Android Vendor Training

Submitted in partial fulfilment of the requirements

of the degree of

BACHELOR OF ENGINEERING

in

INFORMATION TECHNOLGY

(A.Y. 2015-2016)

by

Varsha Jha (28)
Aditya Nalge (42)
Rushabh Patel (69)

Under the Guidance of

Mrs. Vandana Munde

Assistant Professor, IT Department, TCET

University of Mumbai

Department of Information Technology

TCET

DEPARTMENT OF INFORMATION TECHNOLOGY (IT)

Credit Based Grading Scheme(Revised - 2012) - University of Mumbai

CBGS-2012(R)

Project Report Approval for Bachelor of Engineering

This project report entitled ***Android Vendor Training*** by ***Varsha Jha, Aditya Nalge and Rushabh Patel*** is approved for the degree of ***BACHELOR OF ENGINEERING in INFORMATION TECHNOLOGY***.

Signature :----------
Name : Mrs. Vandana Munde
Assistant Professor - IT

Signature :----------
Name : Dr. Vinayak A. Bharadi
HOD-IT

Signature: ----------
Name : Dr. B. K. Mishra
Principal,
Thakur College of Engineering and Technology.

Examiners

1. Signature :----------
   Name :
2. Signature :----------
   Name :

Date: 23rd April 2016

Place: Mumbai

Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

(Signature)

1. Varsha Jha (28)
2. Aditya Nalge (42)
3. Rushabh Patel (69)

Date: 23rd April 2016

Place: Mumbai

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CERTIFICATE

This is to certify that Varsha Jha, Aditya Nalge and Rushabh Patel are a bonafide students of Thakur College of Engineering and Technology, Mumbai. They have satisfactorily completed the requirements as prescribed by University of Mumbai while working on "Android Vendor Training".

Mrs. Vandana Munde	**Dr. Vinayak Bharadi**	**Dr. B. K. Mishra**
(Guide)	**(HOD IT)**	**(Principal)**

Internal Examiner	**External Examiner**
(Name and Signature with Date)	**(Name and Signature with Date)**

Thakur College of Engineering and Technology
Kandivali(E), Mumbai-400101.

Date: 23rd April 2016

Place: Mumbai

ABSTRACT

As we all know smart phones are more common than computers today. Almost everyone in the world makes regular use of smart phones in their day to day lives. People can get a lot of different benefits from smart phones and that too in a very portable manner. According to the Technology and Telecommunications statistics mobile phone users in India is forecast to reach 683.4 million users. This has urged almost all professional organizations with websites to also develop an app with the aim of achieving the goal of reaching maximum number of users.

With the recent advancement in android development and considering how easy it has become to develop an android application, almost every task in our day to day lives can be made easier with the help of android applications. As a result developers have been motivated to develop better and faster each day to stay ahead of the competition. It would be rational to say that there is an android app for everything right from booking movie tickets to internet banking. This has created huge demand as well as various opportunities for android app developers. We sincerely believe that taking up a project related to any technology is the fastest way to learn and master the technology. This was one of the main reasons we chose android app development to be at the centre of our project as we believed it would help us expand our android skills.

Vendors of the start-up need an application which helps them develop new hard and soft skills in order to improve their service delivery. The main objective of this app is to create an encyclopaedic data for technicians which would contain a large number of skill enhancing tools. A technician who uses the app would be able to learn about the different tasks he has to perform and enhance his soft as well as hard skills. So objective of our android application is to create an android application for vendors which would contain a large number of skill enhancing tools.

List of Contents

List of Figures

List of Tables

Chapter 1

Introduction

Introduction

The next generation open operating systems are not on desktops or mainframes but on the small mobile devices people carry every day. The openness of these new environments leads to new applications and markets and enables greater integration.

The Personal Computer and the Internet have found revolutionary ways to connect people, to entertain them and let them exchange information. But none of these is able to reach each person anywhere and anytime like the cell phone does. Current global mobile phone usage is 4 billion, which is equivalent to around half of the world's population. The cell phone has become very important in today's society. Google has come out with the new open and comprehensive platform for mobile devices called Android. It includes an operating system, middleware, user-interface and applications. It is manufacturer spanning and able to run on every cell phone. By 2014 mobile internet usage should take over Desktop internet usage. Google's approach is to develop an operating system which can run on every mobile device and not for their specific mobile devices itself, enables them to reach as many people as possible.

The recent demand in the android application market is for professional consumer service platform that provides you hassle free, punctual and transparent utility services at your doorstep. The project focuses on developing an android for connecting household services provider's vendors to enhance their educational skill, so that the household services seekers get the best service by the respective companies. So the main objective of our android application is to create an encyclopedia for vendors which would contain a large number of skill enhancing tools

1.1 Problem Definition

Technicians employed by the startup need an app which would help them to learn new skills while improving their existing skills. It is a new start up which aims at providing technicians to house hold in the fastest possible way by making it easier for the technicians as well as the clients to connect with each other.

The main objective of this app is to create an encyclopedic data for technicians which would contain a large number of skill enhancing tools.

A technician who uses the app would be able to learn about the different tasks he has to perform. It will be easier to train technicians with the help of the application through visual representations. Everything the technicians need to learn will be present at their fingertips.

The startup aspires to provide vocational training in all women centered services like house-keeping, beauticians, chef etc. and then create a marketplace for discovery of these services by end users. The project focuses on developing an android for connecting household services provider's vendors to enhance their educational skill, so that the household services seekers get the best service by the respective companies.

1.2 Aim

The aim of this project is to provide the startup DIDI an android application that will help them to train their vendors easily in their respective field.

1.3 Scope

Urbanity Multisolutions Private Limited (brand name DIDI) is a start-up in the vocational education and service delivery space. The startup aspires to provide vocational training in all women centered services like house-keeping, beauticians, chef etc. and then create a marketplace for discovery of these services by end users.

Basically, vendors of the start-up need an application which helps them develop new hard and soft skills in order to improve their service delivery.

The main objective of this app is to create an encyclopedic data for technicians which would contain a large number of skill enhancing tools. A technician who uses the app would be able to learn about the different tasks he has to perform. The tools required for these tasks, as well as the names of these tools along with the method of using these tools will be listed. Another section of the app would help them learn basic English phrases which they can use while conversing with the clients.

1.4 Motivation

Android is recently growing Operating System area in communication technology and distributed network. Due to Android, it has now become possible for the technology to reach most of the areas which cannot be visited on a daily basis as it covers 60% of the market share. A recent survey of 2015 has revealed that 81% people having access to new mobile technologies are using android OS in their personal mobile devices.

This gives the developer in android community huge business opportunity for creating and testing their apps through challenging environment. So, in today's world it is safe to say the biggest trending OS is surviving not only by its users but also its developers contributing to its improvement.

Chapter 2

Review of Literature

2.1 Literature Review

2.1.1. PAPER 1 [1]

Data Mining Techniques for Detecting Household Characteristics based on Smart Meter Data by Krzysztof Gajowniczek and Tomasz Ząbkowski.

Abstract:

The main goal of this research is to discover the structure of home appliances usage patterns, hence providing more intelligence in smart metering systems by taking into account the usage of selected home appliances and the time of their usage.

In particular, we present and apply a set of unsupervised machine learning techniques to reveal specific usage patterns observed at an individual household. The work delivers the solutions applicable in smart metering systems that might: (1) contribute to higher energy awareness; (2) support accurate usage forecasting; and (3) provide the input for demand response systems in homes with timely energy saving recommendations for users.

The results provided in this paper show that determining household characteristics from smart meter data is feasible and allows for quickly grasping general trends in data.

Tools for visualization of electricity consumption providing instantaneous consumption data, often through suggesting ambient displays aiming at emotional reactions

2.1.2. PAPER 2 [2]

Accelerating growth: Startup accelerator programs in the United States by Ian Hathway

Abstract:

A convergence of factors in information technology and capital markets have helped propel a boom in venture capital-backed startups in recent years. While well-established regions such as San Francisco-Silicon Valley, Boston-Cambridge, and New York account for the lion's share of startup activity and funding, significant evidence suggests that a non-trivial amount of early stage capital is dispersing geographically throughout the United States.

As startups begin to proliferate beyond the traditional technology centers, regional and national leaders are increasingly looking to these companies as a source of economic growth. As they do, officials are confronted with the reality that innovation-driven entrepreneurship differs markedly from traditional small business activity, which means that cultivation strategies are radically different.

In this regard, regional development leaders need to recognize that ideas, talent, capital, and a culture of openness and collaboration are all vital to regional startup communities, which are best thought of as innovation ecosystems involving complex interaction among entrepreneurs, investors, suppliers, universities, large existing businesses, and a host of supporting actors and organizations.

Among the latter set of entities, startup "accelerators" are one of the newest, and most widely touted, and it is these somewhat misunderstood organizations that are the subject of this discussion. Accelerators have become increasingly popular elements of the regional growth infrastructure, and are viewed as playing a key role in the scaling-up of growth-oriented entrepreneurial ventures—including by federal, state, and local government. For those reasons, they are worthy of assessment.

2.1.3. PAPER 3 [3]

The Benefits of using Dynamic Simulation and Training Systems for expanding Operator Knowledge and Understanding by Schneider Electric

Abstract:

Dynamic Simulation and Operator Training Systems (OTS) have been available in the marketplace for a long time. However, over the last five years the improvements in technology — the computers, the software and the market understanding —have meant that the use of OTS has become a reality for many processes. No longer are Training Simulators primarily the realm of airline pilots, nuclear systems and astronauts, but now they are available for processes such as FPSOs, LNG terminals, GTL plants, refineries, etc. In the last few years, Invensys has become the new "Tier 1" OTS supplier to the Process and Power Industries, leading the market with the new software - DYNSIM® in the SIM4ME™ Environment. SimSci OTSs have been used worldwide on large-scale projects for not only thoroughly checking the control system configurations in integrated systems before they are applied to the actual plant, but also for training the operators, instructors and plant management in how to best operate their facilities. Plant management has found that a relatively small investment in an SimSci OTS can save hundreds of thousand of dollars with paybacks measured in weeks or months. OTSs have been used to uncover any control system configuration, graphic or logic errors that might lead to unit trips, equipment damage, or other events that would result in an extension of the planned outage window associated with the upgrade effort. This paper describes the project justifications, model development process, and the Control System team integration processes that have been used on SimSci OTS Projects

2.2 Gap Identified

The existing system does not provide the basic learning (hands on application) to all the vendors in their specialized profession. Also the vendors have no proper access to an application that provides information about their filed in a descriptive manner.

2.3 Proposed Work

A web based android application that provides basic training to vendors in their field profession through simple interfaces.

The reasons behind proposing this application are as follows:

a) Workers performing service or maintenance on machinery and equipment are exposed to injuries from the unexpected energization, start-up of the machinery or equipment, or release of stored energy in the equipment.
b) Workers are having no clear knowledge about the tools or equipment's.
c) As English has become an integral part of our day to day life, the workers that are not literate have problems in conversing or describing their tools to the customers
d) To prevent the unexpected energization or startup of machines and equipment, or release of stored energy, in order to prevent workplace injuries during service and maintenance operations

So by understanding all the above problem we have propose and application named as AVT (Android Vendor Training) that incorporates all the above gaps identified.

It includes both the hard skills and soft skills related to all the vendors in DIDI startup for example for a carpenter the basic tools are chisel, blade, saw, etc. so the app will include pictures of all the tools and a brief description of the same.

Chapter 3

Analysis, Planning and Requirement

3.1 Functional Requirement

As the name implies, **Functional requirements** describe the functionality of the product. They describe exactly what tasks the software must perform. Functional requirements define the scope of the system, the product boundaries, and its connections to adjacent systems.

- The system shall display the basic elements of all professional technician fields.
- The system shall display the development of each technician i.e. number of tutorials completed by them.
- The system shall allow the technician to send notification messages to their respective manager after completion of one course.
- The system shall allow the technician to post a classified by providing title, price, location, description, state/area, uploading a picture, and selecting a category.
- The system shall allow the rating of technicians on a scale of 1-5.
- The system shall allow the users to Search Classifieds by Keyword, Category, and Occupation.

3.2 Non Functional Requirement

Support for Operating System Versions: We would develop our application that would support the most common OS and as well as is the new trend in the android application market so that the application is configurable on most of the mobile phones. We would avoid extensive use of third party libraries

Media capabilities: Our application would support audio/video formats (such as 3GP, MP3, MP4). In most cases we will also need programmatic access to these features, therefore also we would ensure that there is SDK support available to operate these features from within our application code.

Maintainability: We would try our best to keep the app updated as per the organization demand so that the users accessing the application aren't bored of the same training provided to them.

Back-Up Time: We will backup all our application data on our drive time to time, so that if there are any system failures, we would recover them easily.

3.3 Feasibility Study

Feasibility study is required to understand a correctness and accuracy of the System requirements being stated. For feasibility analysis, some understanding of the major requirements for the system is essential.

A feasibility study aims to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats present in the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained.

Three key considerations involved in the feasibility analysis are:

3.3.1 Time Feasibility:

A project will fail if it takes too long to be completed before it is useful. Typically this means estimating how long the system will take to develop, and if it can be completed in a given time period using some methods like payback period.

The project is divided into various phases and scheduled accordingly. As per the learning the project requires a lot of information gathering and implementation is on an easier end. So, the project is time feasible as the group is working in coordination to achieve the goal and discussion about the work is held every week.

