

Android Based Application: IELTS Assistor

System Version 2.3.0

Proposal for the project



21st May, 2017.

Head of the department, LEADING UNIVERSITY
Dept. of Computer Science & Engineering
Leading University, Sylhet.

Subject: Application for permission of approval for the 3rd year project.

Sir,

With due respect, we would like to inform you that we, the following students of CSE department are interested to design and develop an android application for our third-year project (project I). We strongly believe that our app will be a handy and smart tool for all types of students who are preparing for IELTS (International English Language Testing System) examination. So, we kindly need your permission to approve the project so that, we can start developing our project as soon as possible.

It will be very grateful for us if you kindly allow us to develop the application and oblige thereby.

Thanking you in anticipation.

Your most obediently,

Md. Nurain Haider	ID – 1432020016
Amdad Hussain Juned	ID – 1432020021
Md. Sakhawat Hussain	ID – 1432020025

Students of Computer Science & Engineering
Leading University, Sylhet.

Project Introduction

We want to create such an app by which an IELTS examinee can find all the necessary things about IELTS. It will not be like a normal informative IELTS apps found in Google Play Store. Instead, the app will provide some fringe benefits to students such as – a student can train himself or herself on each skill by picking up his/her weak topics and solve related problems by using provided tricks, can evaluate band score by using the IELTS calculator (with detailed info), can search the nearest IELTS exam center by app's own map feature and read some world's best books from the online etc. The main goal is to make the IELTS preparation for an examinee as easy as possible.

Scope:

The application is for everyone who is preparing to sit for IELTS exam. It will save money from not purchasing too many books and search unimportant online materials and help them to utilize their time so that they can use it sitting anywhere and boost up the preparation for IELTS. It will also help to guide them properly.

Key functionalities of the system:

1. Users can find some rare but handy e-books to study on
2. Users can study unlimited tips from the app's data storage
3. The app has full training modules on each skill – Listening, Reading, Writing and Speaking.
4. Learners can take detailed training on weak points of each skill
5. The app's calculator will calculate band score with full details.
6. Can find the nearest IELTS organization by just one click.
7. The firebase system of the app will maintain the log in authentication

Aims and objectives:

Following are the key objectives of the project:

- We have decided to develop an android application that will provide features and smooth functionalities to the students and teachers.
- To create the application, we need some short survey from the current students who are taking preparation for upcoming IELTS exam. To get this, we need to go to some conventional local IELTS coaching centers.
- The app will have some free offline features. Users can open these whenever they want, some features will require internet connectivity and GPS enabling and to access some exclusive features, users must sign up or log in.

Preferred Technologies:

1. Hardware
 - A Computer
 - An android based mobile phone
2. Operating System: Windows OS
3. Integrated Development Environment (IDE): Android Studio (2.3)
4. Languages: Java, XML
5. Design Pattern: Android UI design (material)
6. Database and server: Firebase
7. API keys: Google Maps API, YouTube Player API

Recapitulation

To recapitulate, our main idea is to develop this app for the IELTS students to remove their pain from flocking to coaching center, installing too much unnecessary apps and purchasing a stack of books so that they can take 100% preparation from the small app. If we can accomplish this project and get proper support, then we will update and do marketing this app.

Proposal for submission of the project

19th September, 2017

Head of Department

Department of Computer Science & Engineering,

Leading University, Sylhet.

Subject: An application for seeking permission of submission for the third-year project.

Sir,

With due respect, we would like to inform you that, we the following students of CSE department who got permission from you to develop an android based application for third year project for achieving the degree of Bachelor of Science in Computer Science and Engineering. We have successfully completed our project and now we want to submit it. So, we kindly need your permission to submit the project.

We will be very thankful, if you kindly give us permission to submit our project and oblige us thereby.

Thanking you in anticipation.

Your most obediently,

Md. Nurain Haider

ID – 1432020016

Signature: _____

Date:

Md. Sakhawat Hussain

ID – 1432020025

Signature: _____

Date:

Amdad Hussain Juned

ID – 1432020021

Signature: _____

Date:

Students of Computer Science and Engineering, Leading University.

