

**Development of Android Application Programming-Kit**

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of  
Bachelor of Science in computer Science and Engineering.

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NOVEMBER, 2018

## **APPROVAL**

This Project titled “**programming-kit android application**”, submitted by **Gabinda saha**, ID No: **151-15-5053**, **Jasmin Akter**, ID No:**151-15-5011**, **Tamanna Islam Anny**, ID No:**151-15-5251** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering (BSc) and approved as to its style and contents. The presentation has been held on 11/12/18.

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## DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Md. Sazzadur Ahamed, Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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## ACKNOWLEDGEMENT

First we express our heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the final year project successfully.

We really grateful and wish our profound our indebtedness to **Md. Sazzadur Ahamed** Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of “*Android App Development*” to carry out this project. His endless patience ,scholarly guidance ,continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting them at all stage have made it possible to complete this project.

We would like to express our heartiest gratitude to **Prof. Dr. Syed Akhter Hossain**, Head, Department of CSE, for his kind help to finish our project and also to other faculty member and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

## **ABSTRACT**

Programming kit is an android based Application. The application is very essential for an academic students. This application is useful to students who are interested to learning programming language. This application is useful to beginner. This application contains programming languages like (C, Java, PHP, Python) details with example and related video tutorial. We also add complier for real time practice program. The big opportunities of this application is quiz. This quiz is like a game. If user give correct answer his/her score add in the application. If any student give wrong answer they can also exit the online game quiz. Any students or user can join the individual topics and quiz to learn programming language. it is also very useful for any students to test himself continuously. The main purpose of this application is to help practically. The most meaningful part of our android development application programming-kit is that we are add four programming language in an application. By using this application user can learn four programming language as their like. To develop this application we are using JDK, android studio, firebase real-time database etc. The main purpose of our application is to help user practically. Our application can growth the knowledge of ICT sector.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

At present, android is very important platform for everyone. The aim of our application is to help the student or any person by providing online resource. Our project is android based development educational application. Our project helps the student or person who are learn basic programming language. Our project described details on C, Java, PHP and Python. Our project described with example of programming language and can practice example instantly. And also justify himself / herself give the online quiz. Quiz system helps the student learning better. Any students can learn the particular language. Our project can help the students who are studying computer related course. Our project will increase the skills on ICT sector.

### 1.2 Motivation

In the present world, all the students use smartphone for every purpose. Students search learning tools in mobile application. Many students are interested to learn programming Languages. But they did not find the proper guidelines. But programming language is very important in present life. At present we want to develop our country, we need to growth knowledge in ICT sector. For these purpose programming language is very important. Our project provides basic concepts of programming language like C, Java, PHP, PYTHON. Everything's is described fundamentally in our project. Our application gives a basic theory for programming language.

### 1.3 Objectives

- The main objectives of our project are help to person or students who are interested to learning programming language.
- Students can find video tutorial.
- Students can give online quiz game.
- Students can share apps link another person.

- Students can use compiler for real time practice.
- Students can learn C/Java/PHP/Python as their personal interest.

#### **1.4 Expected outcomes**

The outcomes of our project:

- We want to increase programming knowledge.
- This application helps to learn easily programming concept.
- If student can see video tutorial they can learn better.
- We want to growth knowledge in ICT sector.
- If student can attend all quizzes they can increase their knowledge.

Our project will help to build up a career.

#### **1.5 Report Layout**

Chapter1 we are trying to about discuss our programming-kit project basic introduction. Its objective, motivation and expected outcomes.

In this chapter2 we are discuss about existing related work of our project. And comparative the exiting work and our android development work. And scope of the problem and challenges.

Chapter3 Requirement specification which idea helps to develop our project, how can design our development. We are discussing about the business process model, collection and analysis, use case model of our project, the Entity relationship model (logical data model) and the design requirement which we are used in our development project programming-kit.

Chapter4 design specification in the chapter we are discussing, how we are design our front-end, back-end design, interaction design, user experience, the implementation requirement.

Chapter5 in the chapter we are talking about how we are implement our development project in android studio. How we are implement database, front-end designs, interactions and test the result.

Chapter6 conclusion and future scope, this chapter we are discussing, when we are finished our project work. What feature we add future, how to develop our project. That means in this chapter talking about the conclusion and future scope.

## **CHAPTER 2**

### **BACKGROUND**

#### **2.1 Introduction**

Our project is an android application development that can be operated by smartphones, tablet etc. Nowadays anybody can access internet easily. Most of the people uses smartphone. So Android application is very popular for everyone. Our project name is programming-kit. By this application we learning programming language easily.

#### **2.2 Related work:**

There are two related applications in our application. These existing apps contain only programming basic code. Programming languages like of this application. Programming Languages, programming hub our related work. Programming languages description only basic programming code.

But our application contains features languages, quiz, tutorial, and complier and communicate (share, send). Our application contains video tutorial that help learning programming basic. Our application helps the user learning programming language for the new students. Our application also helps the beginner. But existing application programming language describe only implementation of code. But not describe how this code user easily understand. So existing application have some limited. We are trying to improve our application from the existing application.

#### **2.3 Comparative works:**

Our Programming –kit online application is different from the other existing application. The Existing application is describing only the programming basic code. But our application is described the basic theory, code, video tutorial, complier, online quiz game. Tutorial helps to learn

basically. Here we add compiler if user can practice c programming code. Our online Quiz System help the user justify them.

This is existing application:

Here only describe basic programming codes example.this is very traff for the beginner students.This application can not help the user learn basically.



Figure 2.1: existing application.



Our application: Our application contains languages (C, java, Python, PHP), quiz, Tutorial, Compiler, communicate (Send, Share).

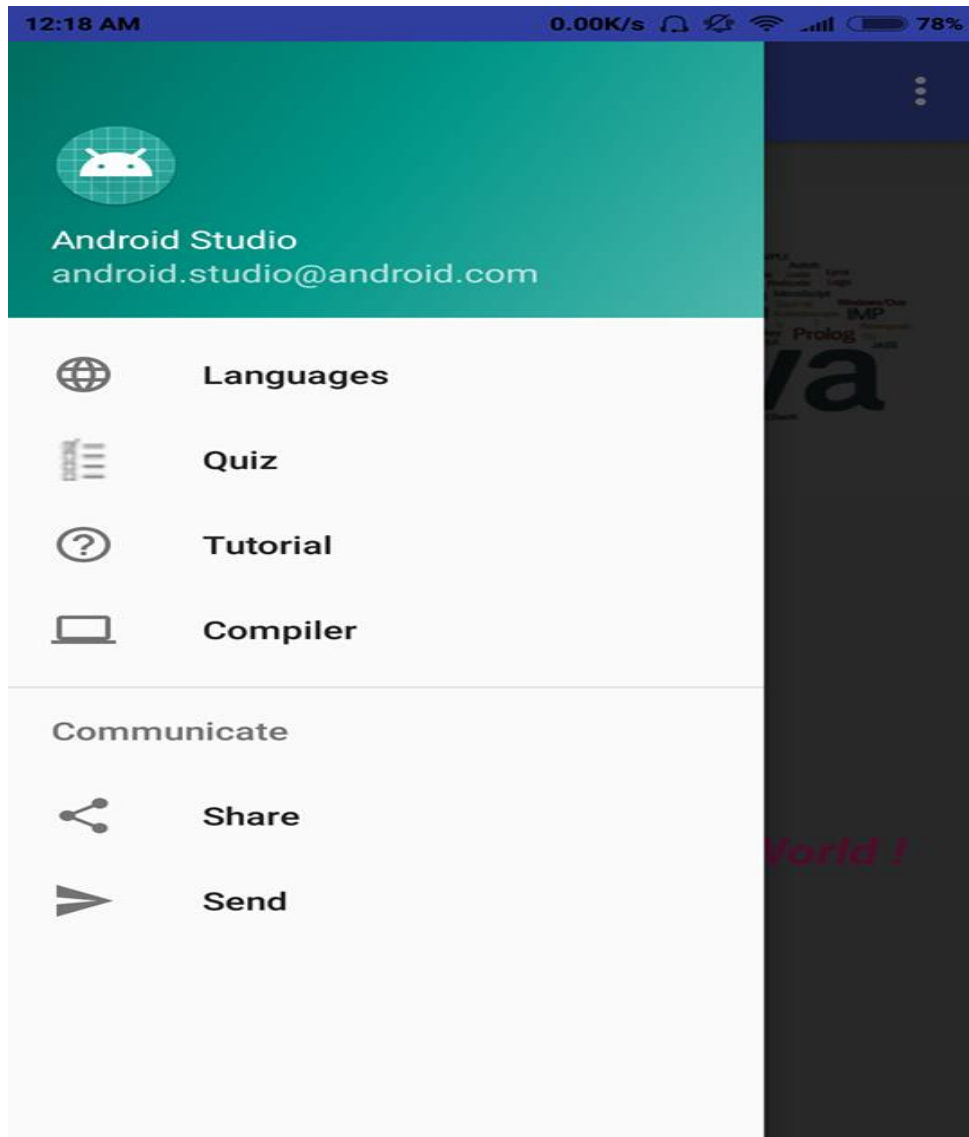


Figure 2.2: existing application.

## **2.4 Scope of the problem:**

The concept of existing application is good. But here only describe programming languages code example. This is very difficult to learn programming for the beginner. Our project concept is mainly who learn programming language basically. In our application we are described every programming language basically with example. We also add video tutorial that user can learn easily. We also add compiler that user can practice examples. One of the big opportunities is the online quiz game system. Online quiz game system is very interesting who learn the programming language

## **2.5 Challenges:**

To completing the project, we have faced many difficulties. To facing the problems of existing application, we are conquering many problems. If we add some extra feature, we have to learn how to make some feature in android studio and how to use this. We save all data online firebase database is not easy to save all data in firebase real time database.

# CHAPTER 3

## REQUIREMENT SPECIFICATION

### 3.1 Business Process Modeling

BPM (business process model) is the process identification, process discovery, process monitoring and controlling, process analysis, process implementation, process redesign. BPM is a typically performed by business analysts, who provide expertise in the modeling discipline.

Types of business process modeling:

- Waterfall
- Code-and-fix
- Spiral
- Rapid prototype
- Unified process(UP)
- Agile methods
- Extreme programming(XP).

Waterfall Model:

Waterfall model is the first software development model. Waterfall model maintain the linear sequential life cycle. It means we starting the new stage of development project, only if the previous stage is complete. Actually implementing a waterfall model within a new software project is a rather straight forward process. In a waterfall, each phase must be completed before the next phase can begin.

