FACULTY OF ENGINEERING AND INFORMATICS

THESIS DIPLOMA

Bishkek – 2019

MINISTRY OF EDUCATION AND SCIENCE OF KYRGYZ REPUBLIC

ALA-TOO INTERNATIONAL UNIVERSITY

FACULTY OF ENGINEERING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE

THESIS DIPLOMA

MOBILE APPLICATION FOR INTERNATIONAL ALA-TOO UNIVERSITY

By NURULLA ZHOLDOSHOV

Thesis Supervisor:	**Date:**
Nurlan Shaidullaev	**26.05.2019**
Head of Department :	**Date:**
Bedelbai Mamadiev	**26.05.2019**

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14010108323

Executor:

Nurulla Zholdoshov_____

«_____» May 2019

Thesis supervisor:

Nurlan Shaidullaev _____

«_____» May 2019

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КЫРГЫЗ РЕСПУБЛИКАСЫНЫН БИЛИМ БЕРҮҮ ЖАНА ИЛИМ МИНИСТИРЛИГИ

АЛА-ТОО ЭЛ АРАЛЫК УНИВЕРСИТЕТИ

ИНФОРМАТИКА ЖАНА ИНЖЕНЕРИЯ ФАКУЛЬТЕТИ

КОМПЬЮТЕРДИК ИЛИМДЕР БОЛУМУ

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НУРУЛЛА ЖОЛДОШОВ УБАЙДИЛЛАЕВИЧ

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Аткарган:

Нурулла Жолдошов _____

«_____» Мая 2019

Илимий жетекчиси:

Нурлан Шайдуллаев _____

«_____» Мая 2019

Бишкек 2019

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

МЕЖДУНАРОДНЫЙ УНИВЕРСИТЕТ АЛА-ТОО

ФАКУЛЬТЕТ ИНЖЕНЕРИИ И ИНФОРМАТИКИ

ОТДЕЛЕНИЕ КОМПЬЮТЕРНЫХ НАУК

ДИПЛОМНАЯ РАБОТА

МОБИЛЬНОЕ ПРИЛОЖЕНИЕ ДЛЯ МЕЖДУНАРОДНОГО УНИВЕРСИТЕТА АЛА-ТОО

ЖОЛДОШОВ НУРУЛЛА УБАЙДИЛЛАЕВИЧ

14010108323

Выполнил:

Нурулла Жолдошов _____

«_____» Мая 2019

Научный руководитель:

Нурлан Шайдуллаев _____

«_____» Мая 2019

Бишкек 2019

ALA-TOO INTERNATIONAL UNIVERSITY
FACULTY OF ENGINEERING AND INFORMATICS
DEPARTMENT OF COMPUTER SCIENCE

Thesis Diploma

By Nurulla Zholdoshov

MOBILE APPLICATION FOR INTERNATIONAL ALA-TOO UNIVERSITY

Thesis supervisor: Nurlan Shaidullaev

This thesis diploma consists of an application for the university “Mobile application for Alatoo International University” and an explanatory note in N pages, containing N figures, as well as N sources of literature. Promoting and presenting the activities of the university in a mobile environment is the main purpose.

The aim of the work is to create a mobile application based on the Android mobile operating system. To achieve the goal, the subject area and similar projects on the Internet were analyzed, sketches and product projects were prepared, and a mobile application was successfully implemented. All data was filled from the official site of the AIU.

The client experience will be smooth: high performing, fast, and responsive. It will be designed and developed as a powerful Android app that will anticipate and respond to user needs and expectations, provide a smooth navigational experience, and appropriately reflect our university in look and feel.

Key words: development, mobile application, university, software, new technology

АННОТАЦИЯ

АЛА-ТОО ЭЛ АРАЛЫК УНИВЕРСИТЕТИ

ИНФОРМАТИКА ЖАНА ИНЖЕНЕРИЯ ФАКУЛЬТЕТИ

КОМПЬЮТЕРДИК ИЛИМДЕР БОЛУМУ

Дипломдук иш

Жолдошов Нурулла Убайдиллаевич

ЭЛ-АРАЛЫК АЛА-ТОО УНИВЕРСИТЕТИ УЧУН МОБИЛДИК ТИРКЕМЕ

Илимий жетекчиси: Нурлан Шайдуллаев

Бул дипломдук жумуш атайын университет учун жасалган «Эл аралык Алатоо университетине мобилдик тиркеме» деген мобилдик тиркемеден турат жана ** бет тушундурмо болуктон, анын ** суроттор, жана ошондой эле ** адабият булактарынан турат. Университетти жаны технология тармагында алдыга карай багыттоо бул тиркеменин негизги максаты болуп эсептелет.

Максаты Андроид мобилдик операциондук системасынын негизинде тиркеме ойлоп табуу болуп саналат. Ал максатка жетуу учун окуу тармагындагы материалдар жана интернеттеги окшош проекттер каралды жана тиркеменин ийгиликтуу даяр болушуна керек болгон бардык булактар анализден отту. Бардык маалыматтар университеттин официалдуу баракчаларынан алынды.

Колдонуучулар учун жылмакай болот: жогорку аткаруу, ыкчам жана сезимтал. Бул алдын ала көрө билип, муктаждыктарына жана пайдалануучулардын күтүүлөрүнө жооп берет. Андроид үчүн күчтүү колдонуу, ошондой эле иштелип чыккан жана иштеп жылмакай өтүү менен камсыз кылуу, ошондой эле тийиштүү окуу көрүнүшүн чагылдырып турат.

АННОТАЦИЯ

МЕЖДУНАРОДНЫЙ УНИВЕРСИТЕТ АЛА-ТОО

ФАКУЛЬТЕТ ИНЖЕНЕРИИ И ИНФОРМАТИКИ

ОТДЕЛЕНИЕ КОМПЬЮТЕРНЫХ НАУК

Дипломная работа

Жолдошова Нуруллы Убайдиллаевича

МОБИЛЬНОЕ ПРИЛОЖЕНИЕ ДЛЯ МЕЖДУНАРОДНОГО УНИВЕРСИТЕТА АЛА-ТОО

Научный руководитель: Нурлан Шайдуллаев

Данная дипломная работа состоит из мобильного приложения, разработанная специально для университета «Мобильное приложение для Международного университета Алатоо» и пояснительной части на N страницах, содержащей N рисунков, а также N источников литературы. Продвижение и представление деятельности университета в сфере новых технологий является основным направлением.

Целью работы является создание мобильного приложения на базе мобильной операционной системы Android. Для достижения цели были проанализированы предметная область и похожие проекты в Интернете, все детали, требуемые для успешной реализации данного продукта, были анализированы, включая: подготовка эскизов и проекты продуктов. Все данные были взяты с официального сайта МУА.

Пользовательский опыт будет плавным: высокопроизводительным, быстрым и отзывчивым. Оно будет спроектировано и разработано как мощное приложение для Android, которое будет предвидеть и реагировать на потребности и ожидания пользователей, обеспечивать плавную навигацию и надлежащим образом отражать внешний вид нашего университета.

ACKNOWLEDGEMENTS

I would like to express my deepest appreciation to our final year Project Adviser, Dr. Dinara Bobusheva, whose contribution in stimulating suggestions and encouragement, helped me to coordinate my project especially in writing this report.

Moreover I would also like to acknowledge with much appreciation the crucial role of the staff of Ala-Too International University administration, who gave the permission to use all the necessary materials and required equipment to complete the task. Last but not least, many thanks go to the head of the project, Nurlan Shaidullaev whose have invested his full effort in guiding me in achieving the goal. I have to appreciate the advises given by other supervisor as well as the panels especially in our project presentation that has improved our presentation skills thanks to their advises and comments.