Supervisor Agreement

- **Purpose** – The purpose of supervision is to develop an android application for third year project and gain the degree of Bachelor of Science (B.Sc) in Computer Science and Engineering.
- **Duration of supervision session:** 4 months.
- **Types of supervision:** Group

Project details

The android application project is for the IELTS examinees. It can be very useful to them in their IELTS preparation journey. Learners get easy access to the main features, can study books, can train themselves to recover their weakness, can know the direction of the nearest exam center, can solve problems with provided strategies and many more. There is nothing to search for anything, all topics and resources are categorized structurally.

Rights and responsibilities of Supervisor and Supervisee's

1. Supervisor's rights and responsibilities –

- To concern about supervisee's work.
- Monitor supervisee's performance.
- Support supervisee's in every step of application developing session.
- Ask questions to supervisees about their work
- Give feedback on the supervisee's performance.
- Provide suggestions to improve their work
- Provide guidelines and give knowledge about professionalism
- Ensuring supervisee's roles and duties.
- Record supervision sessions and store them on record file.

2. Supervisee's rights and responsibilities –

- Develop the project in given time
- Capture the supervisor's attention, ideas and guidance.
- Receive feedbacks.
- Show update of the project in every week.
- Ask any question and discuss to the supervisor if any problem is faced.
- Express ideas and thoughts of their own if needed.
- Discuss about further steps needed to develop the project.
- Put supervisor's ideas and suggestions into the application.
- Check and test the application if any problem or bug is detected.

Signature of the Project Supervisor

Alak Kanti Sarma

Senior Lecturer
Dept. of Computer Science & Engineering
Leading University, Sylhet.

Signature of the supervisees'

1.

Md. Nurain Haider
ID – 1432020016

3.

Md. Sakhawat Hussain
ID - 1432020025

2.

Amdad Hussain Juned
ID - 1432020025

Students of the Department of Computer Science and Engineering
Leading University
Sylhet

Acknowledgement

With the grace of almighty Allah, we would like to express our heartiest gratitude towards a few number of institutes and persons. Without their effort as well as support, it would not be possible for us to successfully accomplish the project.

To start with, it is always a great pleasure to sincerely thank our project supervisor, **Alak Kanti Sarma**. We started creating an app which would be as simple as other IELTS informative app with having some extra features, but he has guided us to make that more programmatic and dynamic.

Then, we would also like to show our gratitude to the **S@ifurs** and **MELI** - local IELTS coaching centers. At the initial moment, when we just planned our project, we visited these two centers and asked their students about the approach they currently follow to prepare for the IELTS exam. Though it is against their business policy to allow outsiders to enter classrooms and interfere the professional environment, the managing executive **Joshim Miah** (S@ifurs) and the president of MELI, **Monir** sir allowed us for a short period of time to take a verbal interaction with the students.

We are immensely grateful to our honorable V.C Professor **Dr. Md. Qumruzzaman Chowdhury** Sir for his favorable support. We also thank **Md. Asaduzzaman Khan** sir and all other teachers of CSE Department for their constructive advice and moral support.

Lastly, all gratefulness to those people who helped us by sharing their knowledge, advice and expertise during this project.

Abstract

Almost everyone who is interested to continue his/her higher studies in an English-speaking country, knows about IELTS – a testing system to justify a person's English proficiency. It is basically a combination of four skills which needs time to master. So, to help a person, there are thousands of materials and hundreds of coaching centers, but still cannot fulfill their exact demand. In the modern era of internet, any challenging skill can be learnt if anyone finds proper track and resources. Having this idea in mind to help participants to boost up their preparation, we have developed this application. Our project is **IELTS Assistor** (boost up your IELTS preparation). This app has been developed as a 3rd year project-I.