3.3.2 Technical Feasibility:

Technical feasibility is one of the first studies that must be conducted after the project has been identified. In large engineering projects consulting agencies that have large staffs of engineers and technicians conduct technical studies dealing with the projects. In individual agricultural projects financed by local agricultural credit corporations, the technical staff composed of specialized agricultural engineers, irrigation and construction engineers, and other technicians are responsible for conducting such feasibility studies.

This assessment is based on an outline design of system requirements, to determine whether the company has the technical expertise to handle completion of the project. The technical feasibility assessment is focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected needs of the proposed system. It is an evaluation of the hardware and software and how it meets the need of the proposed system

The project is application based project and requires only software for development. The project requires few software namely android studio manager and Java SDK.

3.3.3 Economic Feasibility:

The purpose of the economic feasibility assessment is to determine the positive economic benefits to the organization that the proposed system will provide. It includes quantification and identification of all the benefits expected. This assessment typically involves a cost/ benefits analysis.

The project is using studio manager which is available free of cost. Other software which will be used are all available at a very low cost. Hence it is economically feasible.

3.4 Hardware and Software Requirement

- Android studio manager.
- Android SDK is used by Google to stay updated with the latest android's release for development on that platform.
- In-built SQLite database is accessed in the Android powered device that the application is installed on.
- Java SDK
- Application is debugged n the android device for testing.

3.5 Methodologies

3.5.1 Mobile Application Development

The mobile applications market is currently undergoing rapid expansion, as mobile platforms continue to improve in performance, and as the users' need for a wide variety of mobile applications increases. The latest mobile platforms allow for extensive utilization of network resources, and thus offer a strong alternative to workstations and associated software.

Software development for mobile platforms comes with unique features and constraints that apply to most of the lifecycle stages. The development environment and the technologies that support the software are different compared to "traditional" settings. The most important distinguishing characteristics are identified in (Abrahamsson, et al., 2004). Environment particularities include: a high level of competitiveness; necessarily short time-to-delivery; and added difficulty in identifying stakeholders and their requirements. Development teams must face the challenge of a dynamic environment, with frequent modifications in customer needs and expectations. (Abrahamsson, 2007) Technological constraints apply to mobile platforms in the form of limited physical resources and rapidly changing specifications.

Due to significant differences in the environment and in platform specifications, mobile application development requires a suitable development methodology.

By taking into account the main features of a mobile application development scenario, a matching development paradigm can be identified.

3.5.2 Agile Development for Mobile Application

Agile methods represent a relatively new approach to software development, becoming wide-spread in the last decade. The ideas behind these methods originate from the principles of Lean Manufacturing (in the 1940s) and Agile Manufacturing (1990s), which emphasized the adaptability of enterprises to a dynamic environment (Salo, 2006).

The unique features of agile methods derive from the list of principles found in the "Agile Manifesto": individuals and interactions are more important than processes and tools, working software is more valuable than comprehensive documentation, customer collaboration is preferred over contract negotiation, and adaptability is valued higher than creating and following a plan.

When trying to compare mobile application characteristics to those of an agile method, difficulty comes partly from the fact that boundaries of agile methodologies are not clearly established. The author's partition studies into four categories: introduction and adaptation, human and social factors, perception of agile methods, and comparative studies. Findings indicate that the introduction of agile methods to software projects yields benefits, especially if agile practices do not completely replace traditional ones, but work in conjunction with them.

The use of agile methods in software development has received both supporting and opposing arguments. The main argument against agile methods is the asserted lack of scientific validation for associated activities and practices, as well as the difficulty of integrating plan-based practices with agile ones. Indeed, some projects present a mix of plan-based and agile home ground characteristics, in which case a balance must be achieved in the use of

both types of methods (Boehm, 2002). There is also some amount of uncertainty in distinguishing agile methods from ad-hoc programming. However, as stated in (Salo, 2006), agile methods do provide an organized development approach. [3]

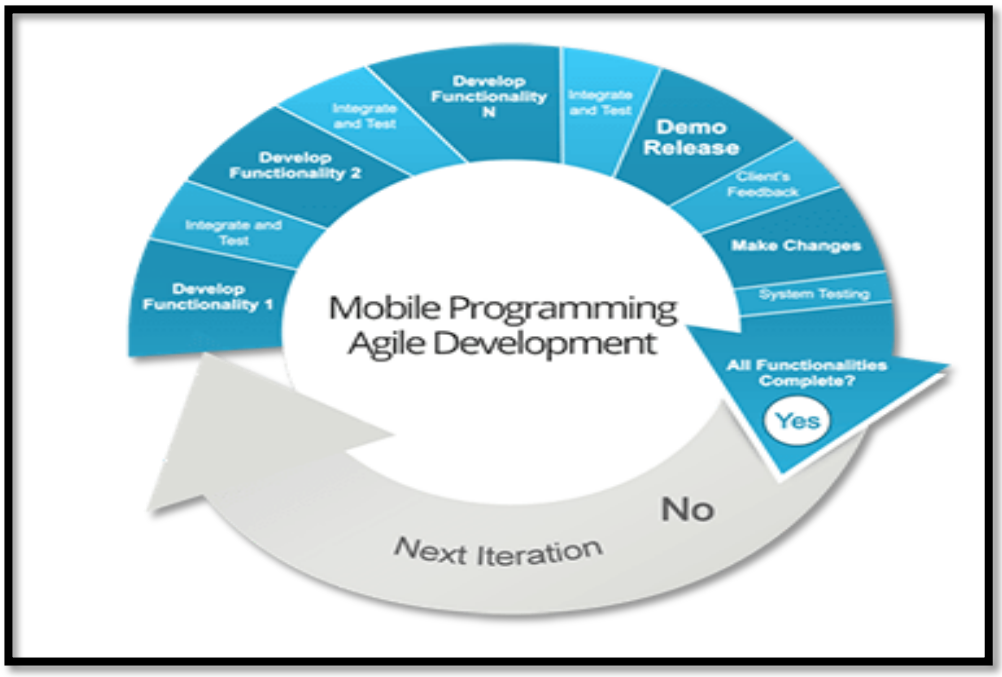

Fig 3.5.2.1

The main steps involved in the development are as follows:

1. Phasing and Placing
2. Architecture Line
3. Mobile Test-Driven Development
4. Continuous Integration
5. Pair Programming
6. Metrics
7. Agile Software Process Improvement
8. Off-Site Customer
9. User-Centered Focus

Chapter 4
Design

4.1 Project Scheduling

Project Scheduling in a project refers to roadmap of all activities to be done with specified order and within time slot allotted to each activity. Project managers tend to define various tasks, and project milestones and them arrange them keeping various factors in mind. They look for tasks lie in critical path in the schedule, which are necessary to complete in specific manner (because of task interdependency) and strictly within the time allocated. Arrangement of tasks which lies out of critical path are less likely to impact over all schedule of the project.

For scheduling a project, it is necessary to –

- Break down the project tasks into smaller, manageable form
- Find out various tasks and correlate them
- Estimate time frame required for each task
- Divide time into work-units
- Assign adequate number of work-units for each task
- Calculate total time required for the project from start to finish

4.1.1 Worked Planned for Semester 7

	JULY				AUGUST				SEPTEMBER					OCTOBER			
	Week1	Week2	Week3	Week4	Week1	Week2	Week3	Week4	Week1	Week2	Week3	Week4	Week5	Week1	Week2	Week3	Week4
1. Gathering Initial Requirements																	
Visit the project guide & discuss the research done till date.							■										
Collect the requirements and analyze and check								■	■								
Confirmation of requirements and the ability to complete the project									■								
Identification of goals and scope										■							
2. Feasibility Phase																	
Technical Feasibility										■							
Economical Feasibility										■							
Operational Feasibility											■	■					
3. Literature Study																	
Study of WSN													■				

Table 4.2.2.1 Worked Planned for Semester 7

4.1.1 Worked Planned for Semester 8

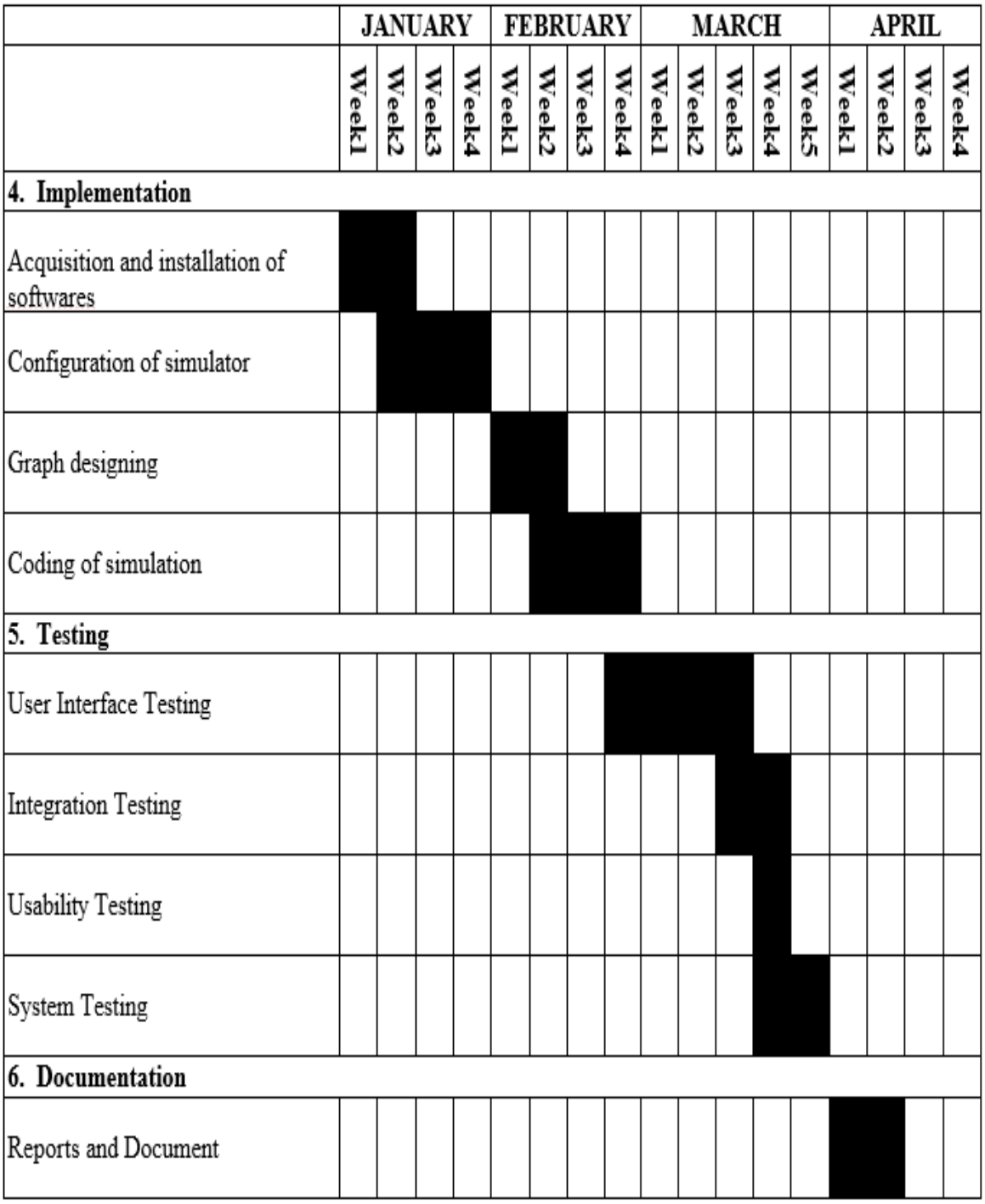

Table 4.2.2.2 Worked Planned for Semester 8

4.2 Team Structure

Team structures

Team structure addresses the issue of organization of the individual project teams. There are some possible ways in which the individual project teams can be organized. There are mainly three formal team structures: chief programmer, democratic, and the mixed team organizations although several other variations to these structures are possible. Problems of different complexities and sizes often require different team structures for chief solution.

Democratic Team

The democratic team structure, as the name implies, does not enforce any formal team hierarchy typically, a manager provides the administrative leadership. At different times, different members of the group provide technical leadership.

The democratic organization leads to higher morale and job satisfaction. Consequently, it suffers from less man-power turnover. Also, democratic team structure is appropriate for less understood problems, since a group of engineers can invent better solutions than a single individual as in a chief programmer team. A democratic team structure is suitable for projects requiring less than five or six engineers and for research-oriented projects. For large sized projects, a pure democratic organization tends to become chaotic. The democratic team organization encourages egoless programming as programmers can share and review one another's work.

Mixed Control Team Organization

The mixed team organization, as the name implies, draws upon the ideas from both the democratic organization and the chief-programmer organization. This team organization incorporates both hierarchical reporting and democratic set up. The democratic connections are shown as dashed lines and the reporting structure is shown using solid arrows. The mixed control team organization is suitable for large team sizes. The democratic arrangement at the senior engineers' level is used to decompose the problem into small parts. Each democratic setup at the programmer level attempts solution to a single part. Thus, this team organization is eminently suited to handle large and complex programs. This team structure is extremely popular and is being used in many software development companies.

Chapter 5
Modelling

5.1 Data Flow Diagram

The DFD Level 0 indicates the basic interaction between the entities of the application. The vendor directly can access the skill development through the application.

