Expense Tracker

A Mid-Term Progress Report Submitted in partial fulfillment of the requirements for the award of the degree of
BACHELORS OF TECHNOLOGY in
Information Technology

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Gurnoor Singh

Abstract

Modern life offers a plethora of options of services and goods for consumers. As a result, peoples expenses have gone up dramatically, e.g., compared to a decade ago, and the cost of living has been increasing day by day. Thus it becomes essential to keep a check on expenses in order to live a good life with a proper budget set up.

The Android OS smartphones is one of the top-selling in the world ,it is apparent that people have been using smartphones as an organizational tool. .

Expense Tracker Mobile Application (Monitary) was developed for Android users to keep track of their expenses and determine whether they are spending as per their set budget. Potential users need to input the required data such as the expense amount, merchant, category, and date when the expense was made. Optional data such as sub-category and extra notes about the expense can be entered as well.The application allows users to track their expenses daily, weekly, monthly, and yearly in terms of summary, bar graphs, and pie-charts.

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CHAPTER 1

INTRODUCTION

1.1 Overview

Forget about not remembering where you spent your money! Keep track of your expenses and get a lot of statistics to know in what you spend more and you can evaluate where you can cut some expenses! Take advantage of this tool that will help you to manage your money and be informed all the time. You can also configure to get notifications when you have to make some payments every month so you dont forget! This Application is made for any user who wants or wish to keep a better track of their expenses in order to keep them in a same place.

1.2 Introduction To Project

With the launch and increase in sales of smartphones over the last few years, people are using mobile applications to get their work done, which makes their lives easier. Mobile applications comprise various different categories such as Entertainment, Sports, Lifestyle, Education, Games, Food and Drink, Health and Fitness, Finance, etc. This Expense Tracker application falls in the Finance Category and serves the important purpose of managing finances which is a very important part of ones life. The software product went through the design, development, and the testing phase as a part of the Software Development Lifecycle.

The applications interface is designed using custom art elements, the functionality is implemented using Android SDK, and the phase of testing the product was accomplished successfully. The application is not much user intensive but just comprises of having them enter the expense amount, date, category, merchant and other optional attributes (taking picture of the receipts, entering notes about the expense, adding subcategories to the categories). With this entered information, the user is able to see the expense details daily, weekly, monthly, and yearly in figures, graphs. All these topics have been explained in detail in their respective chapters

1.3 Objectives

- Implement the various concepts of Android programming together within an application that becomes helpful for intended users.

- Developing an Android based money management system having user friendly interface.

1.4 Intended User

This Application is made for any user who wants or wish to keep a better track of their expenses in order to keep them in a same place.

1.5 Features

- Saves information of expenses
- Manage categories for expenses
- Create reminders to payment dates.
- Shows statistics of saved data.

CHAPTER 2

REQUIREMENT ANALYSIS

2.1 Feasibility Study

Feasibility study is made to see if the project on completion will serve the purpose of the organization for the amount of work, effort and the time that spend on it. Feasibility study lets the developer foresee the future of the project and the usefulness. A feasibility study of a system proposal is according to its workability, which is the impact on the organization, ability to meet their user needs and effective use of resources. Carrying out a feasibility study involves information assessment, information collection and report writing. The information assessment phase identifies the information that is required to answer the three questions set out above. Once the information has been identified, you should question information sources to discover the answers to these questions Thus when a new application is proposed it normally goes through a feasibility study before it is approved for development.

Objectives of feasibility study are listed below.

- To analyze whether the software will meet organizational requirements
- To determine whether the software can be implemented using the current technology and within the specified budget and schedule
- To determine whether the software can be integrated with other existing software.

2.1.1 Types of Feasibility

Various types of feasibility that are commonly considered include technical feasibility, operational feasibility, and economic feasibility.