After completion of higher secondary school or Bachelor course, many students aspire to go abroad for Graduation/Post Graduation. So, they prepare themselves and their documents to be sufficient enough for fulfilling the requirements to apply in those countries. Almost every institution all around the world wants international students to meet up the language requirement and for this, they prefer a legitimate score of a student in IELTS exam (though there are other types of exams similar to IELTS, but it is the most common one).

When a student from Bengali medium jumps to the world of IELTS, s/he gets stuck at first by thinking that where to start preparation wisely. Lots of students flock to the traditional coaching centers, purchase Cambridge IELTS books and start solving them, give mock tests and day-by-day get familiar to the system of IELTS. But their overall proficiency level does not improve at all by practicing like this! All of their time, effort and money are not utilized. They need training on the particular skill(s) they are weak at. They need a system which can be a sandwich made of many useful things and give results to their efforts, need a problem solver in this journey.

IELTS Assistor is of course designed for those who are facing problems in the preparation phase for their upcoming IELTS exam, not for those who do not have any prior experience about IELTS. It will be very useful to train a student on particular topics of each skill of IELTS. For listening and reading skills, one can use the training section of the system to find his/her particular problems and then solve the existing set of problems by using the provided solving strategies. For example, one may find difficulties in the MCQ of listening. So, s/he can go to the listening training, train himself by the tricks given there and solve specific MCQ questions which have been set for MCQ. For writing and speaking training, a learner will find the best directions from world class IELTS experts, whose exclusive videos have been set as a sequential playlist as a proper direction.

There is a tendency that a student from one region go outside to seat for IELTS. For instance, if an examinee from Sylhet goes to Dhaka to stay there and attend the test, s/he may find it difficult to find a suitable nearer exam center from his/her place. To solve the issue, there's no need to search on Google, the system has all the IELTS exam center lists of whole Bangladesh including British Council and IDP Australia centers. Just need one click and the system will tell which one is the nearest.

Unlike the other IELTS calculator, the calculator feature of the system not only determines the overall band score, but also shows summary of the results of individual score and set the level of the user (Expert user, Good user etc.).

Moreover, there are two very useful books (1. IELTS target band-7 – requires credit card to access if anyone tries to access from online and 2. Past IELTS essays, around 300+ writing tasks) and bundle of tips in database of the system which can be accessed by simply sign in or sign up.

To develop the whole app, we have used the “**Android studio v2.3.0**” software. For tracking the user location, **Google Maps API** has been used and **YouTube Player API** has been used for playing YouTube videos. We have used “**Firebase**” as our **data storage** and **Local Hosting**. For front end design, **Android UI material design** has been used and for logic implementation, we have used **Java** as core programming language.

Work Plan

We have followed a structured plan. It has helped us to complete the project very easily within the provided time frame. It took around 4 months to develop our project. So, we had to follow the proper time scheduling.

Working Steps	Start date – end date	Feedback of Project Supervisor
Planned for starting the project, took quick survey and collected IELTS resources [2]	May 10 th – May 25 th (until the project idea has been accepted)	
First meet up with project supervisor, showing our first work on IELTS calculator [1]	June 6 th	Suggested to improve calculator functionality.
Improved calculator functionalities and started to write the documentation [1]	June 20 th - June 27 th	Suggested to start creating the documentation
Saved two books on the firebase database and gave free access to users. [6]	June 28 th - July 10 th	Suggested to use Database with user and admin panel
Started to write documentation and transferred books to Firebase [6]	July 11 th - July 18 th	Gave positive review encouraged to work on further activities
Completed the Maps activity [1]	July 19 th - July 25 th	Suggested to improve functionality and work on further activities
Added tips to the server and completed its logical tasks [6]	July 26 th - August 1 st	Gave positive review Encouraged to work on further activities
Added sign up activity using Firebase and started collecting resources for training [2][6]	August 2 nd - August 8 th	Gave positive review Encouraged to work on further activities
Start working with Material designing and completed the training [7][3][2]	Till August 31 st	Gave suggestions improve work on further activities
Completed report book, completed all bugs and errors, completed UI Design	Till September 16 th	Reviewed and gave constructive directions

