

**MINISTRY FOR DEVELOPMENT OF INFORMATION TECHNOLOGIES
AND COMMUNICATIONS OF THE REPUBLIC OF UZBEKISTAN**

TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES

«Allowed to Defense»
Head of the Department

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« ____ » _____ 2015 y.

BACHELOR'S FINAL WORK

Theme: "Creating Android Application of "Higher Education Institutions of
Uzbekistan""

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SVA and E

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Tashkent – 2015

**MINISTRY FOR DEVELOPMENT OF INFORMATION TECHNOLOGIES
AND COMMUNICATIONS OF THE REPUBLIC OF UZBEKISTAN**

TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES

Faculty: Software Engineering

Department: Algorithmic and mathematical modeling

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BACHELOR'S FINAL WORK

T A S K

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2. The theme approved by order of the University on «22» January 2015 y. № 80-16
3. Completion of the finished work: __.__.20__y

4. Source data to work: Android OS, IntelliJ IDEA 13.0.2 platform, Genymotion Emulator, Java programming language, SQLite database.

5. Contents of the settlement explanatory note (list of questions to be development): Actuality of the topic, goals of the final work and identifying necessary questions and problems for implementation, analyzing “Higher Education Institutions of Uzbekistan” and similar Android applications, designing Android application of “Higher Education Institutions of Uzbekistan” and SQLite database, Creating Android application of “Higher Education Institutions of Uzbekistan”.

6. List of graphic material: 1) Analyze of exist solutions 2) Tables 3) Figures 4) Block diagram of the software 4) Structure of Database 5) User Interfaces 6) Presentation 7) Forms of Report

7. Date of task issue: _____.____.20____y

Supervisor: Yo.Q.Aliqulov _____ _____.____.20__ y

Task received: M.N.Muhiddinov _____ _____.____.20__ y

8. Consultants for the individual sections of the final work

Section	Supervisor and Consultant	Signature, date	
		<i>Task issued</i>	Task received
Introduction	Yo.Q.Aliqulov	02.02.2015	02.02.2015
Theoretical section	Yo.Q.Aliqulov Yo.Q.Aliqulov	18.02.2015	18.02.2015
Main section	Yo.Q.Aliqulov	03.03.2015	03.03.2015
Practical section	S.M.Abdullayeva	15.04.2015	15.04.2015
SVA and Ecology	Yo.Q.Aliqulov	29.05.2015	29.05.2015
Conclusion		01.06.2015	01.06.2015

9. Progress chart

№	Name of the section of work	Term performance	Signature of the consultant
1.	Analyzing overall state of existing Android software and “Higher Education Institutions of Uzbekistan”.	29.01.2015	
2.	Designing Android application of “Higher Education Institutions of Uzbekistan”.	28.03.2015	
3.	Creating Android application of “Higher Education Institutions of Uzbekistan”.	02.05.2015	
4.	SVA and Ecology	29.05.2015	
5.	Conclusion and suggests	01.06.2015	
6.	Preparation of presentation	05.06.2015	

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(signature)

« _____ » _____ 2015 y.

Supervisor _____
(signature)

« _____ » _____ 2015 y.

In the given final work of bachelor, Android operating system and mobile applications were analyzed. Basics of designing Android Application "Higher Education Institutions of Uzbekistan" were studied. For preparing development environment required following software: Java Development Kit (JDK), Android SDK (Software Development Kit), IntelliJ IDEA platform, Genymotion Emulator, Android Developer Tools (ADT), Android Virtual Device (AVD). Structure and Blok-schema of working Android Application "Higher Education Institutions of Uzbekistan" were developed. Android Application "Higher Education Institutions of Uzbekistan" is developed.

Ushbu bitiruv ishida Android operatsion tizimi va mobil ilovalari tahlil qilingan. “O‘zbekiston Oliy o‘quv yurtlari” Android ilovasini loyihalash asoslari o‘rganildi. “O‘zbekiston Oliy o‘quv yurtlari” Android ilovasini yaratish muhitini tayyorlash uchun quyidagi dasturiy vositalar zarur: Java Development Kit (JDK), Android SDK (Software Development Kit), IntelliJ IDEA platform, Genymotion Emulator, Android Developer Tools (ADT), Android Virtual Device (AVD). “O‘zbekiston Oliy o‘quv yurtlari” Android ilovasining strukturasi va ishlash algoritmi blok-sxemasi ishlab chiqildi. “O‘zbekiston Oliy o‘quv yurtlari” Android ilovasi yaratildi.

В данной выпускной работе были анализированы операционная система Android и мобильные приложения. Изучены основы проектирования Android приложения “Высшие учебные заведения Узбекистана”. Для подготовки среды разработки Android приложения “Высшие учебные заведения Узбекистана” требуются следующие программные средства: Java Development Kit (JDK), Android SDK (Software Development Kit), IntelliJ IDEA platform, Genymotion Emulator, Android Developer Tools (ADT), Android Virtual Device (AVD). Разработаны структура и блок-схема алгоритма работы Android приложения “Высшие учебные заведения Узбекистана”. Разработано Android приложение “Высшие учебные заведения Узбекистана”.

TABLE OF CONTENTS

Introduction.....	6
CHAPTER I. ROLE OF ANDROID MOBILE OPERATING SYSTEM AND ITS FEATURES ON IMPROVING MOBILE DEVELOPMENT.....	8
1.1. Characteristics and requirements of currently implemented software in the Android OS.....	8
1.2. Analyzing overall state of existing Android software and applications operated in the Mobile technology and operating system.....	18
1.3. Goals and tasks of the final work.....	24
CHAPTER II. ANALYZING AND SELECTING THE MOST APPROPRIATE SOFTWARE FOR IMPLEMENTATION OF ANDROID APPLICATION.....	26
2.1. Overview of Databases management systems.....	26
2.2. Advantages and Disadvantages of IntelliJ IDEA on implementation of Android applications.....	30
2.3. Java Object-Oriented Programming language and its advantages on implementation of Android applications.....	34
CHAPTER III. CREATING AND DESIGNING “HIGHER EDUCATION INSTITUTIONS OF UZBEKISTAN” FOR ANDROID OS.....	38
3.1. Identifying Users requirements and Software requirements.....	38
3.2. Structure of software and its Package Diagram (UML).....	41
3.3. Analyzing screen view of software and explanation.....	47
CHAPTER IV. SAFETY OF VITAL ACTIVITIES AND ECOLOGY.....	61
4.1. Rational organization of work place.....	61
4.2. Safety emergencies.....	64
4.3. Anthropogenic pollution.....	65
CONCLUSION.....	67
REFERENCES.....	68
APPENDIX.....	69

INTRODUCTION

Advance in ICT(Information and Communication Technologies) plays an indispensable role on progress of every county, as President Islam Karimov stated¹: “Once again I want to stress that today implementing modern ICT, digital and large-format telecommunication, internet is obtaining tremendous significance not only in schools, lyceum, colleges and high institutions, but and in every family”. Today, free and open source software (FOSS) is considered as reasonable way of implementing software potential for developing countries. Because, first and foremost, FOSS is cost-effective and has ever-increasing functionalities. For that reasons, FOSS gives great opportunities for our country. Following arguments will prove topicality of using FOSS in ICT sector of Uzbekistan.

Currently the things in the area of information technologies are changing gradually! President of Uzbekistan Islam Karimov on May 22 in Oqsaroy Vice President of India Hamid Ansari, who is in the country on an official visit. It says to us about our president is putting attention to information technologies [3].

As it was reported earlier, President of the Republic of Uzbekistan Islam Karimov arrived May 27 in Seoul on a state visit, at the invitation of President Park Geun-hye of the Republic of Korea [1].

The relations between the Republic of Uzbekistan and the Republic of Korea have been advancing consistently thanks to the Joint Declaration on Strategic Partnership signed in 2006 and the Joint Declaration on the Further Development and Enhancement of Strategic Partnership penned in 2014. These bonds have been consolidating and enriching in substance owing to the regular contacts between the heads of two states and the community of interests of our two peoples.

1. Speech of President Islam Karimov in ceremonial meeting, devoted to 18 years anniversary of Constitution. December 7, 2010.

As Islam Karimov stressed in particular, the Republic of Korea is Uzbekistan's reliable strategic partner tested by time and that our country attaches a high consideration to this cooperation that is built on openness, mutual understanding and respect. The head of our state underscored that South Korea has earned the reverence of the entire world as a highly advanced country that scientific, technological, innovative and intellectual potential [1].

Practical values

Firstly, it is first an Android application of "Higher Education Institutions of Uzbekistan" for Android users and it allows to users to find an information about 76 Higher Education Institutions, which is located in twelve regions, one autonomy Republic of Karakalpakistan and capital city of Uzbekistan.

Secondly, it is useful for young especially who want to enter Universities and to know different rules for entrant students. It could be good a guideline for entrant students before applying Universities because of they can see last year total score to accept for studying in Universities.

Finally, it allows users working in offline system and it doesn't require internet connection to see an information about universities or other information for entrant students.

Actuality of the topic

Currently, smartphones is becoming vital role in the ICT (information and communication technologies) area. For the reason that, we can use smartphones for calling, texting, surfing internet, taking photos and etc, in some cases it is minicomputer in our pocket and near 69% people use smartphones in the world. Android dominated the market with a 78.0% share. Samsung, a number 1 contributor, managed to increase its volumes quarter on quarter with strong sales channel, wide product portfolio, and particularly a greater focus on low-midrange devices.

CHAPTER I. ROLE OF ANDROID MOBILE OPERATING SYSTEM AND ITS FEATURES ON IMPROVING MOBILE DEVELOPMENT

1.1. Characteristics and requirements of currently implemented software in the Android OS

Android is an open source and Linux-based **Operating System** for mobile devices such as smartphones and tablet computers. Android was developed by the *Open Handset Alliance*, led by Google, and other companies. With a user interface based on direct manipulation, Android is designed primarily for touchscreen mobile devices such as smartphones and tablet computers, with specialized user interfaces for televisions (Android TV), cars (Android Auto), and wrist watches (Android Wear). The OS uses touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching, and reverse pinching to manipulate on-screen objects, and a virtual keyboard. Despite being primarily designed for touchscreen input, it has also been used in game consoles, digital cameras, regular PCs, and other electronics. As of 2015, Android has the largest installed base of all general-purpose operating systems.

Android offers a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on different devices powered by Android.

The first beta version of the **Android Software Development Kit (SDK)** was released by Google in 2007 where as the first commercial version, Android 1.0, was released in September 2008.

The source code for Android is available under free and open source software licenses. Google publishes most of the code under the Apache License

version 2.0 and the rest, Linux kernel changes, under the GNU General Public License version 2.

Android is popular with technology companies which require a ready-made, low-cost and customizable operating system for high-tech devices. Android's open nature has encouraged a large community of developers and enthusiasts to use the open-source code as a foundation for community-driven projects, which add new features for advanced users or bring Android to devices which were officially released running other operating systems.

Android operating system is a stack of software components which is roughly divided into five sections and four main layers as shown below in the architecture diagram Figure 1.1.