May 2019

Zsoldoshov Nurulla

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AIU	Ala-Too International University
IT	Information Technology
PL	Programming Languages
IDE	Integrated Development Environment
API	Application Program Interface
SDK	Software Development Kit
APK	Android Application Package
APT	Advanced Package Tool
XML	Extensible Markup Language

LIST OF FIGURES

INTRODUCTION

Now we are living in the 21st century, in the century of globalization when the new technology plays an important role in every sphere of our everyday life. Sometimes it seems that we cannot imagine our life without devices. Today, more and more people prefer mobile phones and, consequently, computer versions are becoming less popular. According to the statistical data provided by DATAREPORTAL 5,112 billion people are using cell phones. This is the 67% of the whole population worldwide (datareportal.com, 2019). According to the National Statistics Committee of the Kyrgyz Republic in 2015 209 cell phones were per 100 households. Consequently, the information should be adapted specifically for smartphones than for personal computers.

At the moment, using the site from a mobile device creates a number of inconveniences: necessity to memorize the address of the site, or look for it in search engine. On the site itself, among the small text we have to search for the necessary section, among a huge number of links of different degrees of usefulness.

The number of students interested in studying at Alatoo International University is increasing. Comparatively, nowadays the most of the students are excited to get a better education in higher educational institutions. Providing the easiest way to get detailed information about the university for interested individuals, must be in the priority of the university staff, which it requires special needs. With the development of technology our university has to be modern in order to respond to the challenges of the globalization .With this regard, here is developed a special mobile application, which guarantees easy access to the university information, quick access for the news, announcements, for all the social media pages, web sites. In addition to these adventures, it also can be served as a valuable source for those, who are already studying at Ala-Too. A mobile application - is software specifically designed for a specific mobile platform. The advantage of using this mobile application for the university

students is that they can enter with their ID numbers and get information about their status, transcript, and success report.

Objects: The object of the thesis diploma is the process of promotion and representation of the activities of the university in a mobile application.

Subjects: The subject of the thesis diploma is a mobile application for the Alatoo International University.

Aim: The aim of the thesis diploma is to create a mobile application of the AIU based on the Android mobile operating system.

PROBLEM STATEMENT

Since we are living in a century of new technology it is impossible to imagine our lives without devices, internet and mobile applications are not exception. It is good when we have all of the tools, which are counted above, however it is better when we have special applications for our needs. Unfortunately, we do not have special resource that could allow students to get easy access to their data such as: success report, transcript, student status, news, announcements, contact details and social media.

Here is also a problem with introducing the university. In this case we can spread this mobile application throughout Kyrgyzstan's regions in order to make them informed about the activities, enrollment dates, and general information about our university. Consequently, there will not be necessity for the staff members to go through regions in order to give them information.

Nowadays, it is a real problem of the Ala-Too students, because in order to get that or another information they have to visit different sites in internet. First of all, we have to understand that not everybody good at using internet sources, so some people cannot find information about our university or any other required data. Secondly, it is a wasting of time. In order to find all information a person have to visit many sites, which can complicate our lives. This application suggests easy way to obtain information.

CHAPTER 1

1.1 INTRODUCTION TO ANDROID DEVELOPMENT

Figure 1: Android Development

Android- it is a popular computing platform based on the Linux® operating system. In 2008 in the form of a mobile phone platform the initial commercial version of Android hit the market, back when the most popular cell phone was the BlackBerry, when the majority of phone users were still tapping out texts from a flip phone, and when the iPhone was beginning to make meaningful waves across all sectors.

Android has "paid its dues" so to speak, in the mobile phone market for the past 10 years. The success of iPhone and Android devices has rendered the one-time business mobile device market leader BlackBerry to be the subject of a Bruce Springsteen song: Glory Days. Intriguingly, Android's success has helped push BlackBerry into a diverse set of offerings, including shipping devices running the Android platform. (Kudos to the BlackBerry team for pivoting and adding value to their shareholders and the broader market despite experiencing the retreat of their earlier dominance.)

After 10 years, Android has effectively become the world's most popular operating system by a number of measures. In spite of the robust popularity of the flashy and capable Apple iPhone platform, Android shipments worldwide meaningfully outpace Apple's offerings. Android devices scale the global marketplace, While Apple's devices continue to demand an ever-increasing price point. Yes, there are super-pricy Android models sitting next to the latest iPhone, but there are also relatively low-cost Android phones and tablets available for sale at Walmart and on Amazon.

As Android has developed, it is finding its way into a variety of devices, including televisions, projectors, automobiles, and even recreational vehicles. Want to activate the awning or dim the lights in your camper? You can use the Android-based touchscreen interface to manipulate the controls. Or, use your smartphone equipped with the RV's Android-based control system with Bluetooth to communicate. There are many of these types of interfaces finding their way to the market. Some user experiences are simply fantastic (like drone controllers), and some are less than fantastic, like the controls in my daddy's RV.

1.2 A SHORT HISTORY of ANDROID

The Android platform was spawned from the efforts of an organization known as the Open Handset Alliance (OHA), which had at the outset the mission of collaborating to build a better smartphone. At the present time, if you visit the website OHA (Open Handset Alliance), you may think that their efforts were to no purpose, as the last news item dates to 2011. Nonetheless, what was started with that group of carriers, hardware manufacturers, and software vendors has grown into the world's most popular platform. Is Google the "man behind the curtain" of the OHA? Maybe, but no matter. Over a decade since its introduction, Android is offered in the market by many large players across the globe and across numerous industries. Samsung, also a member of the OHA, is the leading manufacturer of smartphone devices worldwide, thanks to Android.

Albeit a single device (HTC manufactured the G1 device and provisioned on the T-Mobile network) started it all, Android devices are now available in virtually every market on the planet — not just for mobile phones.

It is beyond the scope of this article, but ask yourself if there is not a correlation between (arguably) the world's most successful Internet/search company also being the driving force behind the world's most popular mobile platform. More eyeless view Android devices every day worldwide than any other single computing platform.

If you wish to write code that can run literally anywhere in the world, then you need to learn about the Android platform, so read on!