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Chapter 1

Introduction

1.1 IELTS Assistor

Nowadays, people are living their lives by having the whole world in their smartphones. All the daily tasks related to business, education, entertainment, skill development and so on are processed in just a few clicks. In this regard, dependencies on mobile based applications are getting higher. The purpose of having a mobile based system is to enhance the preparation level of an IELTS examinee. One can easily avail all the important features to cover up the weaknesses, get easy observation on results, find easily the researched collection of materials to practice with, save time from googling for specific help and keep updated by every exclusive tip when needed. The MVC model software design pattern has been followed throughout the whole project.

1.2 Benefit of uses

It is an app of very useful integrated features. A user can enter the marks of the 4 skills and know the band score, individual score summary and the type of proficiency level of using English by using the IELTS calculator.

Then, the system provides topic specific training on each skill. For example, a user may have problems on answering some reading question patterns such as – List of Headings, Sentence Completion or may not know how to start answering Writing Task – 01. There are useful tricks and strategies, by mastering which s/he can apply these tricks to solve some set of questions on spot to see whether the tricks come handy or not.

Besides, there is no need to use Google Maps to find the locations of IELTS test centers. The map of the system has markers on every test centers, user can easily detect them without entering the name of the centers. The app will show the nearest one with a polyline along with markers of other test centers too. (a direction button is also added, when it is clicked, Google Maps show the path with detailed information).

There is a trial version of the book on online – Target Band 7 which only has one full chapter. To avail this, readers must pay to get the full version of the book. But, here users are getting the book for free. It's a very special one, written by Simons. The other one is not also available in local markets but handy.

Moreover, users can read hundreds of useful tips now and then.

1.3 Feature

- Overall Band score calculation with proficiency details
- Training on all the question patterns with practice of Reading Skill
- Training on all the question patterns with practice of Listening Skill
- Writing Skill training by watching YouTube playlist
- Writing Skill training by watching YouTube playlist

- Get the name of the nearest IELTS exam center along with map view and direction.
- Get random tips from database
- Push tips notification

1.4 Project Objectives:

There are some specific objectives behind the reason that we choose this project topic:

- Effective for specific problem solution.
- Can take help from the app anytime, anywhere
- Easiest use of maps to find the exam centers
- Detailed record of test score
- No too much hassling while sign up/in.
- Flexible database for user and admin panel

1.5 Project Purpose

Purposes of the project are many. A few of them are -

- To provide particular problem solution to the IELTS participants
- To train all the patterns of IELTS exam more flexibly.
- To save time from searching different resources.
- To keep updated with providing exclusive tips and tricks
- To save time from searching the center name and then finding its location

Chapter 2

Requirements

2.1 System requirements

To develop our project, we needed some specialized tools and compilers to support our required object-oriented language. For our project, we have used the following kinds of programming language, tools and software:

- **Java** (As the primary programming language)
- **Android SDK** (The software to design and develop the app)
- **XML** (For designing the layout files)
- **Android Material Design** (For implementing UI design and custom themes) [3]
- **Firebase** (For user authentication and database storage) [6]
- **Google Maps API** (to ask permission for creating and running a Google Map on application) [4]
- **YouTube Player API** (to ask permission to play YouTube videos) [5]

2.2 Java

Java is one of the best programming languages for designing android apps and we were fully based on that to develop our apps. We have tried to use Object Oriented features for organizing all of the classes as collection of **objects, methods, inheritance, abstraction and polymorphism**. In total, there would be about 35 activities (java files + xml files) along with more java classes perform all logical tasks of the app. The connectors between one screens to others are done with the help of Android Intents all functionalities of which are abstracted, so user will never know the underlying details. In almost of our classes, the usage of inheritance and interface has been well oriented and there were implemented many imported packages which were taken from the Android API Library. Even, some snippets of UI designing codes were also included with the help of java to interact with users friendlier.