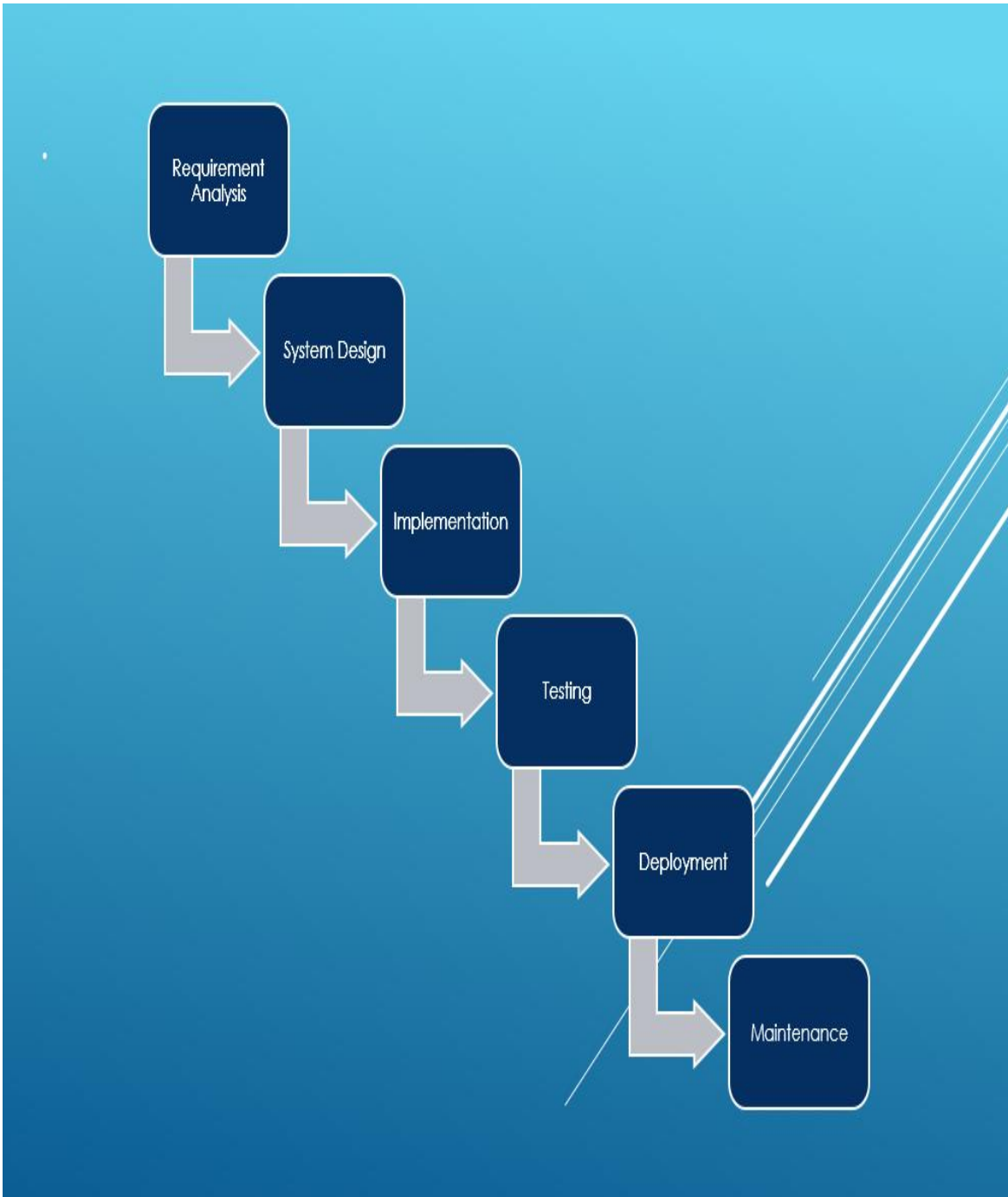


Figure 3.1: Waterfall model

### 3.2 Requirement collection and analysis:

This project we use some software:

- Android studio
- JDK
- Firebase Real-time Database
- Online JSON editor

#### 3.2.1 Android studio:

Android studio is the integrated development environment (IDE). IDE execute the integrated development environment. Android studio holds all the IDE for development of all android application. It holds everything we construct the run android application. If our android studio software is old version, we are find update version for the modify android studio. To find the update version click help→check for updates→restart and update button click. Android studio is provided by google. It has a powerful development executor tools for development user interface. It has important gradle plugin which help us create APKs application files from different configuration.

Giving features are including in updated version:

- Android studio has refactored option, that help us to do specific work.
- Android studio assistance all gradle based problem.
- app-signing and debugging option.
- It has capability to catch performance, usability, version, compatibility and other problems.
- Latest version android studio support kotlin programming language.
- It support android profiler like CPU, memory, network.
- It has capability to current run and rational code editor.
- It has testing all tools.
- It has powerful and unsteady build system.

- Android studio give graphical user interface.

### **3.2.2 JDK:**

JDK means java development-kit. There are three core packages used in java programming. JDK is one of them. JDK permit developers to create java programs and execute it, and run it by the using java virtual machine and java runtime environment. It is used for developing java programming. It is a software development environment.

### **3.2.3 Firebase Real-time Database**

Firebase real time database is accessible from the internet. Firebase real time database is a cloud hosting database. Firebase real time database store data. Firebase real time database favor many platforms like android, IOS, web etc. Firebase real time database Sync messages and to record user-event activity. Firebase real time database data is across all clients in real time. Data is stored J-son format. If we save data in firebase, at first we need the validate data in the online J-son data validator. Then we need to check sublime text. Then we save data in the firebase real time database. Firebase supply real time database. Firebase service as the backend design. the firebase real time database provides a flexible and expression based rules language. Firebase real time database secure our file. Firebase real time database contains cloud fire store, firebase remote config, firebase Hosting and cloud storage. We store data firebase should be structured and data can be read and written. When we integrated with authentication, we can identify who can access to what data and how can access.

### **3.2.4 Online J-son editor**

Online JSON editor is a online android and web based tool to create, edit, view and format and validate. JSON online editor support data side by side. Online JSON support Chrome, firebase, safari, opera, internet, Microsoft explorer etc. online JSON editor save documents by the step→save→online save click here

## **3.3 Use Case Modeling and Description:**

Use case model is very important for development an application. use case is mandatory used in system analysis and design, software engineering to declare, clarify and organize system. use case diagram should contain all the details of our work.

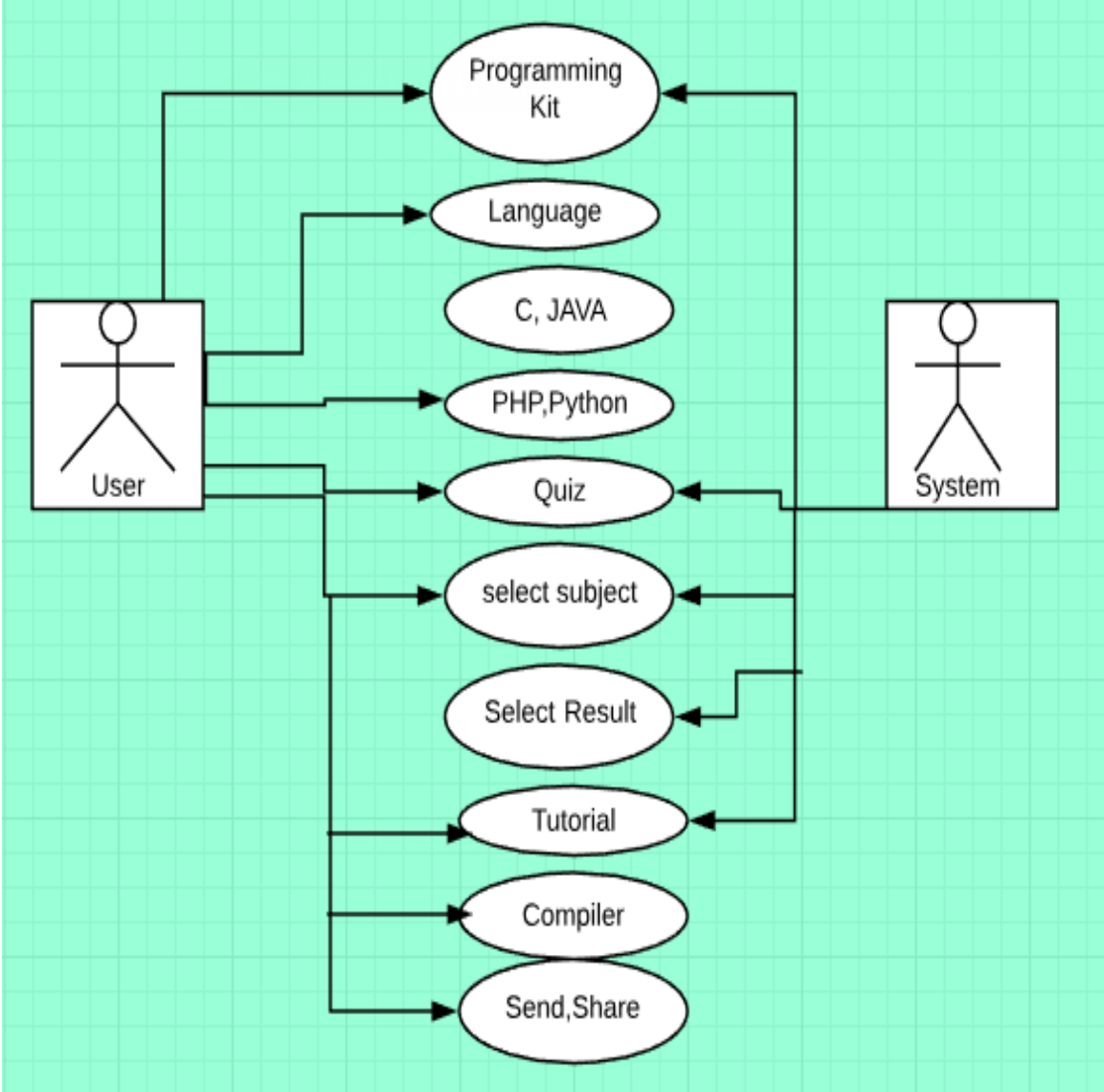


Figure 3.2: Use case model

**3.4 Logical data model**

Logical data model describes the relationship of the entity. logical data model mostly uses in business process model. Logical data model implements a particular computing system. A logical data model is a process of a specific problem domain published independently of a particular database manage action or storage term. Logical data models represent the abstract structure of a domain of information. The Entity-Relationship model or Entity-Relationship diagram (ERD) is a logical data models, it includes the entity, attributes table and relationships.

### **3.4.1 Description of logical data:**

Logical data model also known as E-R (Entity relationship) diagram. Entity Relationship diagram is an entity relationship model, graphical representation of an application. Entity relationship depends on the people, places and object. Our application has many types of user. Anyone Can use our application. User learn languages. Here relationship between user and languages is learning. User share link another person. Here relationship between user and share is communicated. E-R builds relationship between user and system. For this cause E-R diagram is most important for development any application. E-R diagram also help us how can user benefit by using this application.