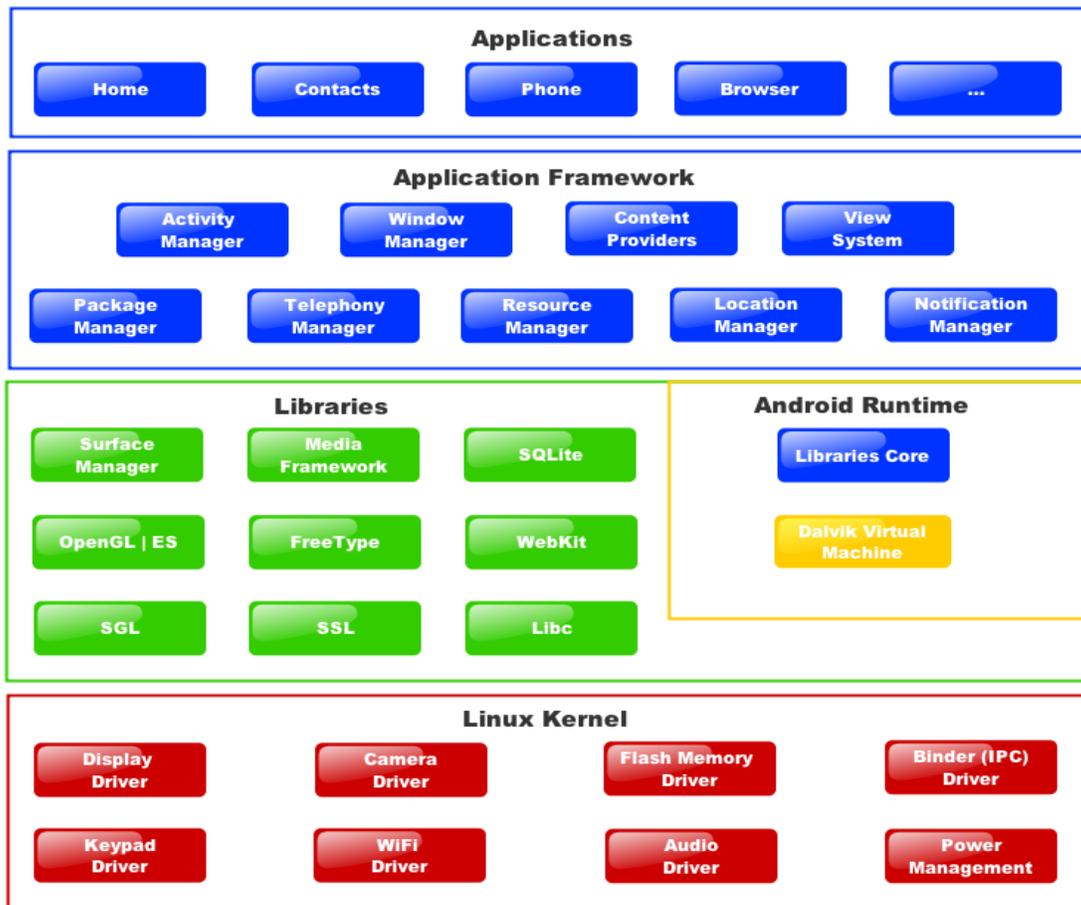


Figure 1.1. Android architecture diagram

The application that we develop will go to the Android Apps layer.

Now we will look at each of these layers in detail:

1. Linux Kernel

The basic layer is the Linux Kernel. The whole Android OS is built on top of the Linux Kernel with some further architectural changes. Please don't get confused by the terms Linux and Linux Kernel. The term Kernel means the core of any Operating System. By saying Android is based upon Linux Kernel, it doesn't mean that it is another Linux distribution.

2. Libraries

The next layer is the Android's native libraries. It is this layer that enables the device to handle different types of data. These libraries are written in C or C++ language and are specific for a particular hardware.

Some of the important native libraries include the following:

- **Surface Manager:** It is used for compositing window manager with off-screen buffering.
- **Media framework:** Media framework provides different media codecs allowing the recording and playback of different media formats
- **SQLite:** SQLite is the database engine used in android for data storage purposes
- **WebKit:** It is the browser engine used to display HTML content
- **OpenGL:** Used to render 2D or 3D graphics content to the screen

3. Android Runtime

Android Runtime consists of Dalvik Virtual machine and Core Java libraries.

ART (Android Runtime)

Google has introduced a new virtual machine known as ART (Android Runtime) in their newer releases of Android. In Lollipop, the Dalvik Virtual Machine is completely replaced by ART.

Core Java Libraries

These are different from Java SE and Java ME libraries. However these libraries provides most of the functionalities defined in the Java SE libraries.

4. Application Framework

These are the blocks that our applications directly interacts with.

Important blocks of Application framework are:

- Activity Manager
- Content Providers
- Telephony Manager
- Location Manager
- Resource Manager

5. Applications

Applications are the top layer in the Android architecture and this is where our applications are going to fit into. Several standard applications comes pre-installed with every device, such as:

- SMS client app
- Dialer
- Web browser
- Contact manager

Application Framework

Application Framework sits on top of native libraries, android runtime and Linux kernel. This framework come pre-installed with high-level building blocks that developers can use to program applications. Following are the most important application framework components for our application and Android development in general as shown in Figure 1.2.

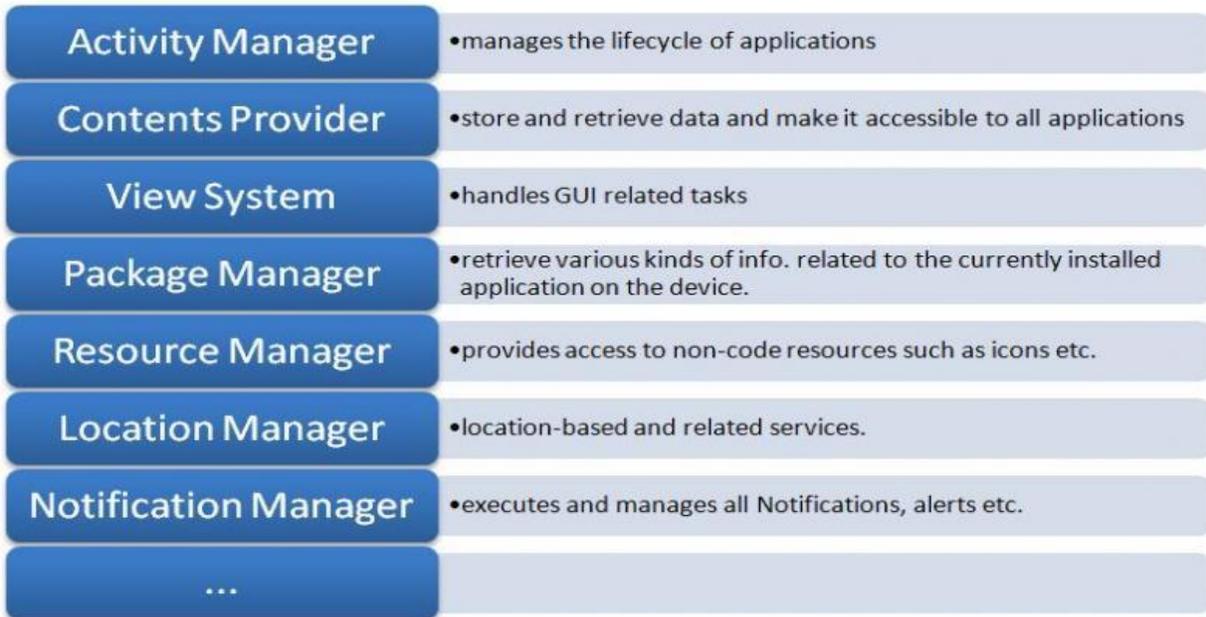


Figure 1.2. The most important application framework

The entire lifecycle is defined by certain methods or states as shown in Figure 1.3.

```

public class Activity extends XYZ {
protected void onCreate(Bundle savedInstanceState);

protected void onStart();

protected void onRestart();

protected void onResume();

protected void onPause();

protected void onStop();

protected void onDestroy();

```

Figure 1.3. Important methods of Activity

Activity Manager

Activity is a single focused thing. Activities can run in the foreground giving direct interaction to the user e.g. current window/tab, they can run as background services or they can be embedded in other activities as shown in Figure 1.4.

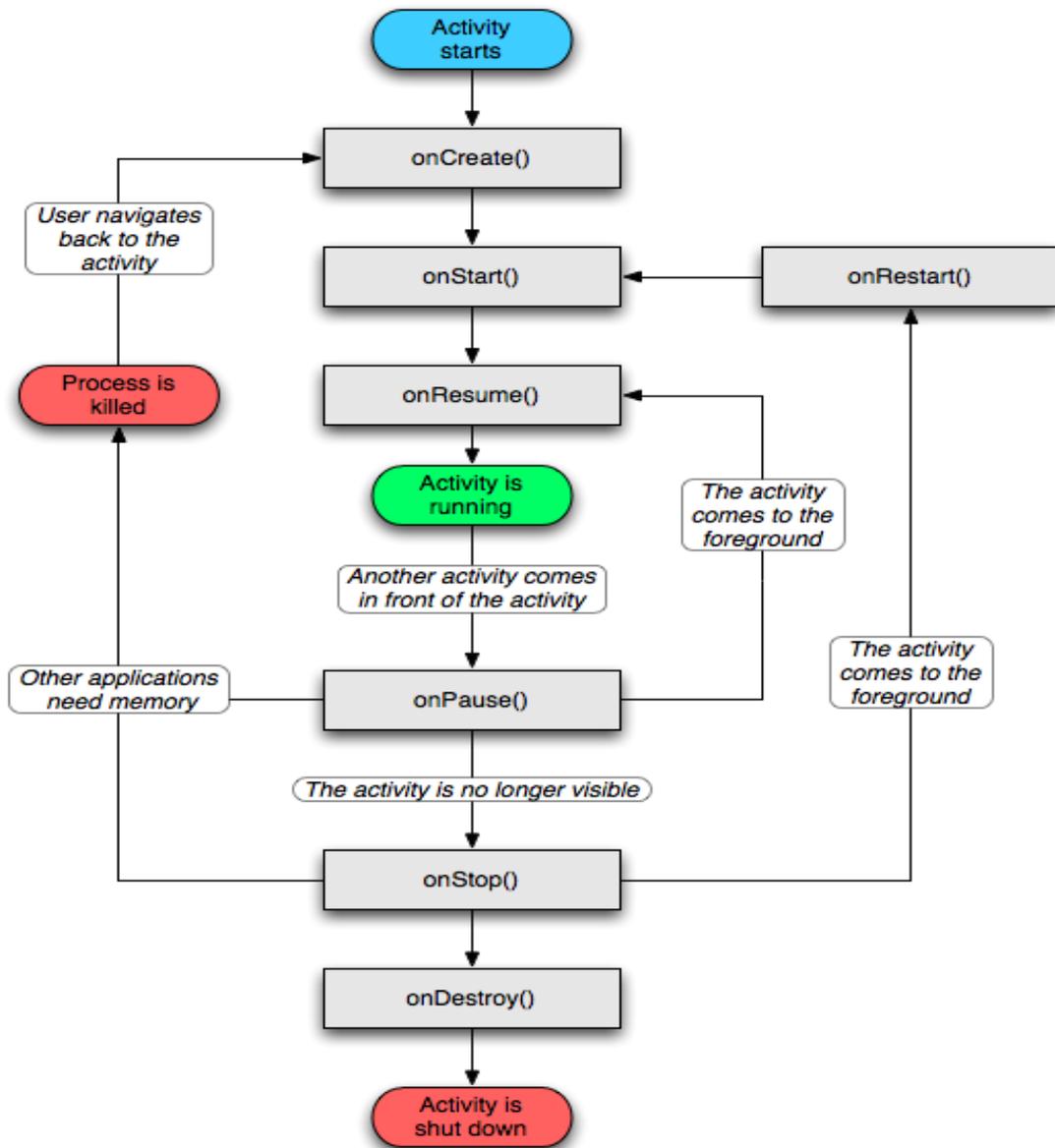


Figure 1.4. Background Services in Activity manager

All activity classes must have a corresponding <activity> declaration in AndroidManifest.xml.