2.2 Android SDK

A software development kit that enables developers to create application for the software platform. We have used the Android SDK from our beginning to the end point of our project work. There, likewise other android projects, our projects include source code package, development tools all the required libraries to build app. At first, we were dependent on the **emulator** of android studio by which we could primarily run the app and test it. But, when advanced features were added, we had to use real android device. SDK defines the eligibility of the app to support on android devices. When we just worked on training and calculator, we could easily work on the minimum SDK 11 but, to support Google Maps, we had to transform it into the version no 15 and lastly for material design, we have converted it into 19. Besides, there is a file in studio called Manifest where developers need to write permissions for using many custom tasks, we did too.

2.4 XML & Android Responsive Design

XML stores data in plain text format. This provides a software- and hardware independent way of storing, transporting, and sharing data. XML also makes it easier to expand or upgrade to new operating systems, new applications, or new browsers, without losing data. With XML, data can be available to all kinds of "reading machines" like people, computers, voice machines, news feeds, etc. We were slightly dependent on it as when we used material design, we developed our custom theme and design. [3]

2.5 Firebase

Firebase is a mobile and web application development platform which is a technology that permits android developers to make web applications with no server-side programming so that development turns out to be quicker and easier. With Firebase, we didn't have to stress over-provisioning servers or building APIs with just a little bit of configuration; we could give Firebase a chance to take every necessary step: storing data, verifying users, and implementing access rules.

By using Firebase in our project, it has been possible to simplify of usage and controlling data, without having to think about how data would be stored, and synchronized across various examples of the application in real time. [6]

Usage:

- We stored our books in Firebase database.
- The Firebase authentication has helped to get the user information while using the app.
- We have created two versions of the app using this Firebase: one for user panel and other one for us – the admin panel.
- We can easily get the user information and can decide whether to give him the access to view our special features or not.
- It is Scalable, so it has been very trusted to handle all of our data without missing a single step.
- Data is stored as native JSON, so we can immediately see what we store as our resources.

2.4 Google Maps API

The Google Maps APIs [4] give developers several ways of embedding Google Maps into web pages or retrieving data from Google Maps, and allow for either simple use or extensive customization. There are several API offerings:

- Web APIs:
- Web service APIs:

- Mobile APIs:

We have used the Google Maps API to allow for the embedding of Google Maps to show the current location of a user and the nearest location of the IELTS exam center, using a simple JavaScript interface or a Flash interface. The API includes language localization for over 50 languages, region localization and geocoding, and has mechanisms for enterprise developers who want to utilize the Google Maps API within an intranet. API HTTP services have been accessed in our project over a secure (HTTPS) connection by Google Maps API Premier customers. [4]

2.4 YouTube Player API

The YouTube Android Player API [5] enables to incorporate video playback functionality into the Android applications. The API defines methods for loading and playing YouTube videos (and playlists) and for customizing and controlling the video playback experience.

Using the API, we have loaded and cued videos into a player view embedded in our application's UI so that we can then control playback programmatically. It saves the time of a user to go to the YouTube and search for the tutorial then. Instead, s/he can grab the provided playlists. The view has been customized likewise the main YouTube view: user can play, pause, or seek to a specific point in the currently loaded video. [4]