1.3 INTRODUCTION TO ANDROID STUDIO IDE

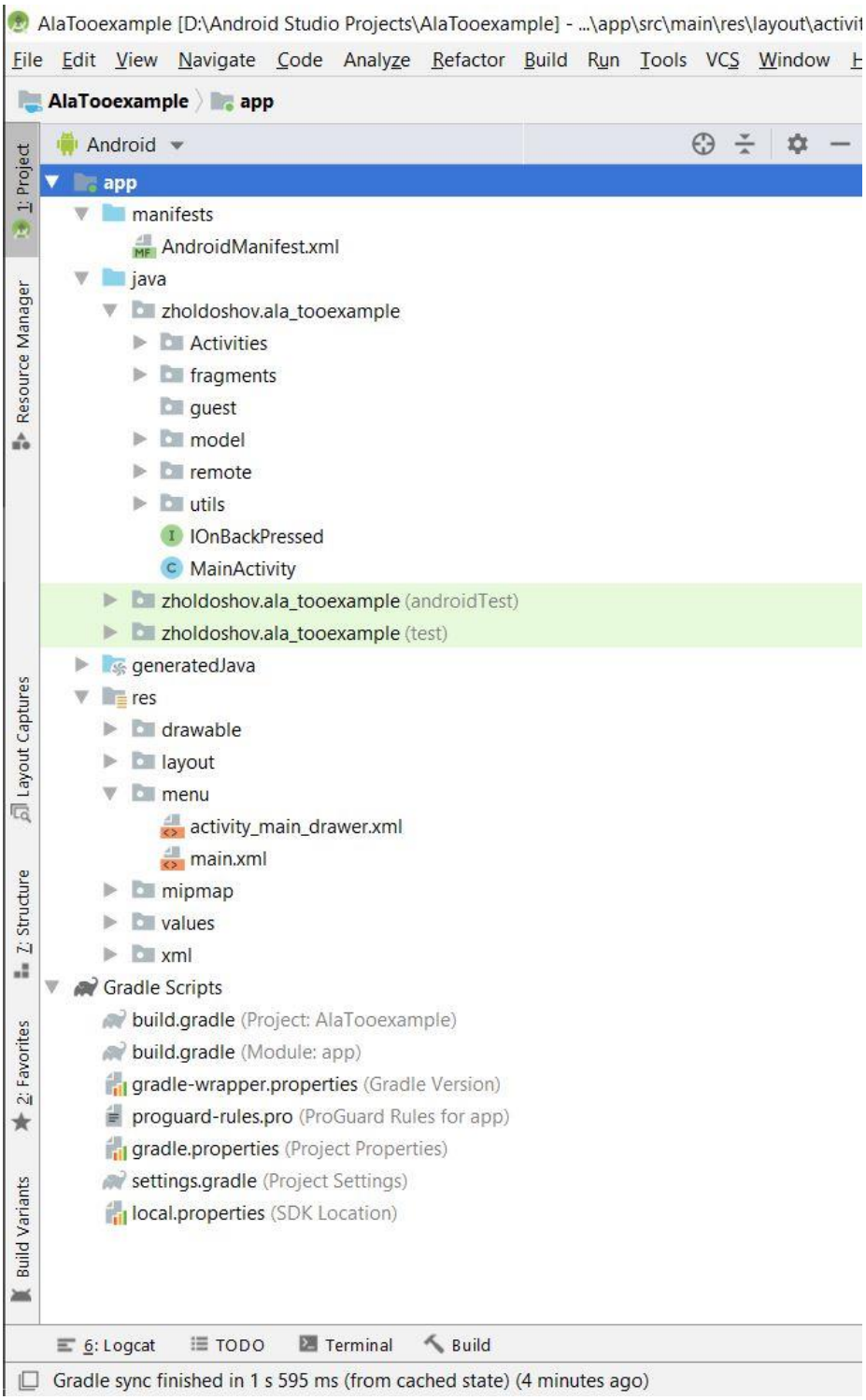

Figure 2: Structure of the Project

Above Image shows Android Project View where you will have all your files related to your project.

There, we have one module Android Application which consists of **Manifest**, **Java**, **Res** Folders.

Manifest Folder: This folder consists of a manifest.xml file which android system requires for all the essential information of the application, like:

- **Package Name** — Unique Identifier of the application
- **Components** — We have to describe all the components in the application (We will discuss components in upcoming chapters)
- **Permissions** — Describe all permission application will require

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    package="zholdoshov.ala_tooexample">

    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    <uses-permission android:name="android.permission.INTERNET" />
    <uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
    <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
    <uses-permission android:name="android.permission.ACCESS_WIFI_STATE" />