Contents Provider

Content provides handles data across applications globally. Android comes with a set of built in content providers to handle multi-media data or contacts etc.

View System

View system binds all the classes together that handle graphical user interface (GUI) related elements. All views elements are arranged in a hierarchical single tree manner. They can be called from a java code or included in XML layout files.

Resource Manager

Resource Manager handles all non-code things. These can be anything ranged from icons, graphics or text. Such resources reside under res directory as can be seen under IntelliJ IDEA Project Explore in the following Figure 1.5.

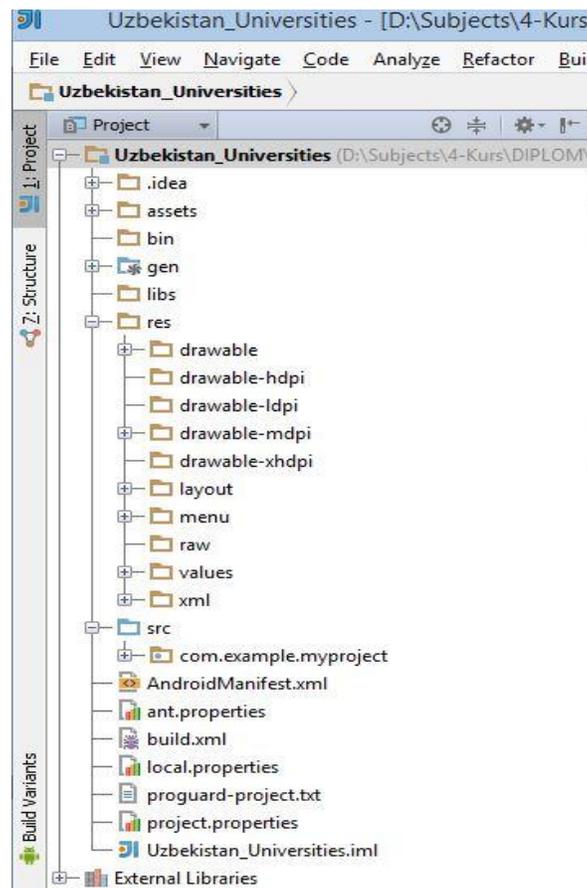


Figure 1.5. IntelliJ IDEA Project Explorer

All the icons and design work that we have done so far using Adobe Illustrator will reside under these layout directories.

Location Services

This bundle supports fine-grained location providers such as GPS and coarse-grained location providers such as cell phone triangulation. LocationManager system service is the central component of the location framework.

An Android Application is coded in Java and compiled into a single distribution package called as APK. APK is the executable file which is installed on your phone as Android app. Let's walk through the various building blocks of the an Android application in following Figure 1.6.

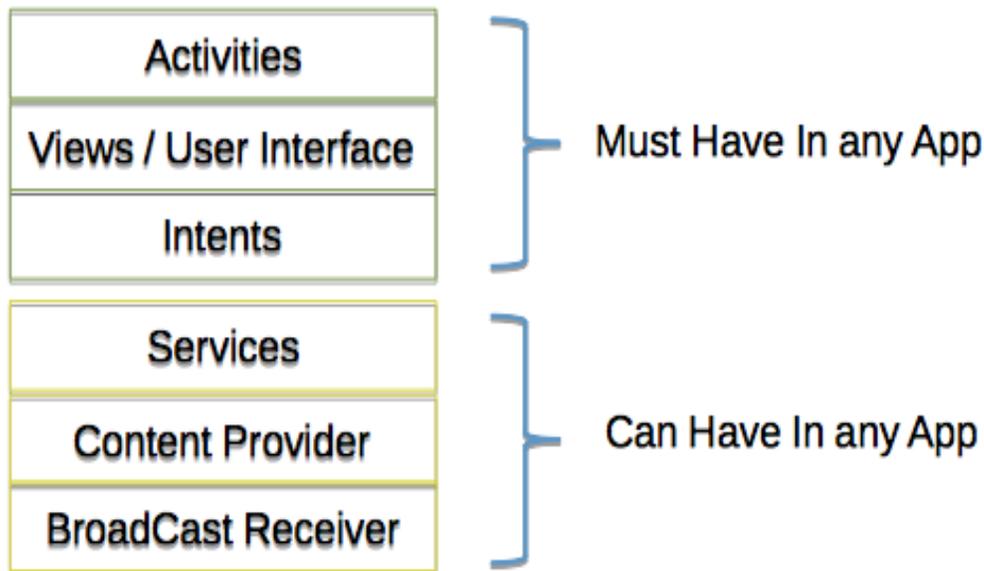


Figure 1.6. Building Blocks of Android

The basic building blocks of any Android app are **Activities**, **Views** and **Intents**. To move from one Activity to another (or one screen to another), on user interaction like click of a button or click of a notification item, Intents are used.

These are a must in any Android app. Services, Content Provider and Broadcast are some of the advance features which add more functionality to your app.

Activity

This is the first Android component you will encounter as soon as you open an Android app. An Android app should have at least one Activity in it.

User Interface / Views

User Interface or UI is what the user sees on the screen. The Activity has the responsibility to *set* the UI for the screen. UI comprises primarily of two type of sub-components. **Views & Layouts or ViewGroups.**

An activity contains views and viewgroups. Views in Android are UI components that could be used to build user interface. Examples are buttons, label, and text boxes. One or more views can be grouped together into a ViewGroup. Types of View in android.

- *Basic Views*
- *List Views*
- *Picker Views*
- *Menus*
- *Display Views*
- *Additional Views*

ViewGroup provides a layout where you can order the appearance of views.

Android support the following view groups.

- *LinearLayout*
- *TableLayout*
- *AbsoluteLayout*
- *FrameLayout*
- *RelativeLayout*
- *ScrollView*

Services

Services is the Android way of keeping an operation going on in the background. When you need to have long running tasks like playing music, downloading data or uploading photos; it is achieved through Service.

SQLite (Database) in Android

Android ships with SQLite database support. Android apps can store data locally in the SQLite database. Every Android application can create its own private SQLite databases which it can use to store data for offline reference.

The purpose of storing data locally is primarily to provide a good user experience. Consider the example of the Android Twitter app.

Content Providers

If your Android app wants to use data from another Android app, you may use Content Providers. A simple example of Content Provider is the Contacts app. You can get contacts in multiple applications like your SMS application, Dialer Application etc. If you are using SQLite/database in your app, you can either access it directly or through a Content Provider.

Notifications

Earlier in the Services section, we came across Notifications. If you have used an Android phone, you would have seen small notifications in the top part of your phone for missed call, SMS or email received etc.

These are Notifications.

- Notifications are simple messages which are used to display information to user that doesn't require user's immediate attention
- Typically notification comes with Text and Small icon, but newer version of Android support richer notification with buttons and images
- User can tap on notification and can interact with it

1.2. Analyzing overall state of existing Android software and applications operated in the Mobile technology and operating system

Development of Mobile technology in Uzbekistan has been gradually improving for a decade. This trend completely relies on new information-communication technologies as well as Government policy. Modern stage of Mobile technology software has undergone many modifications. Following evidences will justify it. Initial registered Mobile manufacturer company “Artel” (Figure 1.7.) which is a worldwide company, surely be regarded first manufacturer of home appliances in Uzbekistan. The History of ARTEL started in 2010 when “AKFA” Group of Companies (www.akfa.uz) with a headquarters in Tashkent, Uzbekistan, the regional leader in production of aluminum and plastic products, established a new production of home appliances and consumer electronics.



Figure 1.7. Artel office in Tashkent

It is a known fact that if you want to be in demand and strive to retain first place in the market, you need to constantly give out something new, original,

attractive in form and outstanding with interesting content. Each employee of Artel possesses creative thinking, makes plans, and tries to turn them into reality.

The basic principle of Artel is manufacturing of high-quality, modern high-tech products for consumers who value comfort, simple solutions and classics of the genre. Stylish ergonomic design, certified raw materials and the most automated filling prove the image of Artel as the manufacturer of home appliances for people with good taste and high consumer demands.

Today Artel offers you the following:

- Air conditioners;
- Vacuum cleaners;
- Microwave ovens;
- Gas, electric and combined stoves;
- Built-in kitchen appliances;
- Electric mini-ovens;
- TV sets;
- Washing machines;
- Refrigerators;
- Cellular phones;

Artel is a successful project; we managed to accumulate the positive experience of the partners and competitors, to introduce KAIZEN method (its basic principles: economical work ethic and effective use of resources), to standardize the quality of products, to introduce a warranty system, to establish operation of own branded stores and showrooms throughout Uzbekistan.

The Group produces LCD/LED TV, Air conditioners, Gas and Electric cookers, Microwave ovens, Vacuum Cleaners, Washing Machines, Refrigerators as well as Mobile phones in the following Figure 1.8. With an aim of expanding into international arena a new company “Artel Gulf General Trading LLC” has

been established in April 2013 in Dubai, U.A.E. as a trading company in Electronics and home appliances.

Artel International FZE was established in August in Dubai Airport Free Zone to conduct export import and wholesale operations in mobile phones and IT products. The branch in Free zone supplies products to numerous local showrooms as well as foreign partners. Geography of suppliers and customers stretches from the US and Asia-Pacific, Africa, the Middle East and the Europe. ARTEL International has offices in China, Singapore, Uzbekistan, Russia, Kazakhstan, Turkmenistan, Tajikistan and in Turkey.



Figure 1.8. Uzbekistan's first project for the production of mobile phones

Uzbekistan's first project for the production of mobile phones with Uzbek interface was implemented at the production sites of JV OJSC «Infinity Electronics», which is in the structure of the association "Uzeltchanoat". In its first stage, consumers were presented six models of mobile phones, including three smartphones with touch screen «Adi5», «Adi5 CDMA» and «Komi3», as well as classic phones «U30», «H35» and «D83». According to the chairman of the

association "Uzeltahsanoat" Jalilov Tabriz, the second phase of the project for the production of mobile phones in Uzbekistan allowed to start the production of improved models.

The advances in mobile technology is affecting various other fields also like it is playing a vital role in health care systems. As an example, if a person owns a business then he is free to extend his business rather than confining it to a particular area. On the basis of the advancement in mobile technology, the operating system on which these work can be defined below along with the comparison between them:

Android OS : This is a software platform and operating system for mobile devices which is based on Linux kernel and is developed by google but later on by Open Handset Alliance (OHA) . This Operating System is used in Samsung, HTC mobiles. Why Android is best for Mobile Operation System? (Figure 1.9.)