2.1.1.1 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. 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. 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. When writing a feasibility report, the following should be taken to consideration:

- A brief description of the business to assess more possible factors which could affect the study
- The part of the business being examined
- The human and economic factor
- The possible solutions to the problem

The system must be evaluated from the technical point of view first. The assessment of this feasibility must be based on an outline design of the system requirement in the terms of input, output, programs and procedures. Having identified an outline system, the investigation must go on to suggest the type of equipment, required method developing the system, of running the system once it has been designed. Technical feasibility assesses the current resources (such as hardware and software) and technology, which are required to accomplish user requirements in the software within the allocated time and budget. For this, the software development team ascertains whether the current resources and technology can be upgraded or added in the software to accomplish specified user requirements. Technical feasibility also performs the following tasks.

- Analyzes the technical skills and capabilities of the software development team members
- Determines whether the relevant technology is stable and established
- Ascertains that the technology chosen for software development has a large number of users so that they can be consulted when problems arise or improvements are required.

Technical issues raised during the investigation are:

- Does the existing technology sufficient for the suggested one?
- Can the system expand if developed?

The project should be developed such that the necessary functions and performance are achieved within the constraints. The project is developed within latest technology. Through the technology may become obsolete after some period of time, due to the fact that never version of same software supports older versions, the system may still be used. So there are minimal constraints involved with this project. The system has been developed using Java the project is technically feasible for development.

2.1.1.2 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.

Economic feasibility is the cost and logistical outlook for a business project or endeavor. Prior to embarking on a new venture, most businesses conduct an economic feasibility study, which is a study that analyzes data to determine whether the cost of the prospective new venture will ultimately be profitable to the company. Economic feasibility is sometimes determined within an organization, while other times companies hire an external company that specializes in conducting economic feasibility studies for them.

The developing system must be justified by cost and benefit. Criteria to ensure that effort is concentrated on project, which will give best, return at the earliest. One of the factors, which affect the development of a new system, is the cost it would require. Economic feasibility determines whether the required software is capable of generating financial gains for an organization. It involves the cost incurred on the software development team, estimated cost of hardware and software, cost of performing feasibility study, and so on. For this, it is essential to consider expenses made on purchases (such as hardware purchase) and activities required to carry out software development. In addition, it is necessary to consider the benefits that can be achieved by developing the software. Software is said to be economically feasible if it focuses on the issues listed below.

- Cost incurred on software development to produce long-term gains for an organization.
- Cost required to conduct full software investigation (such as requirements elicitation and requirements analysis).
- Cost of hardware, software, development team, and training.

The following are some of the important financial questions asked during preliminary investigation:

- The costs conduct a full system investigation.
- The cost of the hardware and software.
- The benefits in the form of reduced costs or fewer costly errors.

Since the system is developed as part of project work, there is no manual cost to spend for the proposed system. Also all the resources are already available, it give an indication of the system is economically possible for development.

2.1.1.3 Behavioral Feasibility

Behavioral feasibility assesses the extent to which the required software performs a series of steps to solve business problems and user requirements. It is a measure of how well the solution of problems or a specific alternative solution will work in the organization. It is also measure of how people feel about the system. If the system is not easy to operate, than operational process would be difficult. The operator of the system should be given proper training. The system should be made such that the user can interface the system without any problem.

Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. The operational feasibility assessment focuses on the degree to which the proposed development projects fits in with the existing business environment and objectives with regard to development schedule, delivery date, corporate culture, and existing business processes.

- Determines whether the problems anticipated in user requirements are of high priority.
- Determines whether the solution suggested by the software development team is acceptable.
- Analyzes whether users will adapt to a new software.
- Determines whether the organization is satisfied by the alternative solutions proposed by the software development team.

This includes the following questions:

- Is there sufficient support for the users?
- Will the proposed system cause harm?
- The project would be beneficial because it satisfies the objectives when developed and installed. All behavioral aspects are considered carefully and conclude that the project is behaviorally feasible.