    <application
        android:allowBackup="true"
        android:hardwareAccelerated="true"
        android:icon="@mipmap/ic_launcher"
        android:label="Ala-Too"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme"
        tools:ignore="GoogleAppIndexingWarning"
        tools:targetApi="n"
        android:fullBackupContent="@xml/backup_descriptor"
        android:usesCleartextTraffic="true">
        <meta-data
            android:name="com.google.android.geo.API_KEY"
            android:value="AIzaSyBmCNR_sgNd3jhlGTuAQzKk-ho4L8gakN0" />
        <activity
            android:name=".Activities.MapsActivity"
            android:label="Map"
            tools:ignore="InnerclassSeparator" />
        <activity
            android:name=".Activities.LoginActivity"
            android:screenOrientation="portrait"
            tools:ignore="InnerclassSeparator">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
```

Figure 3: Manifest

Java Folder: Here you will have all your Java and Kotlin files.

Res Folder: This folder consists of all the media requirements of application like screen layouts inside the layout, images inside drawable, fonts, colour, strings and dimension will be inside values.

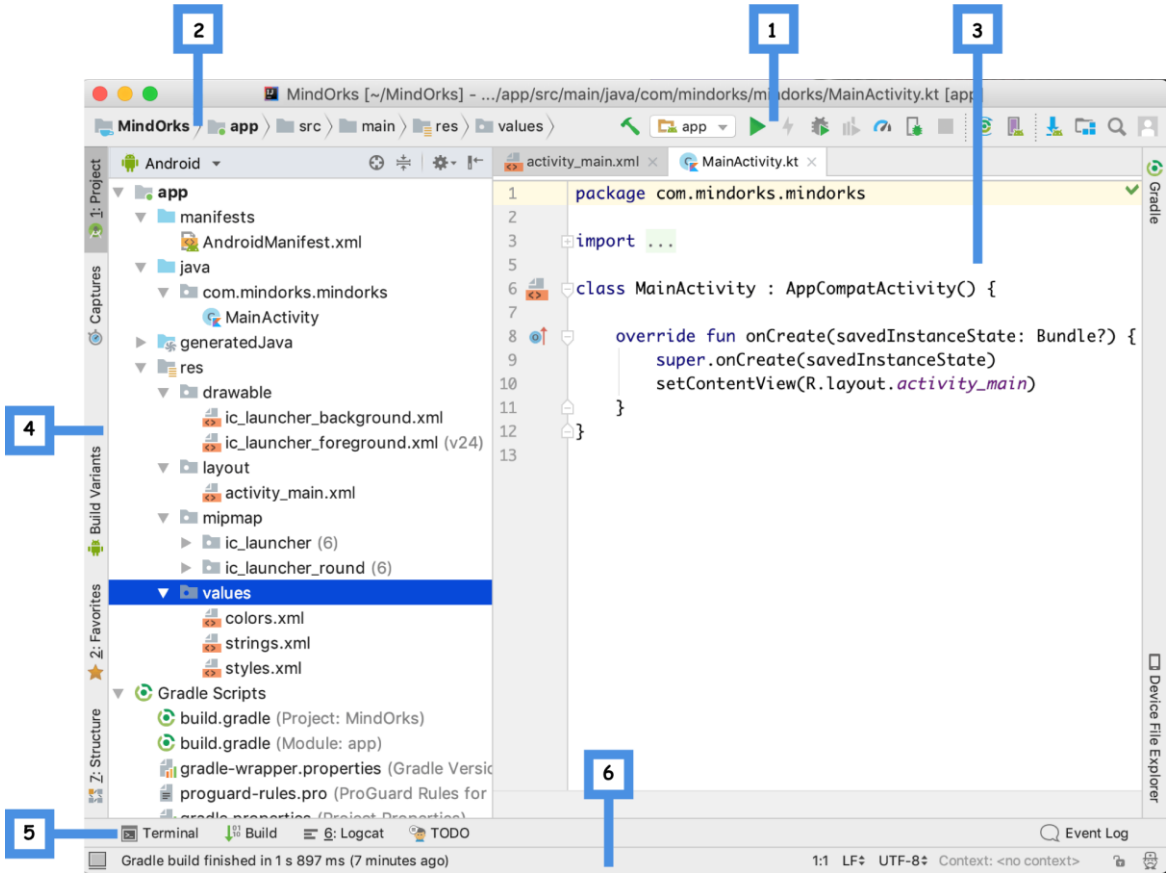

Figure 3: User Interface of IDE

1. **Toolbar:** All needful actions like find, copy, paste, and so on with the run application, open SDK manager and other tools
2. **Navigation Bar:** This shows you the path of the file you are working on
3. **Editor Window:** This is the screen where you have all your files open, and you can write code, design layouts etc. depending upon the file type
4. **Tool Window Bar:** This is the window consists of multiple options which you can expand on clicking on it.
5. **Tool Window:** Here you will see the option you had selected in Tool Window Bar.
6. **Status Bar:** Here you can check your project status

Android Studio Terminal

If you are a person love to work with commands, version control; Android Studio provides you with an in-built terminal.

You can find it at the bottom of your Android Studio, select Terminal.

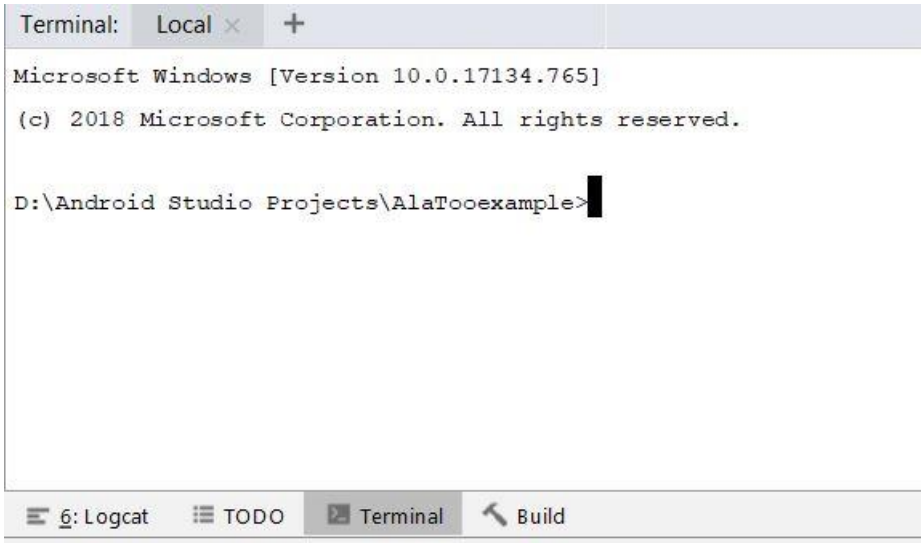

Figure 4: Terminal

Gradle Build System

In Android Studio, Gradle is a custom build tool used to build APK files, by managing dependencies and providing custom build logic.

APK file (Android Application Package) is a specially formatted zip file which consists of Bytecode, Resources (images, UI, XML etc.)

CHAPTER 2

2.0 ANALYTICAL EVALUATION

2.1 What is Android Studio?

Android Studio is the official development environment (IDE) for Android app development. It's based on the "IntelliJ IDEA", a Java integrated development environment for software, and incorporates its developer tools and code editing.

To support app development within the Android OS, Android Studio uses a Gradle-based build system, code templates, emulator, and Github integration. Every project in Android Studio has one or more modalities with resource files and source code. These modalities include Android app modules, Google App Engine modules, and Library modules.

Android Studio uses an Instant Push feature to push resource changes to a running application and code. A code editor assists the developer with writing code and offering code completion, refraction, and analysis. Applications built in Android Studio are then compiled into the APK format for submission to the Google Play Store.

The software was first announced at Google I/O in May 2013, and the first stable build was released in December 2014. Android Studio is available for Windows, Linux, and Mac desktop platforms. It replaced Eclipse Android Development Tools (ADT) as the primary IDE for Android app development. The Software Development Kit and Android Studio can be downloaded directly from Google.

2.2 What is Java?

It is a programming language specially designed for use in the distributed environment of the internet. It is the most popular programming language for Android smartphone applications and is also among the most favored for the development of the internet of things and edge devices.

Java was designed to have the look and feel of the C++ programming language, but is simpler to use and enforces an object-oriented programming model. Java can be used to create complete applications that may run on a single computer or be distributed among clients and servers in a network. It can also be used to build an applet for use as part of a webpage or small application module.

Why Java is popular

It is difficult to give a single reason as to why the Java programming language has become so ubiquitous. However, the language's main characteristics have all played a part in its success, including the following constituent elements:

- **Programs created in Java offer transportation in a network**. Source code is compiled into what Java calls bytecode, which can run anywhere in a network, on a server or on a client that has a Java virtual machine (JVM). The Java virtual machine interprets the bytecode into code that will run on computer hardware. In contrast, most programming languages, such as COBOL or C++, will compile code into a binary file. Binary files are platform-specific, so a program written for an Intel-based

Windows machine cannot on run a Mac, a Linux-based device or an IBM mainframe. As an alternative to interpreting one bytecode instruction at a time, the JVM includes an optional just-in-time (JIT) compiler which dynamically compiles bytecode into executable code. In many events, the dynamic JIT compilation is faster than the virtual machine interpretation.

- **Java is object-oriented**. An object is made up of data as fields or attributes and code as procedures or methods. An object can be a part of a class of objects to inherit code common to the class. Objects can be thought of as "nouns" that a user can relate to "verbs." A method is the object's capabilities or behaviors. As Java's design was influenced by C++, Java was mainly built as an object-orientated language. Java also uses an automatic garbage collector to manage object lifecycles. A programmer will create objects, but the automatic garbage collector will recover memory once the object is no longer in use. However, memory leaks may occur when an object which is no longer being used is stored in a container.

- **The code is robust**. Unlike programs written in C++, Java objects contain no references to data external to themselves or other known objects. This ensures that an instruction cannot include the address of data stored in another application or in the operating system itself, either of which would cause the program and perhaps the operating system to terminate or crash. The Java virtual machine does a number of checks on each object to ensure integrity.

- **Data is secure**. Unlike C++, Java does not use pointers, which can be unsecured. Data converted to bytecode by Java is also not readable to humans. Additionally, Java will run programs inside a sandbox to prevent changes from unknown sources.

- **Applets offer flexibility**. Besides to being executed on the client rather than the server, a Java applet has other characteristics designed to make it run fast.

- **Developers can learn Java quickly**. Java is relatively easy to learn, especially for those with a background in C, because syntax is similar to C++.

2.3 What is Retrofit?

It is a type-safe HTTP client for Java and Android. Retrofit allows it easy to connect to a REST web service by translating the API into Java interfaces. This tutorial shows you how to use one of most popular and often-recommended HTTP libraries available for Android.

This powerful library makes it easy to consume JSON or XML data which is then parsed into Plain Old Java Objects (POJOs). GET, POST, PATCH, PUT, and DELETE requests can all be executed.

Like most open-source software, Retrofit was built on top of some other powerful tools and libraries. Behind the scenes, Retrofit makes use of OkHttp to handle network requests. As well, Retrofit does not have a built-in any JSON converter to parse from JSON to Java objects. Instead it ships support for the below JSON converter libraries to handle that:

- Gson: com.squareup.retrofit:converter-gson
- Jackson: com.squareup.retrofit:converter-jackson
- Moshi: com.squareup.retrofit:converter-moshi

For Protocol Buffers, Retrofit supports:

- Protobuf: com.squareup.retrofit2:converter-protobuf
- Wire: com.squareup.retrofit2:converter-wire

And for XML, Retrofit supports:

- Simple Framework: com.squareup.retrofit2:converter-simpleframework

2.4 So Why Use Retrofit?

Developing your own type-safe HTTP library to interface with a REST API can be a real pain: you have to handle many functionalities such as making connections, caching, retrying failed requests, threading, response parsing, error handling, and more. On the other hand, Retrofit is very well planned, documented, and tested—a battle-tested library that will save you a lot of precious time and headaches.

In this tutorial, you will know how to use Retrofit 2 to handle network requests by building a simple app to query recent answers from the Stack Exchange API. We'll do GET requests by specifying an endpoint—/answers, appended to the base URL https://api.stackexchange.com/2.2/—then get the results and display them in a recycler view. I will also show you how to do this with RxJava for easy management of the flow of state and data.

2.4.1 Create an Android Studio Project

Fire up Android Studio and create a new project with an empty activity called MainActivity.

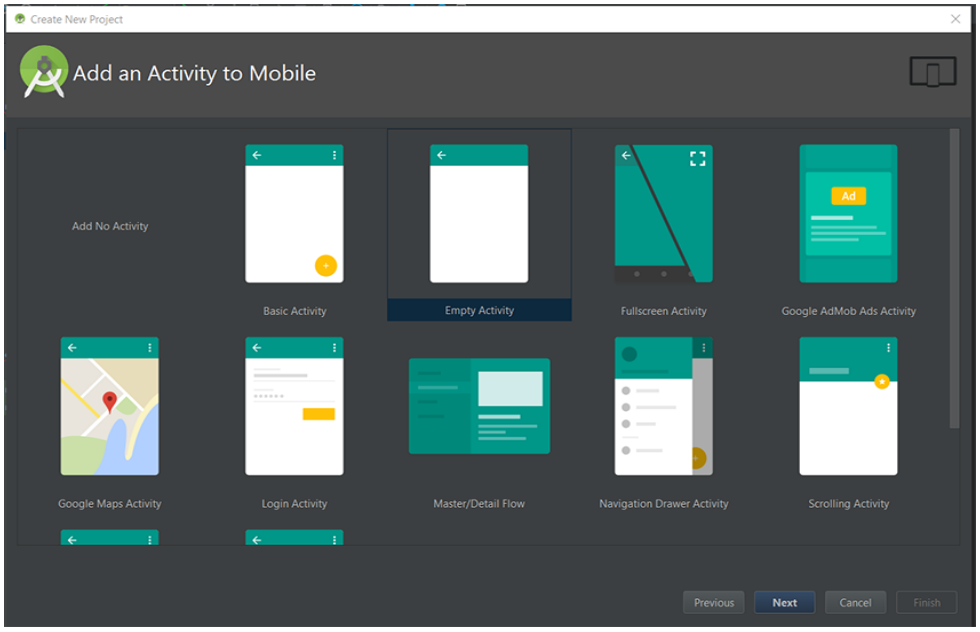

Figure 5: Create an Android Studio Project

2.4.2 Declaring Dependencies

Then declare the following dependencies in your build.gradle. The dependencies include a recycler view, the Retrofit library, and also Google's Gson library to convert JSON to POJO (Plain Old Java Objects) as well as Retrofit's Gson integration.