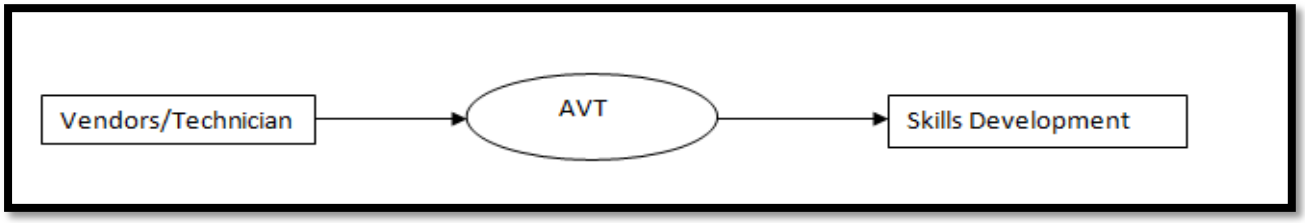

Fig 5.1.1 DFD Level 0

The DFD level 1 is brief description of the interaction of vendors represented in level 0. It describes the login information of a particular user through the application.

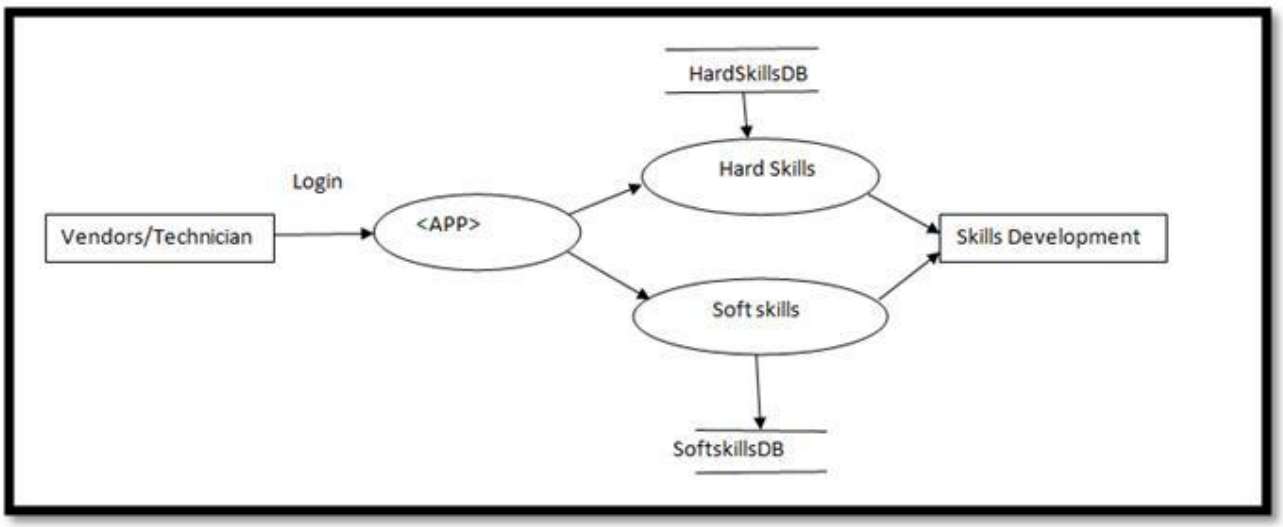

Fig 5.1.2 DFD Level 1

The DFD level 2 is the final detailed representation of the entire flow of the project and it includes all the interaction between the different entities. By going through the entire DFD a normal person can have a basic understanding.

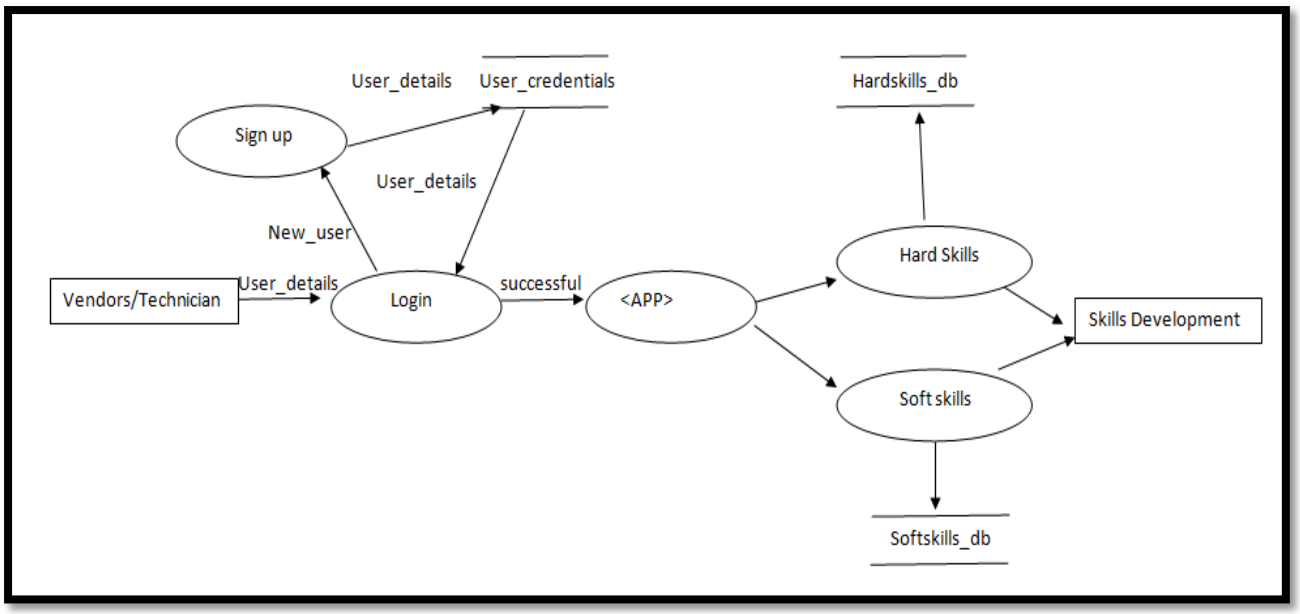

Fig 5.1.3 DFD Level 2

5.2 Use Case Diagram

To model a system the most important aspect is to capture the dynamic behavior. To clarify a bit in details, *dynamic behavior* means the behavior of the system when it is running /operating.

So we have designed two actors i.e. Vendor and Technician and it depicts a normal acess of both the actors o the different skills in the application.

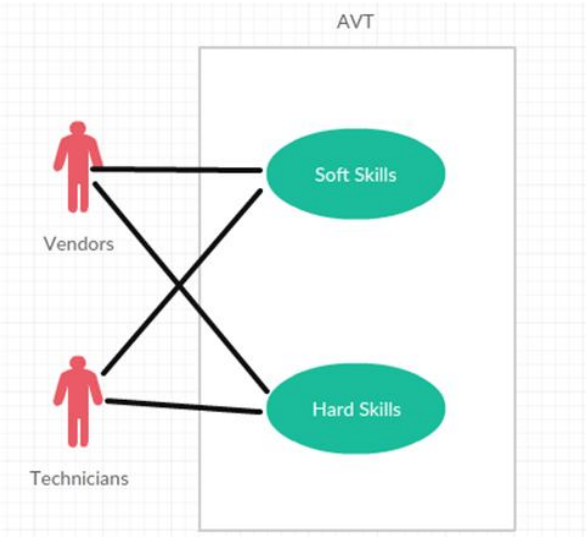

Fig 5.2.1 Use Case Diagram

5.3 Activity Diagram

Activity diagram is another important diagram in UML to describe dynamic aspects of the system.

It basically describes the flow of the project. Initially whenever a user tries to access an application we first check whether the user is a new user or registered user. If he/she is a new user then they need to register or login. If the user is an existing user then they can directly login into the application.

After login, the user has access to the skill interface where there are two skills i.e. Hard skills and soft skills.

Accordingly, the user has further access to all the different skills in the application.

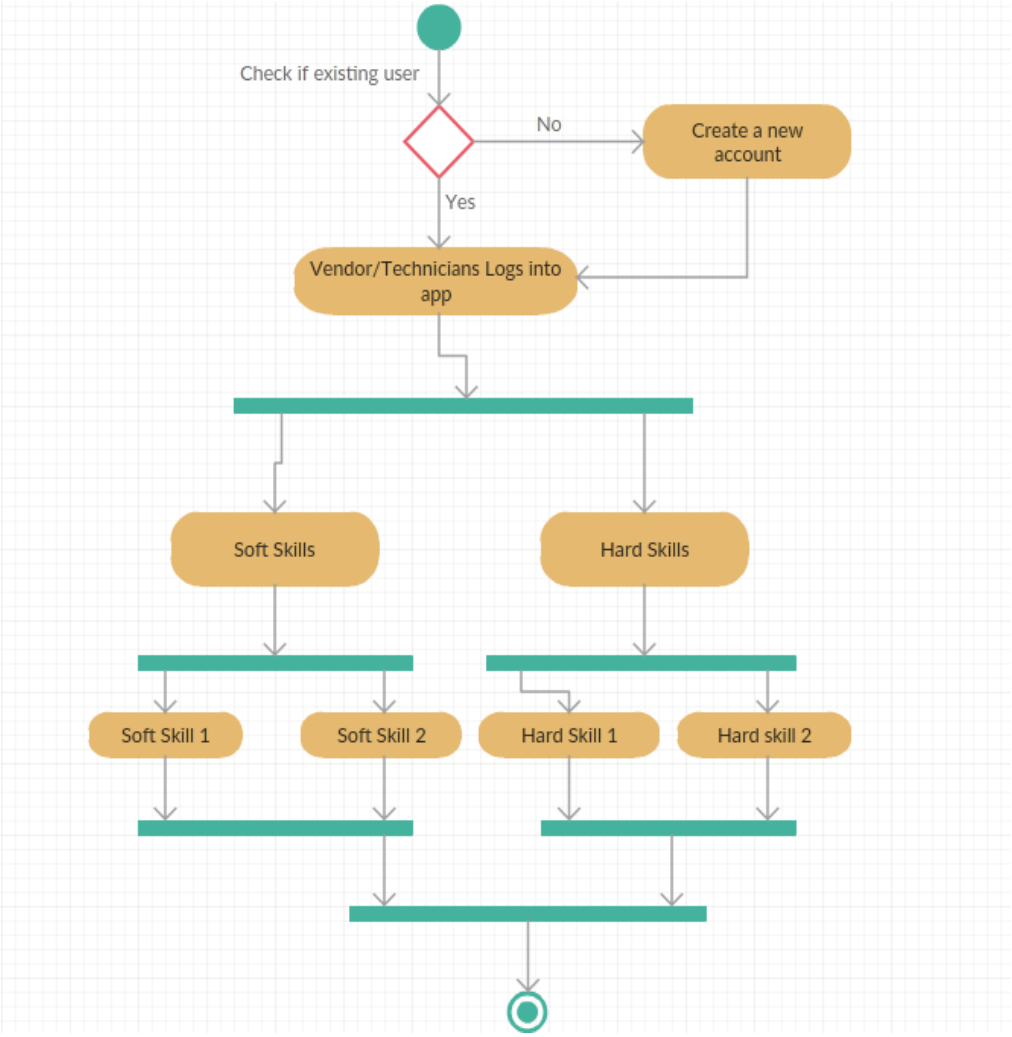

Fig 5.3.1 Activity Diagram

Chapter 6

Platform

6.1. Android

Android is a mobile operating system (OS) currently 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. In addition to touch screen devices, Google has further developed Android TV for televisions, Android Auto for cars, and Android Wear for wrist watches, each with a specialized user interface. Android's source code is released by Google under open source licenses, although most Android devices ultimately ship with a combination of open source and proprietary software, including proprietary software required for accessing Google services. Android is popular with technology companies that require a ready-made, low-cost and customizable operating system for high-tech devices. Its open nature has encouraged a large community of developers and enthusiasts to use the open-source code as a foundation for community-driven projects, which add new features for advanced users or bring Android to devices originally shipped with other operating systems. At the same time, as Android has no centralized update system most Android devices fail to receive security updates: research in 2015 concluded that almost 90% of Android phones in use had known but unpatched security vulnerabilities due to lack of updates and support. The success of Android has made it a target for patent litigation as part of the so-called "Smartphone" between technology companies. Android Studio is the official IDE for android application development. It works based on IntelliJ IDEA, You can download the latest version of android studio from Android Studio Download, If you are new to installing Android Studio on windows, you will find a file, which is named as *android-studio-bundle-135.17407740-windows.exe*. So just download and run on windows machine according to android studio wizard guideline.

If you are installing Android Studio on Mac or Linux, You can download the latest version from Android Studio Mac Download, or Android Studio Linux Download, check the instructions provided along with the downloaded file for Mac OS and Linux. This tutorial will consider that you are going to setup your environment on Windows machine having Windows 8.1 operating system.

Chapter 7

Implementation

7.1. Implementation Phases

Phase 1 - Requirement Gathering :

In this phase we dealt with establishing the needs of stakeholders that are to be solved by the project. We performed elicitation to gather and discover requirements from stakeholders and other sources. It is the first step of requirements development. Understanding the requirements helped us to obtain a clear vision pertaining to where our project was headed. We decided that our app should be easy and simple to use and should provide the basic knowledge of using tools and human interaction.