The figure of E-R diagram:

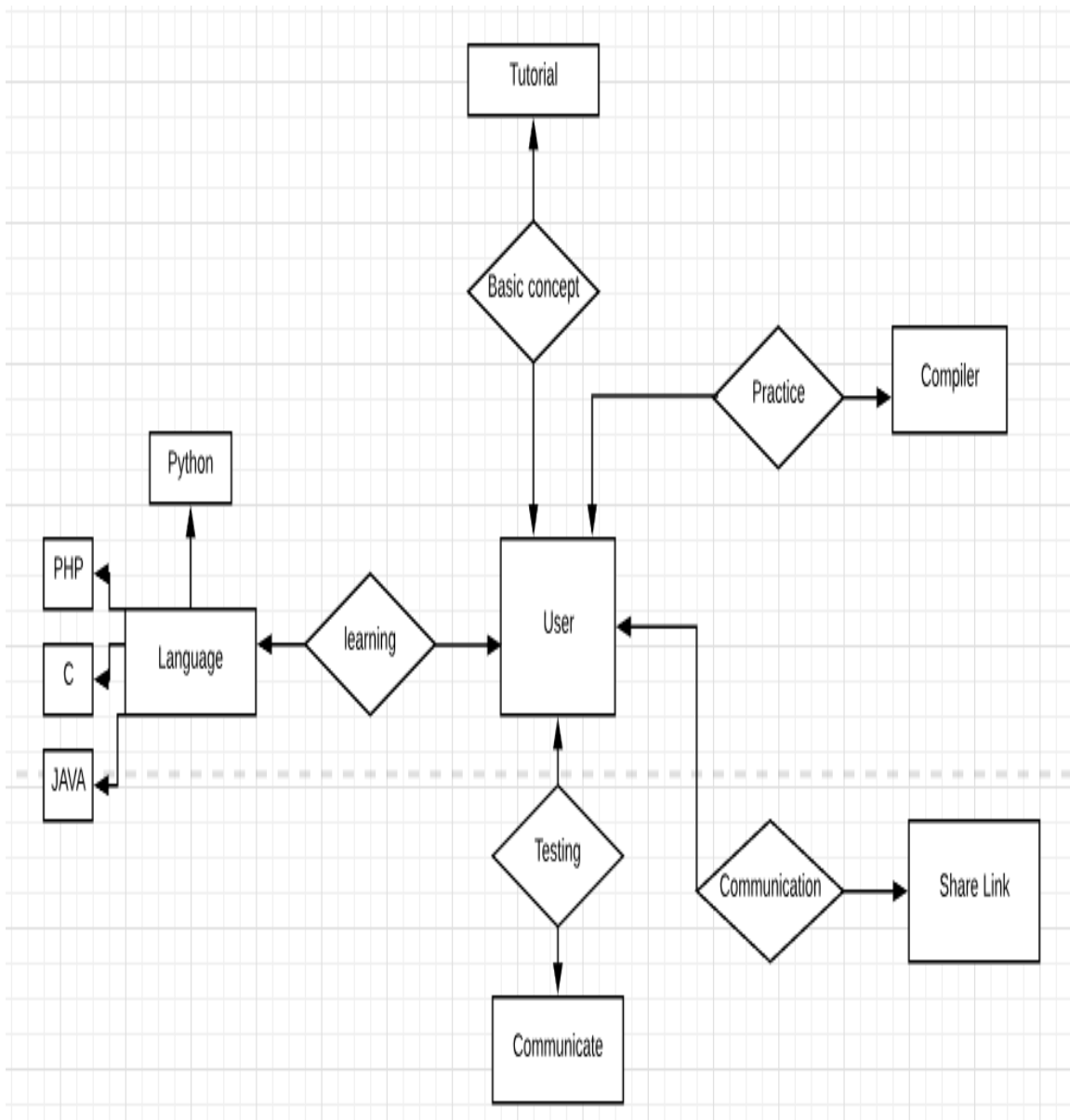


Figure 3.3: E-R diagram for programming-kit

### **3.5 Design Requirements:**

For the design requirements followings were kept in mind:

#### **3.5.1 Simple and flexible**

Make the project simple and flexible for the user.

#### **3.5.2 compatible**

It should be fit the total system.

#### **3.5.3 Efficiency**

Efficiency is the most important things in the project. The system should be run without delaying.

## CHAPTER 4

### DESIGN SPECIFICATION

#### 4.1 Front-end design

Front-end design is very important for an application. An application the front-end design is and apparent part of an application. By the which, the user can interact with the application. Front-end design makes the application attractive for the user. If the front design is simple and usable the user can easily use this. We are using android for the project. We are used XML (mark-up language) to make user interface. Basically activity.xml is used for layout designing. We design UI and layout of our application using xml. Programming-kit android application has many pages. So we are designing many page using navigation drawer activity. We also using button, text view, edit text and web view etc.

This is a first page of our project:



Figure 4.1: First page of our application.

This page design for show feature:

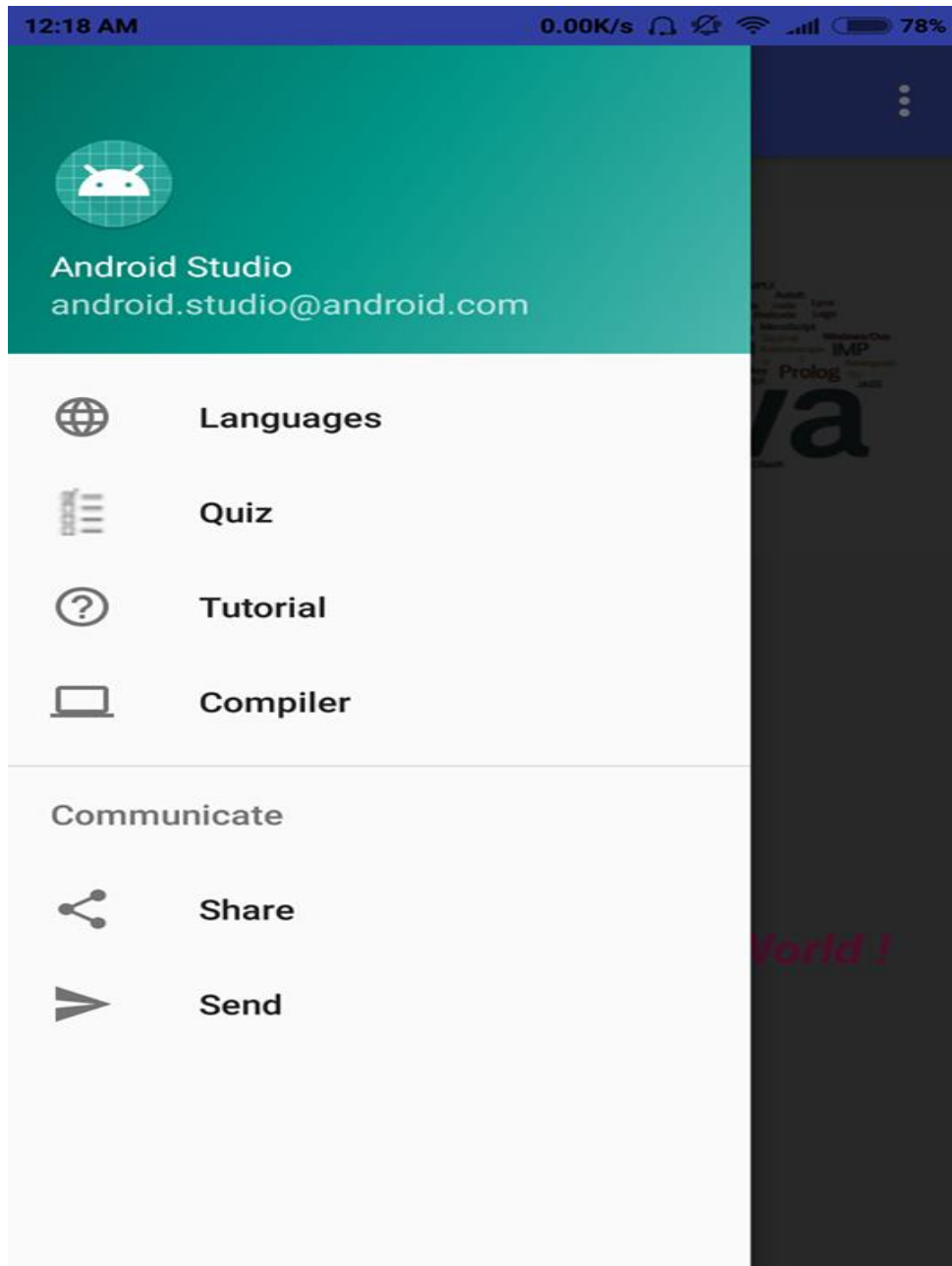


Figure 4.2: Front-end design.

## 4.2 Back-end design

Back-end design is the most important part of our development project. Mainly, User cannot access the back-end design. Actually in the application all the logics work behind the back-end. In the back-end, we are performing all logics and code. In our project front-end design actually finishing by two parts. One part is android studio.java. To maintaining the back-end design we have used firebase real-time database in our application. The main part of firebase real-time database is here. This database system is too much different from all other database system. It is very efficiency to use and together to set up.