```
// Retrofit
compile 'com.squareup.retrofit2:retrofit:2.1.0'

// JSON Parsing
compile 'com.google.code.gson:gson:2.6.1'
compile 'com.squareup.retrofit2:converter-gson:2.1.0'

// recyclerview
compile 'com.android.support:recyclerview-v7:25.0.1'
```

Figure 6:Declaring Dependencies

2.4.3 Adding Internet Permission

To perform network operations, we need to include the INTERNET permission in the application manifest: AndroidManifest.xml.

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
          package="com.chikeandroid.retrofittutorial">

    <uses-permission android:name="android.permission.INTERNET" />

    <application
            android:allowBackup="true"
            android:icon="@mipmap/ic_launcher"
            android:label="@string/app_name"
            android:supportsRtl="true"
            android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN"/>

                <category android:name="android.intent.category.LAUNCHER"/>
            </intent-filter>
        </activity>
    </application>

</manifest>
```

Figure 7: Adding Internet Permission

2.4.4 Generating Models Automatically

We are going to create our models automatically from our JSON response data by leveraging a very useful tool: jsonschema2pojo.

Get the Sample JSON Data

Copy and paste https://api.stackexchange.com/2.2/answers?

order=desc&sort=activity&site=stackoverflow in your browser's address bar (or you could use Postman if you are familiar with that tool). Then press Enter—this will execute a GET request on the given endpoint. What you will see in response is an array of JSON objects. The screenshot below is the JSON response using Postman.

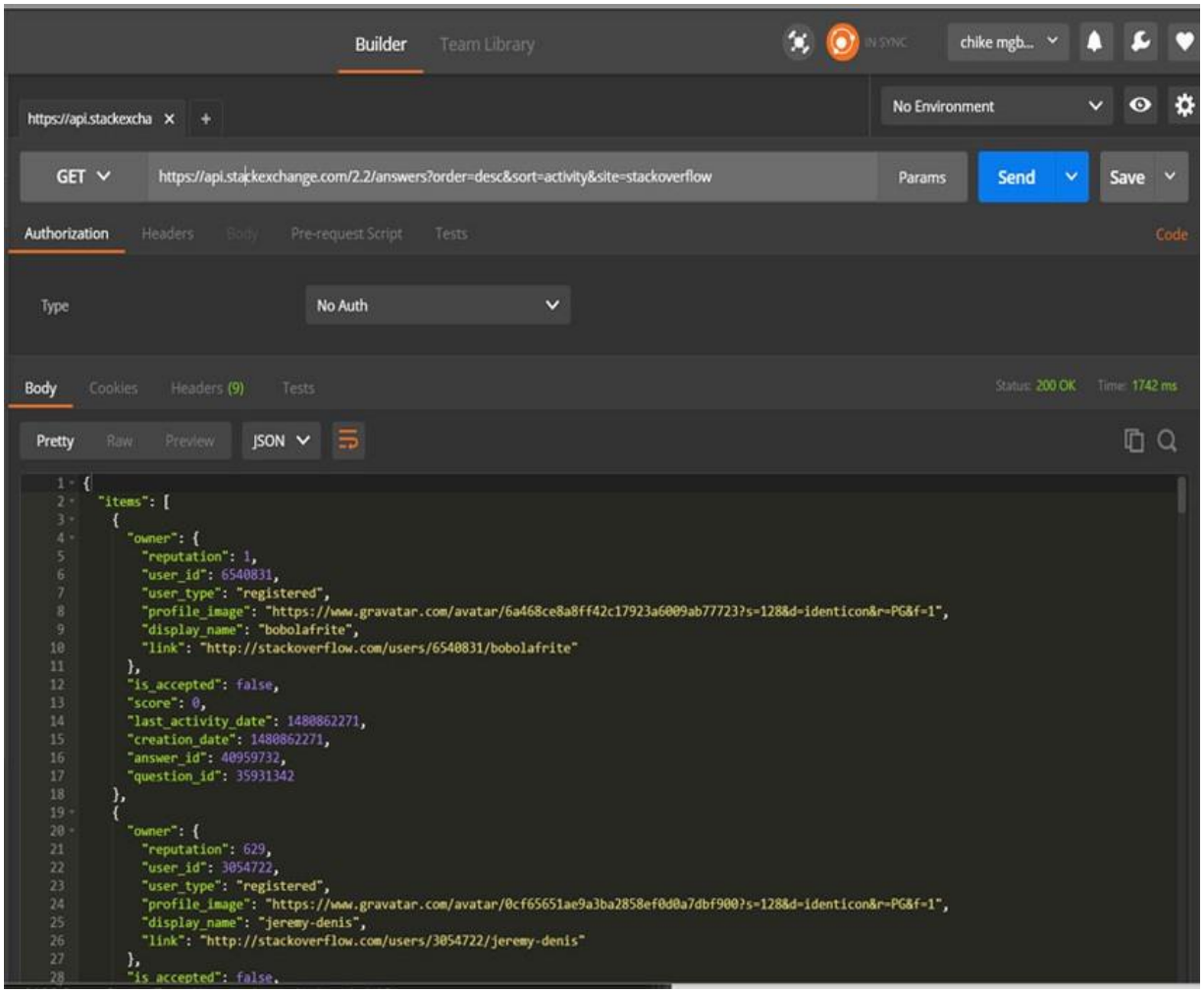

Figure 8: Get the Sample JSON Data

Map the JSON Data to Java

Now visit jsonschema2pojo and paste the JSON response into the input box.

Select a source type of JSON, annotation style of Gson, and uncheck Allow additional properties.