Figure 1.9. Advantages of Android OS

iPhone OS (iOS) : This strong but expensive operating system is developed by Apple whose native language is C. It is also used in iPad, iPhone and iPod touch.

Android Lollipop is the latest version of the Android mobile operating system developed by Google, spanning versions between 5.0 and 5.1. Unveiled on June 25, 2014 during Google I/O, it became available through official over-the-air (OTA) updates on November 12, 2014, for select devices that run distributions of Android serviced by Google (such as Nexus and Google Play edition devices). Its source code was made available on November 3, 2014.

Advantages Android

- Android is open
- Multitasking
- Easy access to the Android App Market
- Can install a modified ROM
- Phone options are diverse
- Ease of notification
- Widget
- Innovations reach the market quicker
- Android was the first to support Wi-Fi Direct, Web images
- Multiple prices for devices
- Customizable UI offers productivity benefits

Smartphone OS Market Share, Q1 2015

The worldwide smartphone market kicked off the year with an expected post-holiday dispersion in shipment volume compared to the previous quarter's unprecedented results.

According to data from the International Data Corporation (IDC) Worldwide Quarterly Mobile Phone Tracker in following Figure 1.10., vendors shipped a total

of 334.4 million smartphones worldwide in the first quarter of 2015 (1Q15), up 16.0% from the 288.3 million units in 1Q14 but down by 11.4% from the 377.6 million units shipped in 4Q14. Android dominated the market with a 78.0% share in 1Q15. Samsung reasserted its global lead with a renewed focus on lower-cost smartphones as shown in Figure 1.11.

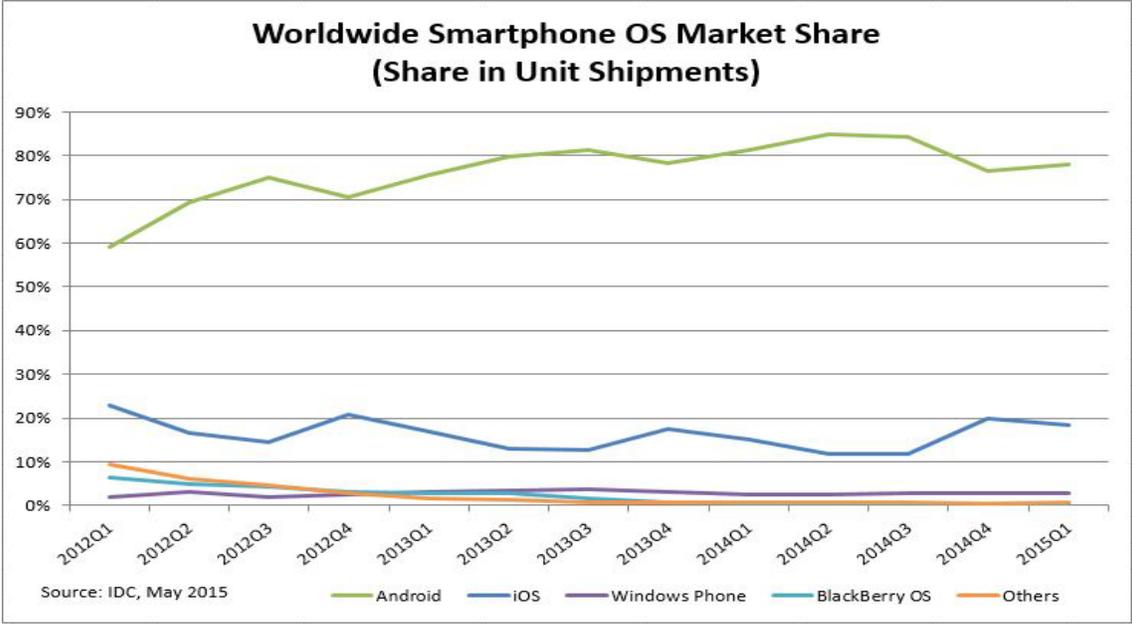


Figure 1.10. International Data Corporation (IDC) Worldwide Quarterly Mobile Phone Tracker

Period	Android	iOS	Windows Phone	BlackBerry OS	Others
Q1 2015	78.0%	18.3%	2.7%	0.3%	0.7%
Q1 2014	81.2%	15.2%	2.5%	0.5%	0.7%
Q1 2013	75.5%	16.9%	3.2%	2.9%	1.5%
Q1 2012	59.2%	22.9%	2.0%	6.3%	9.5%

Figure 1.11. International Data Corporation (IDC) Worldwide Quarterly Mobile Phone Tracker (Source: IDC, May 2015)

Android dominated the market with a 78.0% share.

iOS saw its market share for 1Q15 decline slightly to 18.3% with 61.2 million shipments.

Windows Phone experienced a slight rebound of share to 2.7% YoY from 2.5% with 9.2 million units shipped this quarter.

Blackberry OS continued to decrease across regions. However, the BlackBerry Classic launched in 4Q14 shipped triple amount this quarter, which could be an opportunity for the brand.

1.3. Goals and tasks of final work

Currently Android applications are being created non-stop and they are in great demand. According to this, everybody would like to find a necessary information in easy and cheaper way in order to maintain valuable time of life. In addition, they want to hold all-important information in their hand in order to look whenever and wherever they want. If I created an Android application free of charge, it would be useful and more comfortable for user. I used Java programming language for creating this Android application and for a database part, I used SQLite database.

This software includes following parts and tasks:

- 1- Task. Designing a structure of software.
- 2- Task. Collecting and researching necessary information from books and online resources.
- 3- Task. Installing software (Intellij IDEA, JDK, SDK, SQLite, Genymotion and etc.) for writing and testing code part of Bachelor graduate work.
- 4- Task. Designing UI (User Interface) of Android application of Higher Education Institutions of Uzbekistan.
- 5- Task. Using Android tools and SQLite database to build software.

6- Task. Creating database table in SQLite Browser to store universities information and others.

Furthermore, I should mention is that, there is no such as software in Uzbekistan but there are many web sites, belong to Uzbekistan government, to find information about universities in Uzbekistan for instance ww.dtm.uz, www.edu.uz, www.ziyonet.uz. According to this, all information has taken from trustworthy sources in the internet even by using each university's web site.

The purpose of creating “Higher Education Institutions of Uzbekistan” – software which is work in Android OS, to store all Uzbekistan Universities data into single software and to help people for saving valuable time and learning general information (Address, phone number, email, orienteer, number of Department and Faculty, web sites and etc.) about Higher Education Institutions of Uzbekistan. Moreover, there is separated section for young who interested in applying to Universities for studying.

Software does following functions:

1. List of Higher Education Institutions of Uzbekistan with its information.
2. In order to make comfortable UI there are two menu on the Main Window, “Universitetlar” and “Abituriyent”, and in software there are useful links such as Ministry of higher and secondary specialized education of the republic of Uzbekistan and The Government portal of the Republic of Uzbekistan etc.
3. This software allows users work in offline mode without internet connection because of all data stored in SQLite database and installed with software apk file.
4. Guideline for entrant students. In addition, they can check the average scores for the academic year 2014-2015.

CHAPTER II. ANALYZING AND SELECTING THE MOST APPROPRIATE SOFTWARE FOR IMPLEMENTATION OF ANDROID APPLICATION

2.1. Overview of Databases management systems

A **database** is an organized collection of data. The data is typically organized to model aspects of reality in a way that supports processes requiring information, such as modelling the availability of rooms in hotels in a way that supports finding a hotel with vacancies.

Database management systems (DBMS) are computer software applications that interact with the user, other applications, and the database itself to capture and analyze data. A general-purpose DBMS is designed to allow the definition, creation, querying, update, and administration of databases. Well-known DBMSs include MySQL, PostgreSQL, Microsoft SQL Server, Oracle, Sybase, IBM DB2 and SQLite.

Applications of DBMS

- Banking
- Airlines
- Education
- Credit card transactions.
- Telecommunications
- E-commerce
- Finance
- Sales
- Human resources

Advantages of DBMS

- Controlling Data Redundancy
- Data Sharing
- Enforcing Data Integrity
- Data Security
- Ease of application development
- Multiple user interfaces
- Backup and recovery
- Data Independence
- Reduced Maintenance

Disadvantages of DBMS

- Cost of Data Conversion, Complexity , Cost of Hardware and Software
- Size, Cost of staff training, Higher impact of failure.

The database system can be divided into four components as shown in Figure 2.1.

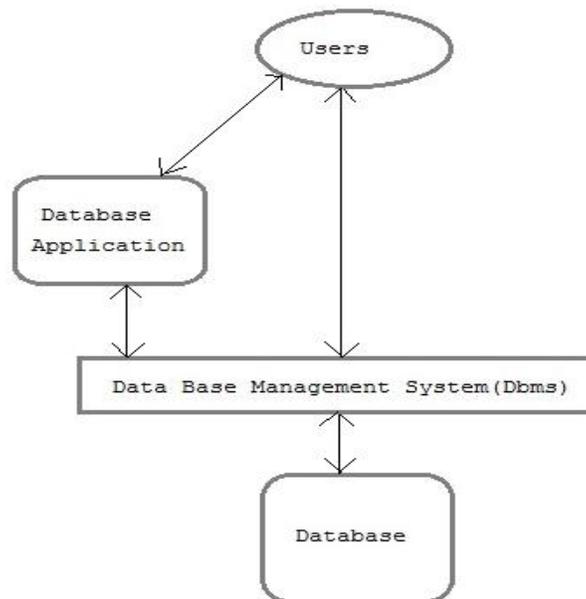


Figure 2.1. The database system's four components

- **Users** : Users may be of various type such as DB administrator, System developer and End users.
- **Database application** : Database application may be Personal, Departmental, Enterprise and Internal
- **DBMS** : Software that allow users to define, create and manages database access, Ex: MySql, Oracle etc.
- **Database** : Collection of logical data.

Functions of DBMS

- Provides data Independence
- Concurrency Control
- Provides Recovery services
- Provides Utility services
- Provides a clear and logical view of the process that manipulates data.

SQLite is an Open Source database. SQLite supports standard relational database features like SQL syntax, transactions and prepared statements. The database requires limited memory at runtime (approx. 250 KByte) which makes it a good candidate from being embedded into other runtimes.

SQLite supports all the relational database features. In order to access this database , you don't need to establish any kind of connections for it like JDBC,ODBC etc.

SQLite architecture

The `android.database` package contains all necessary classes for working with databases. The `android.database.sqlite` package contains the SQLite specific classes in the following Figure 2.2.