Chapter 3

System Design

3.1 Context Diagram

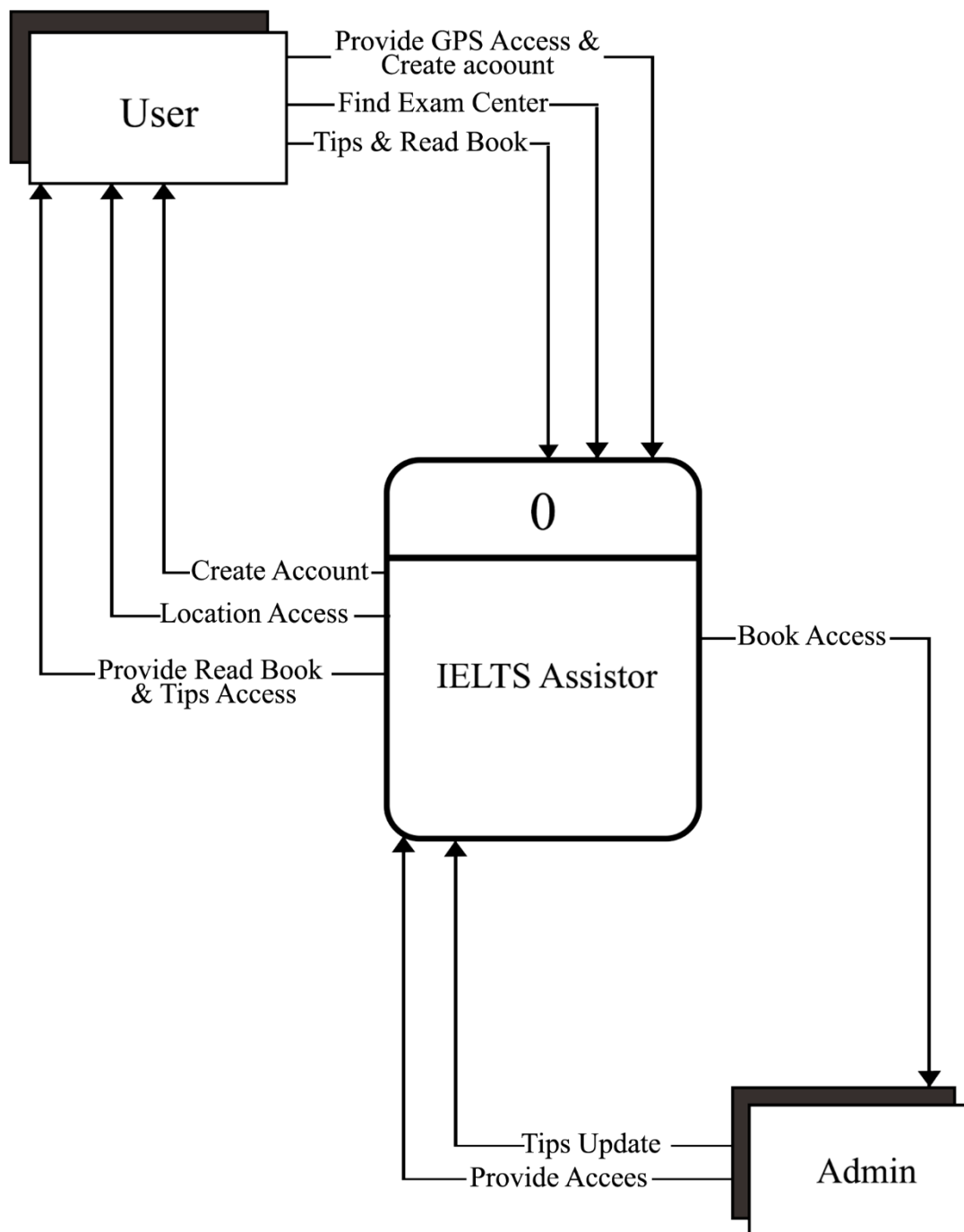


Figure 1: Context Diagram For IELTS Assistor

Chapter 4

Test, VCS & Limitations

4.1 Testing

Testing is the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not. Testing is executing a system in order to identify any gaps, errors or missing requirements in contrary to the actual requirements.

4.1.1 Testing Objects

- Testing is mainly done for rectifying the error from the program that the program that is design for particular problem.
- Testing is a process of executing a program with the intent of finding an error.
- A good test case is one of that has a high probability of finding an as-yet UN discover error.
- A successful test is one that uncovers an as-yet undiscovered error.
- If testing is conducted successfully it will uncover error in the software.

4.1.2 Testing Principle

Before doing the testing, some points should be on mind.

- Around 4 activities of the system require internet connection during execution of tasks. So, whether the system crashes if internet activity is off.
- If GPS is off, the exam center activity creates any problem or not.
- Whether calculator handles every error on every wrong input.
- Successfully log in to view the book and tips.