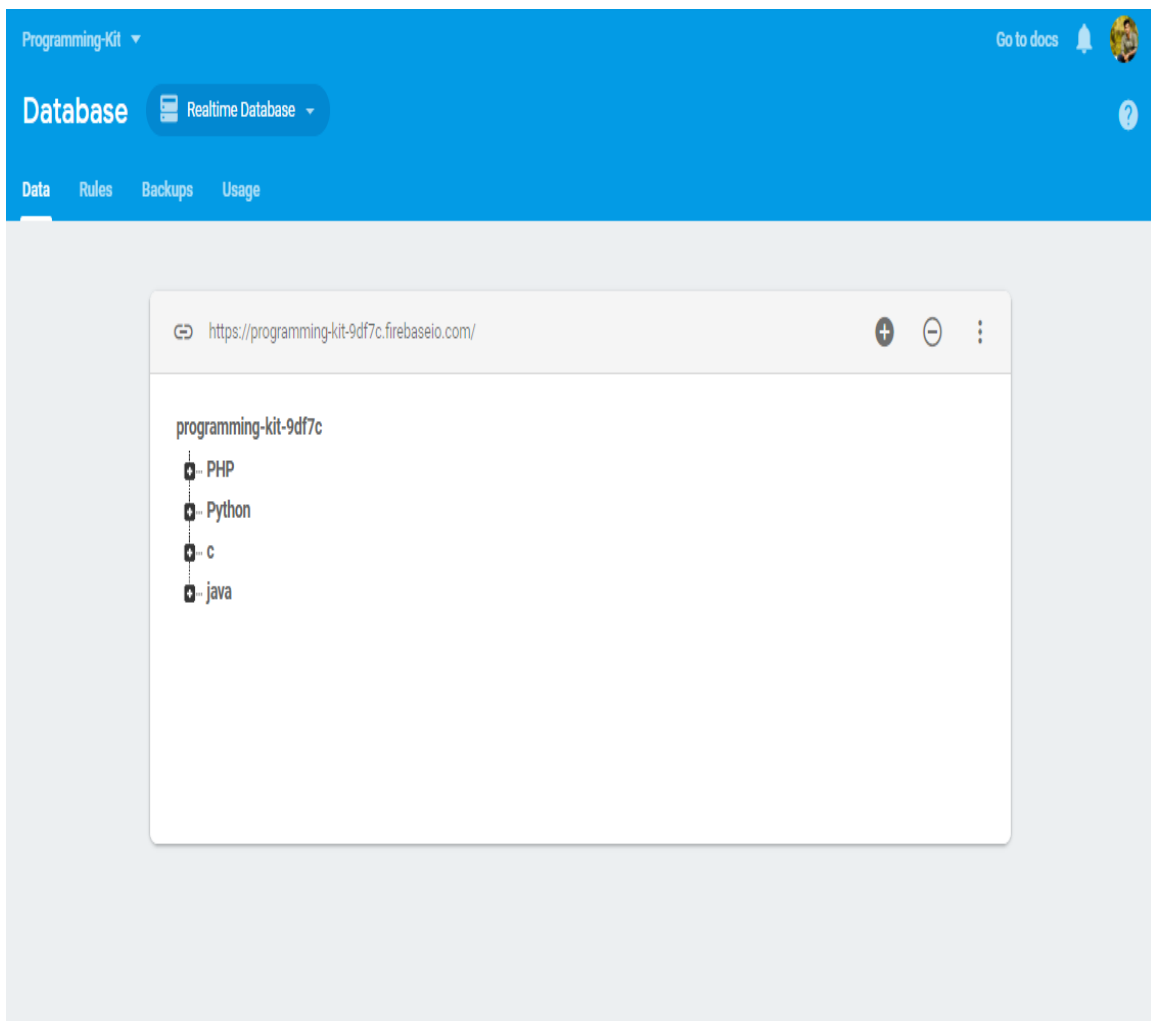


Figure 4.3: Real time data base.

## 4.3 Interaction Design and User Experience (UX)

### 4.3.1 Interaction design:

Interaction design is an important components of an application. Interaction design means the interaction of the application. It is also the design of the interaction between user and application. The function of interaction design is to create the application easy and attractive in the best way possible.

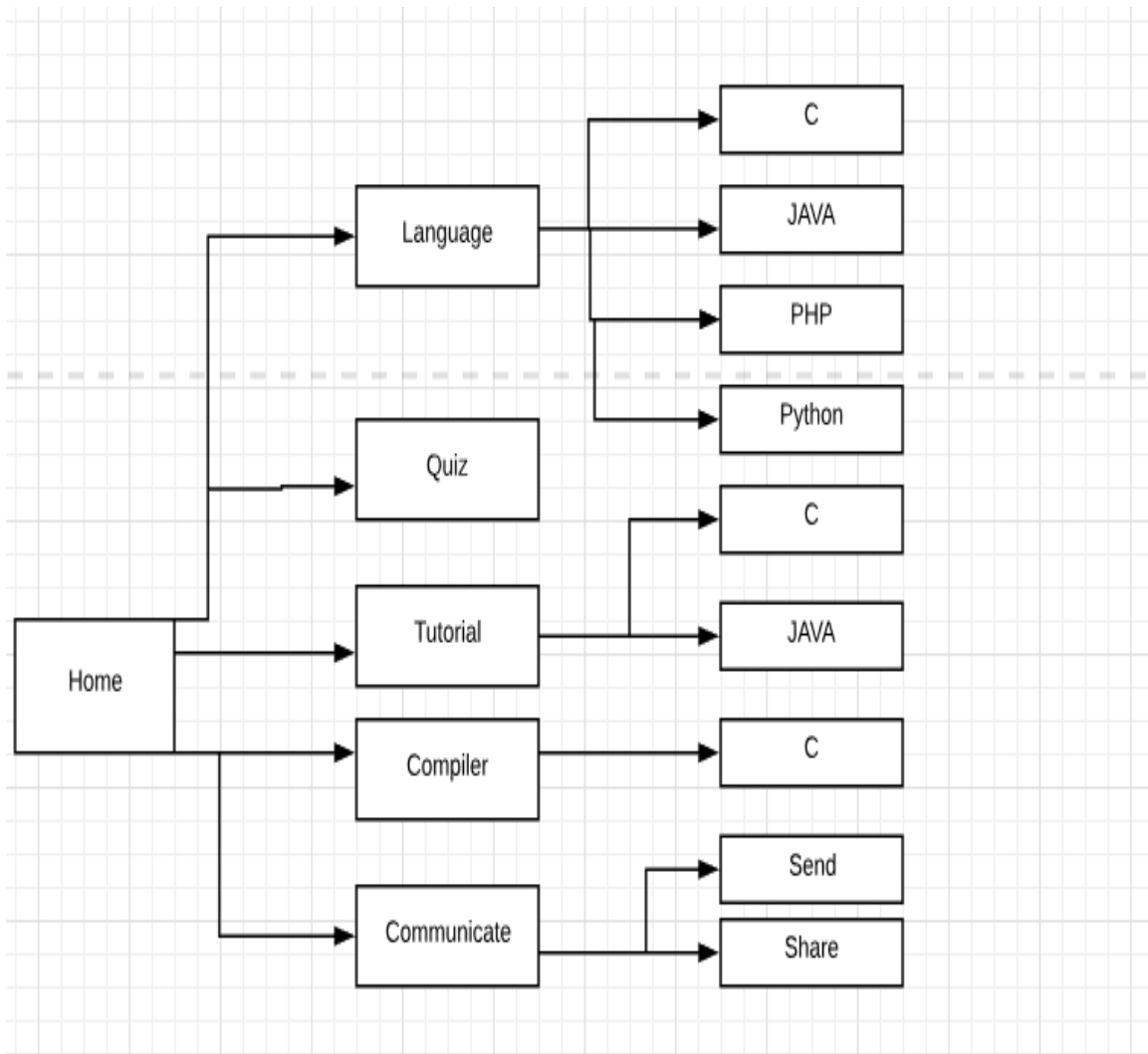


Figure 4.4: Interaction design

### 4.3.2 UX design

UX design means user experience design. User experience design is the satisfaction with a product by improving the usability, accessibility and pleasure provided in the interaction with the product. User experience delegate of a person's mind, sensibility and behavior about using different application. UX (user experience) depends on person to person. User experience is most important for any application. User experience also depend who are impatient with the Particular feel of the outcome. Finally, user experience means is a method overall use and how much it user friendly and how much it easy. If we want to get better user experience. we should need better design.

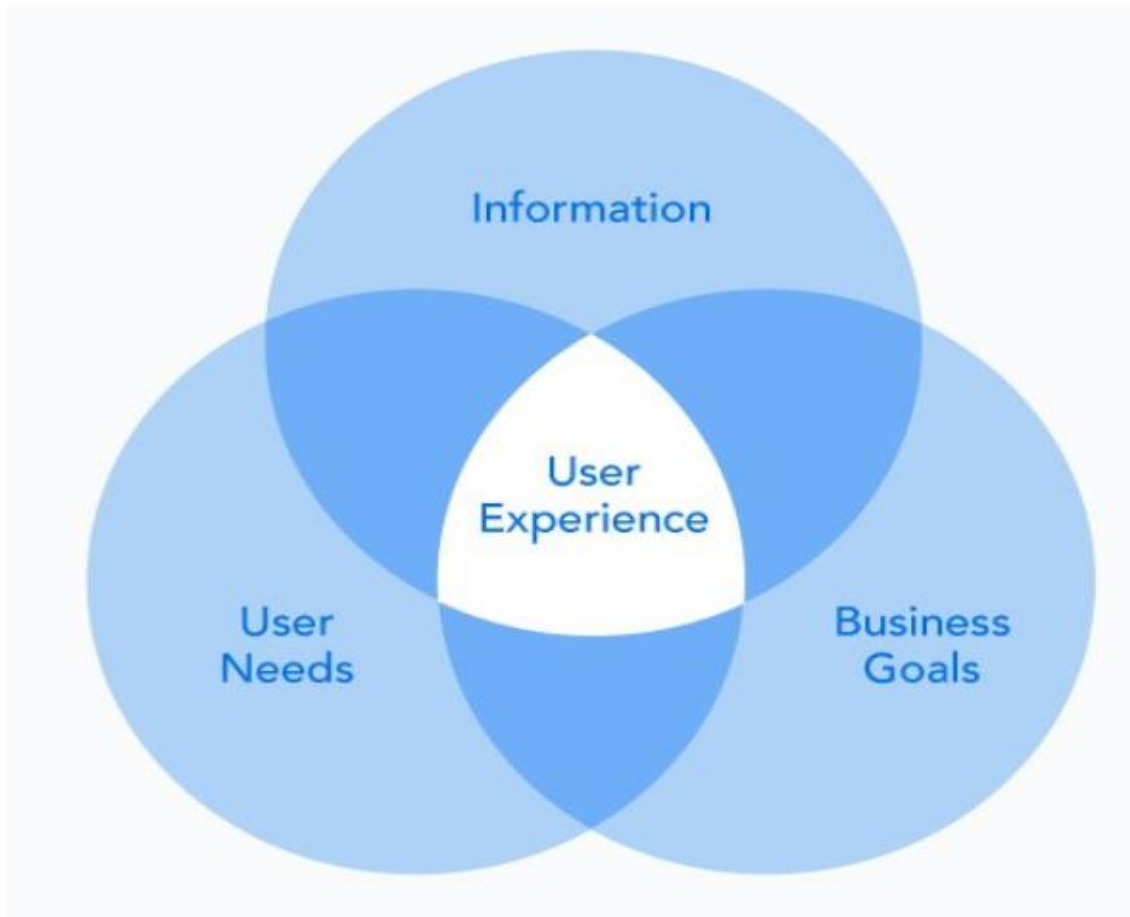


Figure 4.5: UX design



## **4.4 Implementation Requirements**

- Java Development kit
- Android Studio
- Android SDK
- Firebase Real-time database
- The emulator

### **4.4.1: Java Development kit**

JDK execute for java development kit. It is a software development kit used for development java programming and applets.

The following feature are including JDK:

- A translator/loader (java).
- JDK include the java runtime environment.
- A complier (java).
- An archiver (jar).
- A documentation generator.
- An android developers present two JDK tools (JAVA, JAVAC).
- Other tools needed in java development.