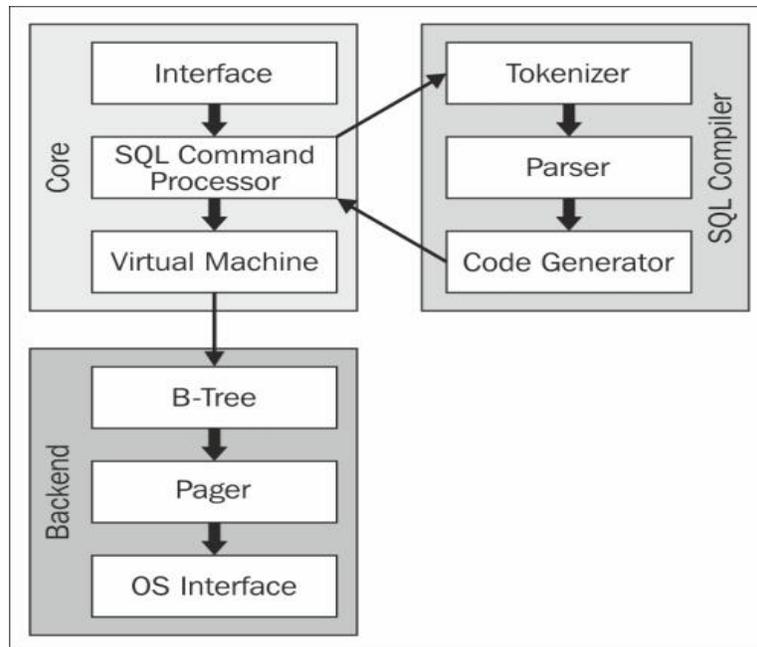


Figure 2.2. SQLite specific classes

Creating and updating database with SQLiteOpenHelper

To create and upgrade a database in your Android application you create a subclass of the `SQLiteOpenHelper` class. In the constructor of your subclass you call the `super()` method of `SQLiteOpenHelper`, specifying the database name and the current database version. In this class you need to override the following methods to create and update your database.

- `onCreate()` - is called by the framework, if the database is accessed but not yet created.
- `onUpgrade()` - called, if the database version is increased in your application code. This method allows you to update an existing database schema or to drop the existing database and recreate it via the `onCreate()` method.

Both methods receive an `SQLiteDatabase` object as parameter which is the Java representation of the database.

DB Browser for SQLite Portable (formerly SQLite Database Browser) is a visual tool used to create, design and edit database files compatible with SQLite as shown in Figure 2.3.

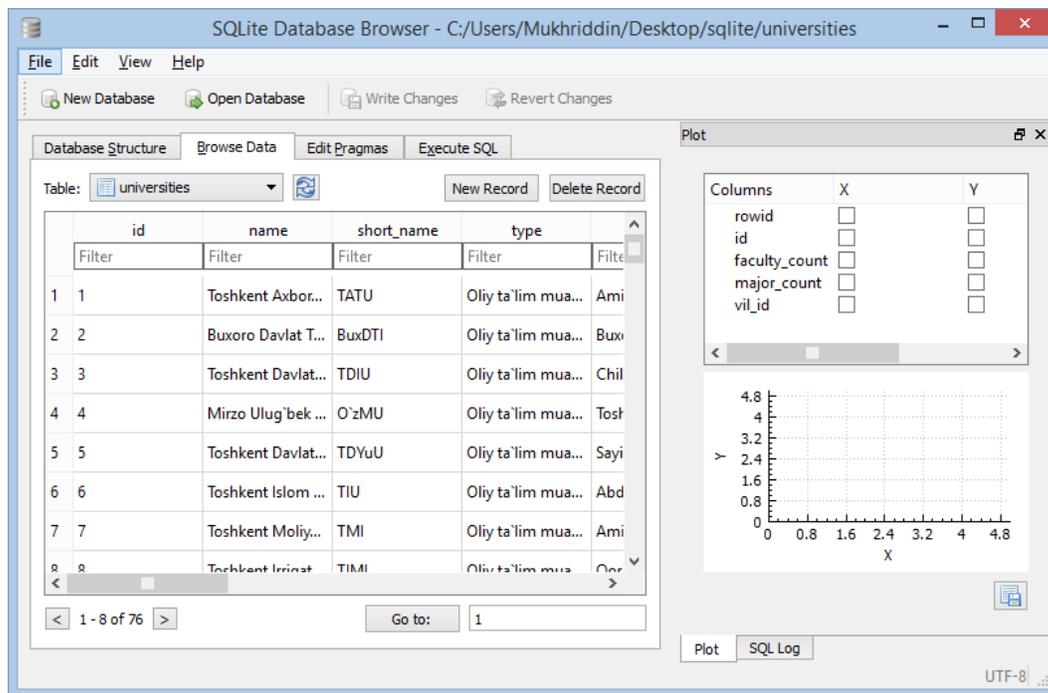


Figure 2.3. SQLite Database Browser

2.2. Advantages and Disadvantages of IntelliJ IDEA on implementation of Android applications

A Java IDE (Integrated Development Environment) is a software application which enables users to more easily write and debug Java programs. Many IDEs provide features like syntax highlighting and code completion, which help the user to code more easily.

Integrated development environments are designed to maximize programmer productivity by providing tight-knit components with similar user interfaces. IDEs present a single program in which all development is done. This program typically provides many features for authoring, modifying, compiling, deploying and debugging software. This contrasts with software development using unrelated tools, such as vi, GCC or make.

Some IDEs are dedicated to a specific programming language, allowing a feature set that most closely matches the programming paradigms of the language. However, there are many multiple-language IDEs, such as Eclipse, ActiveState Komodo, IntelliJ IDEA, MyEclipse, Oracle JDeveloper, NetBeans, Codenvy and Microsoft Visual Studio. Xcode, Xojo and Delphi are dedicated to a closed language or set of programming languages.

IntelliJ IDEA is a Java integrated development environment (IDE) for developing computer software. It is developed by JetBrains (formerly known as IntelliJ), and is available as an Apache 2 Licensed community edition, and in a proprietary commercial edition. IntelliJ IDEA is not based on Eclipse like MyEclipse or Oracle Enterprise Pack for Eclipse.

In December 2014, Google announced version 1.0 of Android Studio, an open source IDE for Android apps, based on the open source community edition of IntelliJ IDEA.

Eclipse

Eclipse is a Free and Open Source IDE, plus a developer tool framework that can be extended for a particular development need. IBM was behind its development, and it replaced IBM VisualAge tool. The idea was to create a standard look and feel that can be extended via plugins. The extensibility distinguishes Eclipse from other IDEs.

NetBeans

The NetBeans IDE is a Free and Open Source IDE for software developers. The IDE runs on many platforms including Windows, GNU/Linux, Solaris and Mac OS X.

IntelliJ IDEA

IntelliJ IDEA is capable of detecting dozens of error-types and inconsistencies. First of all, it helps you to find probable bugs that are not "compilation errors". Its flexible mechanism of resolving problems allows you to easily improve the code structure, conform your code to numerous guidelines and standards, detect performance issues and so on.

IntelliJ IDEA's static code analysis is performed on-the-fly. Various inconsistencies, probable bugs, redundancies, spec violations, etc. are highlighted in the editor right while you are typing. Eclipse, NetBeans and IntelliJ IDEA together as shown Figure 2.4.



Figure 2.4. Eclipse, NetBeans and IntelliJ IDEA

More than 600 automated Code Inspections help you easily detect different inconsistencies. In IntelliJ IDEA you'll find that all inspections are grouped by their goals and sense. Every inspection has the appropriate description, so we won't describe each group separately. But we'll try to highlight the most common tasks that are covered by the static code analysis. They are:

- Finding probable bugs
- Locating the "dead" code
- Detecting performance issues
- Improving code structure and maintainability
- Conforming to coding guidelines and standards
- Conforming to specifications
- As-you-type code smells and warnings.
- Code completion and code generation
- The fixes offered by the ALT+ENTER
- Language support.
- Debugger.

Disadvantages of IntelliJ IDEA

Of course, IntelliJ has some drawbacks, too. I have expected more than I found, though. Here's the list of bad things I found while evaluating IntelliJ:

- Buggy Dialogs
- Awkward Renaming and Adding of Packages
- Awkward Renaming of Modules
- Slowness
- Configuring Subversion Integration can be awkward
- Plugins
- Multiple projects
- Performance

2.3. Java Object-Oriented Programming language and its advantages on implementation of Android applications

Java is a general-purpose computer programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of computer architecture. As of 2015, Java is one of the most popular programming languages in use, particularly for client-server web applications, with a reported 9 million developers

Java has significant advantages over other languages and environments that make it suitable for just about any programming task.

The advantages of Java are as follows:

- Java is easy to learn. Java was designed to be easy to use and is therefore easy to write, compile, debug, and learn.
- This allows you to create modular programs and reusable code.
- Java is platform-independent.
- One of the most significant advantages of Java is its ability to move easily from one computer system to another.
- Java is distributed. Java is designed to make distributed computing easy with the networking capability that is inherently integrated into it.
- Java is Secure
- Write Once, Run Anywhere
- Network-centric Programming
- Dynamic, Extensible Programs

- The network-centric design of the Java platform
- Internationalization
- Performance
- Java is a portable, interpreted language
- Programmer Efficiency and Time-to-Market

One of the most significant advantages of Java is its ability to move easily from one computer system to another.

Java has some other advantages as a teaching language:

- *Low cost.*
- *Easy to test.*
- *Student enthusiasm.*
- *Suitable for advanced courses.*
- *Easy transition to C++ and other languages.*
- *International appeal.*

Everyone has experienced the desire to program at one point or another. The hardest part of learning to program is to overcome the mental block. Learning to code is same as learning any language. In that case, have you ever wondered why to Learn Android Programming in Java as shown in Figure 2.12 .



Figure 2.12. Android Programming in Java

Some of the important features of Java are:

- Easy to learn and understand.
- Designed to be platform-independent and secure, using virtual machines.
- Object-oriented Android relies heavily on these Java fundamentals.

Now let us discuss about one of the most important aspects of this topic. You may be aware of two different kinds of android applications, the Native app and the PhoneGap (Cross Mobile Application). Application that is created in such a way that it is designed to run on a single particular platform is called Native Application. On the other hand, Cross Mobile Application is an app that is created to run on multiple platforms of a smart device. Now we need to know that PhoneGap is a Cross Mobile Application. You may code once and use that on 6 different platforms / Mobile Operating Systems. Another important fact to know is that, Android is generally made to work with Native App as shown in Figure 2.13.

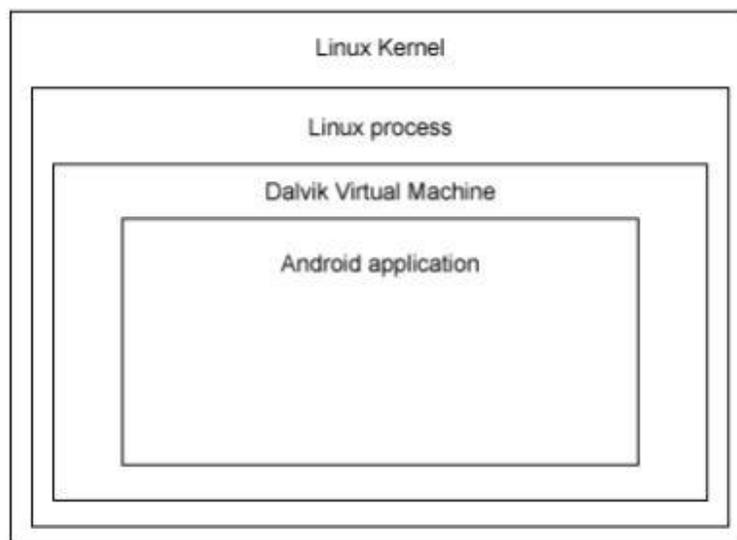


Figure 2.13. Native App

Native Android Application works directly with Dalvik Virtual Machine which means that whatever codes you create, it would be directly compiled into the machine compiler code that can be understood by the Java Machine to carry out tasks accordingly. The core language that is required behind the scene is Java.