2.2 Software Requirement Analysis

Software requirement analysis is a process of gathering and interpreting facts, diagnosing problems and the information to recommend improvements on the system. It is a problem solving activity that requires intensive communication between the system users and system developers. System analysis or study is an important phase of any system development process. The system is studied to the minutest detail and analyzed. The system analyst plays the role of the interrogator and dwells deep into the working of the present system. The system is viewed as a whole and the input to the system are identified. The outputs from the organizations are traced to the various processes. System analysis is concerned with becoming aware of the problem, identifying the relevant and decisional variables, analyzing and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action.

A detailed study of the process must be made by various techniques like interviews, questionnaires etc. The data collected by these sources must be scrutinized to arrive to a conclusion. The conclusion is an understanding of how the system functions. This system is called the existing system. Now the existing system is subjected to close study and problem areas are identified. The designer now functions as a problem solver and tries to sort out the difficulties that the enterprise faces. The solutions are given as proposals. The proposal is then weighed with the existing system analytically and the best one is selected. The proposal is presented to the user for an endorsement by the user. The proposal is reviewed on user request and suitable changes are made. This is loop that ends as soon as the user is satisfied with proposal.

Preliminary study is the process of gathering and interpreting facts, using the information for further studies on the system. Preliminary study is problem solving activity that requires intensive communication between the system users and system developers. It does various feasibility studies. In these studies a rough figure of the system activities can be obtained, from which the decision about the strategies to be followed for effective system study and analysis can be taken.

CHAPTER 3

SYSTEM DESIGN

3.1 Detail Design

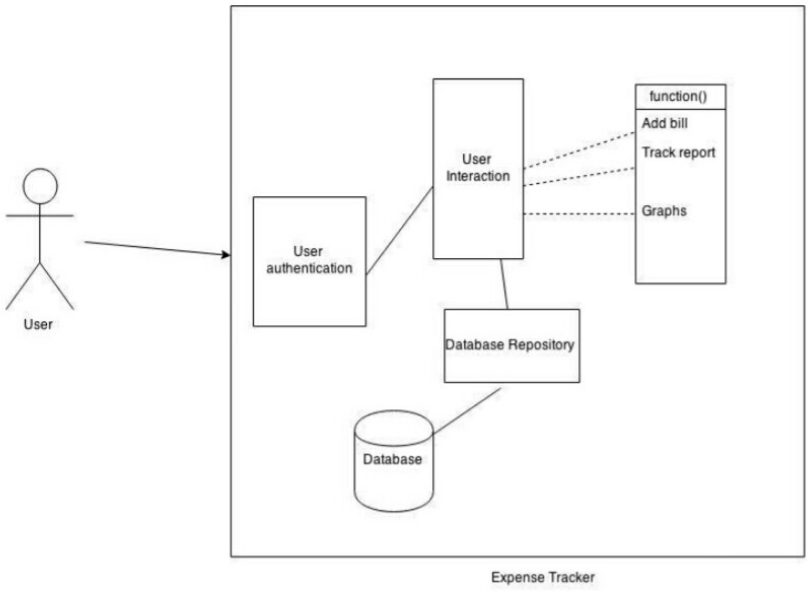

Figure 3.1: System Diagram

The basic requirement of this app is that the user must be having ANDROID Operating System in his phone or tablet. The minimum version of Androids Operating System must be ICECREAM SANDWICHAll the versions of Android OS above IcecreamSandwich(i.e. Jellybean, Kitkat, Lollipop,Marshmallows) will support this app. A user needs Monitary app installed in device .
As shown in the Figure 3.2, .
Brief introduction showing the features available in the application.
This are the options the navigation drawer the app will contain. These will contain the screens the user can navigate too that can be seen in Figure 3.3.