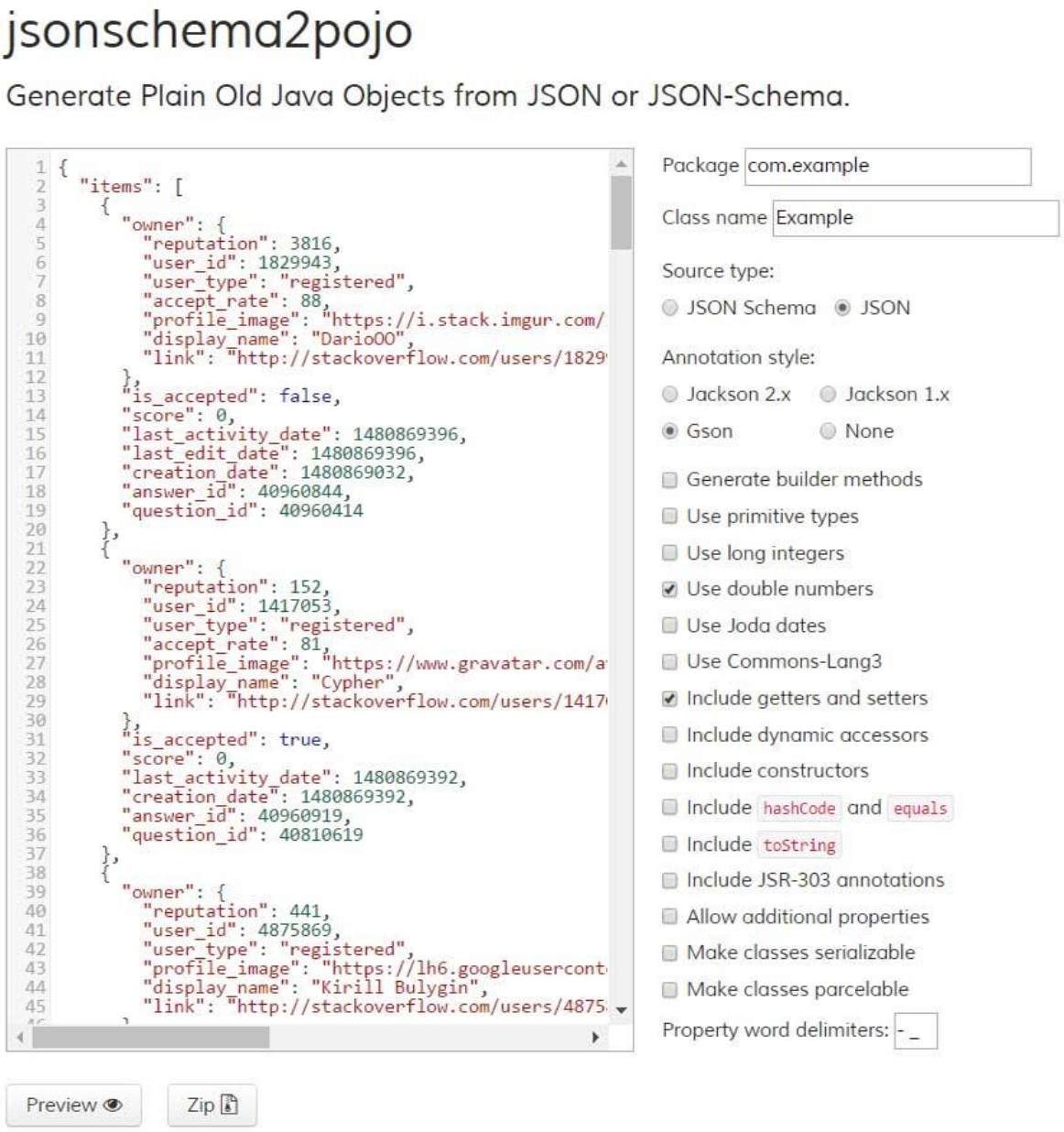

Figure 9: Map the JSON Data to Java

Then click the Preview button to generate the Java objects.

Figure 10: Preview generated Java objects

You might be wondering what the @SerializedName and @Expose annotations do in this generated code. Don't worry, I'll explain it all!

CHAPTER 3

3.1 DESCRIPTION PART

The main objective of the study is to provide quick access to the following data: university news, student information, transcript, contacts details, social media pages and a possibility to leave a feedback to the university or to the developer of the mobile application. In the following part there will be made stress on each of the items listed above:

- **University news**

  Firstly, let's consider University news. It is one of the strong advantages of the application. This item will consist of daily updated news and will be shown on the main screen right at the time when students, staff members or guests enter. So, there will not be necessity to reach websites in order to be informed about what is going on in the university. The news will be gained from the official webpage of the university, which can ensure reliability of the contents. There will be occur different types of news on the main screen with bold fonts describing the main topic of the news. In order to read the news more it is enough just to click on a certain one.

Figure 11: University News

- **About Student**

  The section “About student” will consist of detailed information about the student including: name, surname, ID number of the student, department, group, phone number, Email, birth date, education status, academic status and gender. They will be listed on the screen line by line, making it easy to read and understand.

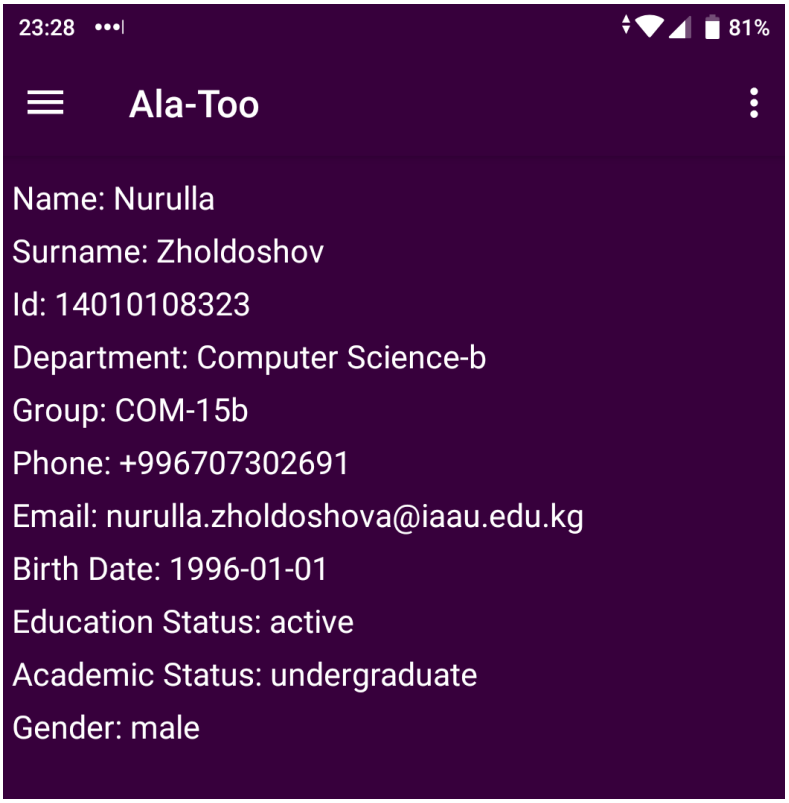

Figure 12: About Student

- **Transcript**

The transcript section provides a data about student's academic achievements. All the marks gained from the midterm or final examinations will be reflected. Students can easily go to the application and just click on "transcript" in order to get data instead of going to websites, finding appropriate section and depend on the speed of the internet.

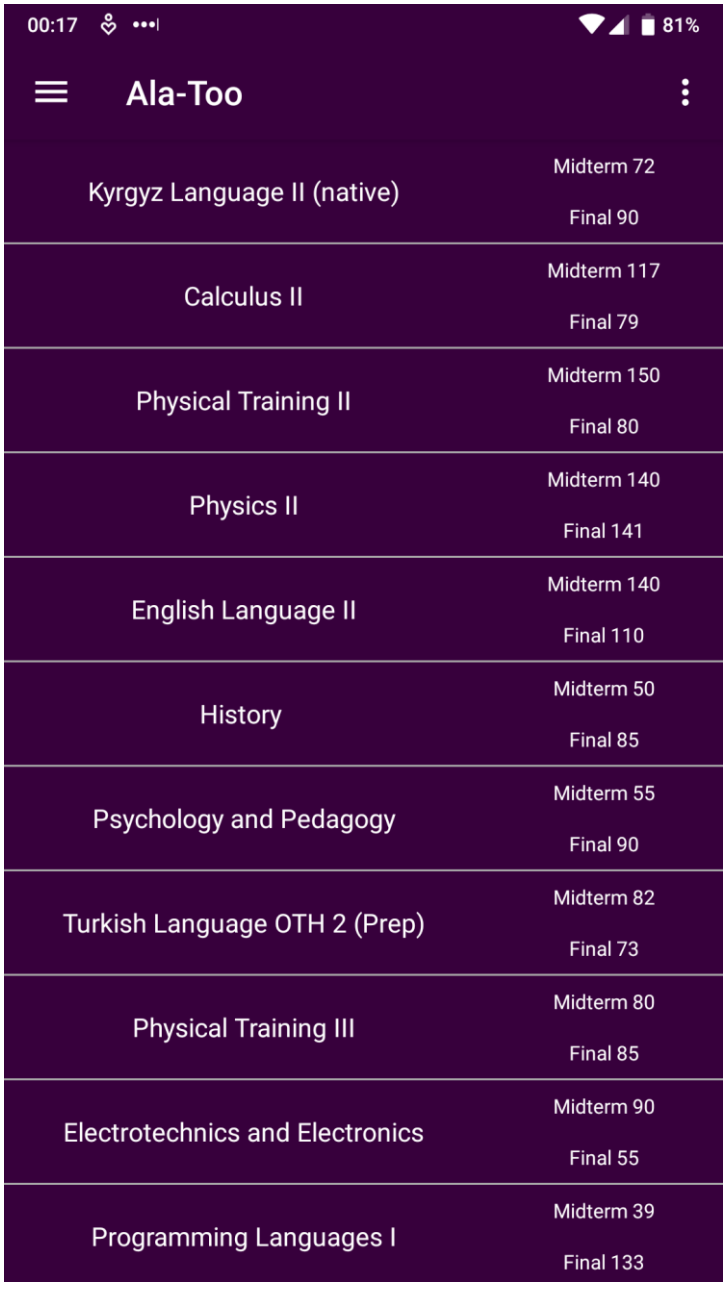

Figure 13: Transcript

- **Feedback**

  Feedback is one of the tools to make improvements in certain area, in our case to improve the university. Every person, doesn't matter male or female, old or young, a university student or not a university student can leave their feedback too the university or to the developer of the application. It can be criticism, comments, corrections, suggestions, recommendations or just wishes. It is important to know the each interested person's viewpoints according to certain issues because everyone has his or her own unique opinion, which can lead to one firm decision. All in all, it can be the reason of huge improvements.