Android Application Development is based on Java and uses Android Library packages. PhoneGap on the other hand, has a long procedure. The biggest advantage of it is that it does not require much knowledge of Java.

This is because Android doesn't need to take the application as hybrid. The code just needs to be passed on to the virtual machine and the virtual machine carries the responsibility of finishing the task from there on.

IEEE Spectrum recently completed a survey which uses no less than ten sources to rank the popularity of programming languages:

- *search results in Google*
- *data from Google Trends*
- *tweets sent on Twitter*
- *GitHub repositories*
- *StackOverflow questions*

Let's see what are those top 20 most useful programming languages in this world as shown in Figure 2.14.

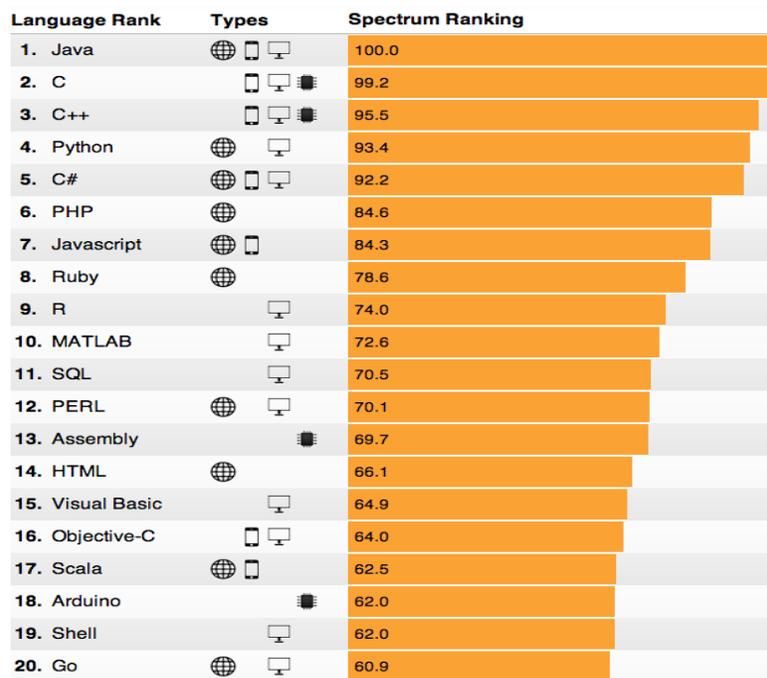


Figure 2.14. Top 20 most useful programming languages in this world

CHAPTER III. CREATING AND DESIGNING “HIGHER EDUCATION INSTITUTIONS OF UZBEKISTAN” FOR ANDROID OS

3.1. Identifying Users requirements and Software requirements

First, I should mention is that before creating any kind of software we should know our project’s future users requirement. For instance, what sort of information could be exist in our software or who would be users for our project in the future? After these kind of stapes, we have to think about User Interface of software and supportive materials and important information, which is the latest and useful to help our users. In my point of view, design of software is vital part to attract customers and perspective of our software.

Most developers don’t realize this, they include as much as possible in their software and reduce the total value.

So how do you communicate the full value of what you have to offer?

- One of the classic marketing strategies is AIDA:
- Attention: Get your customer’s attention.
- Interest: Explain the benefits they’ll enjoy—not just the features you offer.
- Desire: Increase their interest so that they want what you’re offering.
- Action: Turn that interest into a project.

Here are two questions to consider when you’re creating a software for your customer:

1. What are your customer’s needs?
2. How does your service satisfy their needs?

Before we write a single line of code, we need to design the user interface and make it fit the Android user experience. Although we may know what a user will do with your app, we should pause to focus on how a user will interact with it.

Our design should be sleek, simple, powerful, and tailored to the Android experience.

Setting up IntelliJ IDEA

To develop your application via IntelliJ IDEA, you need to install the following pieces of software.

- **Java Development Kit 7+** (JDK) (6 will not work!)
- **IntelliJ IDEA 13.+,** the Community edition is sufficient. On Mac OS X, as of December 2014, JetBrains still recommends running IntelliJ IDEA under Apple JDK 6 (you have to install it in addition to the JDK listed above, it will be picked automatically by IntelliJ), due to unresolved issues with Oracle JDK 7+.
- **Android SDK,** you only need the SDK, not the ADT bundle, which includes Eclipse. Install the latest stable platform via the SDK Manager. You also have to create an environment variable called `ANDROID_HOME`, which points at your Android SDK installation directory!

System Requirements

Windows

- Microsoft® Windows® 8/7/Vista/2003 (32 or 64-bit)
- 2 GB RAM minimum, 4 GB RAM recommended
- 400 MB hard disk space
- At least 1 GB for Android SDK, emulator system images, and caches
- 1280 x 800 minimum screen resolution
- Java Development Kit (JDK) 7
- Optional for accelerated emulator: Intel® processor with support for Intel® VT-x, Intel® EM64T (Intel® 64).

Mac OS X

- Mac® OS X® 10.8.5 or higher, up to 10.9 (Mavericks)
- 2 GB RAM minimum, 4 GB RAM recommended
- 400 MB hard disk space
- At least 1 GB for Android SDK, emulator system images, and caches
- 1280 x 800 minimum screen resolution
- Java Runtime Environment (JRE) 6
- Java Development Kit (JDK) 7
- Optional for accelerated emulator: Intel® processor with support for Intel® VT-x, Intel® EM64T (Intel® 64), and Execute Disable (XD) Bit functionality

Linux

- GNOME or KDE desktop
- GNU C Library (glibc) 2.15 or later
- 2 GB RAM minimum, 4 GB RAM recommended
- 400 MB hard disk space
- At least 1 GB for Android SDK, emulator system images, and caches
- 1280 x 800 minimum screen resolution

Windows, Mac OS and Linux operation systems as shown in Figure 3.1



Figure 3.1. Windows, Mac OS and Linux operation systems

3.2. Structure of software and its Package Diagram (UML)

Creating Android application “Higher Education Institutions of Uzbekistan” is created with unique opportunity for the users especially who would like to know detailed information about higher education institutions. In addition, users can use this software without internet connection in offline system because almost all information located in SQLite database. This Android application divided into main two parts. In the first part, users can choose one of Uzbekistan region to see list of universities which is located in this region and can know each university’s detailed information by clicking on University’s name button. In the second part, users can choose “Abituriyent” button and can see list of important information and useful links for entrant student as well as other young generation.

I chose the Android platform because it is one of the fastest growing mobile operating systems on the market and is an open source development. This project allowed us to gain an understanding of how some of the built in frameworks can be utilized to develop application. Furthermore, this project demonstrates how mobile applications can contribute to improve in lifestyle of user with all the information of the world on a hand with a single click.

In addition, I chose SQLite database because of SQLite is a popular choice as embedded database for local/client storage in application software such as web browsers and others. It is arguably the most widely deployed database engine, as it is used today by several widespread browsers, operating systems, and embedded systems, among others. SQLite has many bindings to programming languages.

Android Application of "Higher Education Institutions of Uzbekistan" block diagram as shown in Figure 3.2.

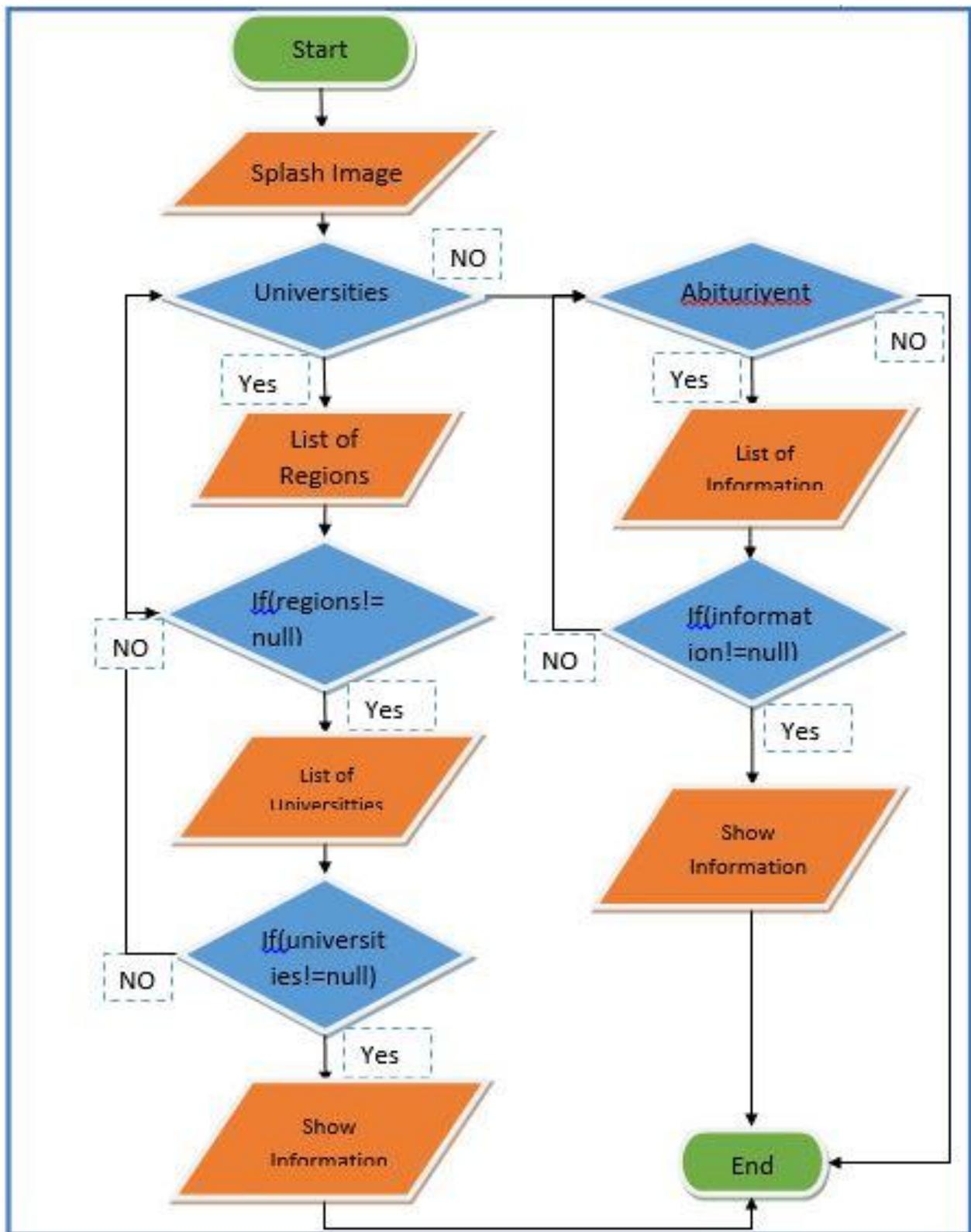


Figure 3.2. “Higher Education Institutions of Uzbekistan” block diagram

“Higher Education Institutions of Uzbekistan” Android application structure as shown in Figure 3.3.