Phase 2 - Design :

Design was the phase wherein the proper look and interface of our project was shaped. Each page had to be created in a way that was easy to understand by the user as well as fulfill the required functions. A home page containing two buttons i.e. Soft Skills and Hard Skills was created which linked to further activities. Each button further linked to a set of five options which further expanded to provide the option specific details. Visual representation in the form of images was added to certain pages wherein simple text description could not be deemed enough. It not only enhanced the design of the application but would assist the user to understand the concepts better.

Phase 3 - Implementation :

Implementation is the realization of an application, or execution of a plan, idea, model, design, specification, standard, algorithm, or policy. It is a systematically structured approach to effectively integrate a software based service or component into the workflow of an organizational structure or an individual end-user. The project was implemented with the help of Android Studio which is a software which allows the developer to use drag and drop functions to create the android application with ease.

Phase 4 - Verification :

Verification which is a part of engineering or quality management systems is the act of reviewing, inspecting or testing, in order to establish and document that a product, service or system meets regulatory or technical standards. It helped us make sure that product is designed to deliver functionality to the user. At every step of project development we had to ensure that we were building the project in the right way by meeting all specifications as well as parameters.

Phase 5 - Maintenance :

Maintenance is very important as it ensures customer satisfaction in the long run which is the building block of any successful software or application deployment. The final phase of our project implementation will be maintenance which would include regular updates to fix any bugs or vulnerabilities as well as add new content and functionalities.

Chapter 8
Testing

8.1 Formal Technical Review

Software technical review is a form of peer review in which a term of qualified personnel…examines the suitability of the software product for its intended use and identifies discrepancies from specification and standards.

Technical review may also provide recommendation of alternatives and examination of various alternatives" (IEEE Std. 1028-1997, IEEE Standard for Software Reviews, clause 3.7). "SOFTWARE PRODUCT" Normally refers to some kind of technical document. Technical review differs from software walkthroughs in its specific focus on the technical quality of the product reviewed, and its lack of a direct focus on training and process improvement.

8.2 Test Plan

A test plan documents the strategy that will be used to verify and ensure that a product or system meets its design specification and other requirements. A test plan is usually prepared by or with significant input from Test Engineers. Depending on the product and the responsibility of the organization to which the test plan applies, a test plan may include one or more of the following:-

- Design Verification or Compliance test:-
  To performed during the development or approval stages of the product, typically on a small sample of units.
- Manufacturing or Production test:-
  To be performed during preparation or assembly of the product in an ongoing manner for purposes performance verification and quality control.
- Acceptance or Communication test:-
  To be performed at the time of delivery on installation of the product.
- Service and Repair test:-
  To be performed as required over the service life of the product.
- Regression test:-
  To be performed on an existing operational product, to verify that existing functionality didn't get broken when other aspects of the environment are changed (For example: - Upgrading the platform on which an existing application runs.)

8.3 Test Cases and Test Results

A test case in software engineering is a set of condition or variables under which a tester will determine whether an application or software system is working correctly or not.

The mechanism for determining whether a software program or system has passed or failed such a test is known as a test oracle. In some setting, an oracle could be a requirement or use case, while in other it could be a heuristic. It may take many test cases to determine that a software program or system is functioning correctly. Test cases are often referred to as test scripts, particularly when written. Written test cases are usually collected into test suites.

Item No	Test Condition	Operator Action	Input Specification	Output Specification(Expected Results)	Pass or Fail
1	Successful Language translation	Perform language translation	Select the translation language	If there is sufficient Internet connectivity then the application will connect to the Bing translator Engine & return the output	**Pass**
2	Unsuccessful Language translation	Perform language translation	Select the translation language	If there is not sufficient Internet connectivity then the application will not perform the translation & no output is generated .	**Pass**