4.2 Version Control System

A component of software configuration management, version control, also known as revision control or source control, is the management of changes to documents, computer programs, large web sites, and other collections of information. Changes are usually identified by a number or letter code, termed the "revision number", "revision level", or simply "revision". For example, an initial set of files is "revision 1". When the first change is made, the resulting set is "revision 2", and so on. Each revision is associated with a timestamp and the person making the change. Revisions can be compared, restored, and with some types of files, merged.

As we have worked as a team and everyone had to complete the allotted tasks in time. So, every one of us created many branches for specific tasks and then commit the files, push them all, update the project and lastly merge the work with others, we have used GitHub for this project work, we have all the records of every update. It is open to all, anyone can access and understand our work.

So here is the link of it: https://github.com/HussainJuned/IELTSAssistor_july12-master/tree/master **it has total 72 commits and 11 branches in total.**

4.3 Limitations

As this is my first android based application project there is some limitations on it. I hope I will make it more reliable in future. Limitations are

- User can know the nearest exam center from only his/her current location
- Writing and Speaking training has only numbers of useful playlists, no chance to practice.
- Firebase is free, but when crosses 100 users, we have to pay to continue with their database.

Chapter 5

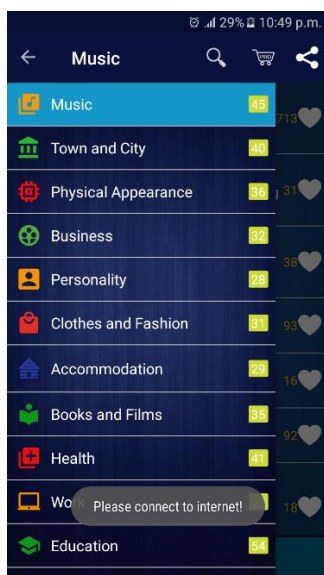
Project and Literature Review

5.1.1 Full Band 7.5+

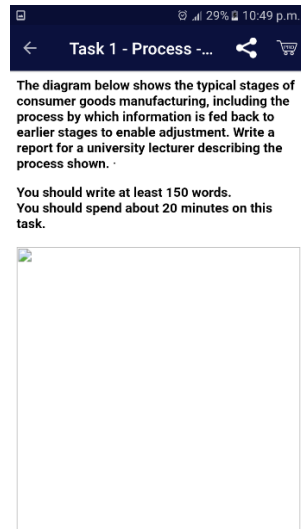
We have reviewed one of the most downloaded apps on Google Play Store named “**IELTS Full Band 7.5+**”. It has around 6 activities, each one is focused on providing tips and showing sample answers. One beneficial feature of the app is its vocabulary feature. It has good collections of lexical resources on many categories. Learners can learn them by using this app. Overall, it is a tutorial app with bunch of tips, nothing special one to improve the level of the IELTS participants. [8]



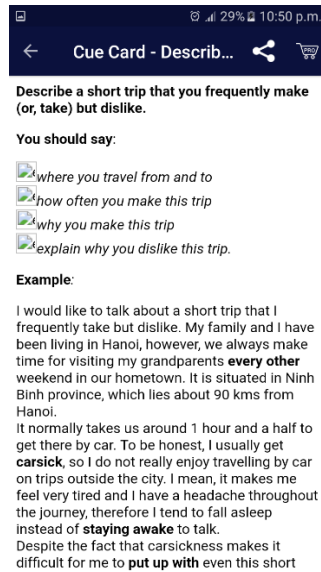
The Complete IELTS app
Home Screen



The dictionary features



Writing question sample



Speaking cue card sample

Test 12 - Section 1

date:	(8)
Watching the game together:	(9)
What Jim needs to do before the move-in:	take (10) in the morning

[#answer](#)



[Check Your Grammar Problem - Click here](#)

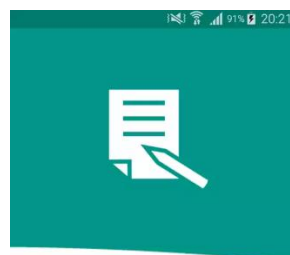
Answers

Each question correctly answered. **Correct** spelling is needed in all answers.

