to complete a task. UML sequence diagrams are useful design tools because they provide a dynamic view of the system behavior which can be difficult to extract from static diagrams or specifications.

Although UML sequence diagrams are typically used to describe object-oriented software systems, they are also extremely useful as system engineering tools to design system architectures in business process, as message sequence charts and call flows for telecoms or wireless system design, and for protocol stack design and analysis.A sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is a construct of a message sequence chart. A sequence diagram shows object interactions arranged in time sequence.

It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence Diagrams are typically associated with use case realizations in the logical View of the system under development. Sequence diagrams are sometimes called event diagrams or event scenarios.A sequence diagram shows, as parallel vertical lines (lifelines), different processes or objects that live simultaneously, and, as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.



Sequence diagram for ocr

**II.3.3ActivitIy Diagram**

The basic purposes of activity diagrams are similar to other four diagrams. It captures the dynamic behaviour of the system. Other four diagrams are used to show the message flow from one object to another but activity diagram is used to show message flow from one activity to another .Activity is a particular operation of the system.

Activity diagrams are not only used for visualizing the dynamic nature of a system, but they are also used to construct the executable system by using forward and reverse engineering techniques. The only missing thing in the activity diagram is the message part.It does not show any message flow from one activity to another. Activity diagram is sometimes considered as the flowchart. Although the diagrams look like a flowchart, they are not. It shows different flows such as parallel, branched, concurrent, and single.

Activity diagrams are mainly used as a flowchart that consists of activities performed by the system. Activity diagrams are not exactly flowcharts as they have some additional capabilities. These additional capabilities include branching, parallel flow, swimlane, etc.Before drawing an activity diagram, we must have a clear understanding about the elements used in activity diagram. The main element of an activity diagram is the activity itself. An activity is a function performed by the system. After identifying the activities, we need to understand how they are associated with constraints and conditions.

Before drawing an activity diagram, we should identify the following elements –

* Activities
* Association
* Conditions
* Constraints

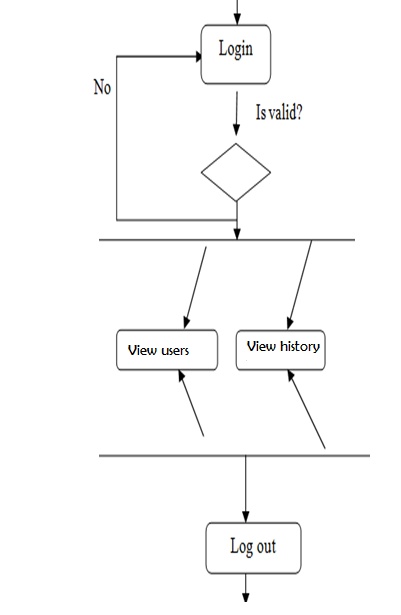


Figure III.5: Activity diagram for Admin

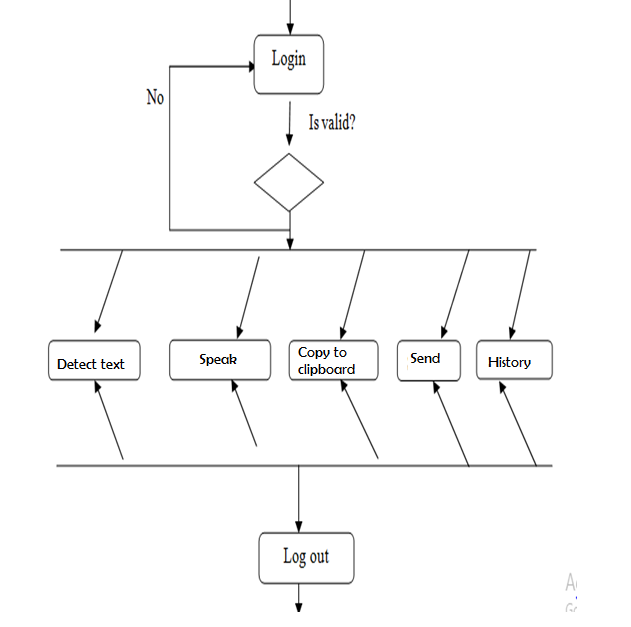


Figure III.6: Activity diagram for User

# III.4 SYSTEM DESIGN

The most creative and challenging phase of the system life cycle is the system design. The term design describes a final system and the process by which it is developed. It refers to the technical specification that will be applied in implementing the candidate system. In system design, we move from the logical to the physical aspects of the life cycle .The first step is to determine how the output is to be produced and in what format. Then input data and master files have to be designed as the next step and finally the impact of the candidate system on the user and organization are documented and evaluated by the management. After identifying the problem and the limitation of the existing system, a detailed design of the proposed system is conducted .Free flow personnel interview and reference to previous records prepared manually were the only methods taken to collect necessary information.

At present, all organizations are on the path of computerization process.Design is the phase that indicates the final system. It is the solution, the translation of requirements into ways of meeting them. In this phase the following elements were designed namely, data flow, data stores, processes, procedures was formulated in a manner that meet the project requirements. After logical design physical construction of the system is done.The database tables, input screens, output screens, output reports are designed. After analyzing the various functions involved in the system the database, labels as dictionaries designed. Care is taken for the field name to be in self-explanatory form. Unnecessary fields are avoiding so as not affecting the storage system.

Care must be taken to design the input screen in the most user-friendly way so as to help even the novice users to make entries approximately in the right place. This is being accomplished by the use of giving online help messages, which are brief and cleanly prompts users for appropriate action .Design is the only way that we can accurately translate a customer’s requirements into a finished software product or system. Without design, risk of building an unstable system exist one that will fail when small changes are made, one that will be difficult to test .All input screens in the system are user friendly and are designed in such a way that even a layman can operate.

The sizes of all screens are standardized.Reports generated in this software give the finer accepts of the required information, which helps in taking vital decision. The importance of the software design can be stated with a single word quality. Design is a place where quality is fostered in software development. Design is the only way where requirements are actually translated into a finished software product or system.

**Mainly this project consists of 2 Modules:**

* **Admin**
* **User**

**Admin Module**

Administrator is the main actor in this system. He has the entire control of the system which includes viewing all the details to generate the reports. Brief description about the functionalities performed by the admin is given below. After the admin successfully login to this website the admin can perform the functionalities including:

**Admin**

* Login
* View history
* View users

**User**

* Login
* Detect text
* Speak
* Copy to clipboard
* Send
* History

**III.4.1 Input Design**

Input design is the process of converting a user oriented description of the inputs to a computer based business system into a programmer oriented specification. The design accurate from the stage at which it is recorded and documented to the stage at which it is accepted by the computer. Validation procedures are also present to detect errors in data input, which decision for handling input specify how data are accepted for computer processing. Input design is a part of overall design that needs careful attention.

The collection of input data is considered to be the most expensive part of the system design. Since the inputs have to be planned in such a way so as to get the relevant information, extreme care is taken to obtain the pertinent information. If the data going into the system is incorrect then the processing and outputs will magnify these errors. The goal of designing input data is to make data entry as easy, logical and free from errors as possible. The following are the objectives of input design:

* To produce a cost effective method of input.
* To ensure validation

Effort has been made to ensure that input data remains is beyond control procedures. Validation procedures are designed to check each record, data item or field against certain criteria.In my proposed system Image Compression, data has to be accurate and complete. If not, error messages are displayed to the user and he is unable to proceed to the next stage of action unless he corrects his data. Duplicate entries are not allowed. The data validation, a procedure of the proposed system, provides program checks for the completeness, consistency, reasonableness and sequence of the system.

Maximum care has been taken to ensure that user types in only minimum data into the system, as all he/she will have to do is to move and click the mouse or strike a key to select the desired data at the desired position.The screens are designed in such a way that the user can find the needed like options, actions etc. with ease of use. The needed columns, where interaction is needed, like labels, buttons are also simple.

The related data columns are clubbed together as groups, so that the user can understands the related data easily.The input design is the link between the information system and the user. It comprises developing specifications and procedures for data preparation and those steps that are necessary to put input data into a usable form for processing data entry. The design of inputs focuses on controlling the amount of inputs required, controlling errors, avoiding delay, avoiding extra steps and keeping the process simple.

**III.4.2 Data Flow Diagram**

Data flow diagram is the graphical representation of the system. It is a network that uses special symbols to describe the flow of data and process that transforms data throughout the system.