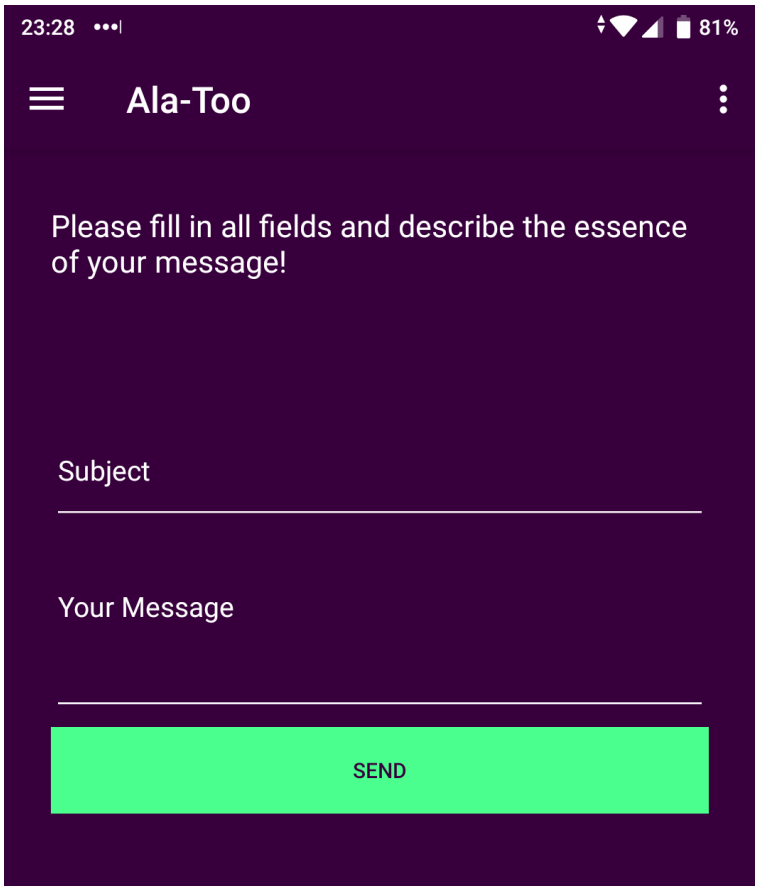

Figure 14: Feedback

- **Social Media**

Nowadays social media is becoming a part of our life, that we cannot imagine our life. Consequently, most of the institutions have pages in social media portals. Alatoo's all social media pages can be find in one place, particularly inside the application. There is the special bottom by clicking which users find necessary for them social media. The university has pages in the following social media portals where the news and information concerning to the university and university life are sharing: Facebook, Twitter, Instagram, Youtube and VK.

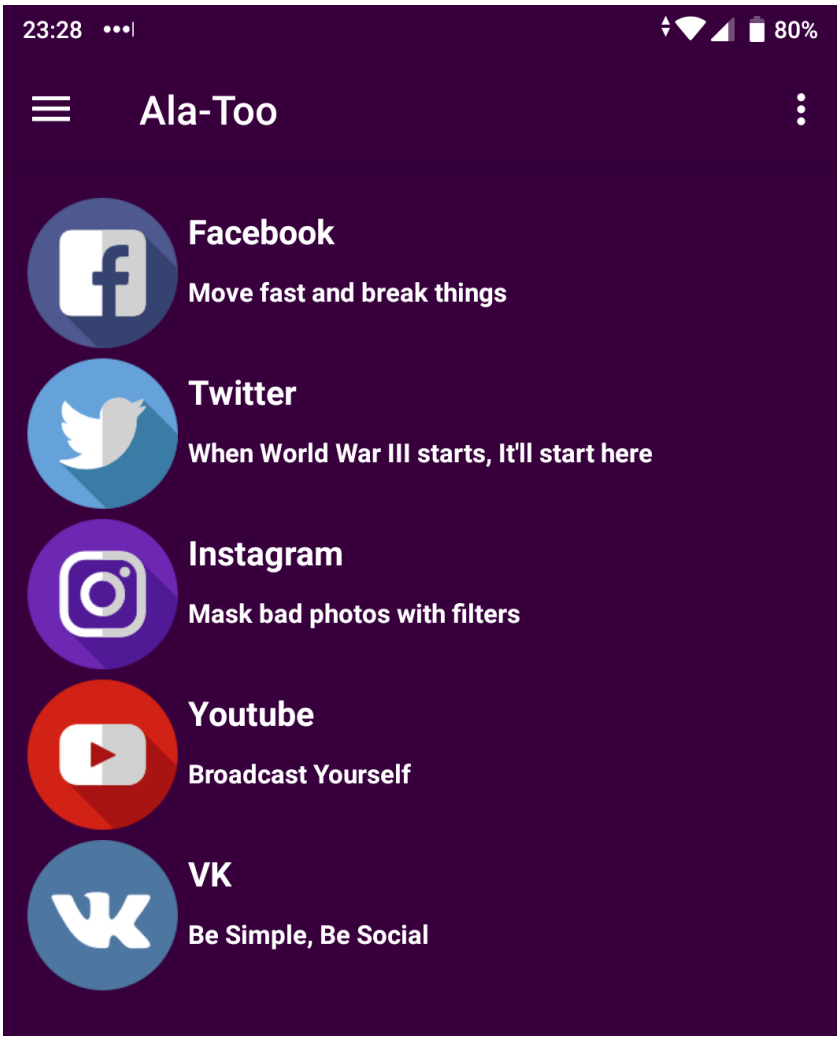

Figure 15: Social Media

- **Contacts**

Contacts section is mostly needed. In this part the interested individuals or students can find contact details including: address of the university, telephone numbers, Email, Fax. There is also clickable bottom “find us” which helps to show the location on a map and gives the alternative numbers of buses to identify directions in order to get university.