### **4.4.2: Android studio**

Android studio is a total IDE is a package for developing android application. Most of the work of our project is completed android studio. We are use android studio latest version 3.2.1 of android studio. This version supports all the new plug in. This version is latest version at present.

#### **4.4.3 Android SDK:**

An android SDK is another kind of software development-kit. Android SDK Possess the developer to create applications for the android platform. SDK contains Sample project defining source code, development tools, and emulator. the absent Of available libraries, the android studio cannot support SDK. It also contains debugging tool. It also helps how to build application using API. Sometimes it displaying corresponding feature as the APKs.

#### **4.4.4: Firebase real time database**

Firebase is an excellent powerful tool. Firebase is a secure and potential site for saving our data. Firebase is a contemporaneous connection of data. Cloud fire store performing store data, write Document, read document, delete document. If we want to save data firebase, at first sign in firebase console by using a valid email address. Then we create a project providing android studio Project id. Firebase has many options for developer like database, storage, hosting and function. Firebase analytics contains dashboard, events, conversions and audience. Firebase authenticate Manage user from a variety of providers.

#### **4.4.5: Emulator**

An emulator imitates a smart phone device of our desktop / laptop that we can experiment. Our android development project on a different device. And access API levels without needing to have actual device. Emulator has some ways to run faster and easier of the application. And we can easily be testing our application. For example, we can send data easily and fast to the emulator than to a device connected over USB. The emulator gives almost all of the efficiency of a real Android device. We can be personating the location of the device, incoming phone calls and text messages, simulate different network speeds, simulate rotation and other hardware sensors, access the Google Play Store, and much more. The emulator comes with predefined configurations for various Android phone, tablet, Wear OS, and Android TV devices.

## CHAPTER 5

### IMPLEMENTATION AND TESTING

#### 5.1 Implementation of database

Implementing a database is a major part of an application. We use Firebase Realtime Database for storing data. The Realtime Database supplies a declarative system of language that allows us to define how our data should be structured, how it should be indexed, and when your data can be read from and written to. Read and write access to our database is restricted so only authenticated users can read or write data. At first, we store the entire data online in JSON format. The whole database of our project is stored as JSON. JSON uses two different types of structures. The first structure can be used to model an object because an object is a collection of attributes that hold some values. An object in JSON is modeled using a name-value pair. Here we give some sample of Firebase Realtime Database data. We set up the image step by step.

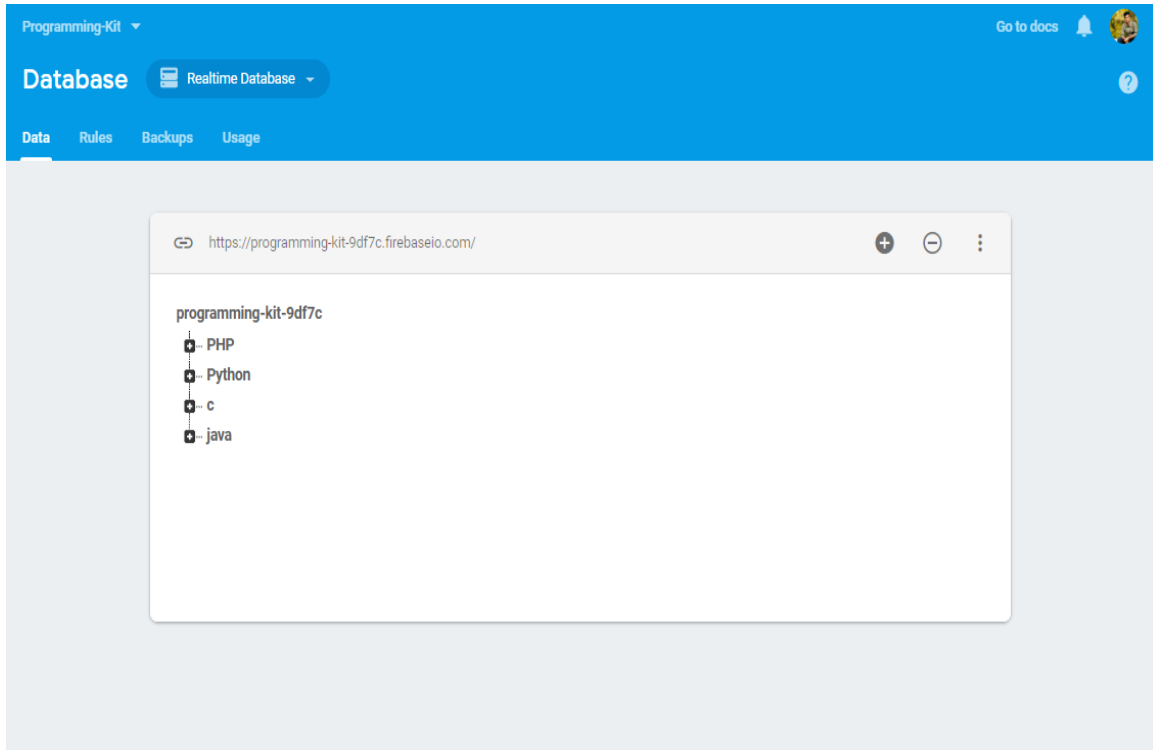


Figure 5.1: Implementation of database.

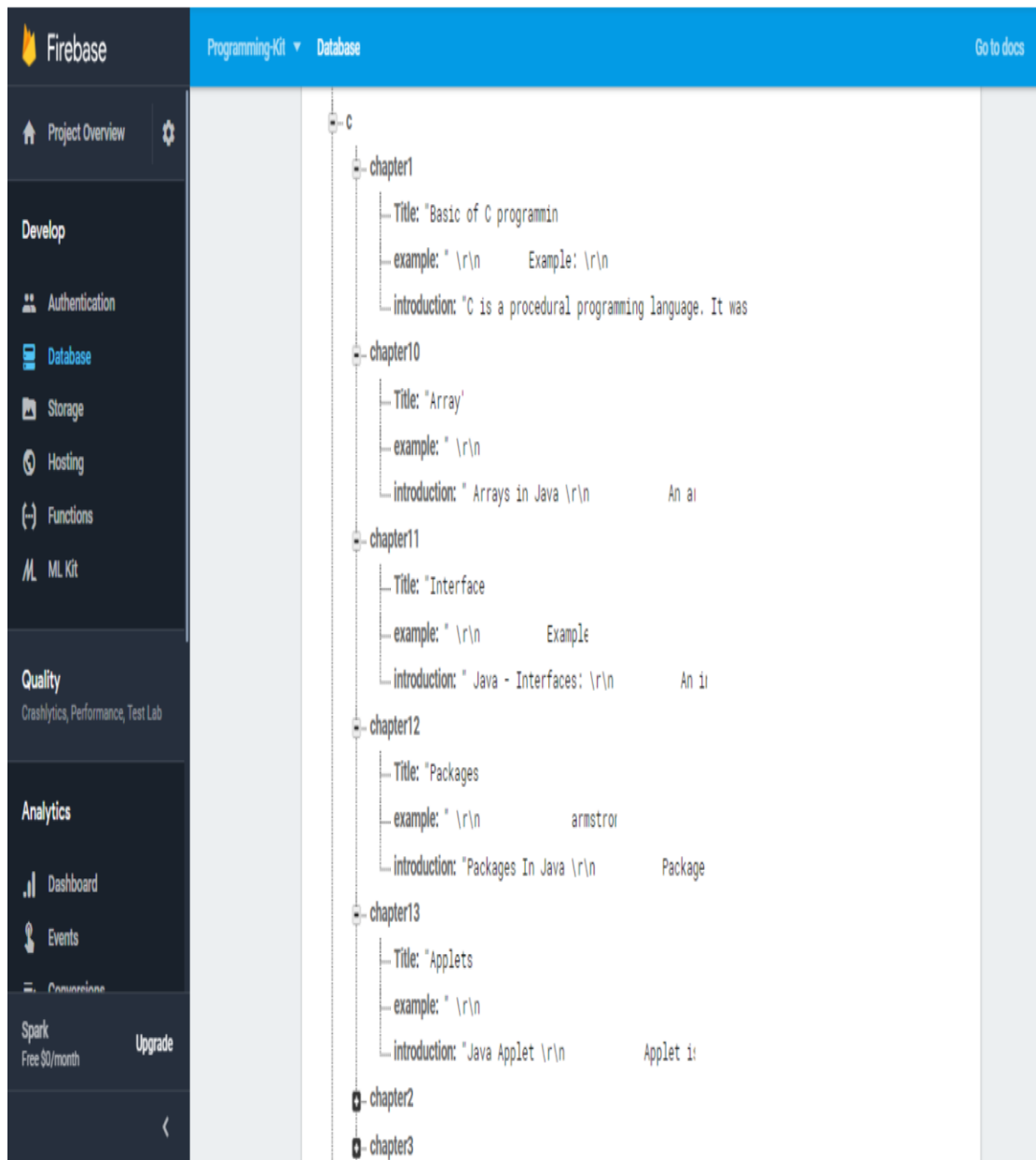


Figure 5.2: Database of c programming.