Listening Section One Sample with no interaction with user

5.1.2 IELTS Writing

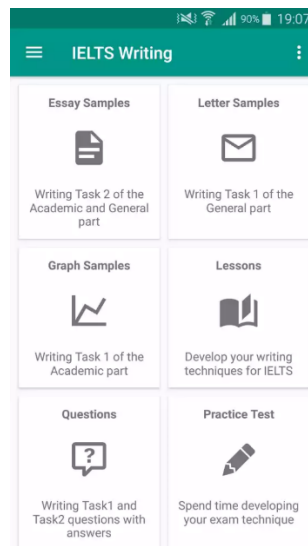
We have reviewed another app called “IELTS Writing”. Likewise, the previous one, it has also tips, sample answers, one edit Text box to practice writing task but no sending activity to anywhere. Other IELTS app are also informative but dynamic and user interactive. [8]



IELTS Writing

Free, self preparation for Academic and General part of the IELTS writing test.

The IELTS Writing App



Riched with sample answers

The more significant fact is that, there is no single app that is so many integrated features like ours. We have used so many dynamic features: Google Maps, YouTube playlists, Material UI designs, Firebase database, Sign Up authentication etc. We found no single apps like that. Yes, there are apps such as - IELTS calculator, Complete IELTS band score 7/7+, tips and tricks but has very limited features. They are just ended up with the normal Text Views, some links for mock tests, no dynamic use of Android GUI components like us. And yes of course, projects like these have overloaded content than ours, which is very easy to add in ours but we have some incomparable dynamic features that almost all IELTS tutorial android projects do not have.

5.2 Literature Review

As we reviewed some of the existing apps, we have researched on them and found many differences from our application. Ours is a more exclusive one than the others because our project has –

1. There's no IELTS tutorial app which can track the user location and can tell the nearest exam center. [3]
2. A user can be trained by our system by mastering the tricks and solving our provided questions. A few apps have this functionality but no explanation added after answering the questions.
3. We are keeping database of the users of the app. We have created two panels: user panel and admin panel. We found no apps covering this feature. [6]
4. We have used some of the IELTS apps which require internet connectivity to run. But the apps crash if internet connection is gone and the annoying fact is that ads appear now and then which irritated a user to read their materials. It means that net connectivity and other errors are not handled properly in these applications. We have carefully tested and handled each activity which requires internet connection. [3] [4]

5. Our app is showing full details of a user's individual score along with the band score, and then shows the level of the user according to the result. Other IELTS calculator apps are just bound to provide the overall band score, nothing more. [1]
6. We are providing two exclusive books to users to download and save it as offline, we have encrypted these books so that users must come in our apps to read the books. The apps that provides pdfs to study, most of them give the links so that users can download the book in the storage and read this from the storage.

Chapter 6

Future Plan & Conclusion

6.1 Future Plan

It's just the beginning of our long-term project. We have made our first target successful. For near future, we have some extended plans. Our future plan is to provide more Artificial Intelligence features on Reading Training of the application. Even, we are planning to have an IELTS expert to provide solutions on Writing and Speaking and interact with users within minute (like a chat app). Besides, there will be features to track the improvement level of each user and provide feedback on the completion of each module of the training. The map of system will be also more dynamic to find IELTS exam centers as like as current Google Map. Hopefully in the near future all of our projections will be set out into the application.

6.2 Conclusion

The main goal of this project is to help those who are preparing for IELTS exam in order to save time from diving into uncertain and huge resources. They can get the more probable solution they are searching for, train them when they want and judge the level while solving other resources. Our future plan is to enhance this application by making it more dynamic and give a better online platform. Also, if possible, we have plans to publish our upgraded work into Play stores and other platforms where students can grab it for free. Hopefully in the near future, we will be able to accomplish all these features into the application.

Chapter 7

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