Table 8.3.1 Test Cases

Chapter 9

Results

9.1 Snapshots

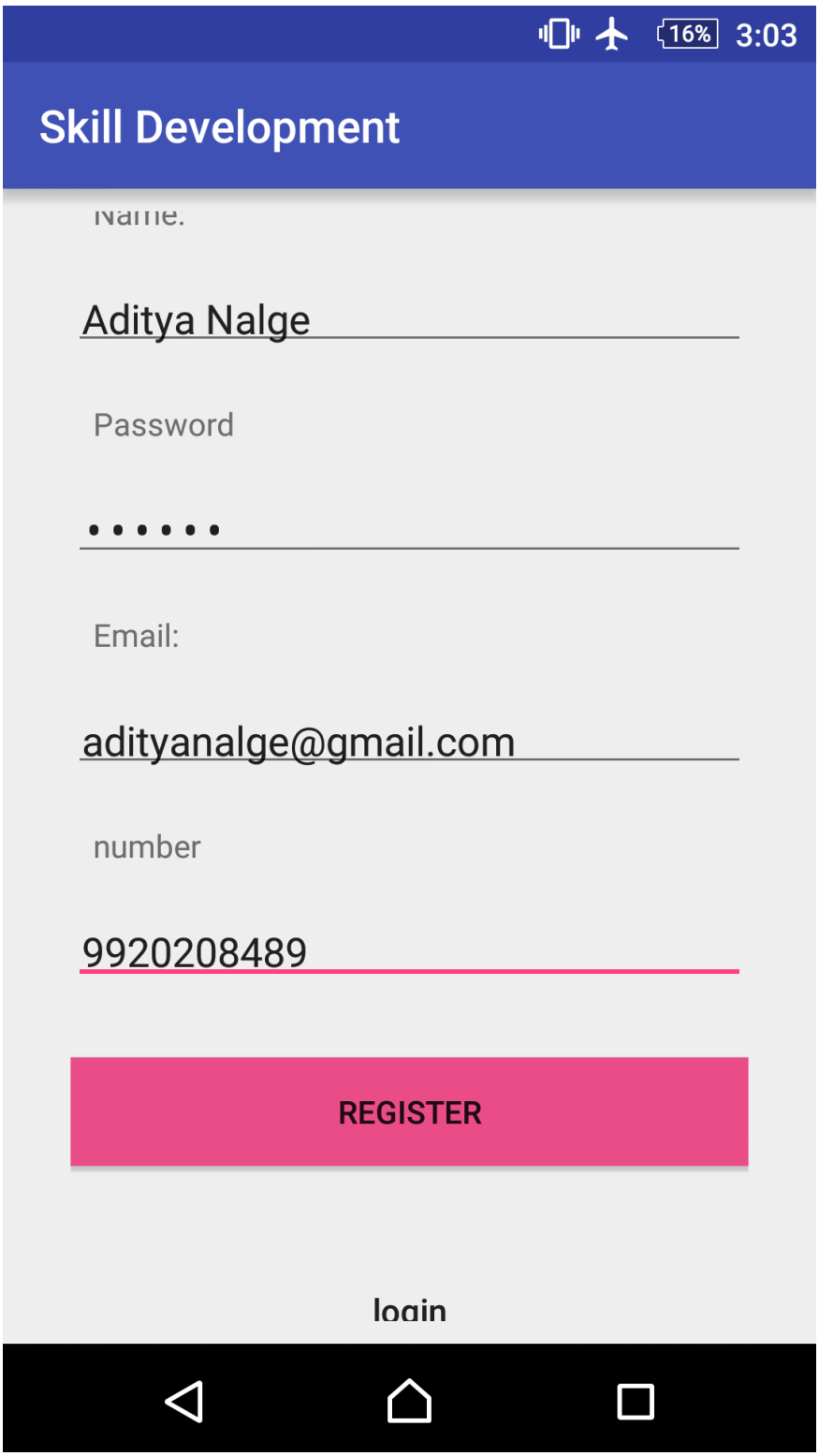

Fig 9.1.1 Registration Page

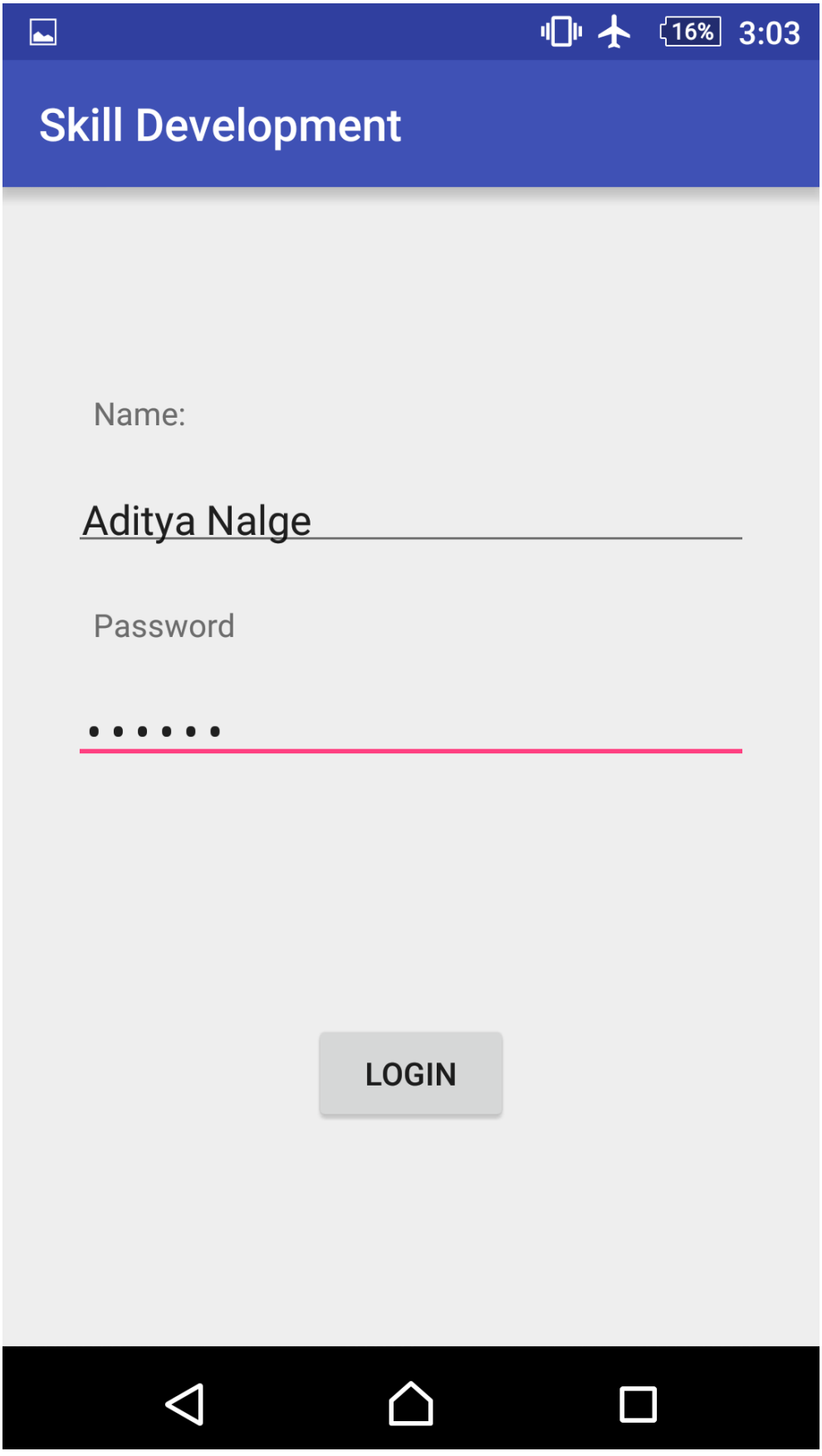

Fig 9.1.2 Login Page

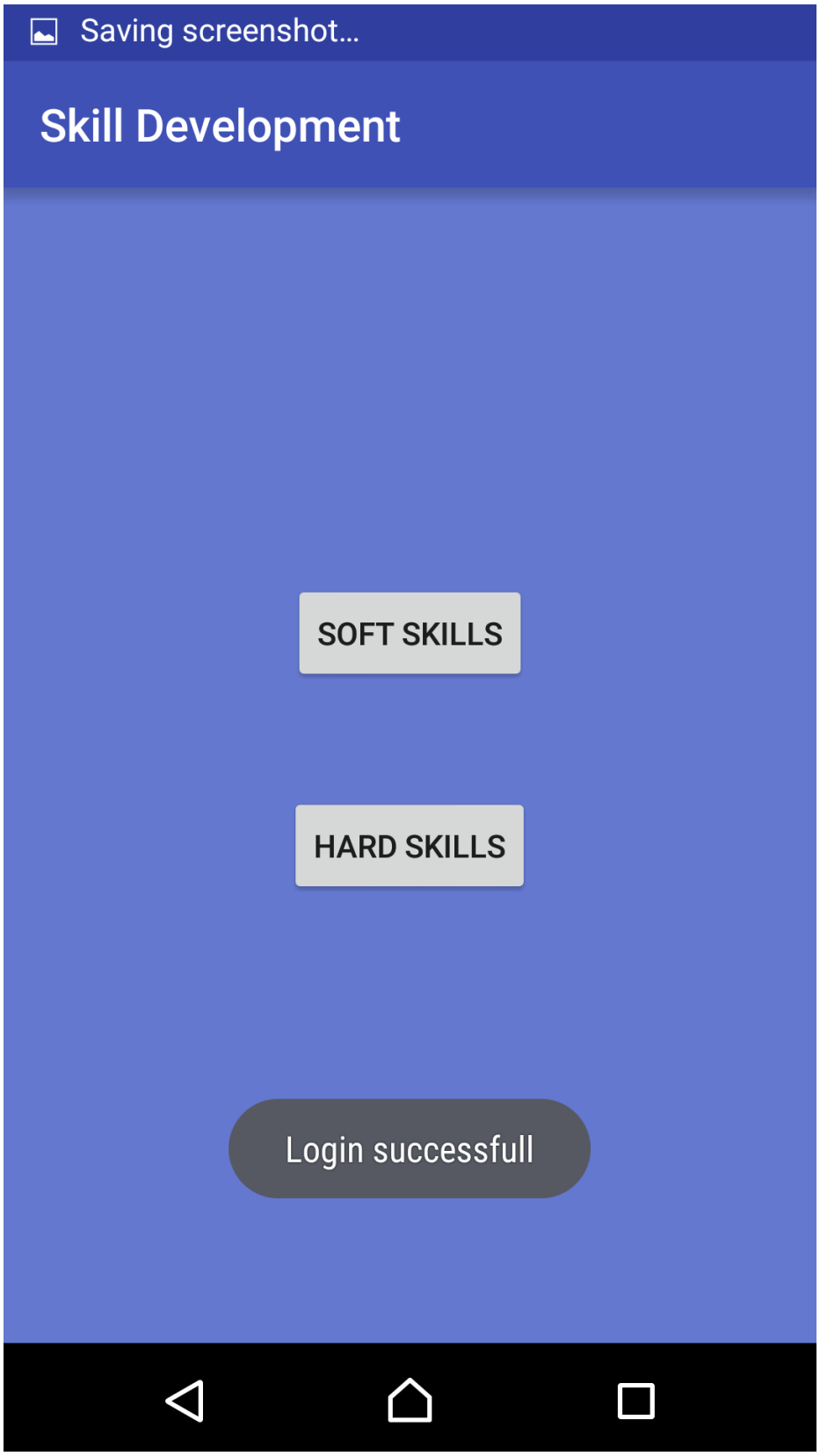

Fig 9.1.3 Home Page

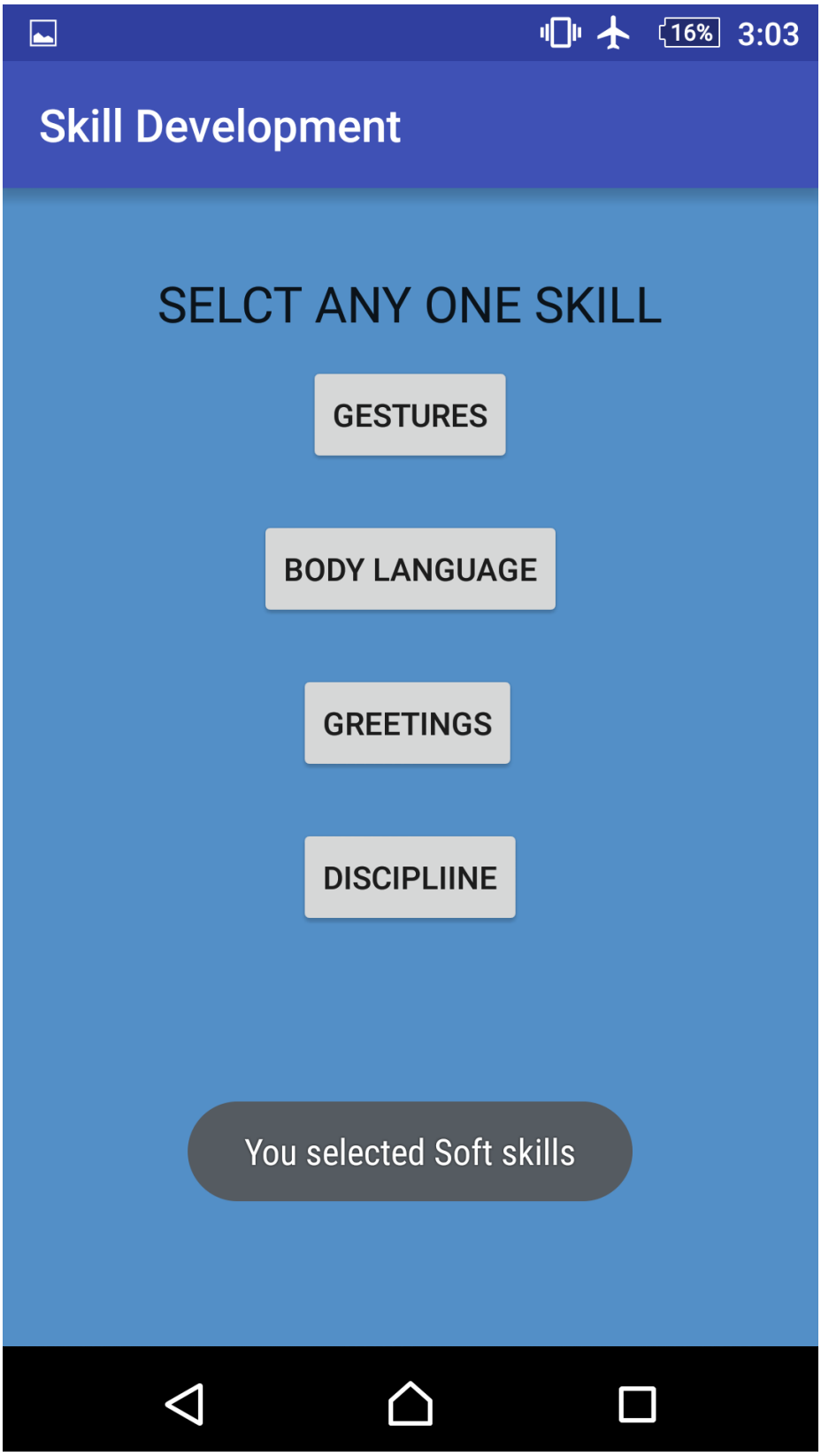

Fig 9.1.4 Soft Skills Page

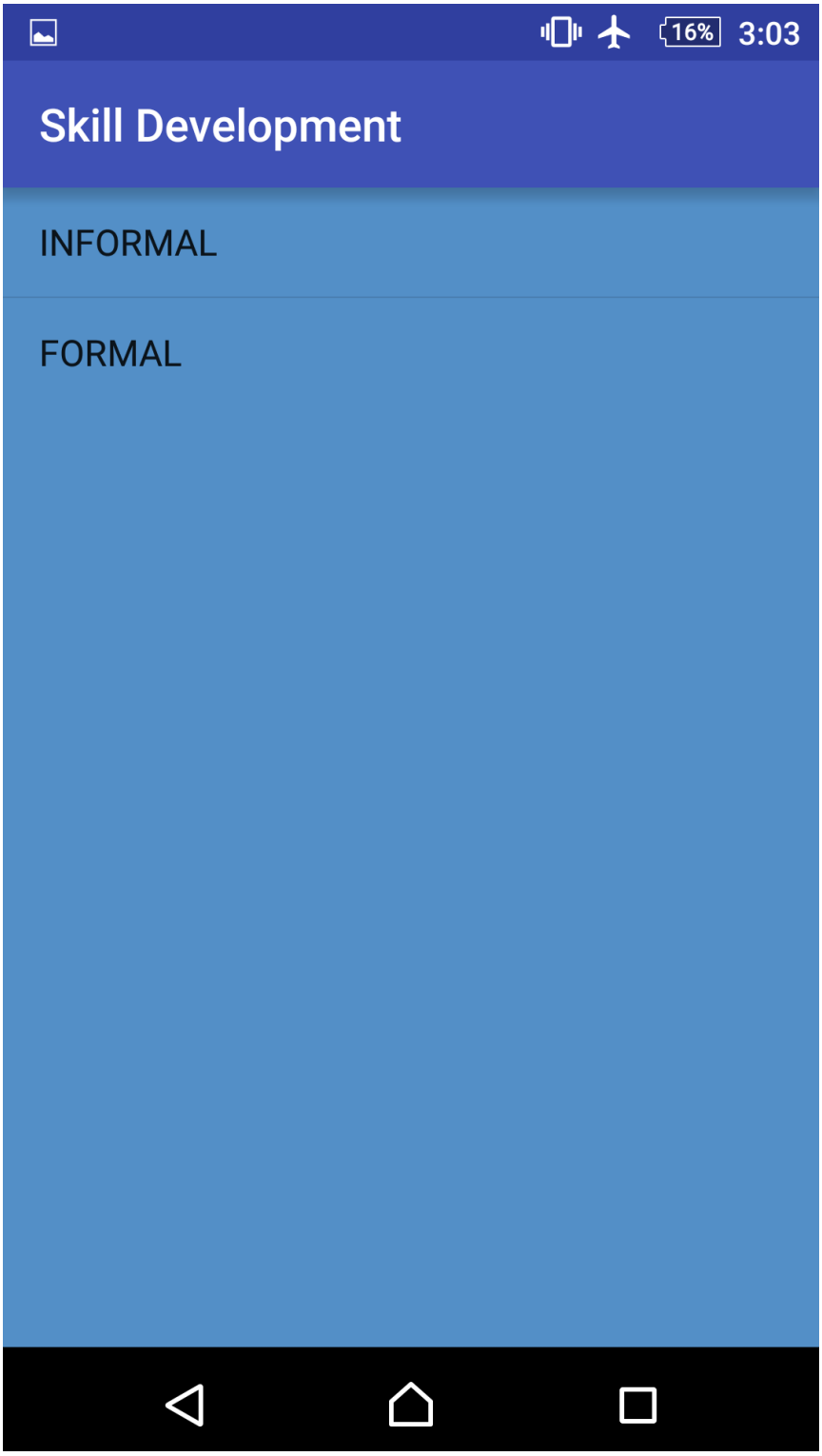

Fig 9.1.5 Greetings Page

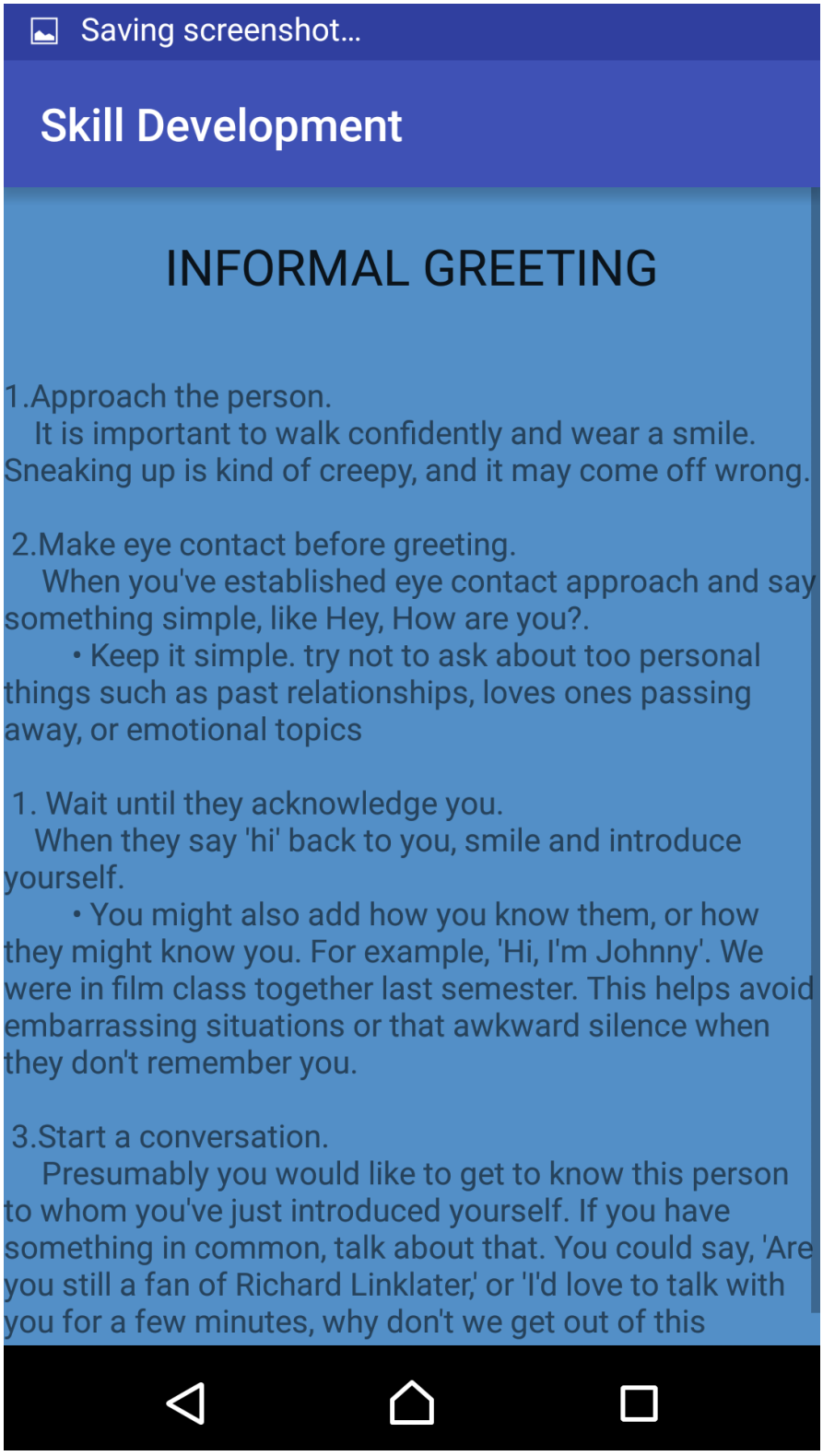

Fig 9.1.6 Informal Greetings Page

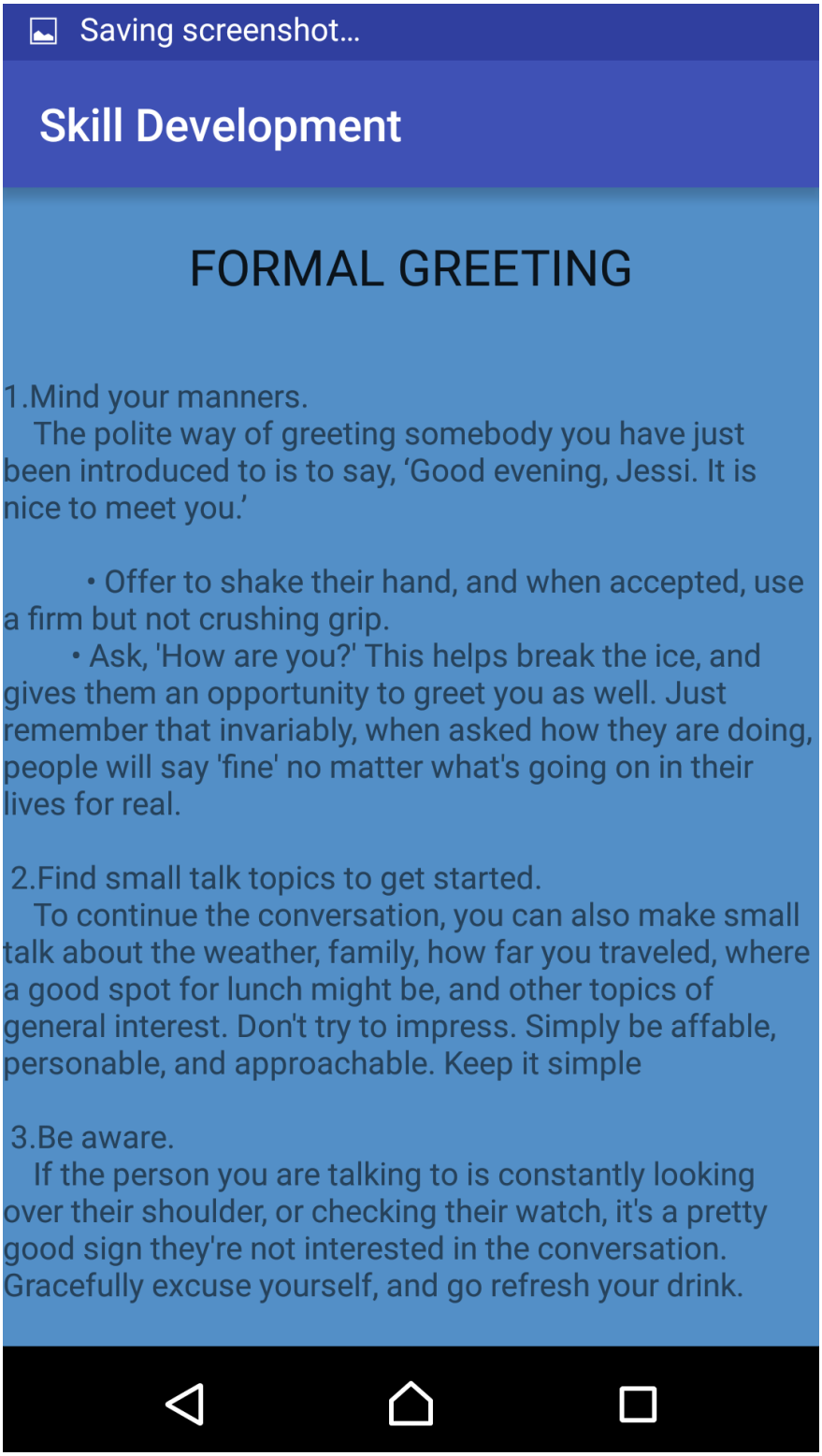