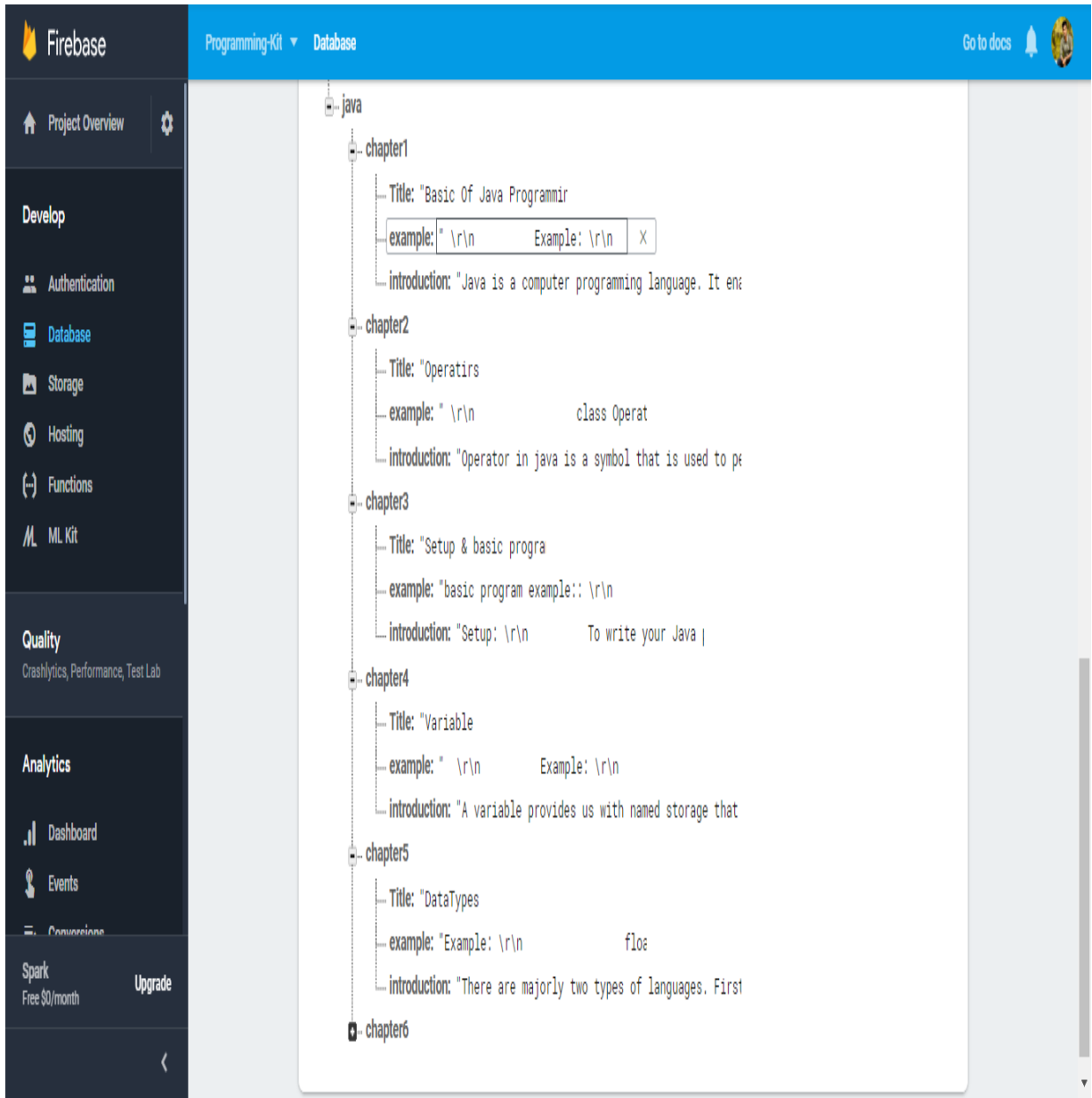


Figure 5.3: database of java programming.

```
Programming-Kit ▾ Database Go to docs 🔔 👤  
  
programming-kit-9df7c  
├── PHP  
│   ├── chapter1  
│   │   ├── Title: "Basic of PHP"  
│   │   ├── example: " \r\n      example:"  
│   │   └── introduction: " \r\n      Introduction of PHP: \r\n"  
│   ├── chapter2  
│   │   ├── Title: "The PHP Installer"  
│   │   ├── example: ""  
│   │   └── introduction: " \r\n      The PHP Installer: Although"  
│   ├── chapter3  
│   │   ├── Title: "PHP Syntax"  
│   │   ├── example: " \r\n      example: \r\n"  
│   │   └── introduction: " \r\n      Basic PHP Syntax: \r\n"  
│   ├── chapter4  
│   │   ├── Title: "Variable"  
│   │   ├── example: " \r\n      example: \r\n"  
│   │   └── introduction: " \r\n      Variable in PHP: \r\n      Var"  
│   ├── chapter5  
│   │   ├── Title: "PHP Operators"  
│   │   ├── example: " \r\n      example: \r\n"  
│   │   └── introduction: " \r\n      PHP Operators: \r\n"  
│   └── chapter6
```

Figure 5.4: database of PHP programming

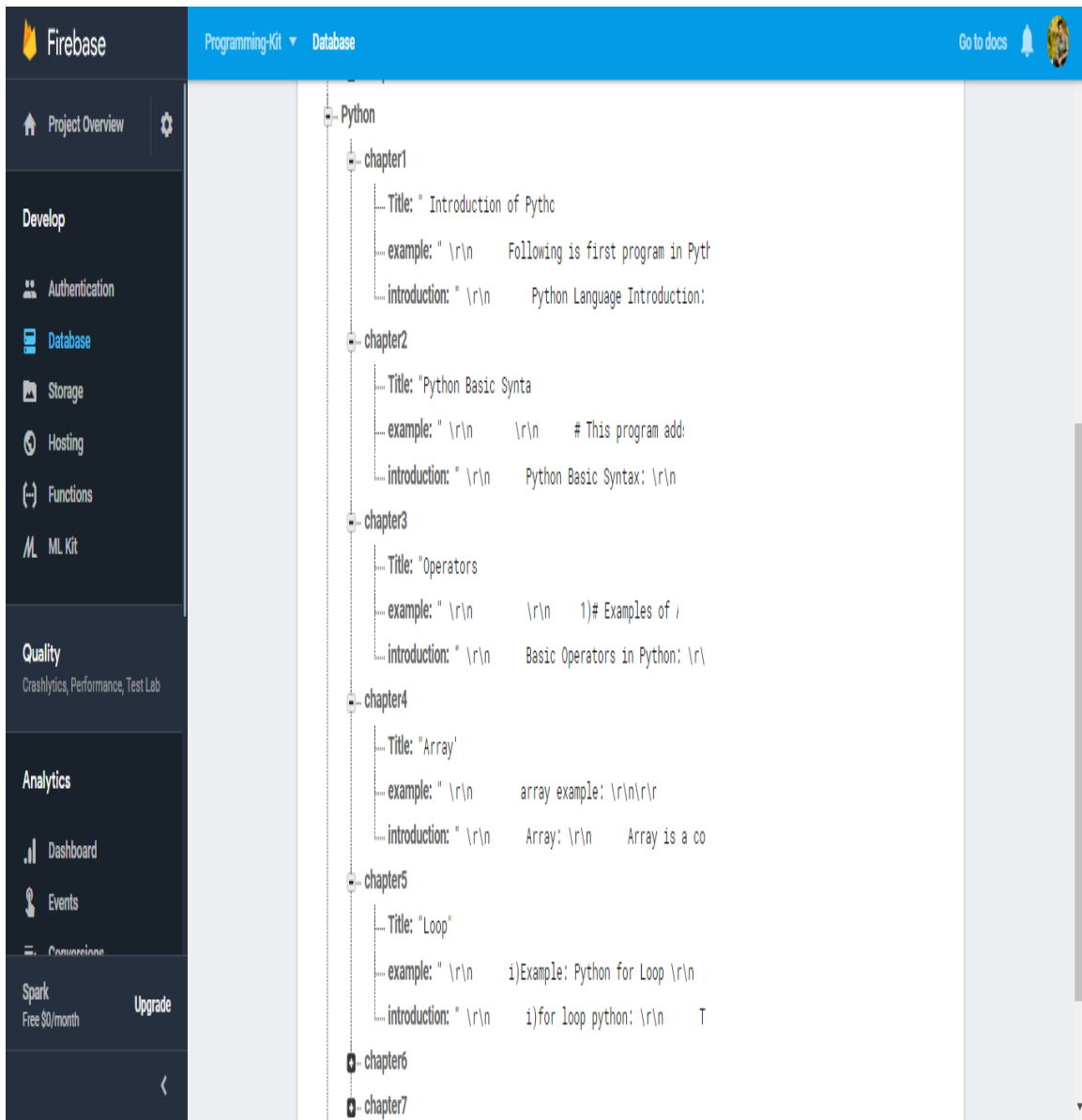


Figure 5.5: database of python programming

## Basic of C programming

C is a procedural programming language. It was initially developed by Dennis Ritchie between 1969 and 1973. It was mainly developed as a system programming language to write operating system. The main features of C language include low-level access to memory, simple set of keywords, and clean style, these features make C language suitable for system programming like operating system or compiler development.

Example:

```
#include<stdio.h>
int main()
{
    printf(hello word);
}
```

`#include<stdio.h>` :

When you use it, its code must be written somewhere so that you directly use it. `stdio.h` is a header file, where this and other similar functions are defined. `stdio.h` stands for standard input output header.

`int main()`:

It's a function, so it can be `int` or `void`. `int main` means that the main function returns an integer value. `Main()` is the signal for the compiler from where the compilation should start and `int` is the return type which returns integer values. There is no program in C without having `main()`. `main` is a user defined function.

Figure 5.6: Showing details of C programming



## Basic Of Java Programming

Java is a computer programming language. It enables programmers to write computer instructions using English-based commands instead of having to write in numeric codes. It's known as a high-level language because it can be read and written easily by humans.

Java terminology:

i) Java Virtual Machine (JVM)

This is generally referred as JVM. Before, we discuss about JVM let's see the phases of program execution. Phases are as follows: we write the program, then we compile the program and at last we run the program.

1) Writing of the program is of course done by java programmer like you and me.

2) Compilation of program is done by javac compiler, javac is the primary java compiler included in java development kit (JDK). It takes java program as input and generates java bytecode as output.

3) In third phase, JVM executes the bytecode generated by compiler. This is called program run phase.

ii) Java Development Kit (JDK):

While explaining JVM and bytecode, I have used the term JD. Let's discuss about it. As the name suggests this is complete java development kit that includes JRE (Java Runtime Environment), compilers and various tools like JavaDoc, Java debugger etc.

In order to create, compile and run Java program you would need JDK installed on your

Figure 5.7: Showing details of Java programming

## Basic of PHP

### Introduction of PHP:

PHP started out as a small open source project that evolved as more and more people found out how useful it was. Rasmus Lerdorf unleashed the first version of PHP way back in 1994.

\*PHP is a recursive acronym for PHP: Hypertext Preprocessor.

\*PHP is a server side scripting language that is embedded in HTML. It is used to manage dynamic content, database, session tracking, even build entire e-commerce sites.

\* It is integrated with a number of popular databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server.

\* PHP is pleasingly zippy in its execution, especially when compiled as an Apache module on the Unix side. The MySQL server, once started, executes even very complex queries with huge result sets in record-setting time.

\* PHP supports a large number of major protocols such as POP3, IMAP, and LDAP. PHP4 added support for Java and distributed object architectures (COM and CORBA), making n-tier development a possibility for the first time.

\*PHP is forgiving: PHP language tries to be as forgiving as possible.

Figure 5.8: Displaying details of PHP

## Introduction of Python

### Python Language Introduction:

Python is a widely used general-purpose, high level programming language. It was initially designed by Guido van Rossum in 1991 and developed by Python Software Foundation. It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines of code.

Python is a programming language that lets you work quickly and integrate systems more efficiently.

There are two major Python versions- Python 2 and Python 3. Both are quite different.

### Beginning with Python programming:

#### Finding an Interpreter:

Before we start Python programming, we need to have an interpreter to interpret and run our programs. There are certain online interpreters like <https://ide.geeksforgeeks.org/>, <http://ideone.com/> or <http://codepad.org/> that can be used to start Python without installing an interpreter.