Figure III.8: Level 0 DFD

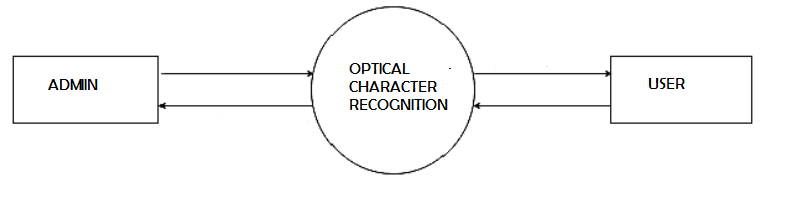


Figure III.9: Level 1 DFD for Admin

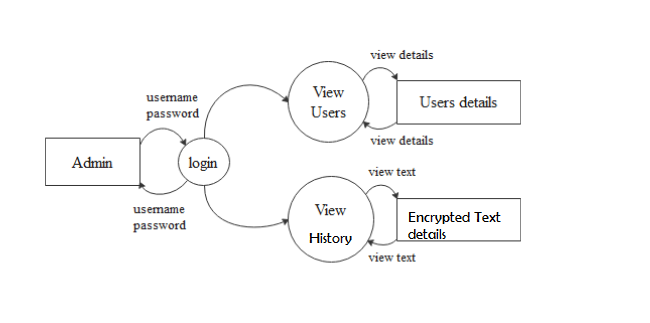
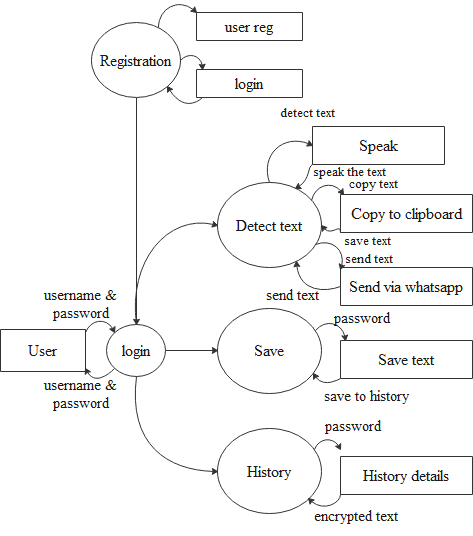


Figure III.10: Level 1 DFD for User

****

**III.4.3 Output Design**

The output design phase of the system design is concerned with the conveyance of information to the end users in user friendly manner. The output design should be efficient, intelligible so that the system relationship with the end user is improved and thereby enhancing the process of decision making.

The output design is an ongoing activity almost from the beginning of the project, efficient and well defined output design improves the relation of the system and the user. The primary considerations in the design of the output are the requirement of the information and the objective of the end user. There are various types of outputs required by most of the systems, but outputs of Image Compression are purely interactive outputs which involve the user in communicating with the computer.

The system output may be of any of the following

* A report
* A document
* A message

The output design specification is made in such a way that it is unambiguous and comprehensive. The approach to output design is very dependent on the type of output and nature of data. Special attention has to be made to data editing. The choice of appropriate output medium is also an important task. The output designed must be specified and documented, data items have to be accurately defined and arranged for clarity. The layout of the output will be normally specified on a layout chart. The final design layout must be approved by the user, communicated in detailed to the programmer. The user’s requirements are quite different from that of the programmer. Before preparing a specification for the programmer, it is prudent to ensure that the design is acceptable to the user.

**III.4.4Database Design**

**TABLES**

**Admin:**

|  |  |  |
| --- | --- | --- |
| **Field** | **Data type** | **Description** |
| Email | Varchar(100) | Admin email |
| Password | Varchar(100) | Admin password |

Primary key:email

**Registration**:

|  |  |  |
| --- | --- | --- |
| **Field** | **Data type** | **Description** |
| id | Int(100) | Id of user |
| name | Varchar(100) | Name of user |
| email | Varchar(100) | Email of user |
| password | Varchar(100) | Password of user |

Primary key: id

**String:**

|  |  |  |
| --- | --- | --- |
| **Field** | **Data type** | **Description** |
| String id | Int(100) | String id |
| string | Longtext | string |
| title | Varchar(100) | title |
| id | Varchar(100) | User id |

Primary key: string\_id

**III.5 TOOLS AND PLATFORMS**

In this project we mainly use two languages:

* Android
* Php

**III.5.1.** **Android**

Android is a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touch screen mobile devices such as smart phones and tablets. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input. Android's source code is released by Google under an open source license, although most Android devices ultimately ship with a combination of free and open source and proprietary software, including proprietary software required for accessing Google services.

Applications ("apps"), which extend the functionality of devices, are written using the Android software development kit (SDK) and often, the Java programming language. The SDK includes a comprehensive set of development tools,including a debugger, software libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Initially, Google's supported integrated development environment (IDE) was Eclipse using the Android Development Tools (ADT) plugin. Android has a growing selection of third-party applications, which can be acquired by users by downloading and installing the application's APK (Android application package) file, or by downloading them using an application store program that allows users to install, update, and remove applications from their devices. Google Play Store is the primary application store installed on Android devices that comply with Google's compatibility requirements and license the Google Mobile Services software.

**III.5.2. Android Applications**

Android applications are usually developed in the Java language using the Android Software Development Kit.Once developed, Android applications can be packaged easily and sold out either through a store such as Google Play, SlideME, Opera Mobile Store, Mobango, F-droid and the Amazon Appstore.

Android powers hundreds of millions of mobile devices in more than 190 countries around the world. It's the largest installed base of any mobile platform and growing fast. Every day more than 1 million new Android devices are activated worldwide.This tutorial has been written with an aim to teach you how to develop and package Android application. We will start from environment setup for Android application programming and then drill down to look into various aspects of Android applications.

**Libraries**

On top of Linux kernel there is a set of libraries including open-source Web browser engine WebKit, well known library libc, SQLite database which is a useful repository for storage and sharing of application data, libraries to play and record audio and video, SSL libraries responsible for Internet security etc.

**Android Libraries**

This category encompasses those Java-based libraries that are specific to Android development. Examples of libraries in this category include the application framework libraries in addition to those that facilitate user interface building, graphics drawing and database access. A summary of some key core Android libraries available to the Android developer is as follows −

* android.app − Provides access to the application model and is the cornerstone of all Android applications.
* android.content − Facilitates content access, publishing and messaging between applications and application components.
* android.database − Used to access data published by content providers and includes SQLite database management classes.
* android.opengl − A Java interface to the OpenGL ES 3D graphics rendering API.
* android.os − Provides applications with access to standard operating system services including messages, system services and inter-process communication.
* android.text − Used to render and manipulate text on a device display.
* android.view − The fundamental building blocks of application user interfaces.
* android.widget − A rich collection of pre-built user interface components such as buttons, labels, list views, layout managers, radio buttons etc.
* android.webkit − A set of classes intended to allow web-browsing capabilities to be built into applications.

Having covered the Java-based core libraries in the Android runtime, it is now time to turn our attention to the C/C++ based libraries contained in this layer of the Android software stack.

**Android Runtime**

This is the third section of the architecture and available on the second layer from the bottom. This section provides a key component called Dalvik Virtual Machine which is a kind of Java Virtual Machine specially designed and optimized for Android.The Dalvik VM makes use of Linux core features like memory management and multi-threading, which is intrinsic in the Java language. The Dalvik VM enables every Android application to run in its own process, with its own instance of the Dalvik virtual machine.The Android runtime also provides a set of core libraries which enable Android application developers to write Android applications using standard Java programming language.

**Application Framework**

The Application Framework layer provides many higher-level services to applications in the form of Java classes. Application developers are allowed to make use of these services in their applications.

**The Android framework includes the following key services −**

* Activity Manager − Controls all aspects of the application lifecycle and activity stack.
* Content Providers − Allows applications to publish and share data with other applications.
* Resource Manager − Provides access to non-code embedded resources such as strings, color settings and user interface layouts.
* Notifications Manager − Allows applications to display alerts and notifications to the user.
* View System − An extensible set of views used to create application user interfaces.

You will be glad to know that you can start your Android application development on either of the following operating systems −

* Microsoft Windows XP or later version.
* Mac OS X 10.5.8 or later version with Intel chip.
* Linux including GNU C Library 2.7 or later.

Second point is that all the required tools to develop Android applications are freely available and can be downloaded from the Web. Following is the list of software's you will need before you start your Android application programming.

* Java JDK5 or later version
* Android Studio

Here last two components are optional and if you are working on Windows machine then these components make your life easy while doing Java based application development. So let us have a look how to proceed to set required environment.

**Activities**

An activity represents a single screen with a user interface, in-short Activity performs actions on the screen. For example, an email application might have one activity that shows a list of new emails, another activity to compose an email, and another activity for reading emails. If an application has more than one activity, then one of them should be marked as the activity that is presented when the application is launched.

**Services**

A service is a component that runs in the background to perform long-running operations. For example, a service might play music in the background while the user is in a different application, or it might fetch data over the network without blocking user interaction with an activity.