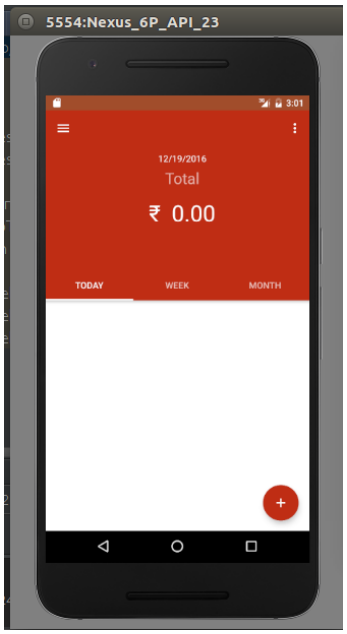

Figure 3.2: Home Screen

Statistics will be able to change according to the dates selected. Default values will be the current week. User Will be able to see diagrams according to Quantity and days, Quantity and categories and others.as seen in the Figure 3.4.

Reminder view will contain details from the reminder created and the user can edit the reminder values. in Figure 3.5.

Reminder screen will show the current saved Reminder and if they are active or not. To activate one it will have a switch next to the name so it can be activated in any moment. The user will be able to erase and add from this view as seen in the Figure 3.6. It's named as output.dxf. We can open that file in LibreCAD directly from the command-line.

Expenses View is the main screen that will be showed. The user will be able to add expenses and see a total amount in Today, Week and Month. as shown in Figure 3.7.
This activity will provide necessary help to the user. One can also mail the maker (GURNOOR SINGH) for further queries as shown in Figure 3.8.