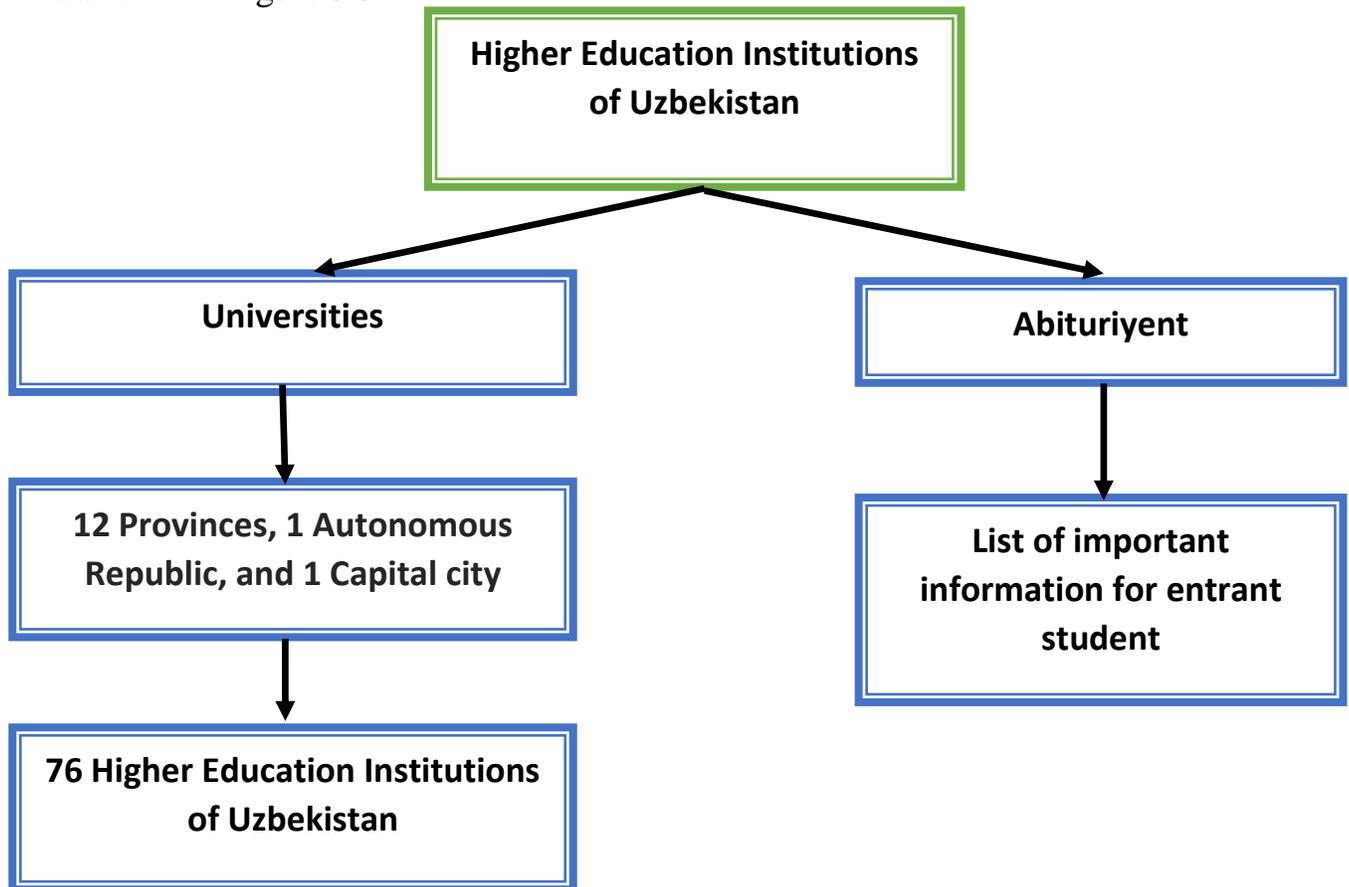


Figure 3.3. “Higher Education Institutions of Uzbekistan” Android application structure

As you can see figure 3.3 “Higher Education Institutions of Uzbekistan” Android application is divided into a main two parts.

1. Universities: In this part, there are 12 provinces: Andijan, Bukhara, Fergana, Samarkand, Tashkent, Syrdarya, Jizzakkh, Namangan and etc.
2. Abiturient: In this section, users can learn important information such as Abiturientga eslatma, Titul varoqi etc.

Package diagram is **UML structure diagram** which shows **packages** and dependencies between the packages.

Model diagrams allow to show different views of a system, for example, as multi-layered (aka multi-tiered) application - multi-layered application model. The following nodes and edges are typically drawn in a package diagram: package, package able element, dependency, element import, package import, package merge.

When I'm creating a use case package diagram I'll follow two rules of thumb. First, included and extending use cases belong in the same package as the base/parent use case. This heuristic works well because these use cases typically were introduced by "pulling out" their logic from the base/parent use case to start. Second, I then analyze the use cases with which my main actors are involved. Figure 3.4 "Higher Education Institutions of Uzbekistan" Android application package diagram (UML).

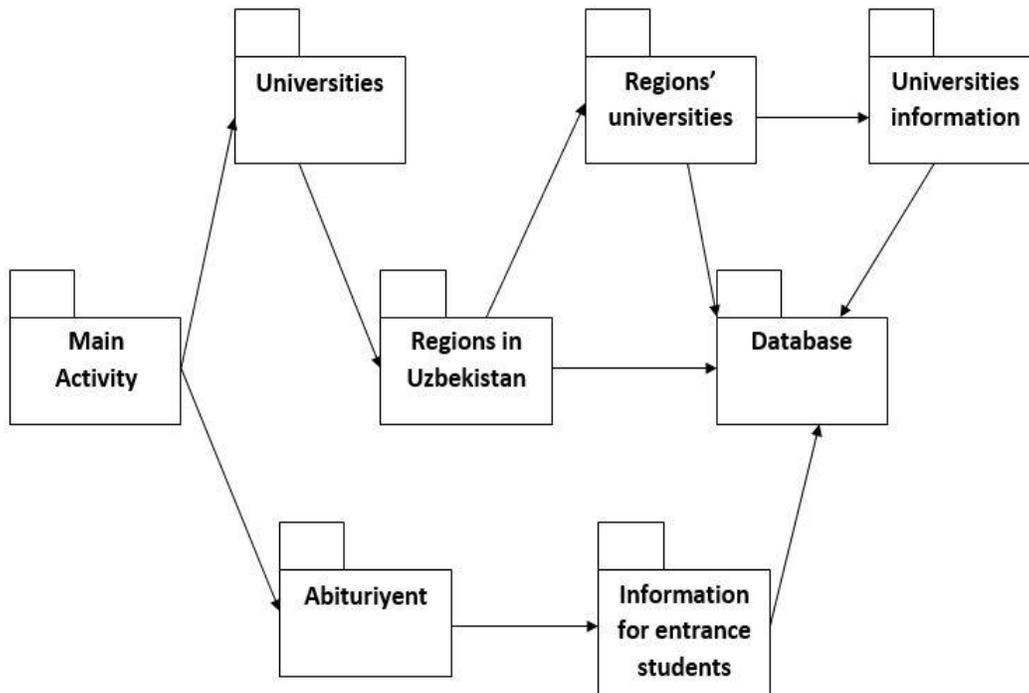


Figure 3.4 "Higher Education Institutions of Uzbekistan" Android application package diagram (UML)

I used SQLite database browser to save “Higher Education Institutions of Uzbekistan” Android application data. In SQLite database browser, I created two tables first table for regions names and second one for universities information as shown in Figure 3.5.

SQLite is an Open Source database. SQLite supports standard relational database features like SQL syntax, transactions and prepared statements. The database requires limited memory at runtime (approx. 250 Kbyte) which makes it a good candidate from being embedded into other runtimes.

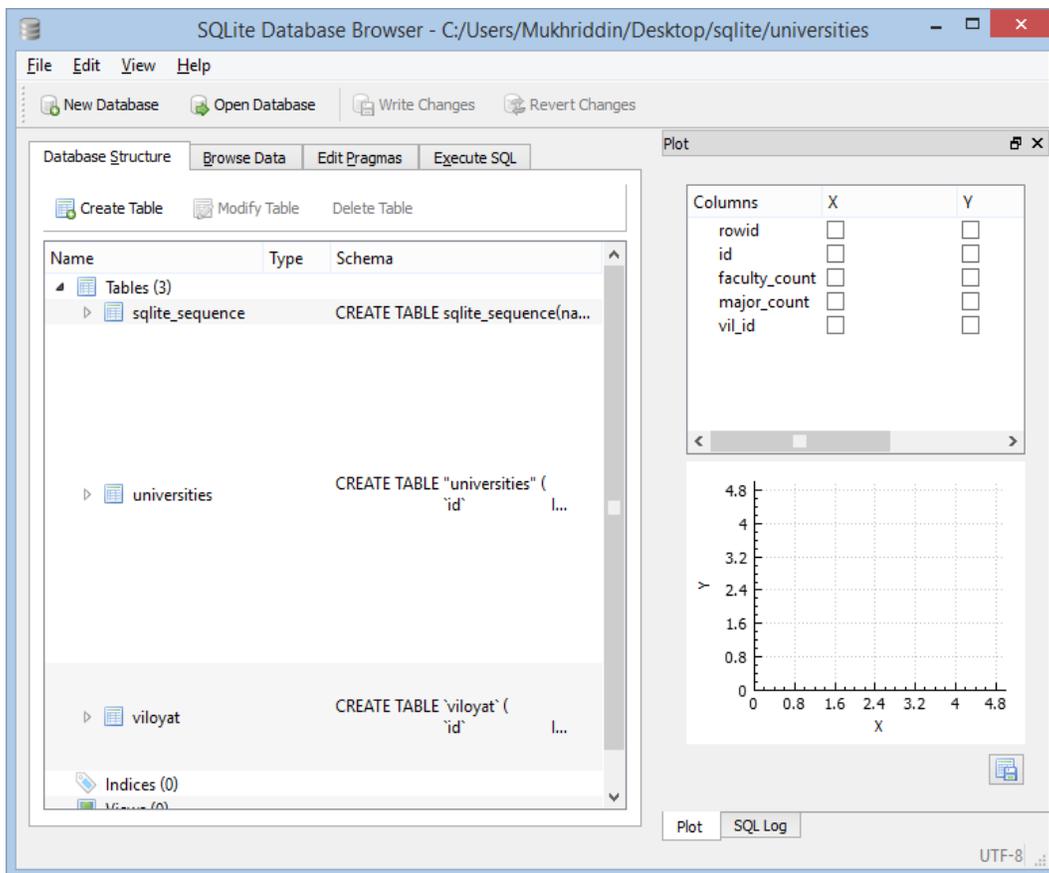


Figure 3.5. SQLite database browser

In the viloyat table, I created three fields: id, vil_name, vil_desc to save regions name and description as shown in Figure 3.6. In order to create this table, I

tried to make comfortable UI for users by putting each higher education institutions of Uzbekistan into related regions.

In addition, I marked a number of Universities in this regions for instance, 34 universities located in capital city Tashkent and 7 universities located in the most historical and turizm zone of Uzbekistan, Samarqand. Also, as I mentioned earlier I added vil_desc field to save this regions descriptions.