**Broadcast Receivers**

Broadcast Receivers simply respond to broadcast messages from other applications or from the system. For example, applications can also initiate broadcasts to let other applications know that some data has been downloaded to the device and is available for them to use, so this is broadcast receiver who will intercept this communication and will initiate appropriate action. A broadcast receiver is implemented as a subclass of Broadcast Receiver class and each message is broadcaster as an Intent object.

**Content Providers**

A content provider component supplies data from one application to others on request. Such requests are handled by the methods of the *Content Resolver* class. The data may be stored in the file system, the database or somewhere else entirely.A content provider is implemented as a subclass of Content Provider class and must implement a standard set of APIs that enable other applications to perform transactions.

**Running the Application**

Let's try to run our Hello World**!** application we just created. I assume you had created your AVD while doing environment set-up. To run the app from Android studio, open one of your project's activity files and click Run Eclipse Run Icon icon from the tool bar. Android studio installs the app on your AVD and starts it and if everything is fine with your set-up and application, it will display following Emulator window.

**III.5.3.Features**

**Messaging**

sms and mms are available forms of messaging, including threaded text messaging and Android Cloud To Device Messaging (C2DM) and now enhanced version of C2DM, Android Google Cloud Messaging (GCM) is also a part of Android Push Messaging services. Android phones also have the ability to send and receive RCS via the messages app (if supported by the carrier).

**Auto Correction and Dictionary**

Android Operating System has an interesting feature called Auto Correction. When any word is misspelled, then Android recommends the meaningful and correct words matching the words that are available in Dictionary. Users can add, edit and remove words from Dictionary as per their wish

**Web browser**

The web browser available in Android is based on the open-source Blink (previously [WebKit](https://en.wikipedia.org/wiki/WebKit)) layout engine, coupled with [Chromium](https://en.wikipedia.org/wiki/Google_Chromium)'s [V8 JavaScript engine](https://en.wikipedia.org/wiki/V8_JavaScript_engine). Then the WebKit-using Android Browser scored 100/100 on the [Acid3](https://en.wikipedia.org/wiki/Acid3#Mobile_browsers) test on Android 4.0 ICS; the Blink-based browser currently has better standards support. The old web browser is variably known as 'Android Browser', '[AOSP](https://en.wikipedia.org/wiki/Android_Open_Source_Project) browser', 'stock browser', 'native browser', and 'default browser' (from the time it was always the default). Starting with Android 4.4 KitKat, Google has begun licensing [Google Chrome](https://en.wikipedia.org/wiki/Google_Chrome) (a proprietary software) separately from Android, but usually bundled with (what most device vendors did). Since Android 5.0 Lollipop, the WebView browser that apps can use to display web content without leaving the app has been separated from the rest of the Android firmware in order to facilitate separate security updates by Google.

**Voice-based features**

Google search through voice has been available since initial release. Voice actions for calling, texting, navigation, etc. are supported on Android 2.2 onwards. As of Android 4.1, Google has expanded Voice Actions with ability to talk back and read answers from Google's Knowledge Graph when queried with specific commands. The ability to control hardware has not yet been implemented.

**Multi-touch**

Android has native support for [multi-touch](https://en.wikipedia.org/wiki/Multi-touch) which was initially made available in handsets such as the [HTC Hero](https://en.wikipedia.org/wiki/HTC_Hero). The feature was originally disabled at the kernel level (possibly to avoid infringing Apple's patents on touch-screen technology at the time).

Google has since released an update for the [Nexus One](https://en.wikipedia.org/wiki/Nexus_One) and the [Motorola Droid](https://en.wikipedia.org/wiki/Motorola_Droid) which enables multi-touch natively.

**Multitasking**

Multitasking of applications, with unique handling of memory allocation, is available.

**Screen capture**

Android supports capturing a [screenshot](https://en.wikipedia.org/wiki/Screenshot) by pressing the power and home-screen buttons at the same time.[[11]](https://en.wikipedia.org/wiki/List_of_features_in_Android#cite_note-11) Prior to Android 4.0, the only methods of capturing a screenshot were through manufacturer and third-party customizations (apps), or otherwise by using a PC connection (DDMS developer's tool). These alternative methods are still available with the latest Android

.

**TV recording**

Android TV supports capturing [video](https://en.wikipedia.org/wiki/Video) and replaying it.

**Video calling**

Android does not support native video calling, but some handsets have a customized version of the operating system that supports it, either via the [UMTS](https://en.wikipedia.org/wiki/UMTS) network (like the [Samsung Galaxy S](https://en.wikipedia.org/wiki/Samsung_Galaxy_S)) or over IP. Video calling through Google Talk is available in Android 2.3.4 (Gingerbread) and later. Gingerbread allows [Nexus S](https://en.wikipedia.org/wiki/Nexus_S) to place Internet calls with a SIP account. This allows for enhanced VoIP dialing to other SIP accounts and even phone numbers. Skype 2.1 offers video calling in Android 2.3, including front camera support. Users with the [Google+ Android app](https://play.google.com/store/apps/details?id=com.google.android.apps.plus&hl=en) can perform video chat with other Google+ users through [Hangouts](https://www.google.com/+/learnmore/hangouts/).

**Multiple language support**

Android supports multiple languages.

**Accessibility**

Built-in text-to-speech is provided by *TalkBack*  for people with low or no vision. Enhancements for people with hearing difficulties are available, as are other aids.

**III.5.4. Android IDEs**

There are so many sophisticated Technologies are available to develop android applications, the familiar technologies, which are predominantly using tools as follows

* [Android Studio](https://www.tutorialspoint.com/android/android_studio.htm)
* Eclipse IDE(Deprecated)

[**Android Studio**](https://www.tutorialspoint.com/android/android_studio.htm)

Android Studio is an IDE based on IntelliJ IDEA used for android application development. It is released on 15th may 2013. This tool has more options for Android Development, making the process faster and more productive. A “live layout” was shown that renders your app as you’re editing in real-time.Prior to Android Studio, developers were relying only on the open source eclipse as IDE with ADT plugin for android development. Due to this android was always falling back compared Apples xCode IDE for iOS based development. After android studio release Google can equally bet with iOS platform in terms of development assets. Now let’s see more of the IDE capabilities.

**Android Studio Features**

Android studio is based on IntelliJ IDEA, which does all the functionality that Eclipse with ADT plug-in do, with lot more additional features. The initial version of android studio offers

1. Gradle-based build support.
2. Android-specific refactoring and quick fixes
3. Lint tools to catch performance, usability, version compatibility and other problems
4. ProGuard and app-signing capabilities
5. Template-based wizards to create common Android designs and components.
6. A rich layout editor: it allows you to drag-and-drop UI components, preview layouts on multiple screen configurations. Preview appears instantly as you change in the layout editor. You can choose a language, and can see the preview of layout with that locale.
7. Rich Color Preview editor: While adding colors as a resource, and we can see the color preview at the left hand side of the editor.
8. Deep Code Analysis: If you point to a line and it gives detailed explanation about an exception based on the annotation added. And you can also know which constants are allowed for which API. It also has the powerful code completion. You can also inspect code in whole project, InteliJ lists all Lint errors during code inspection.

**III.5.5. PHP (PHP-5.0)**

PHP is a widely-used Open Source general-purpose scripting language that is especially suited for Web applications and can be embedded into HTML. It is a free software. Its syntax draws upon C, Java, and Perl, and is easy to learn. The main goal of the language is to allow web developers to write dynamically generated web pages quickly. One of the most important factors driving PHP’s popularity over the last couple of years has been its support for a variety of databases, including MySQL, Oracle, and Microsoft Access. One of the most powerful combinations in the open source arena today is the PHP/ MySQL combination. Like PHP, MySQL has open-source roots: it is a fast and reliable database management system that is rapidly acquiring a worldwide user base. By using PHP and MySQL together, users can benefit from the cost savings that accompany community-driven software, and also leverage off the immense number of freely available PHP/MySQL applications to reduce development time.Typically, PHP code is embedded inside a regular HTML document, and is recognized and executed by the web server when the document is requested through a browser. Because PHP is a full-featured programming language, you can code all manner of complex thin gummies into your web pages using this technique; the server will execute your code and return the output to the browser in the format you specify. Because PHP code is executed on the server and not on the client, developers don’t have to worry about browser-specific quirks that could cause the code to break (as commonly happens with JavaScript); PHP code works independently of the user’s web browser.

**Characteristics of PHP**

* Simplicity
* Efficiency
* Security
* Flexibility
* Familiarity

In order to develop and run PHP Web pages three vital components need to be installed on your computer system.