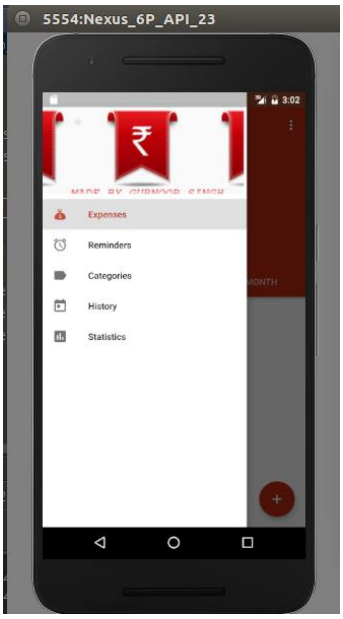

Figure 3.3: Navigation Drawer

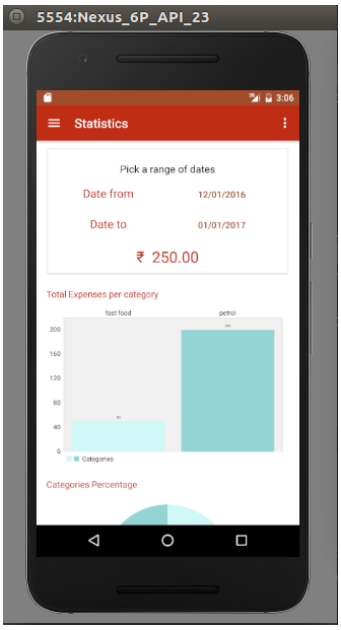

Figure 3.4: Statistics

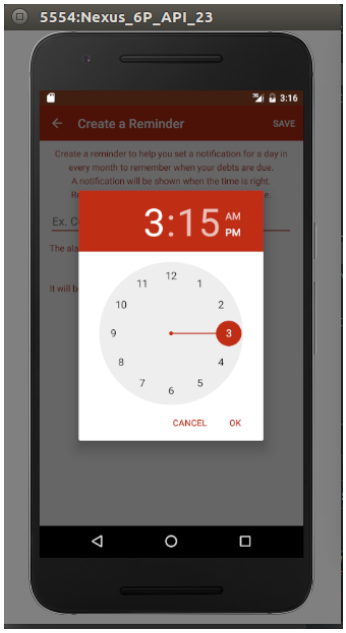

Figure 3.5: Reminder

Figure 3.6: Expenses View

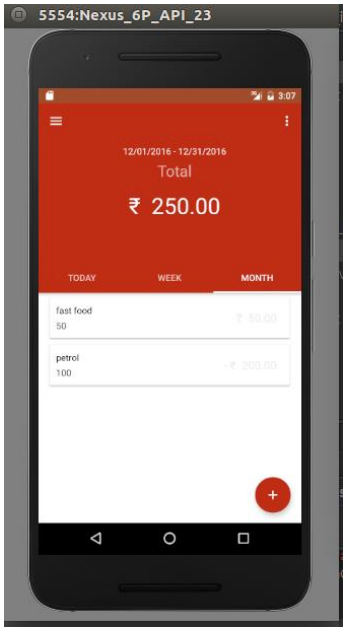

Figure 3.7: Expenses View II

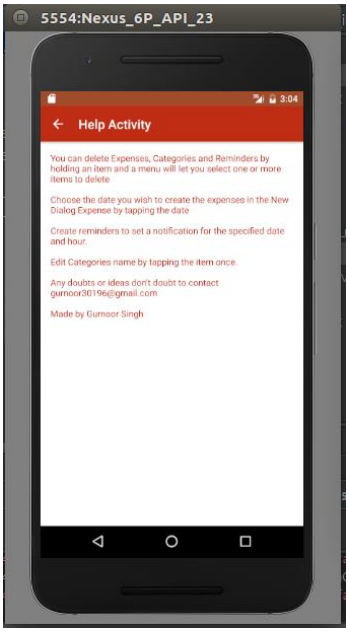

Figure 3.8: Help

CHAPTER 4

IMPLEMENTATION

4.1 Technologies Used

Android provides a rich application framework that allows you to build innovative apps and games for mobile devices in a Java language environment. The documents listed in the left navigation provide details about how to build apps using Android's various APIs.The various fundamental concepts about the Android app framework:

4.1.1 Android

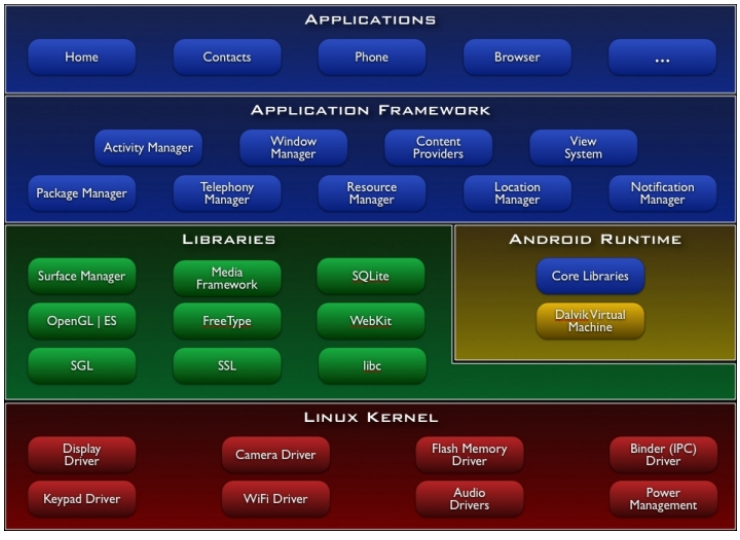

Figure 4.1: Android Anatomy

Apps provide multiple entry points.Android apps are built as a combination of distinct components that can be invoked individually. For instance, an individual activity provides a single screen for a userinterface, and a service independently performs work in the background. From one component you can start another component using an intent. You can even start a component in a different app, such as an activity in a maps app to show an address. This model provides

multiple entry points for a single app and allows any app to behave as a user's "default" for an action that other apps may invoke.

Apps adapt to different devices, Android provides an adaptive app framework that allows you to provide unique resources for different device configurations. For example, you can create different XML layout les for different screen sizes and the system determines which layout to apply based on the current device's screen size. You can query the availability of device features at runtime if any app features require specific hardware such as a camera. If necessary, you can also declare features your app requires so app markets such as Google Play Store do not allow installation on devices that do not support that feature Android comes with an Android market which is an online software store. It was developed by Google.