Fig 9.1.7 Formal Greetings Page

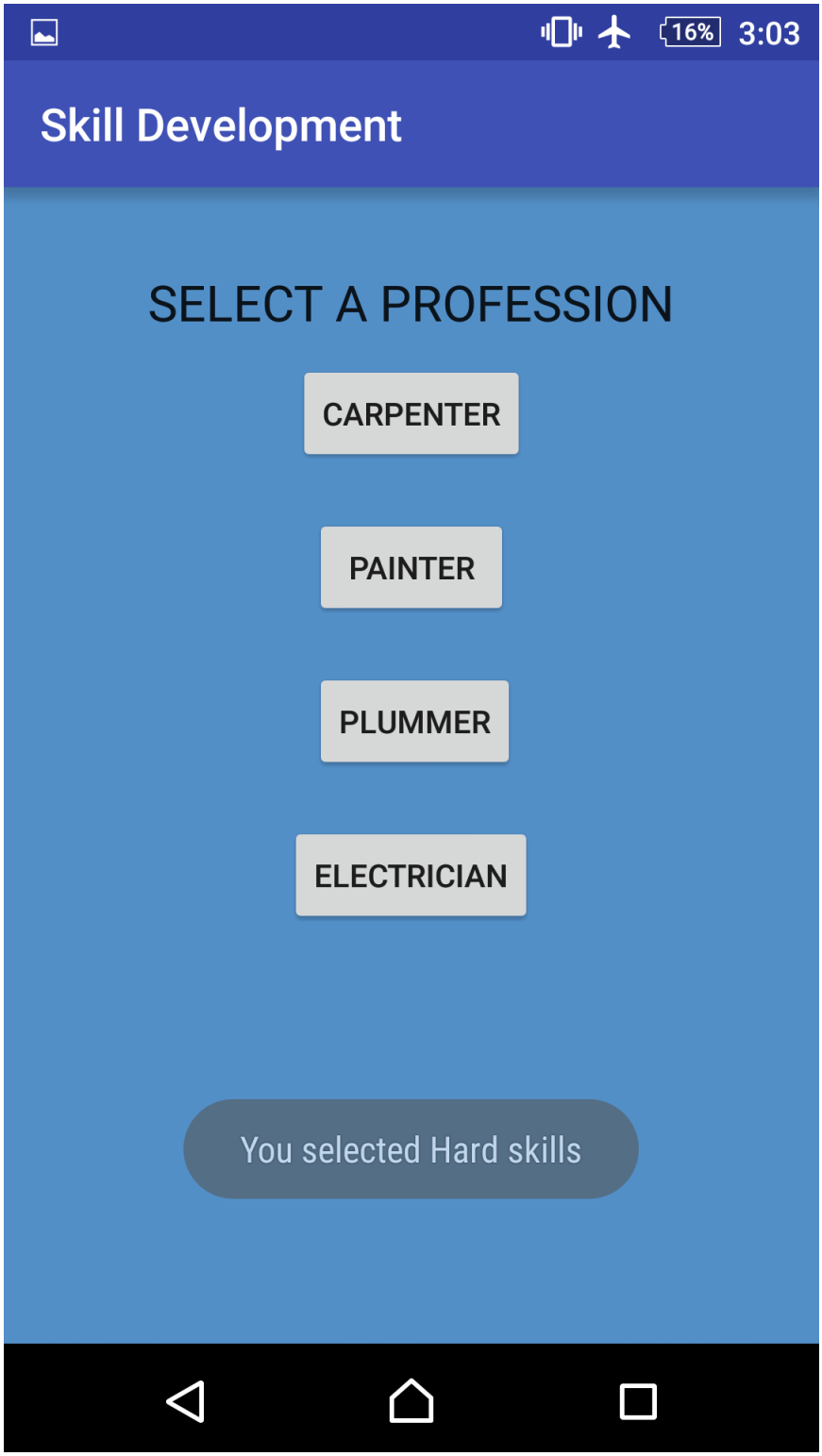

Fig 9.1.8 Hard Skills Page

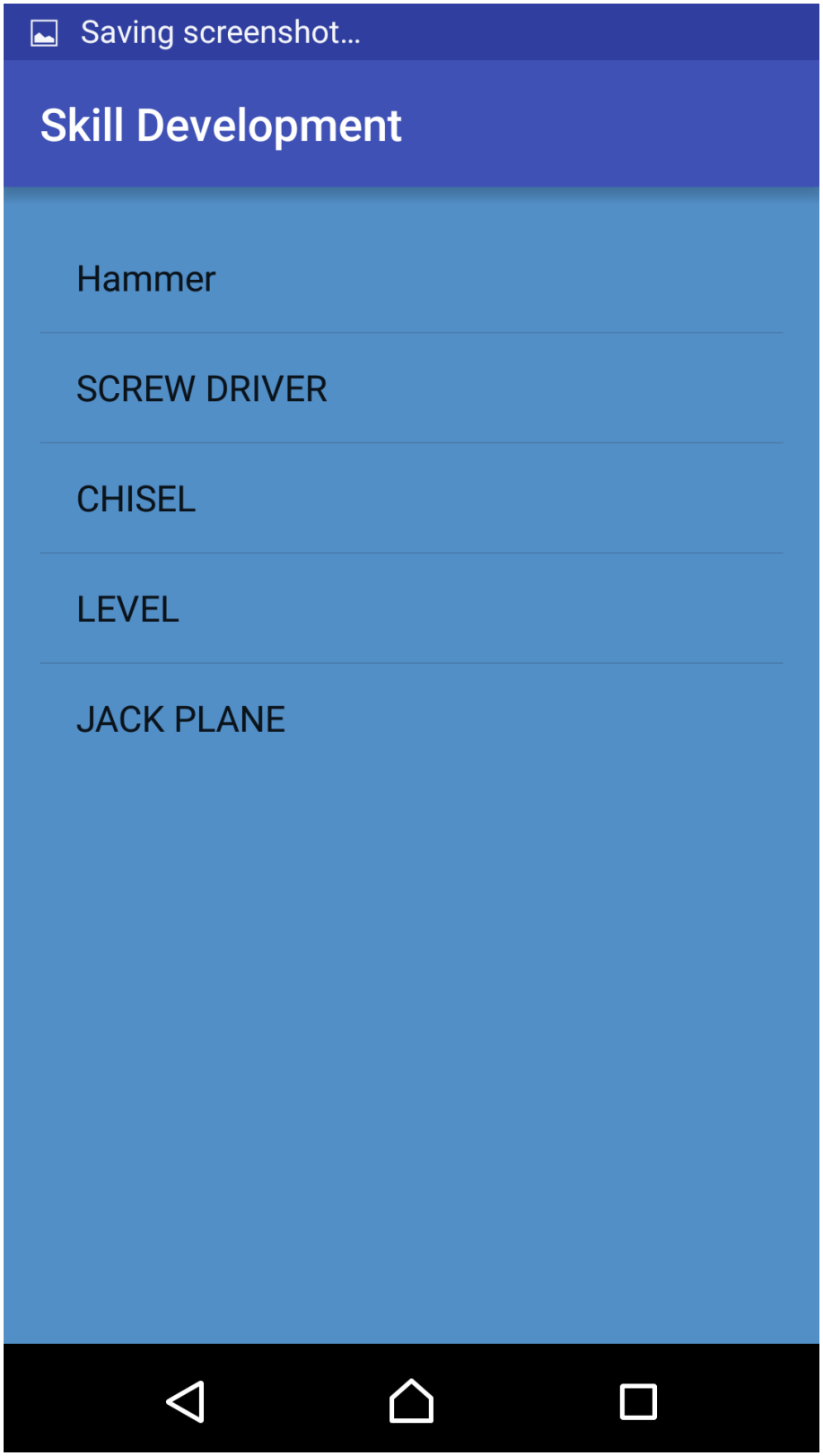

Fig 9.1.9 Carpenter Skills Page

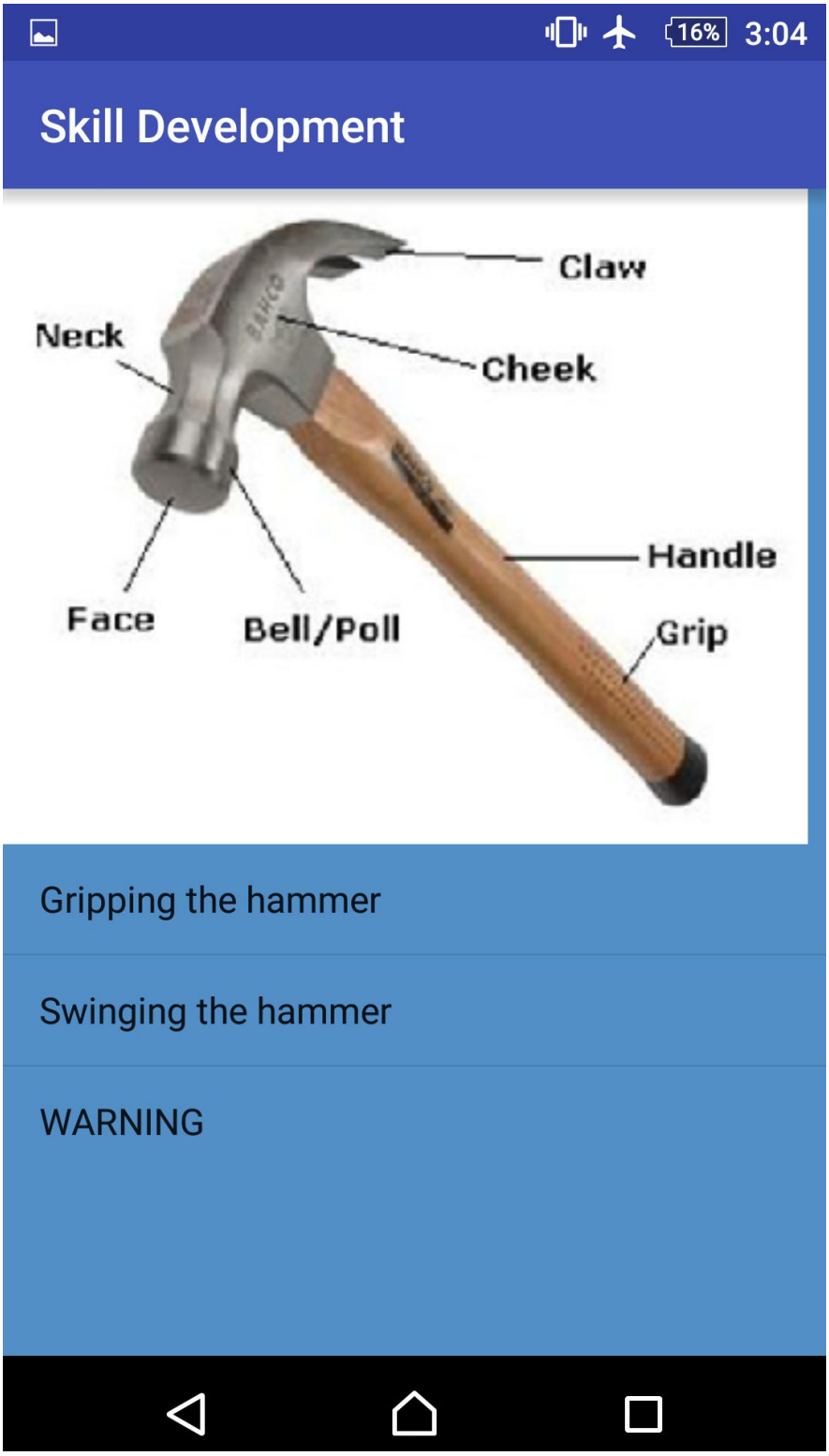

Fig 9.1.10 Hammer Page

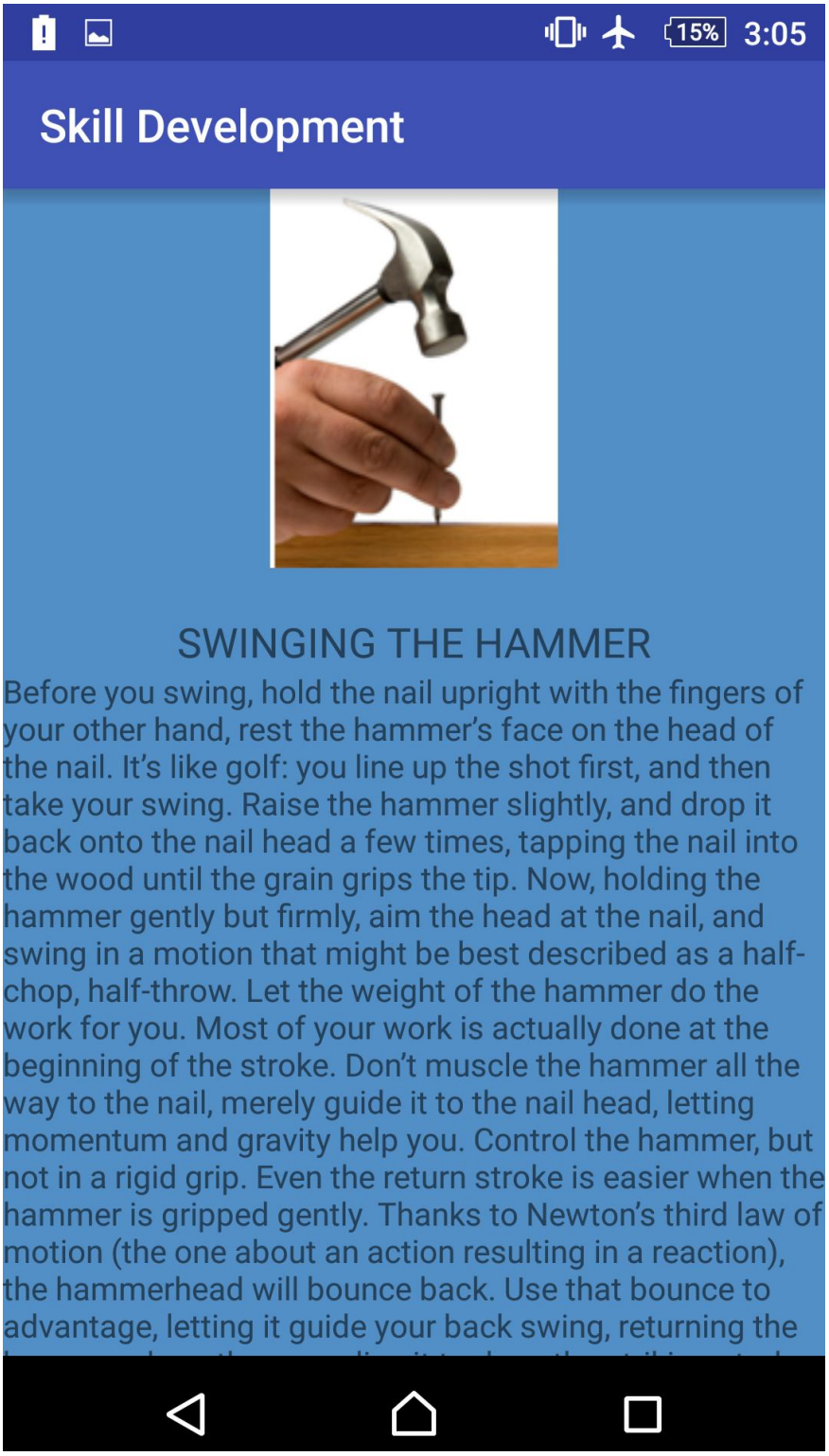

Fig 9.1.11 Swinging the Hammer Page

Fig 9.1.12 Griping the Hammer Page

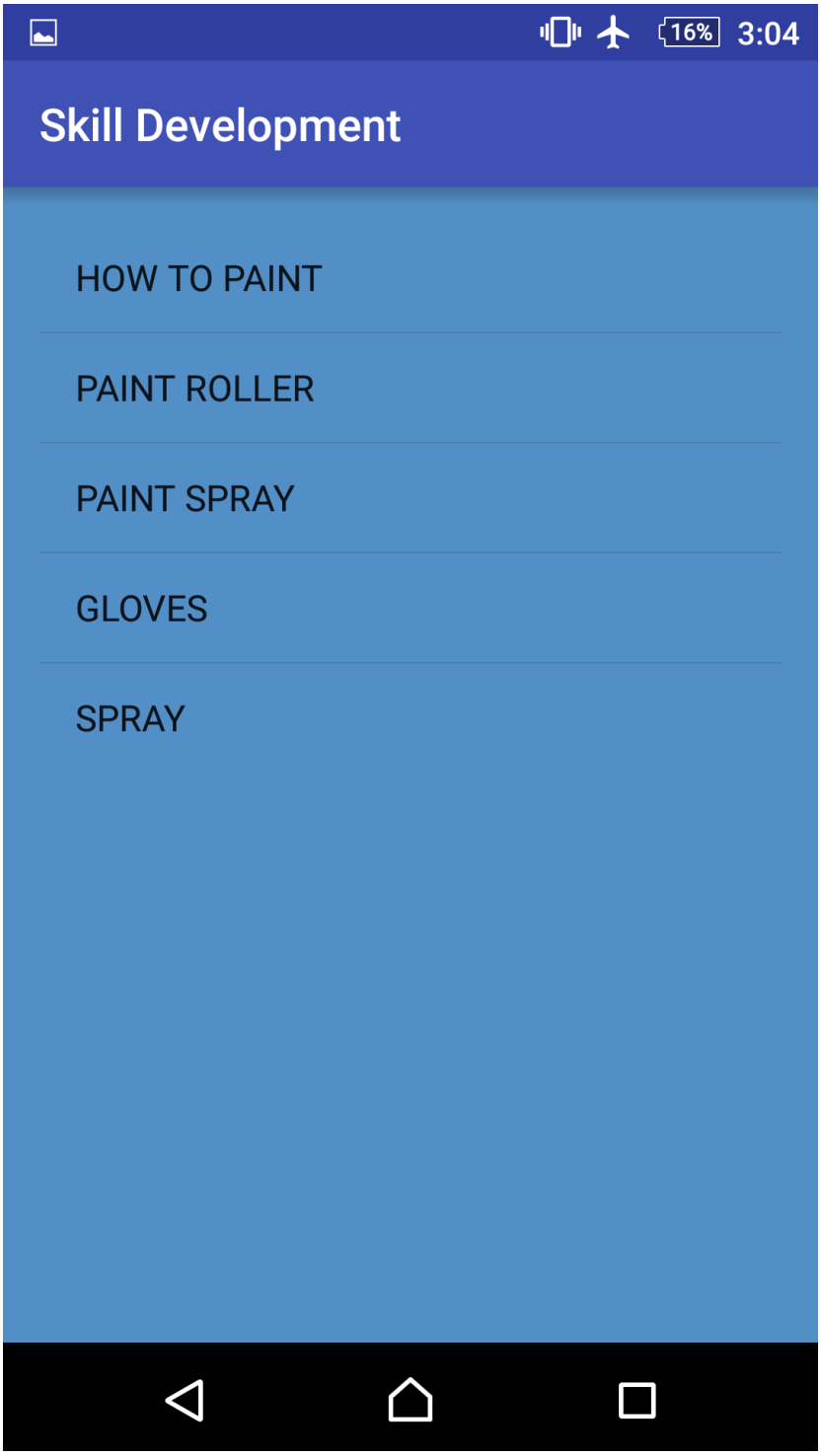

Fig 9.1.13 Painter Skills Page

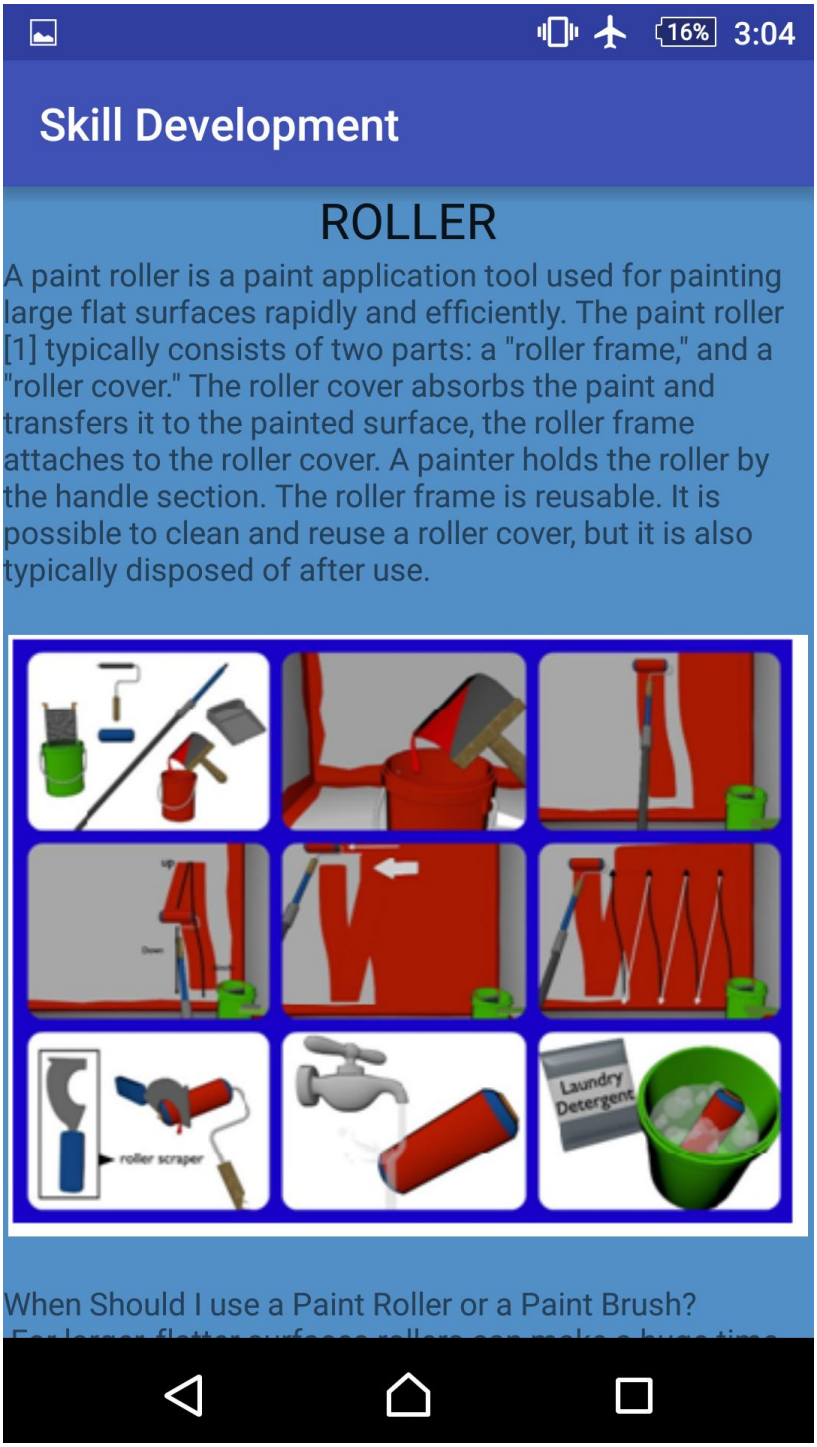

Fig 9.1.14 Paint Roller Page

In this Blackbook, our project group has provided a detailed report on the project "Android Vendor Training". We have compiled detailed information pertaining to the importance of our project. The problem definition has been thoroughly understood by all our group members which will make it easier to work on the project. The goals and objectives we wish to achieve at the end of the project as well as the path and methodology that we need to follow are now comprehensible.