* **Web Server** − PHP will work with virtually all Web Server software, including Microsoft's Internet Information Server (IIS) but then most often used is freely available Apache Server. Download Apache for free here − <https://httpd.apache.org/download.cgi>
* **Database** − PHP will work with virtually all database software, including Oracle and Sybase but most commonly used is freely available MySQL database. Download MySQL for free here − <https://www.mysql.com/downloads/>
* **PHP Parser** − In order to process PHP script instructions a parser must be installed to generate HTML output that can be sent to the Web Browser. This tutorial will guide you how to install PHP parser on your computer.

**Identifying Browser & Platform**

PHP creates some useful environment variables that can be seen in the phpinfo.php page that was used to setup the PHP environment.

One of the environment variables set by PHP is HTTP\_USER\_AGENT which identifies the user's browser and operating system.

PHP provides a function getenv() to access the value of all the environment variables. The information contained in the HTTP\_USER\_AGENT environment variable can be used to create dynamic content appropriate to the browser.

**Browser Redirection**

The PHP header() function supplies raw HTTP headers to the browser and can be used to redirect it to another location. The redirection script should be at the very top of the page to prevent any other part of the page from loading .The target is specified the Location: header as the argument to the header() function. After calling this function the exit() function can be used to halt parsing of rest of the code.

**III.5.6.Frame Work**

Most of the frameworks are reliability, consistence and time saver. Some of the innovative frameworks are having the rich set of functionalities, so developer no need to write whole code, Developers needs to access the code by using framework and develop a PHP web application. Frameworks don't give the solutions for bad code writers, but it gives reliability while writing code.

## frame works

### FuelPHP

Fuel PHP works based on Model View Control and having innovative plug ins. FuelPHP supports router based theory where you might route directly to a nearer the input uri, making the closure the controller and giving it control of further execution.

### CakePHP

Cake PHP is a great source to build up simple and great web application in an easy way. Some great feature which are inbuilt in php are input validation, SQL injection prevention that keeps you application safe and secure.

**Features**

* Build Quickly
* No need to configure
* MIT licence
* MVC Model

### FlightPHP

Flight PHP is very helpful to make RESTful web services and it is under MIT licence.

### Laravel

Laravel is most useful for RESRful Routing and light weight bled tempting engine. Laravel has integrated with some of great components of well tested and reliable code.

### Agavi

Agavi is a powerful frame work and follows MVC model. It enables to developer to write clean and maintainable code.

### Codeigniter

Codeigiter is simple to develop small fool print for developer who need simple and elegant tool kit to create innovative web applications.

### Phalcon PHP

Pholcon PHP works based on MVC and integrated with innovative architecture to do perform faster.

### Zend

Zend is Modern frame work for performing high end web applications. This works based on Cryptographic and secure coding tools.

## PHP Parser Installation

Before you proceed it is important to make sure that you have proper environment setup on your machine to develop your web programs using PHP.Type the following address into your browser's address box.http://127.0.0.1/info.php

If this displays a page showing your PHP installation related information then it means you have PHP and Webserver installed properly. Otherwise you have to follow given procedure to install PHP on your computer.

This section will guide you to install and configure PHP over the following four platforms −

* [PHP Installation on Linux or Unix with Apache](https://www.tutorialspoint.com/php/php_installation_linux.htm)
* [PHP Installation on Mac OS X with Apache](https://www.tutorialspoint.com/php/php_installation_mac.htm)
* [PHP Installation on Windows NT/2000/XP with IIS](https://www.tutorialspoint.com/php/php_installation_windows_iis.htm)
* [PHP Installation on Windows NT/2000/XP with Apache](https://www.tutorialspoint.com/php/php_installation_windows_apache.htm)

### Apache Configuration

If you are using Apache as a Web Server then this section will guide you to edit Apache Configuration Files.

Just Check it here − [PHP Configuration in Apache Server](https://www.tutorialspoint.com/php/php_apache_configuration.htm)

### PHP.INI File Configuration

The PHP configuration file, php.ini, is the final and most immediate way to affect PHP's functionality.

Just Check it here − [PHP.INI File Configuration](https://www.tutorialspoint.com/php/php_ini_configuration.htm)

### Windows IIS Configuration

To configure IIS on your Windows machine you can refer your IIS Reference Manual shipped along with IIS.

**Applications of PHP**

As mentioned before, PHP is one of the most widely used language over the web. I'm going to list few of them here:

* PHP performs system functions, i.e. from files on a system it can create, open, read, write, and close them.
* PHP can handle forms, i.e. gather data from files, save data to a file, through email you can send data, return data to the user.
* You add, delete, modify elements within your database through PHP.
* Access cookies variables and set cookies.
* Using PHP, you can restrict users to access some pages of your website.
* It can encrypt data.

**CHAPTER IV**

**SYSTEM TESTING**

# IV.1 TESTING METHODOLOGIES AND STRATEGIES

Software testing is an integral part of to ensure software quality, some software organizations are reluctant to include testing in their software cycle, because they are afraid of the high cost associated with the software testing .There are several factors that attribute the cost of software testing. Creating and maintaining large number of test cases is a time consuming process.

Furthermore, it requires skilled and experienced testers to develop great quality test cases.

Even with the wide availability of automation tools for testing, the degree of automation mostly remains at the automated test script level and generally significant amount of human intervention is required in testing. In addition data collected, as testing is conducted provides a good indication of software quality as a while. The debugging process is the most unpredictable part of testing process. Testing begins at the module level and work towards the integration of entire computer based system. No testing is completed without verification and validation part.

The goal of verification and validation activities are to access and improve the quality of work products generated during the development and modification of the software. Testing plays a vital role in determining the reliability and efficiency of the software and hence is very important stage in software development. Tests are to be conducted on the software to evaluate its performance under a number of conditions. Ideally, it should do so at the level of each module and also when all of them are integrated to form the completed system.In the project ”OEMS” the testing has been successfully handled with the modules. The test data was given to each and every module in all respect and got the desired output. Each module that has been tested is found working properly.

**IV.1.1 Unit Testing**

Here we test each module individually and integrated the overall system. Unit testing focuses verification efforts even in the smallest unit of software design in each module. This is known as ”module testing”. The modules of the ”OEMS” are tested separately. This testing is carried out in the programming style itself. In this testing each module is focused to work satisfactorily as regard to expected output from the module. There are some validation checks for the fields.

Unit testing gives stress on the modules of ”OEMS” independently of one another, to find errors. Different modules are tested against the specifications produced during the design of the modules. Unit testing is done to test the working of individual modules with test servers. Program unit is usually small enough that the programmer who developed it can test it in a great detail. Unit testing focuses first on that the modules to locate errors. These error are verified and corrected and so that the unit perfectly fits to the project.

**IV.1.2 Integration Testing**

Data can be lost across an interface, one module can have an adverse effect on the other sub-functions, when combined they may not perform the desired functions. Integrated testing is the systematic testing to uncover the errors within the interface. This testing is done with simple data and the developed system has run successfully with this simple data. The need for integrated system is to find the overall system performance. The Modules of this project are connected and tested.

After splitting the programs into units, the units were tested together to see the defects between each module and function. It is testing to one or more modules or functions together with the intent of finding interface defects between the modules or functions. Testing completed at as part of unit or functional testing, integration testing can involve putting together of groups of modules and functions with the goal of completing and verifying meets the system requirements.

**IV.1.3 system Testing**

System testing focuses on testing the system as a whole. System Testing is a crucial step in Quality Management Process. In the Software Development Life Cycle, System Testing is the first level where the System is tested as a whole. The System is tested to verify whether it meets the functional and technical requirements. The application/System is tested in an environment that closely resembles the production environment where the application will be finally deployed.

The perquisites for System Testing are:-

* All the components should have been successfully Unit Tested.
* All the components should have been successfully integrated.
* Testing should be completed in an environment closely resembling the production environment. When necessary iterations of System Testing are done in multiple environments.

**IV.1.4 User Acceptance Testing**

The system was tested by a small client community to see if the program met the requirements defined the analysis stage. It was fond to be satisfactory. In this phase, the system is fully tested by the client community against the requirements defined in the analysis and design stages, corrections are made as required, and the production system is built. User acceptance of the system is key factor for success of the system.

# Test case for login page

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Step** | **Expected Result** | **Actual Result** | **Status** |
| Click on the Login button without entering user name or password | Messages like "Please enter User Name" and "Please Enter Password" should appear. | Messages "Please enter User Name" and "Please Enter Password" appear. | Pass |
| Enter a non-existing user name password and click on the Login button | Message like "Invalid User Name" should appear | A message "Invalid User Name" appears | Pass |
| Enter a valid user name but wrong password and click on the Login button | Message like "Wrong Password" should appear | A message "Wrong Password" appears | pass |
| Enter a valid user name and password and click on the Login button | The page should be navigated to the home page | The page is navigated to the home page | pass |

# Test case for registeration page

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Step** | **Expected Result** | **Actual Result** | **Status** |
| Enter all fields and click Register button | The page should navigated to the Login page | The page is navigated to the login page | Pass |
| Enter all fields, but some fields are invalid | Message like "Invalid entry" | A message "Invalid Entry" appears | Pass |
| Click on Register button without filling all fields that are required | Messages like "Please fill all required fields" should appear. | A message "Please fill all required fields" appears | pass |

**CHAPTER V**

**SYSTEM IMPLEMENTATION**

The implementation is one phase of software development. Implementation is that stage in the project where theoretical design is turned into working system. Implementation involves placing the complete and tested software system into actual work environment. Implementation is concerned with translating design specification with source code. The primary goal of implementation is to write the source code to its specification that can be achieved by making the source code clear and straight forward as possible.