It allows Android users to select, and download applications developed by third party developers and use them. There are around 2.0 lack+ games, application and widgets available on the market for users. Android applications are written in java programming language. Android is available as open source for developers to develop applications which can be further used for selling in android market. There are around 200000 applications developed for android with over 3 billion+ downloads. Android relies on Linux version 2.6 for core system services such as security, memory management, process management, network stack, and driver model. For software development, Android provides Android SDK (Software development kit).

4.1.2 Activity Lifecycle

Activities in the system are managed as an activity stack. When a new activity is started, it is placed on the top of the stack and becomes the running activitythe previous activity always remains below it in the stack, and will not come to the foreground again until the new activity exits. An activity has essentially four states: If an activity in the foreground of the screen (at the top of the stack), it is active or running.

If an activity has lost focus but is still visible (that is, a new non-full-sized or transparent activity has focus on top of your activity), it is paused. A paused activity is completely alive (it maintains all state and member information and remains attached to the window manager), but can be killed by the system in extreme low memory situations.

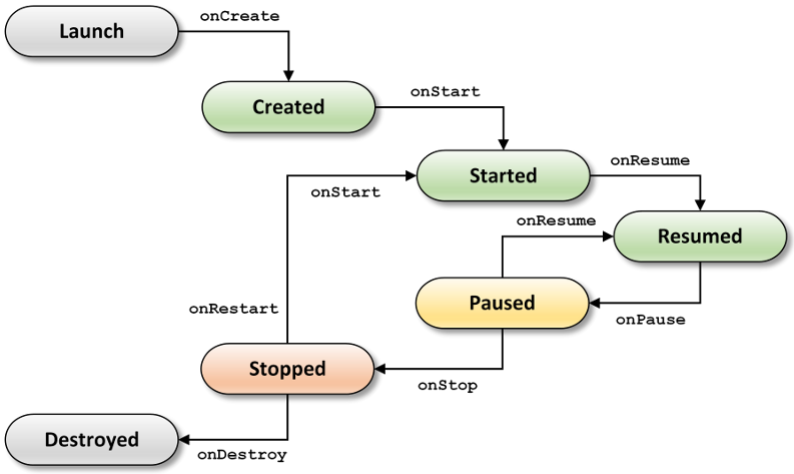

Figure 4.2: Activity Life Cycle

If an activity is completely obscured by another activity, it is stopped. It still retains all state

and member information, however, it is no longer visible to the user so its window is hidden and it will often be killed by the system when memory is needed elsewhere.

If an activity is paused or stopped, the system can drop the activity from memory by either asking it to finish, or simply killing its process. When it is displayed again to the user, it must be completely restarted and restored to its previous state.

4.2 Libraries used in making this application

- **Android Support Library** Android Support Library, Card View, Recycler View, Material : The application will follow Material design guidelines.
- **Realm**

  Library to use Realm ORM in the application. This will allow to save data in the database of the app and to retrieve, update and delete objects saved.

- **Willian Charts** Library to implement the graphics to show the statistics of the app. Statistics include Expenses per month, per week and comparison of expenses according to selected dates.

4.2.1 Impliment UI for Each Activity and Fragment

- UI for MainActivity
- UI for Expenses Activity
- UI for Expense Detail that will show last known expenses in the same category as a summary.
- UI for Categories Fragment
- UI for Statistics fragment
- **Expenses Fragment** Implement Business Logic for Adding and removing Expenses. Including removing from recycler view:
  - Add expense or income
  - Remove expense or income from recycler view after enter to the detail page.
- **Categories Fragment**
  - Categories add and remove from recycler view.
  - Detail of category with graph showing last used in the present week.
- **Statistics Fragment** Picker to select dates to make the query.
  - Show Graph for expenses made that month
  - Show graph for expenses made by category

4.2.2 Any other supporting Language

Java is a platform-independent programming language used to create secure and robust application that may run on a single computer or may be distributed among servers and clients over a network.