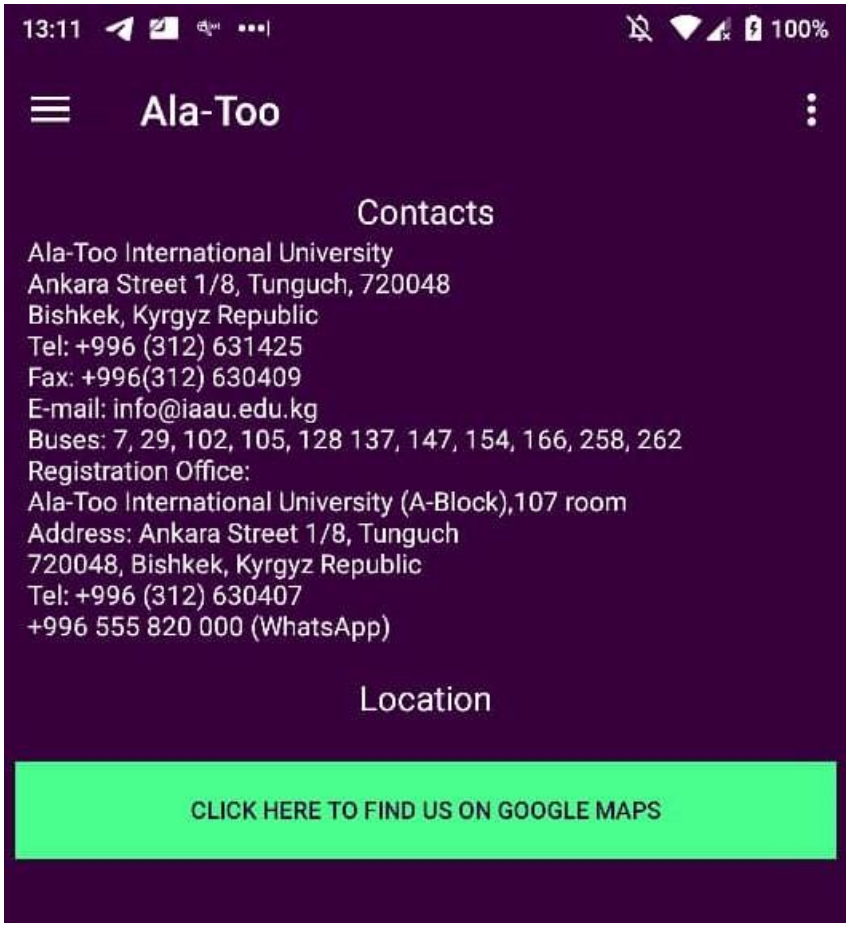

Figure 16: Contacts

- **University Location on Google Maps**

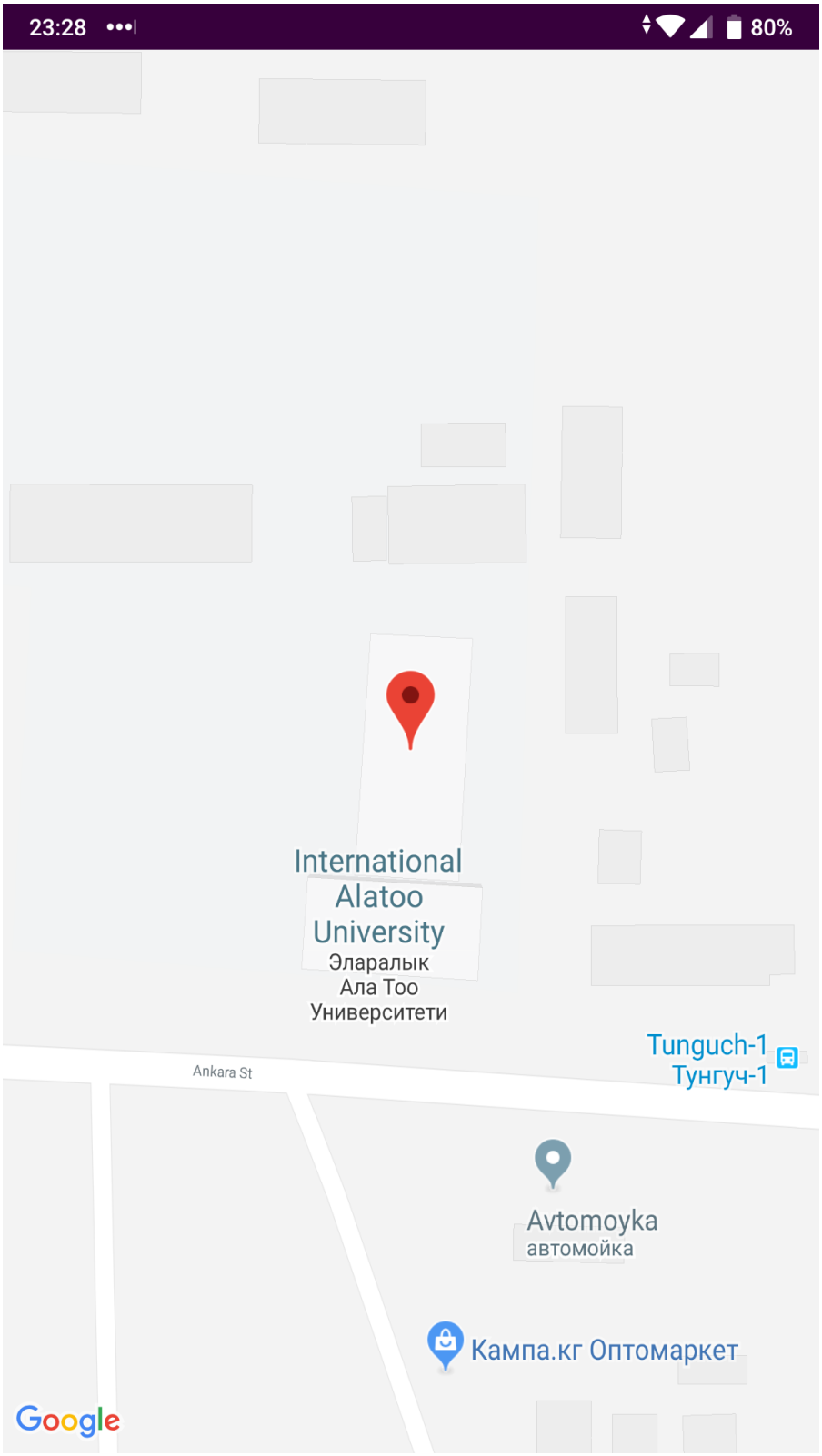

Figure 17: Location on Google Maps

- **Guest Page**

  Guest page is the special page for those who are not students of the university and who are not staff members. They can enter without any ID numbers using the privileges of “guests”. They will have all the same access to the data. However, they will not have sections “Transcript” and “About student” as far as they are not the students of this particular university.

CHAPTER 4

4.1 BENEFITS

Mobile phones are not just a means of communication anymore. All sorts of facilities can be availed from them and this includes a wide range of services including access to student and university information, status, to success report, to transcript and to the updated news and announcements.

In many universities of Kyrgyzstan have not yet developed such a project, most probably it will be the first project implemented at the University of Kyrgyzstan. This will certainly attract the interests of many final year school students. If we look at business issues, mobile sites are not enough to attract users or to optimize performance and to get ahead of competitors companies have to think about developing mobile applications. In our case, this application will help attract the attention of people, because they can easily download it and read information about the university and find all the pages in social media right there and improve their awareness of the university. In our time, information plays a crucial role. By submitting the available information, we can further reveal the activities of our university on a large scale with its usability and accessibility.

There are important and essential benefits for both university and students. For example are followings:

Firstly, mobile applications are faster. Applications are usually 1.5 times faster than mobile websites, and they perform actions much faster (KNOWARTH Technologies, 2017). People are becoming busy nowadays, especially students. So, the probability that they will appreciate this resource and that they will benefit from it is high.

Secondly, cost reduction. Kyrgyzstan has seven regions and there are obviously students who are willing to attend universities. Because of the lack of information about universities in some of the regions, there is a necessity to go to those places and give explanatory sessions, which also requires certain amount of money from the budget of the university. This mobile application has trends to save that visible costs and opportunity costs and suggests innovative ways to spread the information.

Thirdly, the biggest advantage of the mobile application is that they improve communication between the students, suppliers and customers by providing the same resources and placing orders, giving answers and teaching your products and user behavior. It tends to increase productivity and the quality of the education.

CONCLUSION

It can be concluded, that the use of this mobile application, developed for AIU, will not only simplify the getting of information on a mobile device, but also allow the user to quickly interact with many elements of the site. In this regard, it was decided to develop a mobile application that fully incorporates information from the site. Within the framework of the thesis diploma, a mobile application was developed that allows the user to obtain information about Alatoo International University and use it to get student and university information, access to success report and transcript, to university news and announcements.

On the basis of analytics and referring to the technical task, the operating system of the mobile device for the application, as well as the development environment, was chosen. In the course of the thesis work the following tasks were solved:

- Prepared product draft;
- Implemented a mobile application running the Android operating system;
- The application is filled with data taken from the university database.

The result of the work is the development of a mobile application for Alatoo International University. The developed project meets all the requirements of the technical specifications.

Thus, it should be considered that the tasks of the thesis diploma have been completely solved and the aim of the research has been achieved.

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