Implementation means the process of converting a new or revised system design into operational one. The three types of implementation are:-implementation of a computerized system to replace a manual system, implementation of a new system to replace existing one and implementation of a modified system to replace an existing one .The implementation is the final stage and it is an important phase. It involves the individual programming; system testing, user training, and the operational running of developed proposed system that constitute the application subsystem.

The implementation phase of the software development is concerned with translating design specification in the source code. The user tests the developed system and the changes are according to the needs. Before implementation, several tests have been conducted to ensure no errors encountered during the operation. The implementation phase ends with an evaluation of the system after placing it into operation of time. The validity and proper functionality of all the modules of the developed application is assured during the process of implementation.

Implementation is the process of assuring that the information system is operational and then allowing user to take over its operation for use and evaluation. Implementation is the stage in the project where the theoretical design is turned into a working system. The implementation phase constructs, installs and operated the new system. The most crucial stage in achieving a new successful system is that it works effectively and efficiently.

**CHAPTER VI**

**CONCLUSION**

Nowadays, a lot of documents are produced in paper form but it is obvious, that automatic data recognition systems are very popular. The document is repeatedly copied and changed during subsequent processing steps, so it exists in many different copies. In some applications they can successfully help humans, but in some cases they are useless. Though researchers have suggested various sophisticated ideas and techniques to deal with the recognition of unconstrained and connected characters, practical OCR systems suffer from a lack of such characteristics.

It is because of the claims made by the researchers are not adequately substantiated by exposure of the systems into real working environments/conditions the lack of practical feasibility of such advanced techniques with the available hardware from an economical viewpoint. From these constraints and the lack of performances it can be concluded that the ability to read text by machines with the same fluency as the human remains an unachieved goal, though a great amount of effort has already been expended on the subject.

By handwritten character recognition one means the recognition of single and unconstrained hand drawn characters, i.e. numerals, upper-case and lowercase characters of a particular alphabet. However, the frontiers of character recognition have now moved to the recognition of cursive script that is the recognition of characters which may be connected or written in calligraphy.