The requirement gathering phase helped us understand the requirements of the project. Feasibility study helped us analyze the feasibility of the requirements and ensure that all the requirements can be met. The literature survey enabled us to develop an understanding of other similar initiatives and thus obtain a better idea related to our project. Exhaustive project planning and scheduling assisted us to design a proper timeline to complete our project.

EXPECTED OUTCOMES:

- Daily use of the application will help vendors to develop their skills.
- It will solve a major problem for the startup which is finding trained professionals.
- The startup can easily hire untrained professionals and train them with the help of the application.
- The organization will be able to actively pursue continuous improvement.
- Continuous improvement: This expected outcome requires that: The organization actively pursues continuous improvement.
- Regulatory compliance**:** This expected outcome requires that: The organization's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, and professional standards.

Chapter 10
Conclusion

The recent demand in the android application market is for professional consumer service platform that provides you hassle free, punctual and transparent utility services at your doorstep. Taking this demand into consideration, a start-up named Urbanity Multisolutions Private Limited (brand name DIDI) in the vocational education and service delivery space aspires to provide vocational training in all women centered services like house-keeping, beauticians, chef etc. and then create a marketplace for discovery of these services by end users.

By Using Java - Android Programming Language in an Integrated Development Environment we have implemented an Android based application for Vendor Training for DIDI. This application was implemented using multi-language programming IDE Eclipse with database connection using SQLite which uses Android device's internal or external storage for saving data. The application would serve as a handy tool for making sure that the technicians can learn new skills while enhancing existing skills.

Chapter 11
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Publications

ABSTRACT

Vendors of the start-up need an application which helps them develop new hard and soft skills in order to improve their service delivery. The main objective of this app is to create an encyclopedic data for technicians which would contain a large number of skill enhancing tools. A technician who uses the app would be able to learn about the different tasks he has to perform and enhance his soft as well as hard skills. So objective of our android application is to create an android application for vendors which would contain a large number of skill enhancing tools.

INTRODUCTION

Smart phones are more common than computers today. Almost everyone in the world makes regular use of smart phones in their day to day lives. People can get a lot of different benefits from smart phones and that too in a very portable manner. The recent demand in the android application market is for professional consumer service platform that provides you hassle free, punctual and transparent utility services at your doorstep. The project focuses on developing an android for connecting household services providers vendors to enhance their educational skill, so that the household services seekers get the best service by the respective companies. So the main objective of our android application is to create an encyclopedia for vendors which would contain a large number of skill enhancing tools.

PROBLEM DEFINITION

Technicians employed by the startup need an app which would help them to learn new skills while improving their existing skills. It is a new start up which aims at providing technicians to house hold in the fastest possible way by making it easier for the technicians as well as the clients to connect with each other.A technician who uses the app would be able to learn about the different tasks he has to perform. It will be easier to train technicians with the help of the application through visual representations. Everything the technicians need to learn will be present at their fingertips.The startup aspires to provide vocational training in all women centered services like house-keeping, beauticians, chef etc. and then create a marketplace for discovery of these services by end users. The project focuses on developing an android for connecting household services providers vendors to enhance their educational skill, so that the household services seekers get the best service by the respective companies.

The algorithm terminates when no further successful extensions are found.Apriori uses breadth-first search and a Hash tree structure to count candidate item sets efficiently. It generates candidate item sets of length from item sets of length . Then it prunes the candidates which have an infrequent sub pattern. According to the downward closure lemma, the candidate set contains all frequent -length item sets. After that, it scans the transaction database to determine frequent item sets among the candidates.

DATA FLOW DIAGRAM

A DFD is often used as a preliminary step to create an overview of the system, which can later be elaborated. DFDs can also be used for the visualization of data processing.

LITERATURE SURVEY

The main objective of this project is to create an encyclopedic data for technicians which would contain a large number of skill enhancing tools. A technician who uses the android app would be able to learn about the different tasks he has to perform and enhance his soft as well as hard skills. Android Studio is an integrated development environment (IDE) for developing for the Android platform. It was announced on May 16, 2013 at the Google I/O conference by Google's Product Manager, Katherine Chou. Android Studio is freely available under the Apache License 2.0. Android Studio's first stable build was released in December 2014, starting from version 1.0. Based on JetBrains' IntelliJ IDEA software, Android Studio is designed specifically for Android development

Doormint

Doormit that was launched in January 2015, is a start-up similar to the one we are working with. It has a vision to become a one-stop solution for hyper local consumer services. Based in Chandivali, Mumbai, Doormint provides hassle-free, punctual and transparent utility consumer services at the doorstep. Its current services include on-demand electrician, plumber, carpenter, electronics appliance repair and pest control. By integrating latest technology with operations, Doormint minimises customer effort and delivers a delightful and safe customer experience.[1]

Zimmber

Zimmber provides the best handyman services. It provides various services which include electrical services that takes care of any electrical installation or repairs, plumbing services, AC services that include air conditioner services and repairs, house painting for that beautiful abode look and carpentry work of the finest quality by the best carpenters in Mumbai. Customer satisfaction is our priority. We provide services at a competitive pricing, full commitment and in the smoothest way possible.[2]

Apriori Algorithm

Apriori is an algorithm for frequent item set mining and association rule learning over transactional databases. It proceeds by identifying the frequent individual items in the database and extending them to larger and larger item sets as long as those item sets appear sufficiently often in the database. The frequent item sets determined by Apriori can be used to determine association rules which highlight general trends in the database: this has applications in domains such as market basket analysis.Apriori uses a "bottom up" approach, where frequent subsets are extended one item at a time (a step known as candidate generation), and groups of candidates are tested against the data

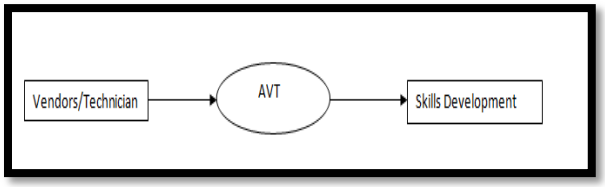

Fig 4.1 Level 0

This DFD level 0 shows the input module vendor where he/she just has to use the application AVT to develop their skills.

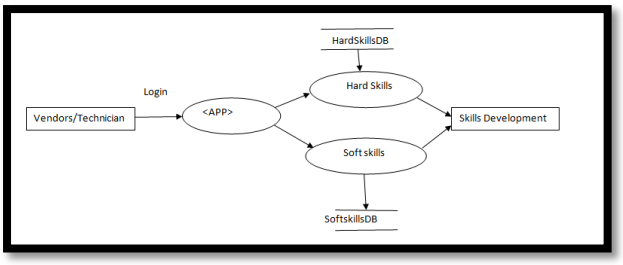

Fig 4.2 Level 1

This DFD Level 1 elaborates the other details required by the application that the vendor has to register if he/she is a new user. After signing up for the application, the vendor can access any skill development area.

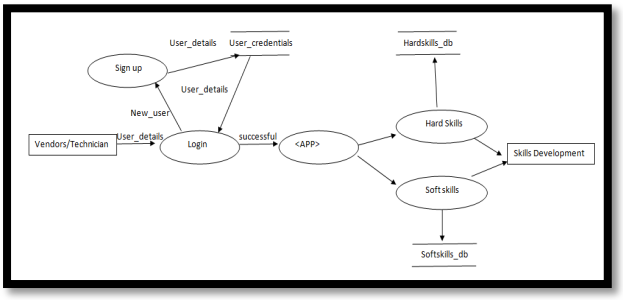

Fig 4.3 Level 2

This DFD Level 2 elaborates the other details required by the application that the vendor has to login directly if he/she is a registered user. If he/she is not a registered user then he has to go through all the steps as mentioned in DFD Level 0 diagram. After successfully signing up for the app, the vendor is now allowed to access any skill development area. As the vendor selects the skill area, the database is made available of that particular skill to the application.

APRIORI ALGORITHM

Association rule mining is a classic algorithm used in data mining for learning association rules and it has several practical applications. Association analysis is applicable in all the major application domains such as bioinformatics, geo informatics, data mining, web mining, medical diagnosis and scientific data analysis. This is one of the data mining algorithms that we are going to use in our application development. [3] We would use this algorithm to find an association between the technicians (maid,plumber,etc) and the requirement of the organization. These associations are referred to as positive associations. However, valuable information can be mined with the help of negative associations.The organization is going to provide us with database or data warehouse that stores large amount of records of the technicians that are collected from different locations. The overhead in integrating the data sources will be too high so we will use mining association rule in a single large database that would require less processing power. Due to property of distributed environments, conventional technology used for centralized data mining is no longer suitable for new systems. Grid service implements apriori algorithm in parallel and distributed manner.

Apriori algorithm is executed on multiple grid nodes in parallel. Distributed data mining algorithms optimize the exchange of data needed to develop global knowledge models based on concurrent mining of remote data sets. Fast Distributed Mining (FDM) Algorithm is implemented on grid network. In each grid node, FDM finds the local support counts and prunes all infrequent item sets. After completing local pruning, each grid node broadcasts messages containing all the remaining candidate sets to all other grid nodes to request their support counts. It then decides whether large itemsets are globally frequent and generates the candidate itemsets from those globally frequent itemsets. The FDM communication complexity is

$$O(|Cp| * n),$$

where |Cp| and n are large itemsets and the number of sites

The three basic operations used by the genetic algorithm are selection, crossover and mutation.The selection operation is used to select individual items from organization's database. This is usually done by applying basic criteria for example: the maid must have 5 years of experience in cleaning house.

These values are arranged in descending order and accumulated from which one value is chosen. The crossover operation refers to the process of taking more than one parent solution and producing a child solution from them.

Example: Once the database is sorted according to the basic criteria, we must be apple to eliminate all the data that does not satisfy the condition and then select one solution that completely satisfies the criteria and make it as a parent solution. On the basis of the parent solution, the other datasets must be selected.

Finally, the mutation operation maintains genetic diversity from one generation of a database of the genetic algorithm to the next. In mutation, there is a possibility that the solution might change entirely from the previous solution. This helps prevent the database from stagnating at any local optima. Mutation occurs during evolution according to a user-definable mutation probability. Thus, applying these basic operations of genetic algorithm can result in a better solution.

Implementation

The frequent item sets generated by Apriori algorithm are optimized using Genetic Algorithm as follows:

Step 1: Begin

Step 2: Read the sample record file, which fits in the memory (provided by the company)

Step 3: Apply Apriori algorithm on the sample data by setting the support and confidence values to generate the sets of requent item sets

Step 4: Apply selection method of genetic algorithm to this item set collection to select two technicians.

Step 5: Apply crossover and mutation on selected item sets to find association rules.

Step 6: Repeat the steps 3-5 till desired number of generations is obtained.

Step 7: End

Improved Approaches

In order to obtain a set of improvements to a given development methodology, one must first analyze the key method characteristics that have yielded successful results in previous projects. For mobile application development methods, key success characteristics are identified in (Rahimian & Ramsin, 2008). These are agility of the approach, market consciousness, software product line support, architecture-based development, support for reusability, inclusion of review and learning sessions, and early specification of physical architecture. Some of these key features can already be found in the Mobile-D method (agility, early specification of physical architecture, architecture-based development, and review and learning sessions); however, the method could be improved if more of these key success features could be integrated.[4]

The following list represents an adapted prioritization of traits for successful mobile application development methodologies.

- Agility

- Market consciousness
- Early specification of physical architecture
- End-user feedback support
- Software product line support
- Reusability support
- Architecture-based development
- Review and learning sessions

OUTCOMES

• Daily use of the application will help vendors to develop their skills.
• It will solve a major problem for the startup which is finding trained professionals.
• The startup can easily hire untrained professionals and train them with the help of the application.
• The organization will be able to actively pursue continuous improvement.
• Continuous improvement: This expected outcome requires that: The organization actively pursues continuous improvement.
• Regulatory compliance: This expected outcome requires that: The organization's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, and professional standards.

CONCLUSION

The recent demand in the android application market is for professional consumer service platform that provides you hassle free, punctual and transparent utility services at your doorstep. Taking this demand into consideration, a start-up named Urbanity Multisolutions Private Limited (brand name DIDI) in the vocational education and service delivery space aspires to provide vocational training in all women centered services like house-keeping, beauticians, chef etc. and then create a marketplace for discovery of these services by end users.

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We remain indebted to our H.O.D, Dr. Vinayak Bharadi, IT Department, Principal, Dr. B.K. Mishra for their comments and kind permission to complete this project. We would also like to thank them for their timely suggestions and valuable guidance.

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