Java features such as platform-independency and portability ensure that while de-veloping Java EE enterprise applications, you do not face the problems related to hardware , network , and the operating system.

Java was started as a project called "Oak" by James Gosling in June 1991. Gosling's goals were to implement a virtual machine and a language that had a familiar C like notation but with greater uniformity and simplicity than C/C++. The First publication of Java 1.0 was released by Sun Microsystems in 1995. It made the promise of "Write Once, Run Anywhere", with free runtimes on popular platforms. In 2006-2007 Sun released java as open source and andplateform independent soft-ware. Over time new enhanced versions of Java have been released. The current version of Java is Java 1.7 which is also known as Java 7.he Java virtual machine (JVM) is a software implementation of a computer that executes programs like a real machine. The Java virtual machine is written specifically for a specific operating system, e.g. for Linux a special implementation is required as well as for Windows.

Java programs are compiled by the Java compiler into bytecode. The Java virtual machine interprets this bytecode and executes the Java program. The Java runtime environment (JRE) consists of the JVM and the Java class li- braries and contains the necessary functionality to start Java programs. The JDK contains in addition the development tools necessary to create Java pro-grams. The JDK consists therefore of a Java compiler, the Java virtual machine, and the Java class libraries.

The characteristics and features of java are as follows :

- **Simple**
- **OOPS**

  Object Oriented following characteristics.

  - Encapsulation
  - Polymor-phism
  - Inheritance
  - Abstraction
- **Secure**
- **Robust**
- **Platform-independent**
- **Architectural Neural**
- **Portable**
- **Dynamic**
- **Interpreted**
- **High performance**

- **Multithreading**
- **Distributed**

4.2.3 Introduction to LaTeX

Figure 4.3: LaTeX Logo

LaTeX, I had never heard about this term before doing this project, but when I came to know about it's features, it is just excellent. LaTeX(pronounced /letk/, /letx/, /ltx/, or /ltk/) is a document markup language and document preparation system for the TeX typesetting program. Within the typesetting system, its name is styled as LaTeX.

Figure 4.4: Donald Knuth, Inventor Of TeX typesetting system

Within the typesetting system, its name is styled as LaTeX. The term LaTeX refers only to the language in which documents are written, not to the editor used to write those documents. In order to create a document in LaTeX, a .tex file must be created using some form of text editor. While most text editors can be used to create a LaTeX document, a number of editors have been created specifically for working with LaTeX.

LaTeX is most widely used by mathematicians, scientists, engineers, philosophers, linguists, economists and other scholars in academia. As a primary or intermediate format, e.g., translating DocBook and other XML-based formats to PDF, LaTeX is used because of the high quality of typesetting achievable by TeX. The typesetting system offers programmable desktop publishing features and extensive facilities for automating most aspects of typesetting and desktop publishing, including numbering and cross-referencing, tables and figures, page layout and bibliographies.

LaTeX is intended to provide a high-level language that accesses the power of TeX. LaTeX essentially comprises a collection of TeX macros and a program to process LaTeXdocuments. Because the TeX formatting commands are very low-level, it is usually much simpler for end-users to use LaTeX.

4.2.3.1 Typesetting

LaTeX is based on the idea that authors should be able to focus on the content of what they are writing without being distracted by its visual presentation. in preparing a LaTeX document, the author specifies the logical structure using familiar concepts such as chapter, section, table, figure, etc., and lets the LaTeX system worry about the presentation of these structures. it therefore encourages the separation of layout from content while still allowing manual typesetting adjustments where needed.

```
\documentclass[12pt]{article}
\usepackage{amsmath}
\title{\LaTeX}
\begin{document}
  \maketitle
  \LaTeX{} is a document preparation system
  for the \TeX{} typesetting program.
   \par
   $E=mc^2$
\end{document}
```

4.2.3.2 Installing LaTeX on System

Installation of LaTeX on personal system is quite easy. As i have used LaTeX on Ubuntu 13.04 so i am discussing the installation steps for Ubuntu 13.04 here:

- Go to terminal and type

  sudo apt-get install texlive-full

- Your Latex will be installed on your system and you can check for manual page by typing.

  man latex

  in terminal which gives manual for latex command.