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**APPENDIX A**

**APPENDICES**

# A.1 SCREEN SHOTS INPUT FORM, OUTPUT FORMS

**A.1 SCREEN SHOTS**

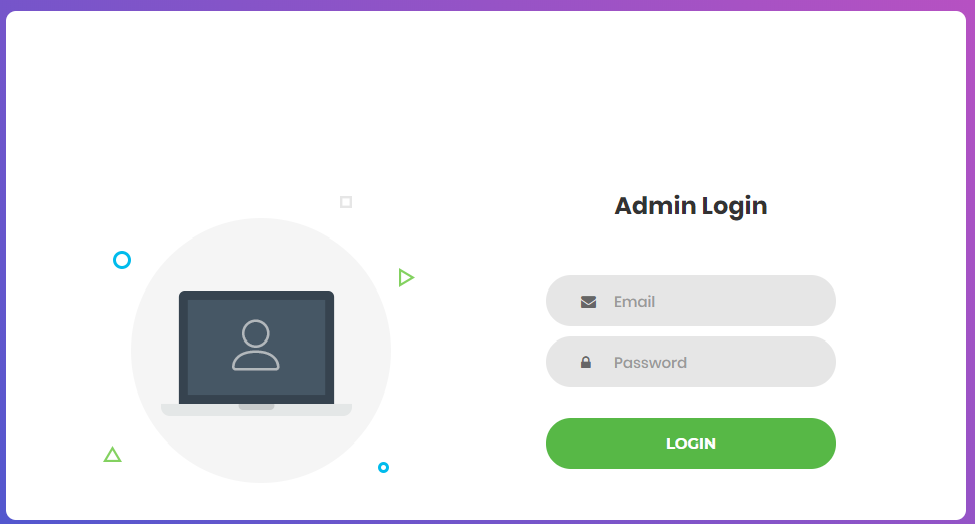
****

Figure A.1: Admin login page

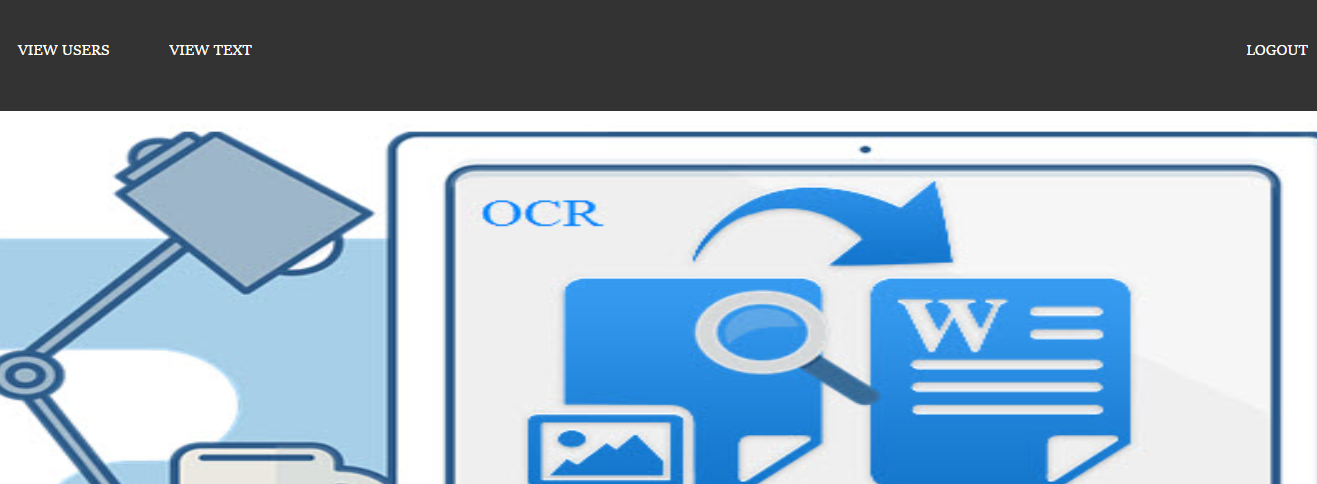


Figure A.2: Admin Home Page

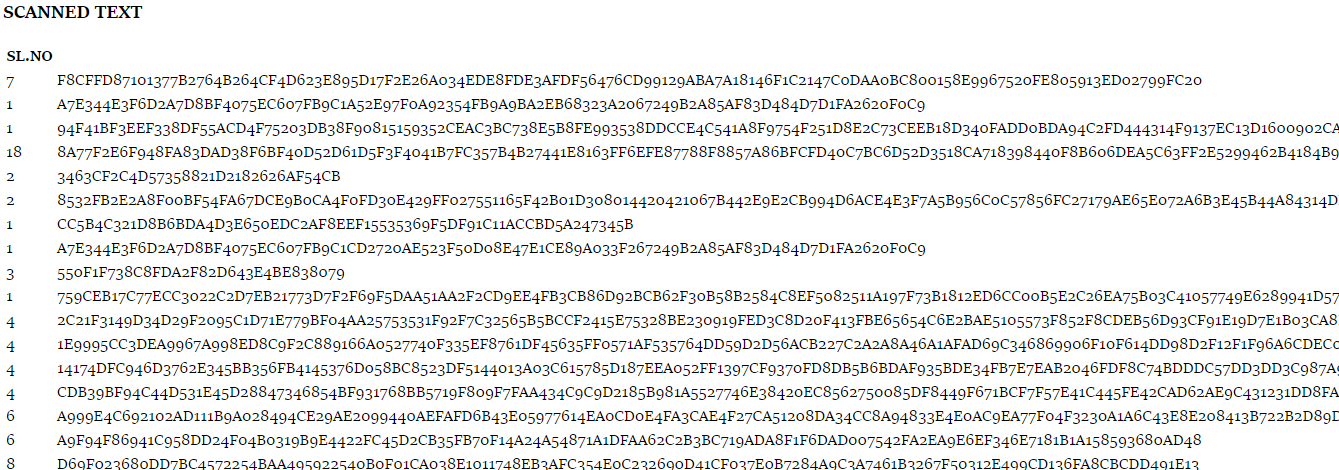


Figure A.3: scan text



Figure A.4:View history



Figure A.5: Front page for users

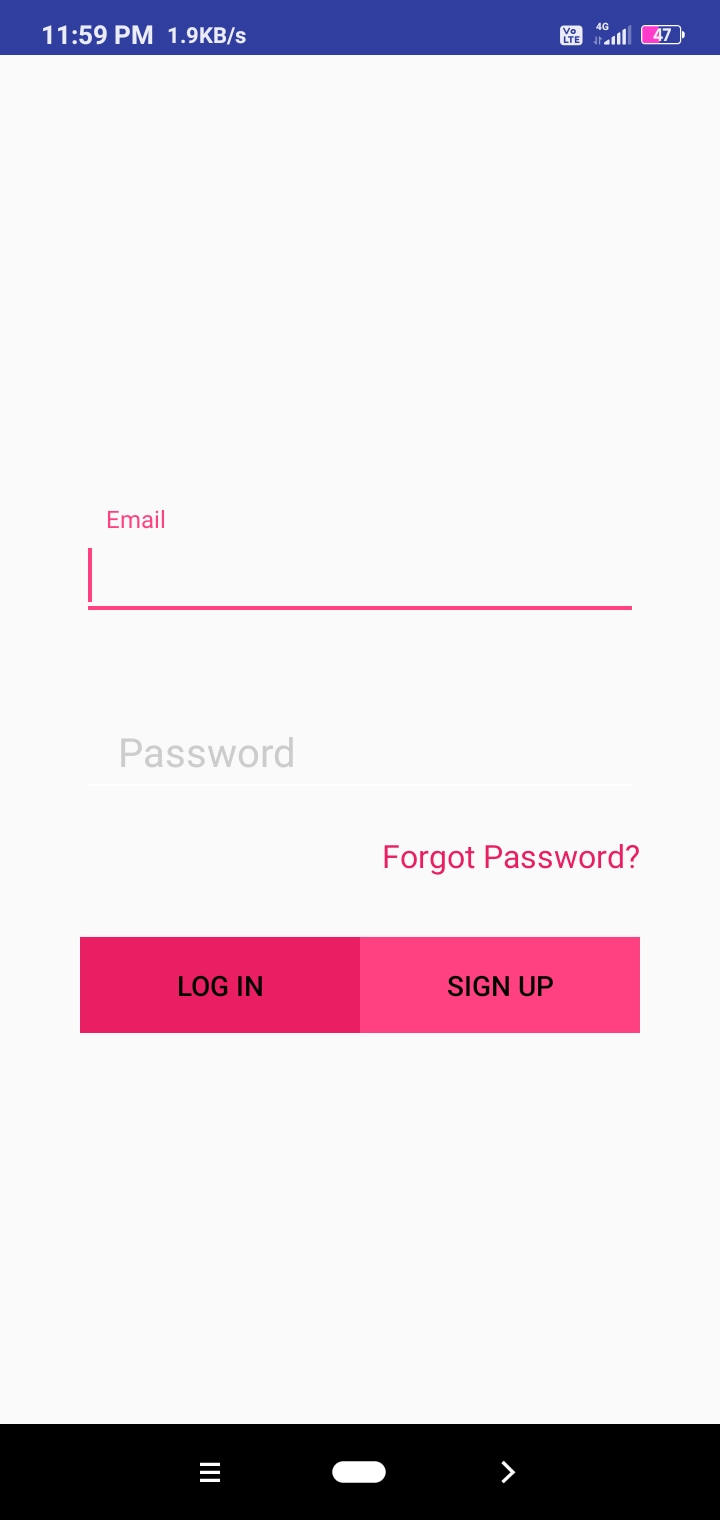


Figure A.6: User login

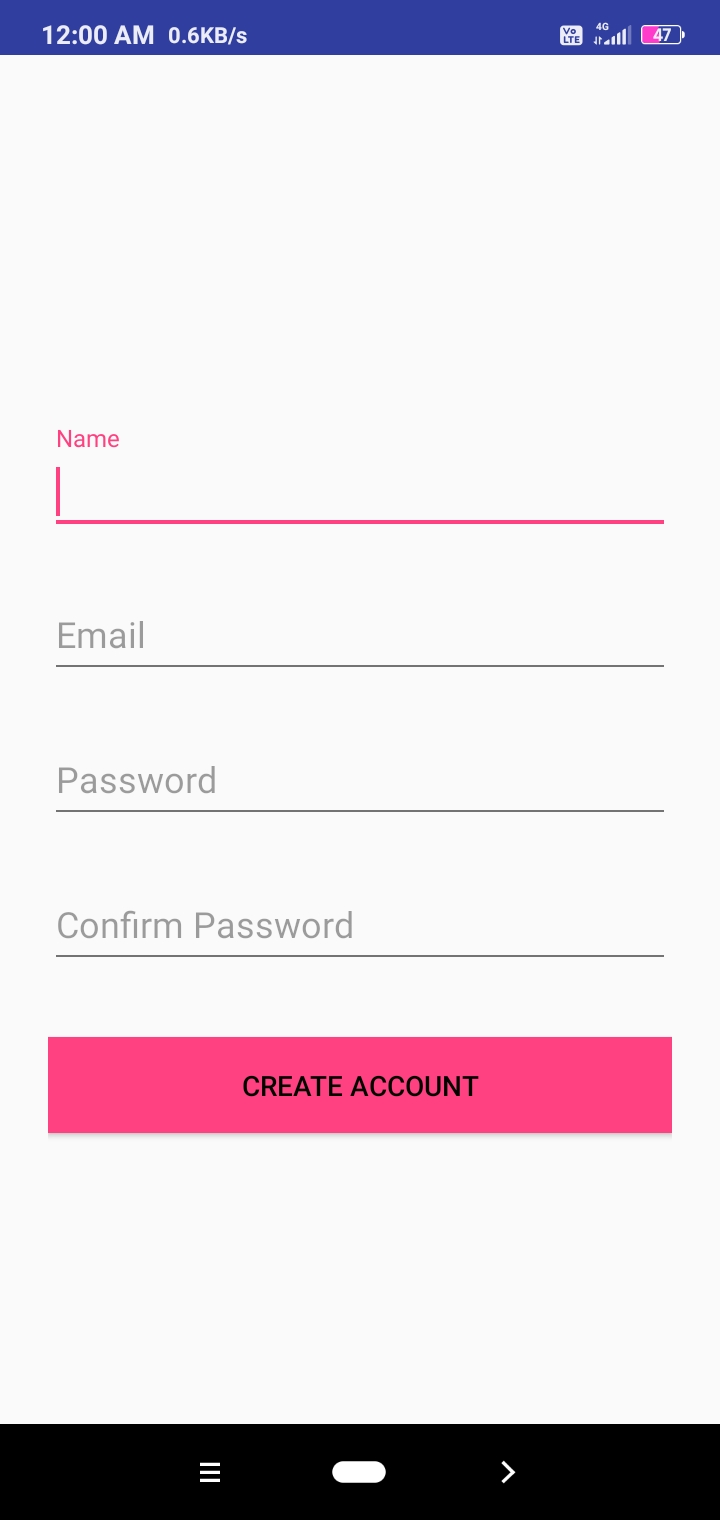


Figure A.7: User Signup

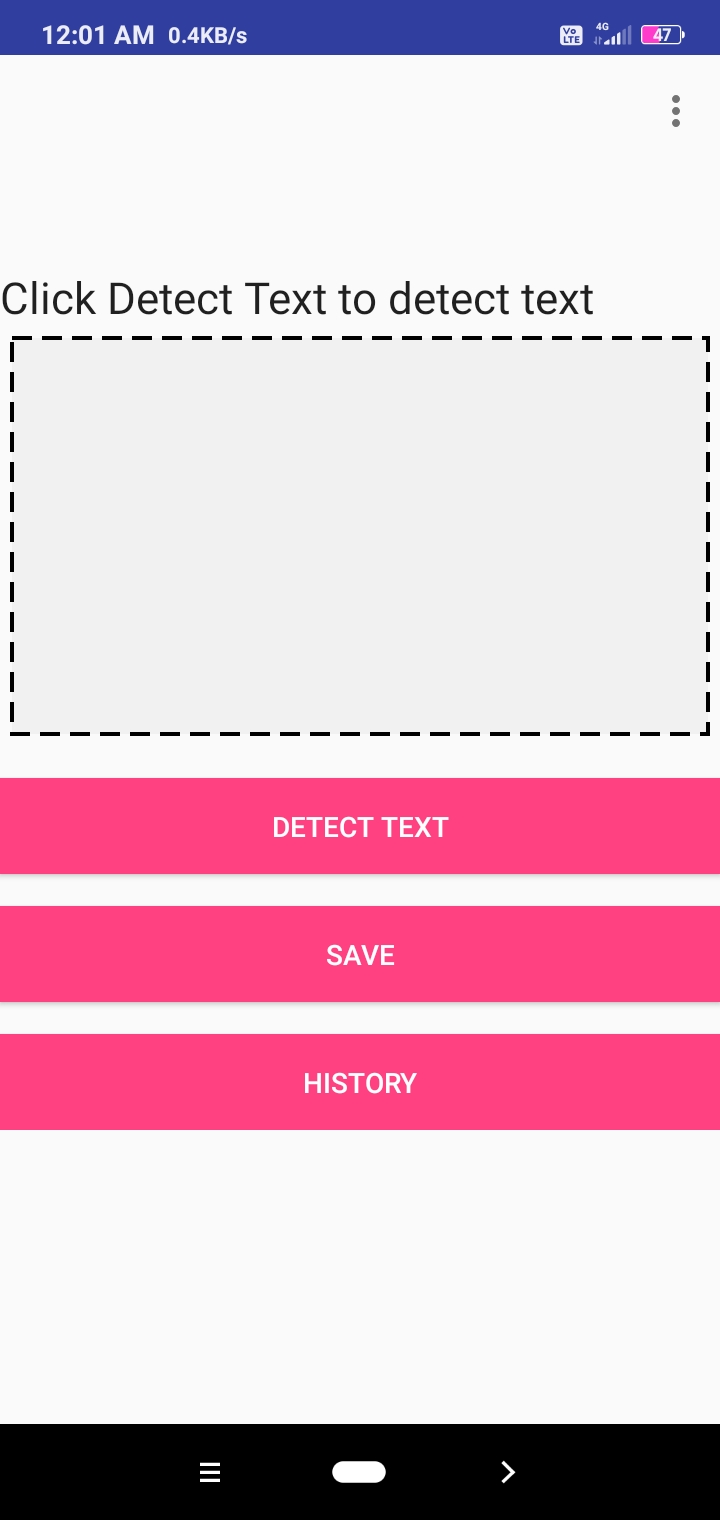


Figure A8:Scan Text



Figure A.9: Detect text



Figure A.10: Encrypted text

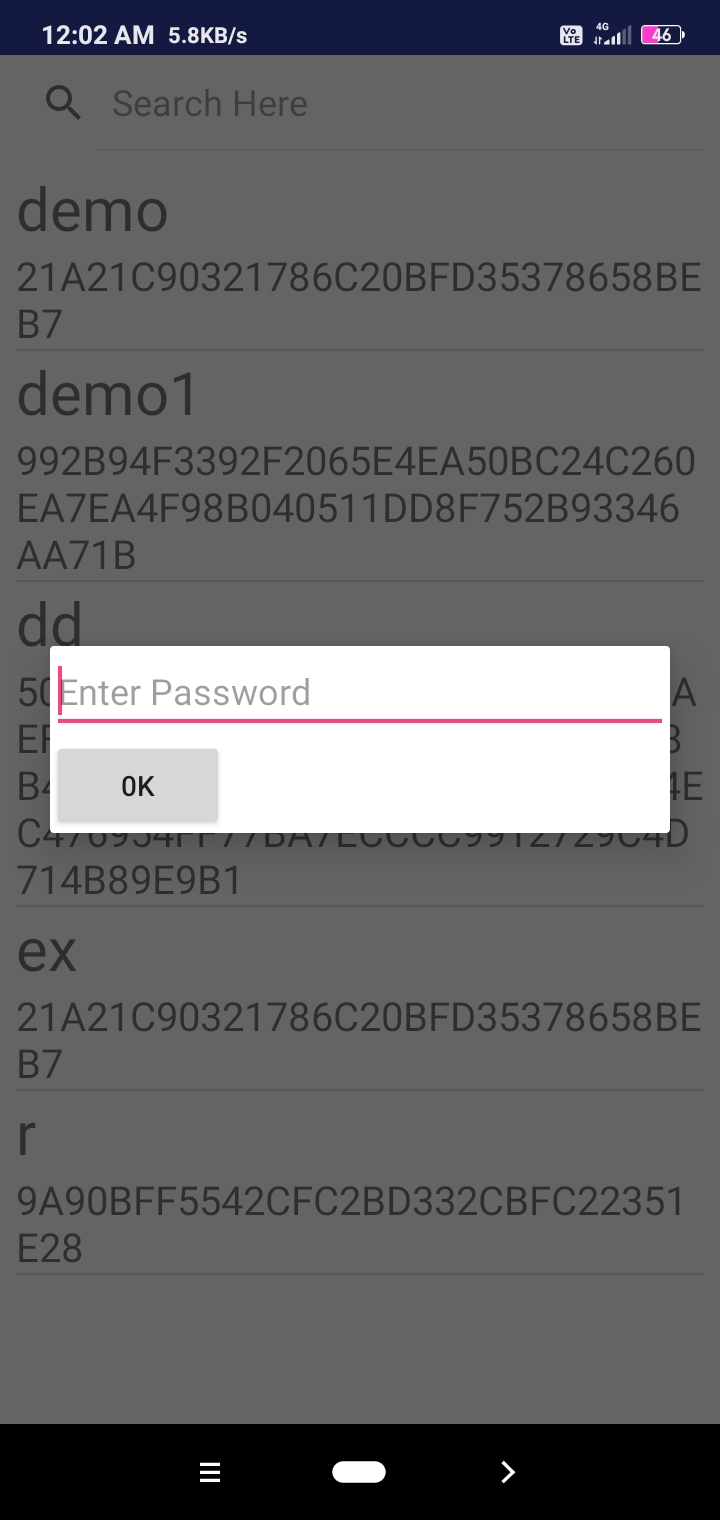


Figure A.11: Enter password

**A.2 SAMPLE CODE**

ocrhistory

import android.content.Context;

import android.content.Intent;

import android.content.SharedPreferences;

import android.os.Bundle;

import android.support.v7.app.AlertDialog;

import android.support.v7.app.AppCompatActivity;

import android.support.v7.widget.SearchView;

import android.text.Editable;

import android.text.TextUtils;

import android.text.TextWatcher;

import android.util.Log;

import android.view.LayoutInflater;

import android.view.View;

import android.view.ViewGroup;

import android.widget.AdapterView;

import android.widget.BaseAdapter;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Filter;

import android.widget.Filterable;

import android.widget.ListView;

import android.widget.TextView;

import android.widget.Toast;import com.example.asus.ocrreaderwithtxttospeech.MainActivity;

import com.example.asus.ocrreaderwithtxttospeech.R;

import com.loopj.android.http.AsyncHttpClient;

import com.loopj.android.http.AsyncHttpResponseHandler;

import com.loopj.android.http.RequestParams;

import org.json.JSONArray;

import org.json.JSONObject;