Windows: There are many interpreters available freely to run Python scripts like IDLE ( Integrated Development Environment ) which is installed when you install the python software from <http://python.org/>  
Linux: For Linux, Python comes bundled with the

Figure 5.9: showing details of python

## 5.2 Implementation of front –end design

The use of any application will depend on how serviceable of this application. Progress of an application depends on the function as well as in the design. In android studio front end design performed of activity XML. For the front-end-design every XML activity under the layout. Many kinds of layout-end –design. Linear layout, Relative layout, Frame layout. We are uses these layouts for designing. Sample file for one design is give below:



Figure 5.10: 1<sup>st</sup> of our application.

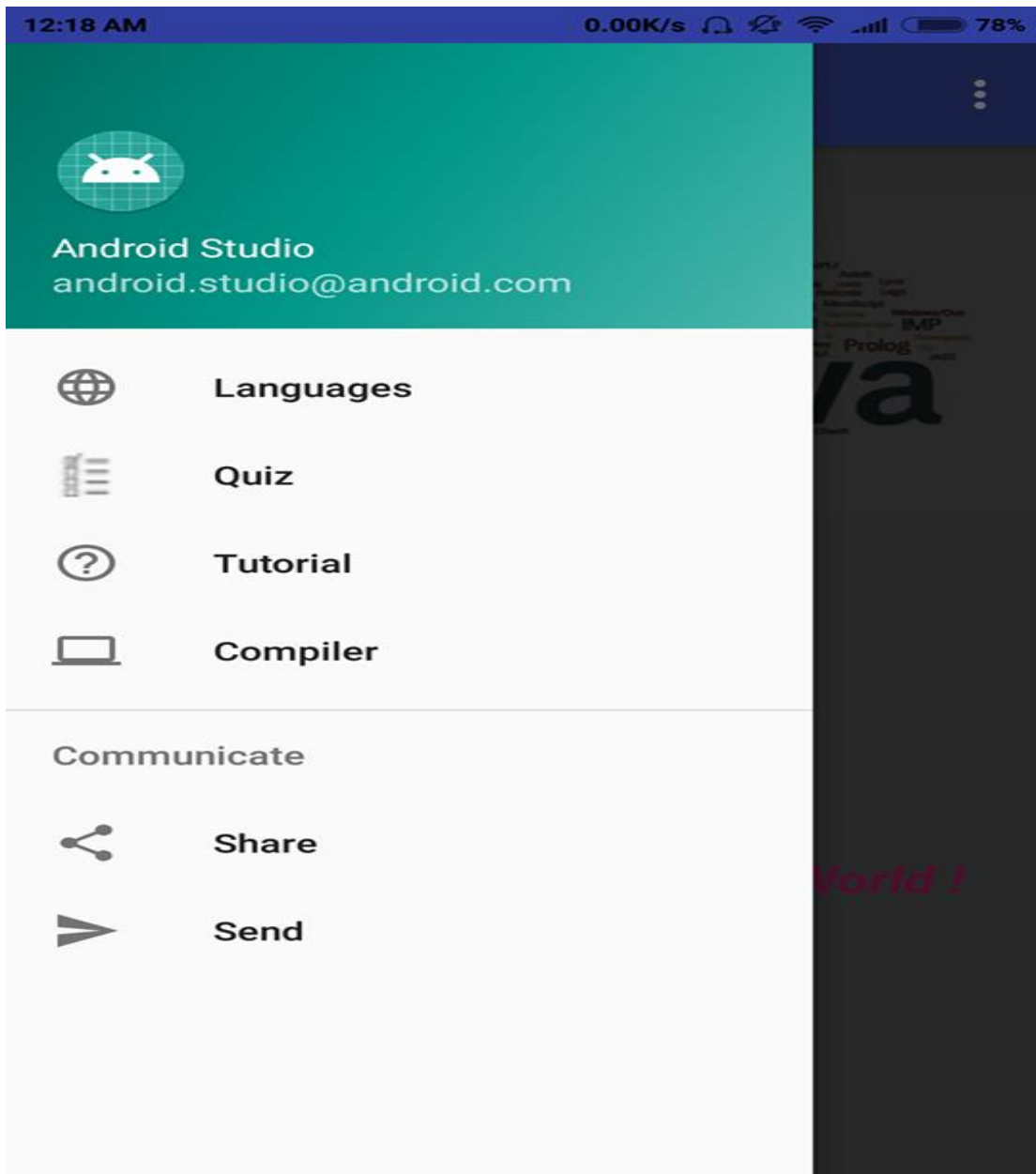


Figure 5.11: second page of our application



Figure 5.12: this page contains programming language.

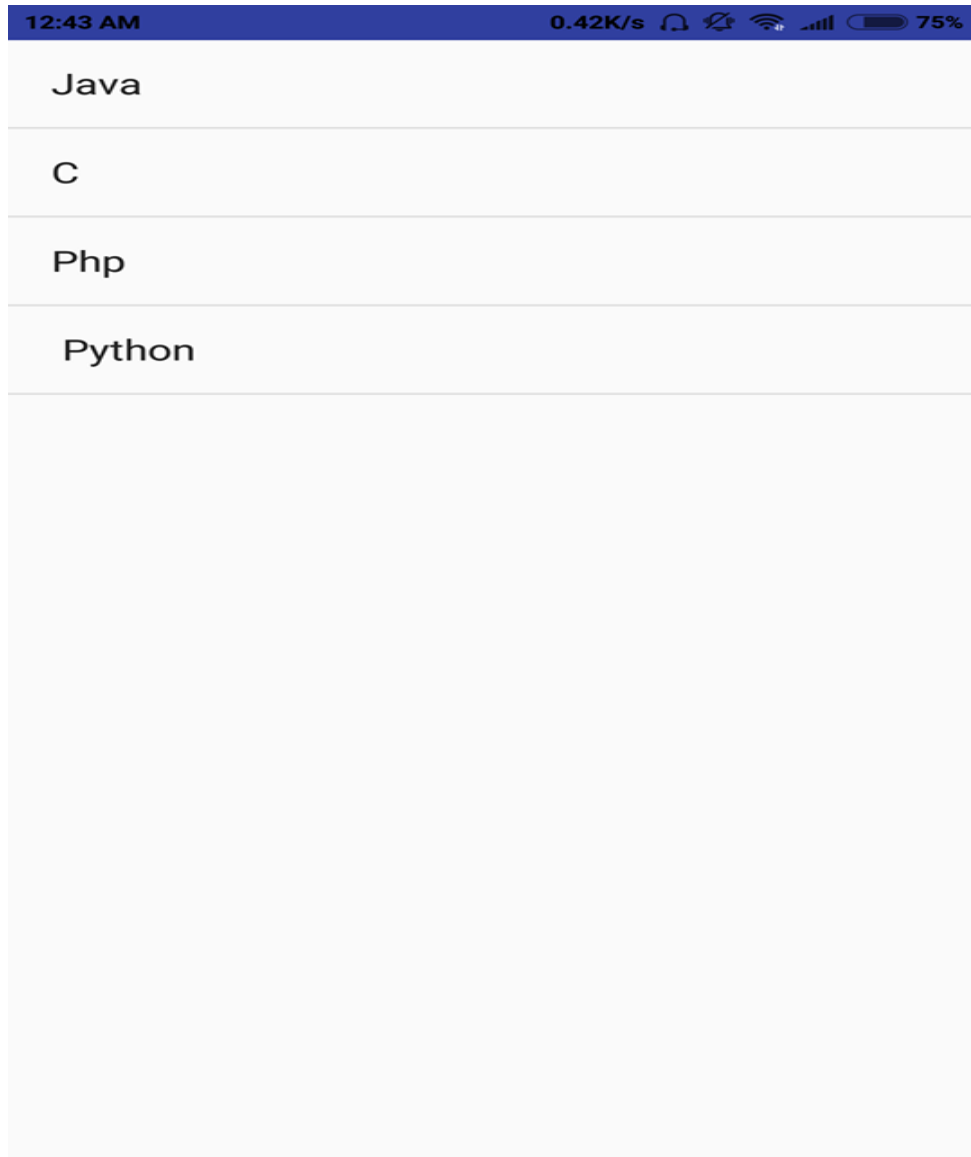


Figure 5.13: By this page we are select language for watching tutorial

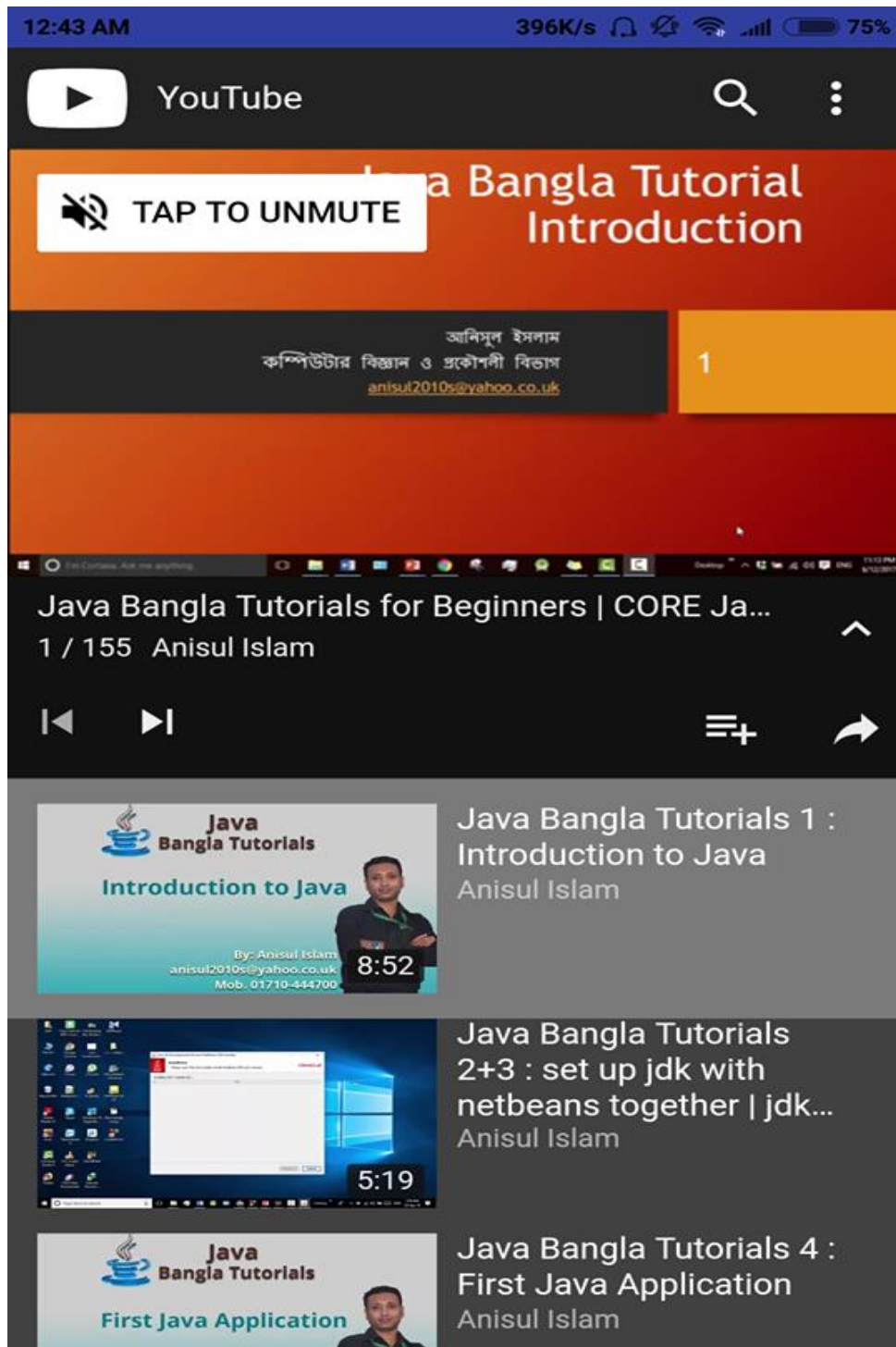


Figure 5.14: In this page we watching java tutorial.



which is the first planet in the solar system?