- To do very next step now one should stick this to mind that the document which one is going to produce is written in any type of editor whether it may be your most common usable editor Gedit or you can use vim by installing first vim into your system using command.

  sudo apt-get install vim

- After you have written your document it is to be embedded with some set of commands that Latex uses so as to give a structure to your document. Note that whenever you wish your document to be looked into some other style just change these set of commands.

- When you have done all these things save your piece of code with .tex format say test.tex. Go to terminal and type

  latex path of the file test.tex Or pdflatex path of the file test.tex

eg: pdflatex test.tex
for producing pdf file simultaneously.
After compiling it type command

evince filename.pdf
eg: evince test.pdf
To see output pdf file.

4.2.4 Doxygen

Doxygen is a documentation generator, a tool for writing software reference documentation. The documentation is written within code, and is thus relatively easy to keep up to date. Doxygen can cross reference documentation and code, so that the reader of a document can easily refer to the actual code. Doxygen supports multiple programming languages, especially C++, C, C#, Objective-C, Java, Python, IDL, VHDL, Fortran and PHP.[2] Doxygen is free software, released under the terms of the GNU General Public License.

Doxygen is the de facto standard tool for generating documentation from annotated C++ sources, but it also supports other popular programming languages such as C, Objective-C, C#, PHP, Java, Python, IDL (Corba, Microsoft, and UNO/OpenOffice flavors), Fortran, VHDL, Tcl, and to some extent. Doxygen can help you in three ways:

- It can generate an on-line documentation browser (in HTML) and/or an off-line reference manual (in) from a set of documented source files. There is also support for generating output in RTF (MS-Word), PostScript, hyperlinked PDF, compressed HTML, and Unix man pages. The documentation is extracted directly from the sources, which makes it much easier to keep the documentation consistent with the source code.

- You can configure doxygen to extract the code structure from undocumented source files. This is very useful to quickly find your way in large source distributions. Doxygen can also visualize the relations between the various elements by means of include dependency graphs, inheritance diagrams, and collaboration diagrams, which are all generated automatically.

- You can also use doxygen for creating normal documentation (as I did for the doxygen user manual and web-site).

Doxygen looks at the files extension to determine how to parse a file. If a file has an .idl or .odl extension it is treated as an IDL file. If it has a .java extension it is treated as a file written in Java. Files ending with .cs are treated as C# files and the .py extension selects the Python parser. Finally, files with the extensions .php, .php4, .inc or .phtml are treated as PHP sources. Any other extension is parsed as if it is a C/C++ file, where files that end with .m are treated as Objective-C source files.

CHAPTER 5

CONCLUSION AND FUTURE SCOPE

5.1 Conclusion

Earlier user records are maintained in a diary which leads to the wastage of paper.Thus makes the system not ecofriendly. It .After working on the Android money management we would like to conclude that with the help of this app,maintainence of user money records becomes simple and easier.

5.2 Future Scope

The app uses android technology which has evergreen scope. The app obviously has a bright future scope as there is test which includes different level and type of questions .. Moreover in Future, one can see his/her earlier records regarding the payments and extra diets. The platform used is android. Nowadays Android has become very popular which is an open-source, Linux-based operating system mainly designed by Google for smart-phones and tablets.

Many mobile Apps development industries are considering Android Application Development as one of the best business opportunities, for this they need to hire a lot of knowledgeable mobile application developer in future. This adds a big sign of scope of mobile Apps in future.

In the current job market of mobile application development, the need for inventive App developers is huge and still increasing. Android Apps development can also be taken up as a part time job. You can create your own applications at home and submit it to the Google Play store which can be downloaded by smart-phone users.

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