import java.util.ArrayList;

public class OChist extends AppCompatActivity implements SearchView.OnQueryTextListener {

AsyncHttpClient client;

RequestParams params;

AsyncHttpClient newclient;

RequestParams newparams;

ArrayList<String> details;

ArrayList<ContentTitle> titles;

ArrayList<ContentTitle>orig;

EditText pin;

String itemvalue;

private SearchView mSearchView;

// AsyncHttpClient client1;

// RequestParams params1;

// JSONObject objpin;

// String pinurl="http://srishti-systems.info/projects/ocr/pin.php?id=1&password=1234";

ListView listview;

LayoutInflater inflate;

String url="http://srishti-systems.info/projects/ocr/view\_string.php?";

String newurl="http://srishti-systems.info/projects/ocr/pin.php?id=1&password=1234";

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_ocrhist);

listview = findViewById(R.id.lview);

mSearchView = (SearchView) findViewById(R.id.searchv);

client = new AsyncHttpClient();

params = new RequestParams();

newclient = new AsyncHttpClient();

newparams = new RequestParams();

SharedPreferences sp = getApplicationContext()

.getSharedPreferences("d1", MODE\_PRIVATE);

final String stid = sp.getString("did", null);

details = new ArrayList<>();

orig = new ArrayList<>();

titles = new ArrayList<>();

Log.e("In", "ouut");

params.put("id", stid);

client.get(url, params, new AsyncHttpResponseHandler() {

@Override

public void onSuccess(String content) {

super.onSuccess(content);

try {

Log.e("Inn", "out");

JSONObject jobjmain = new JSONObject(content);

if (jobjmain.getString("status").equals("success")) {

JSONArray jarray = jobjmain.getJSONArray("String\_details");

for (int i = 0; i < jarray.length(); i++) {

JSONObject jobj = jarray.getJSONObject(i);

String st = jobj.getString("string");

String ptitle = jobj.getString("title");

titles.add(new ContentTitle(ptitle, st));