MERQURY

VENUS

MARS

STARS

Score:0

Figure 5.15: this is a page for quiz.

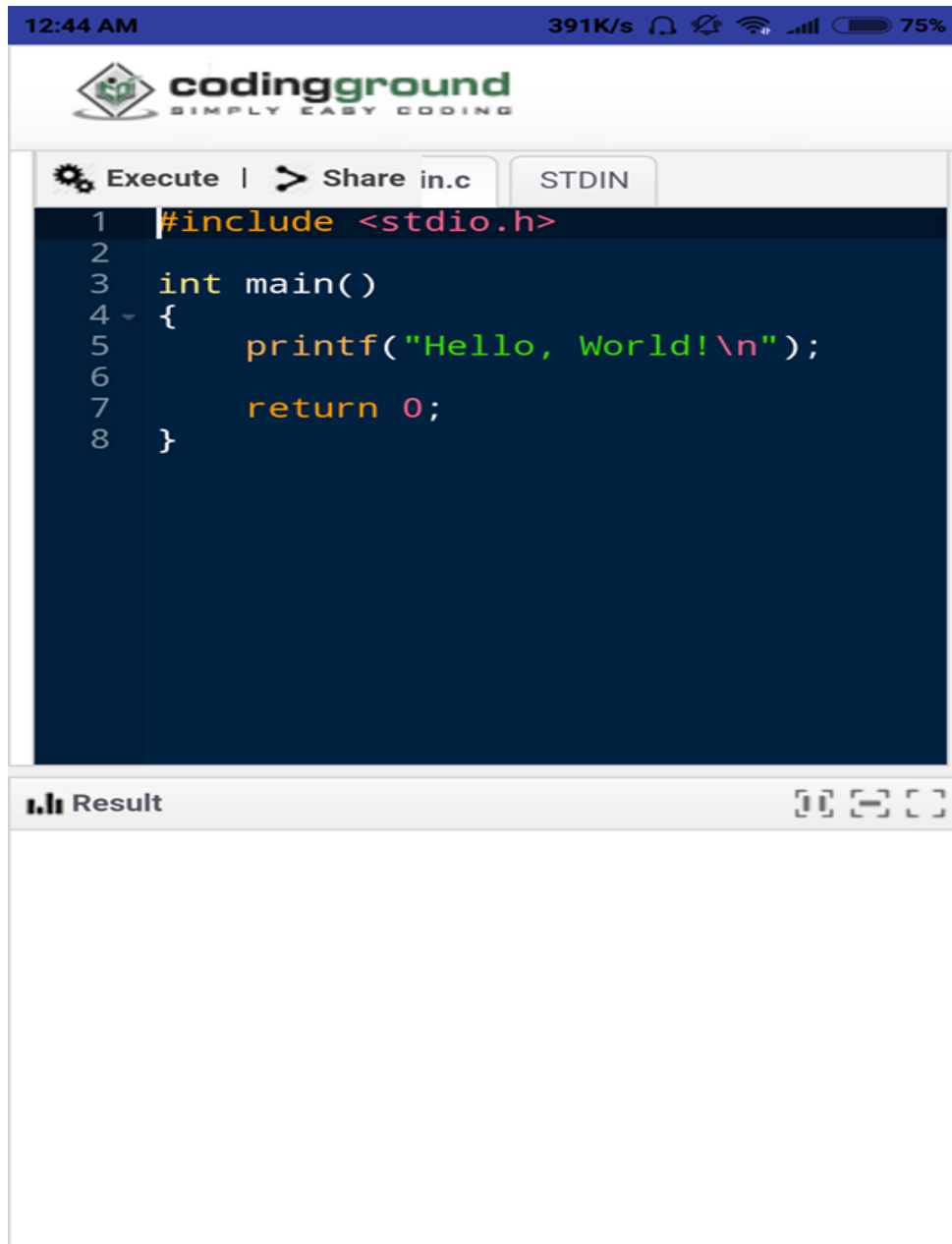


Figure 5.16: this is c compiler for practicing.

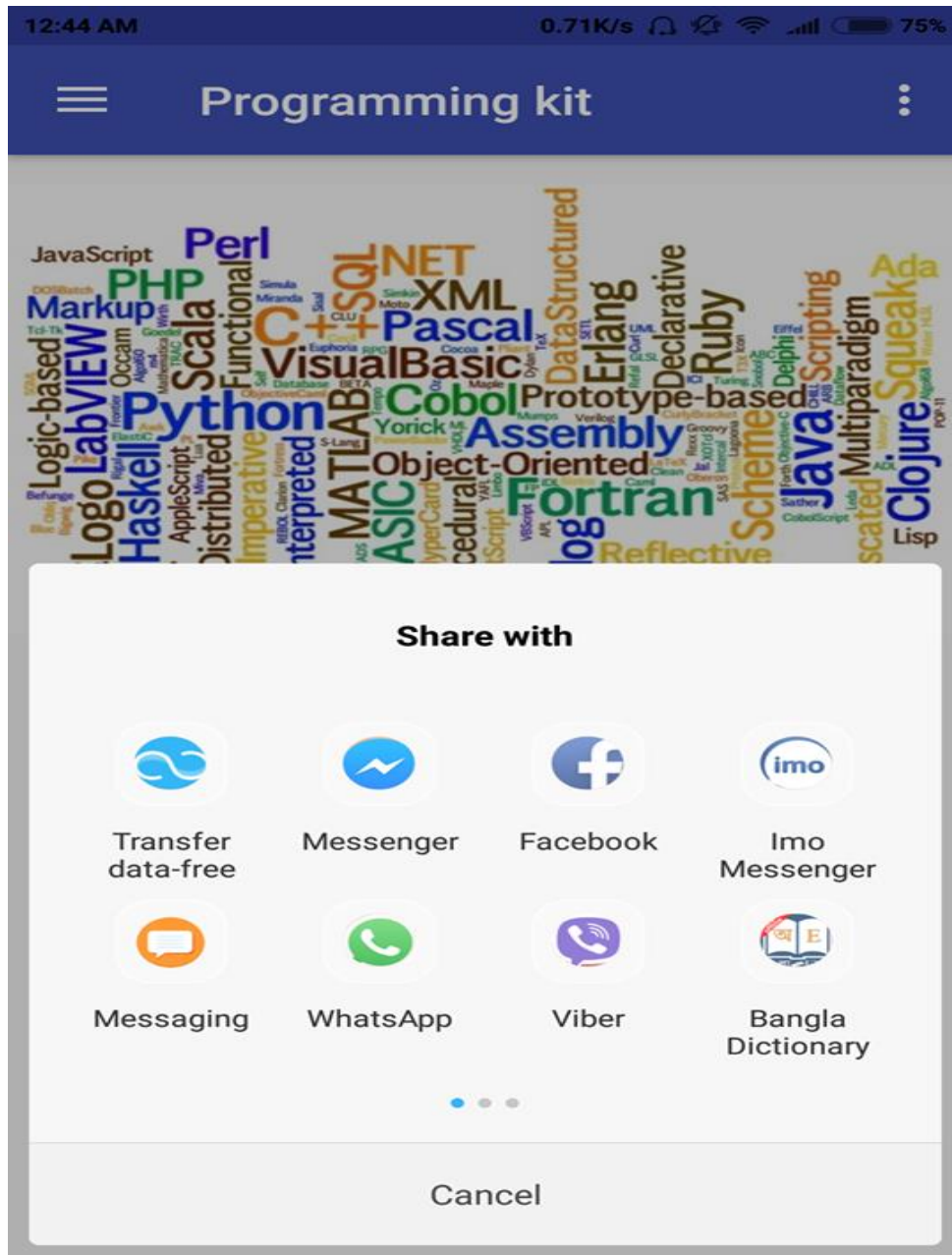


Figure 5.17: Share application link

### **5.3 Implementation of Interactions:**

The application is more interactive when the user can be used it more. At present communication system, interaction is the most important thing of a system. Making an application, its need some material design with useable system. Interaction is a process that We are in specific function and we are go to another function. We are using Navigation drawer activity which has 4 fragments apart from Main Activity. We are design every user part very politely that user what he/she wants is actually here. We are finished our application is very carefully that the design attractive to users. We are try to make the system very understanding for a better user experience. Our satisfaction level is very high.

### **5.4 Testing Implementation**

#### **5.4.1 Testing**

Testing is an important part of a development project. The main purpose of the testing is validating the contribution, quality, and efficiency of the application. This project is to implement android based related to basic programming.

#### **5.4.2 Unit test**

We are confirmed that every part of our project is tested because every activity design of our project is exactly completed. This process of testing makes us sure that each part of the application run as per the necessity.

#### **5.4.3 Unit Test Case**

There are two types of unit test case. One of the interface handler and another is database handler. We handle our database on the firebase real-time database. Firebase is an online real time database.

#### **5.4.4 Implementation Test**

The last stage and most important stage is implementation testing. By this testing depends on the user benefit

#### **5.5 Test Results and Reports**

If we are test our application, we have known that our application does work or not. So the process of testing application helps to define our problem. We are tried to test every step of our project. We are testing our programming-kit application many times with different smart phones. And we are see that our application work excessively.

## **CHAPTER 6**

### **CONCLUSION AND FUTURE SCOPE**

#### **6.1 Discussion and Conclusion**

Programming-kit is very essential application to learn programming. This application is very essential for the student. Programming-kit is stands for educational basic. Programming-kit is an educational platform that help the student to learn programming language basically. This application is large motive of learning. This running application work process and compassionate plan is very easy. If our project work is complete, we have faced many problems. This project helps to realize android application development.

#### **6.2 Scope for Further Developments**

- We are wants to add more feature in our application.
- We are wants to add quiz system for all the subject specific.
- We want to add specific time for the quiz.
- We want to add more programming language.

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