}

}

adapter adp = new adapter(OChist.this, titles);

listview.setAdapter(adp);

listview.setTextFilterEnabled(true);

listview.setTextFilterEnabled(true);

setupSearchView();

// setupSearchView();

} catch (Exception e) {

}

listview.setOnItemClickListener(new AdapterView.OnItemClickListener() {

@Override

public void onItemClick(AdapterView<?> adapterView, View view, int position, long l)

{

int ItemPosition = position;

itemvalue=titles.get(position).getDetails();

LayoutInflater inflat=LayoutInflater.from(OChist.this);

View cuslay=inflat.inflate(R.layout.askpin,null);

pin=cuslay.findViewById(R.id.epin);

Button ok=cuslay.findViewById(R.id.eok);

AlertDialog.Builder AB=new AlertDialog.Builder(OChist.this);

AB.setView(cuslay);

final AlertDialog A=AB.create();

A.show();

ok.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

newparams.put("id", stid);

newparams.put("password", pin.getText().toString());

newclient.get(newurl, newparams, new AsyncHttpResponseHandler() {

@Override

public void onSuccess(String content) {

super.onSuccess(content);

try {

Log.e("innn", "in");

JSONObject newobj = new JSONObject(content);

String s = newobj.getString("status");

Toast.makeText(OChist.this, "" + s, Toast.LENGTH\_SHORT).show();

if (s.equals("Success")) {

String encrypted = itemvalue;

String decrypted = "";

try {

decrypted = AESUtils.decrypt(encrypted);

Log.d("TEST", "decrypted:" + decrypted);

} catch (Exception e) {

e.printStackTrace();

}

Intent myintent=new Intent(OChist.this, MainActivity.class).putExtra("key1", decrypted );

startActivity(myintent);

}

} catch (Exception e) {

}

}

});

}

});

}

});

}

}); }

public class adapter extends BaseAdapter implements Filterable {

public Context context;

public ArrayList<ContentTitle> titles;

public ArrayList<ContentTitle> orig;

public adapter(Context context, ArrayList<ContentTitle> titles) {

super();

this.context = context;

this.titles = titles;

}

public class EmployeeHolder

{

TextView texttitle;

TextView textdetails;

}

public Filter getFilter() {

return new Filter() {

@Override

protected FilterResults performFiltering(CharSequence constraint) {

final FilterResults oReturn = new FilterResults();

final ArrayList<ContentTitle> results = new ArrayList<ContentTitle>();

if (orig == null)

orig = titles;

if (constraint != null) {

if (orig != null && orig.size() > 0) {

for (final ContentTitle g : orig) {

if (g.getTitle().toLowerCase()

.contains(constraint.toString()))

results.add(g);

}

}

oReturn.values = results;

}

return oReturn;

}

@SuppressWarnings("unchecked")

@Override

protected void publishResults(CharSequence constraint,

FilterResults results) {

titles = (ArrayList<ContentTitle>) results.values;

notifyDataSetChanged();

}

};

}

public void notifyDataSetChanged() {

super.notifyDataSetChanged();

}

@Override

public int getCount() {

return titles.size();

}

@Override

public Object getItem(int position) {

return titles.get(position);

}

@Override

public long getItemId(int position) {

return position;

}

@Override

public View getView(final int position, View convertView, ViewGroup parent) {

EmployeeHolder holder;

if(convertView==null)

{

convertView=LayoutInflater.from(context).inflate(R.layout.historylview, parent, false);

holder=new EmployeeHolder();

holder.texttitle=(TextView) convertView.findViewById(R.id.titleid);

holder.textdetails=(TextView) convertView.findViewById(R.id.textview);

convertView.setTag(holder);

}

else

{

holder=(EmployeeHolder) convertView.getTag();

}

holder.texttitle.setText(titles.get(position).getTitle());

holder.textdetails.setText(String.valueOf(titles.get(position).getDetails()));

// convertView.setOnClickListener(new View.OnClickListener() {

// @Override

// public void onClick(View v) {

// Toast.makeText(getApplicationContext(),titles.get(position).getDetails(),Toast.LENGTH\_LONG).show();

// }

// });

return convertView;

}

}

private void setupSearchView()

{

mSearchView.setIconifiedByDefault(false);

mSearchView.setOnQueryTextListener(this);

mSearchView.setSubmitButtonEnabled(true);

mSearchView.setQueryHint("Search Here");

}

@Override

public boolean onQueryTextChange(String newText)

{

if (TextUtils.isEmpty(newText)) {

listview.clearTextFilter();

} else {

listview.setFilterText(newText);

}

return true;

}

@Override

public boolean onQueryTextSubmit(String query)

{

return false;

}

@Override

public void onPointerCaptureChanged(boolean hasCapture) {

}

}

AESutil

import javax.crypto.Cipher;

import javax.crypto.SecretKey;

import javax.crypto.spec.SecretKeySpec;

public class AESUtils

{

private static final byte[] keyValue =

new byte[]{'c', 'o', 'd', 'i', 'n', 'g', 'a', 'f', 'f', 'a', 'i', 'r', 's', 'c', 'o', 'm'};

public static String encrypt(String cleartext)

throws Exception {

byte[] rawKey = getRawKey();

byte[] result = encrypt(rawKey, cleartext.getBytes());

return toHex(result);

}

public static String decrypt(String encrypted)

throws Exception {

byte[] enc = toByte(encrypted);

byte[] result = decrypt(enc);

return new String(result);

}

private static byte[] getRawKey() throws Exception {

SecretKey key = new SecretKeySpec(keyValue, "AES");

byte[] raw = key.getEncoded();

return raw;

}

private static byte[] encrypt(byte[] raw, byte[] clear) throws Exception {

SecretKey skeySpec = new SecretKeySpec(raw, "AES");

Cipher cipher = Cipher.getInstance("AES");

cipher.init(Cipher.ENCRYPT\_MODE, skeySpec);

byte[] encrypted = cipher.doFinal(clear);

return encrypted;

}

private static byte[] decrypt(byte[] encrypted)

throws Exception {

SecretKey skeySpec = new SecretKeySpec(keyValue, "AES");

Cipher cipher = Cipher.getInstance("AES");

cipher.init(Cipher.DECRYPT\_MODE, skeySpec);

byte[] decrypted = cipher.doFinal(encrypted);

return decrypted;

}

public static byte[] toByte(String hexString) {

int len = hexString.length() / 2;

byte[] result = new byte[len];

for (int i = 0; i < len; i++)

result[i] = Integer.valueOf(hexString.substring(2 \* i, 2 \* i + 2),

16).byteValue();

return result; }

public static String toHex(byte[] buf) {

if (buf == null)

return "";

StringBuffer result = new StringBuffer(2 \* buf.length);

for (int i = 0; i < buf.length; i++) {

appendHex(result, buf[i]);

}

return result.toString();

}

private final static String HEX = "0123456789ABCDEF";

private static void appendHex(StringBuffer sb, byte b) {

sb.append(HEX.charAt((b >> 4) & 0x0f)).append(HEX.charAt(b & 0x0f));

}

}

forget pass

import android.support.design.widget.TextInputLayout;

import android.support.v7.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.Toast;

import com.example.asus.ocrreaderwithtxttospeech.R;

import com.loopj.android.http.AsyncHttpClient;

import com.loopj.android.http.AsyncHttpResponseHandler;

import com.loopj.android.http.RequestParams;

import org.json.JSONException;

import org.json.JSONObject;

public class Forget\_password extends AppCompatActivity {

TextInputLayout forpass;

Button recover;

AsyncHttpClient client;

RequestParams params;

JSONObject object;

String url="http://srishti-systems.info/projects/ocr/forget\_password.php?email=adarshnair.sics@gmail.com";

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_forget\_password);

forpass=findViewById(R.id.forgetp);

recover=findViewById(R.id.proceed);

client=new AsyncHttpClient();

params=new RequestParams();

recover.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

final String st\_emaill=forpass.getEditText().getText().toString();

params.put("email",st\_emaill);

client.get(url,params,new AsyncHttpResponseHandler()

{

@Override

public void onSuccess(String content) {

super.onSuccess(content);

try {

object=new JSONObject(content);

if(st\_emaill.isEmpty()){

Toast.makeText(getApplicationContext(),"Enter Registered email",Toast.LENGTH\_SHORT).show();

}

else if(object.getString("status").equals("Success"))

{

Toast.makeText(Forget\_password.this, "" + object.getString("status")+" Check your Email", Toast.LENGTH\_SHORT).show(); }

else if(object.getString("status").equals("Email couldnot found"))

{

Toast.makeText(Forget\_password.this, "" + object.getString("status"), Toast.LENGTH\_SHORT).show();

} } catch (JSONException e) {

e.printStackTrace();

}

}

}

);

}

});

}

}