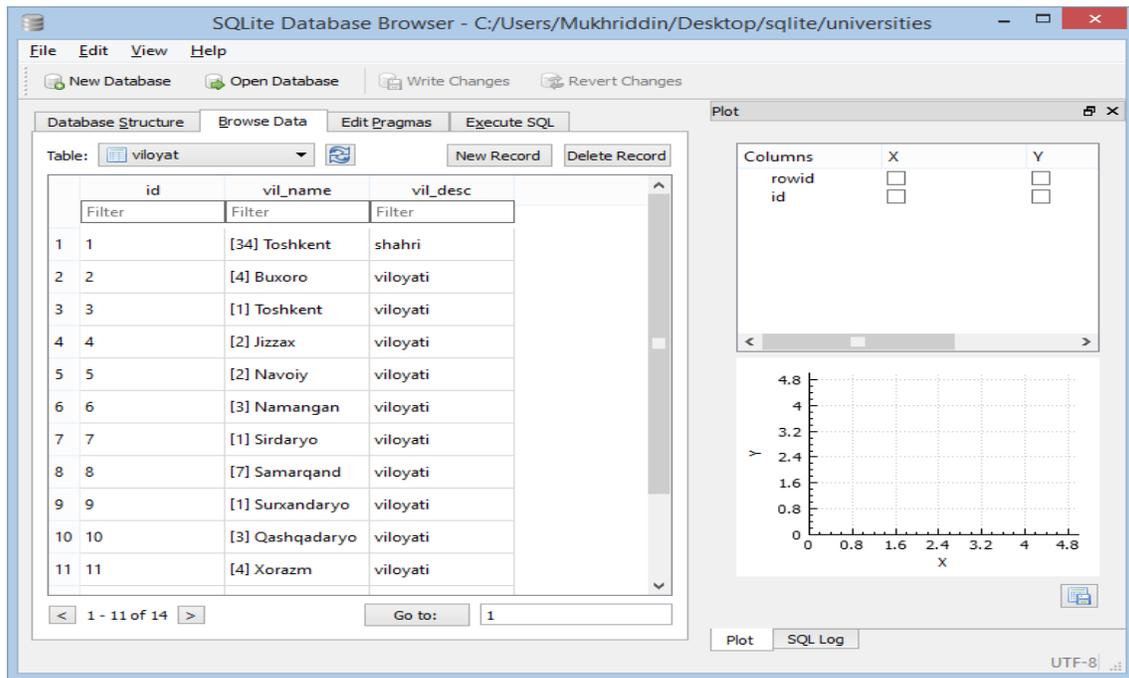


Figure 3.6. SQLite database browser in viloyat table

In the universities table, I created thirteen fields to save universities information id, name, short_name, type, address, orienter, www, bus_number, tel_number, faculty_count, major_count, vil_id and email as shown Figure 3.7.

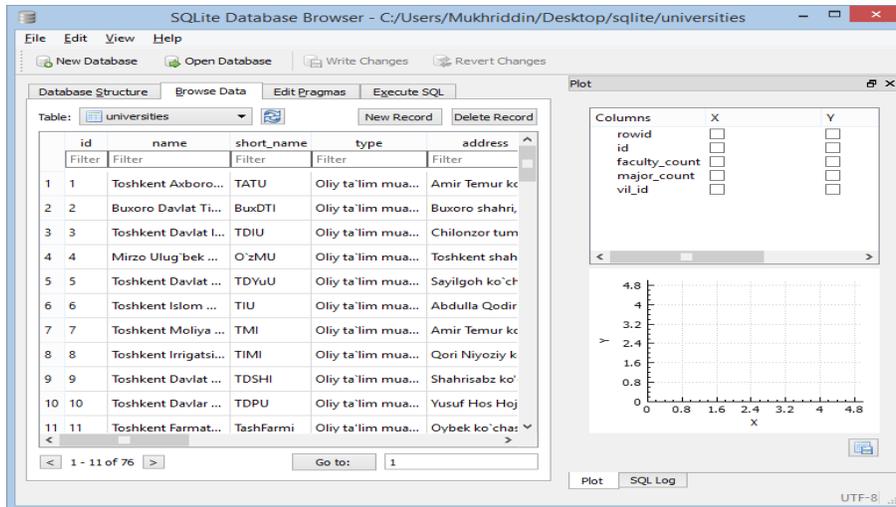


Figure 3.7. SQLite database browser in universities table

3.3. Analyzing screen views of software and explanation

While I was creating an Android application of “Higher Education Institutions of Uzbekistan”, I used IntelliJ IDEA (IDE), Genymotion, SQLite Browser for storing data, Java programming language and HTML. First, When you click software icon on the screen of smartphones then Splash Image run for 2 second after that Main Activity run and so on. For creating Android application, I used IntelliJ IDEA as shown in Figure 3.8.

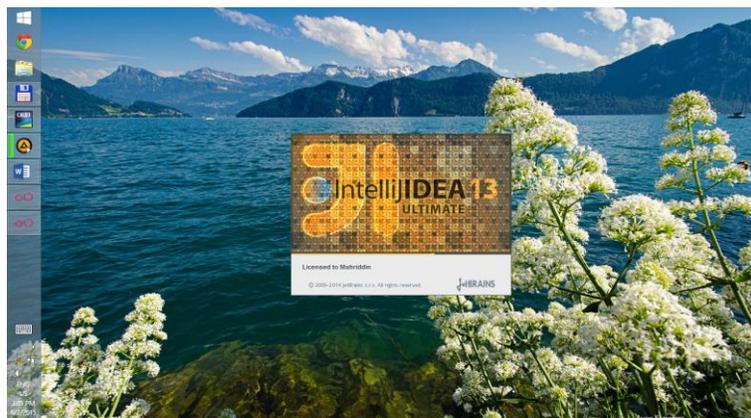


Figure 3.8. IntelliJ IDEA on Desktop

In my opinion, programmers have to see the result of software in each changing step and for Android development, developer use different emulators for testing an Android application. I used Genymotion emulator as shown in Figure 3.9.



Figure 3.9. Genymotion Emulator for testing Android application

When we use Genymotion Emulator for testing, we have to add an Android device into it. In my case, I added Samsung Galaxy S3 Android device as shown in Figure 3.10.

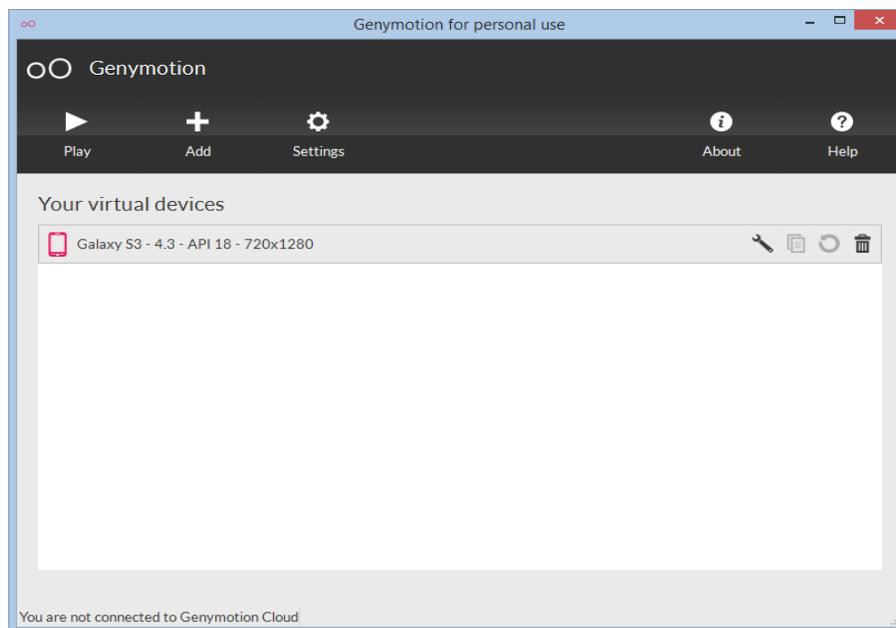


Figure 3.10. Genymotion Emulator main Window and existing devices

In IntelliJ IDEA, I created new Android project named Uzbekistan Universities and started to write code for software. In the following picture contains main window and others features of IntelliJ IDEA. In addition, this picture also includes my software main window with its tools as shown in Figure 3.11.

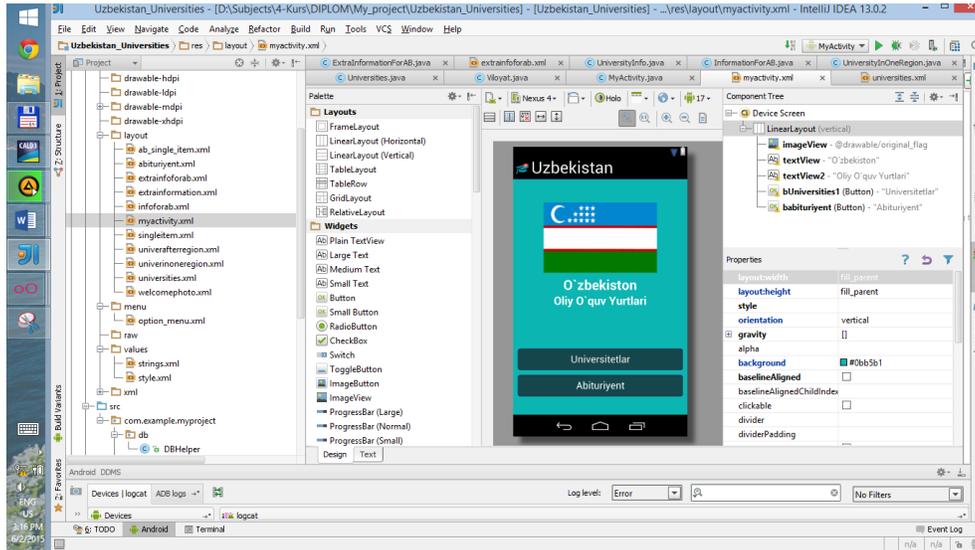


Figure 3.11. Main window of IntelliJ IDEA and Android software

As you notice, there is several parts to help developers for managing and designing an Android application for instance: center part for writing Java codes and classes as well as xml files for style of layouts as shown in Figure 3.12 and Figure 3.13.

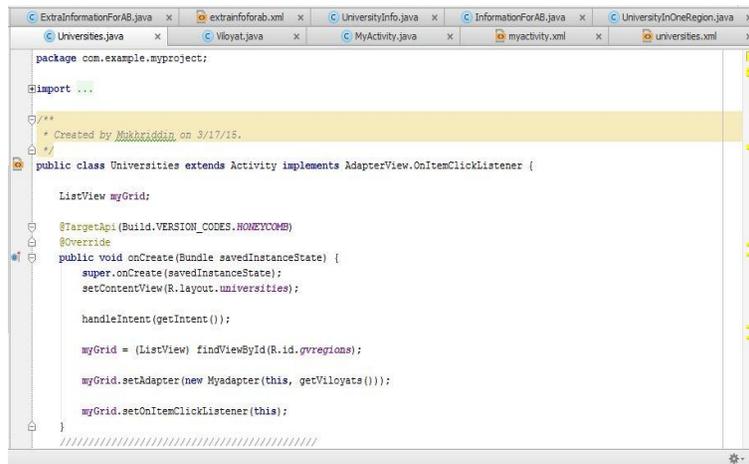


Figure 3.12. Java classes for creating application in IntelliJ IDEA.

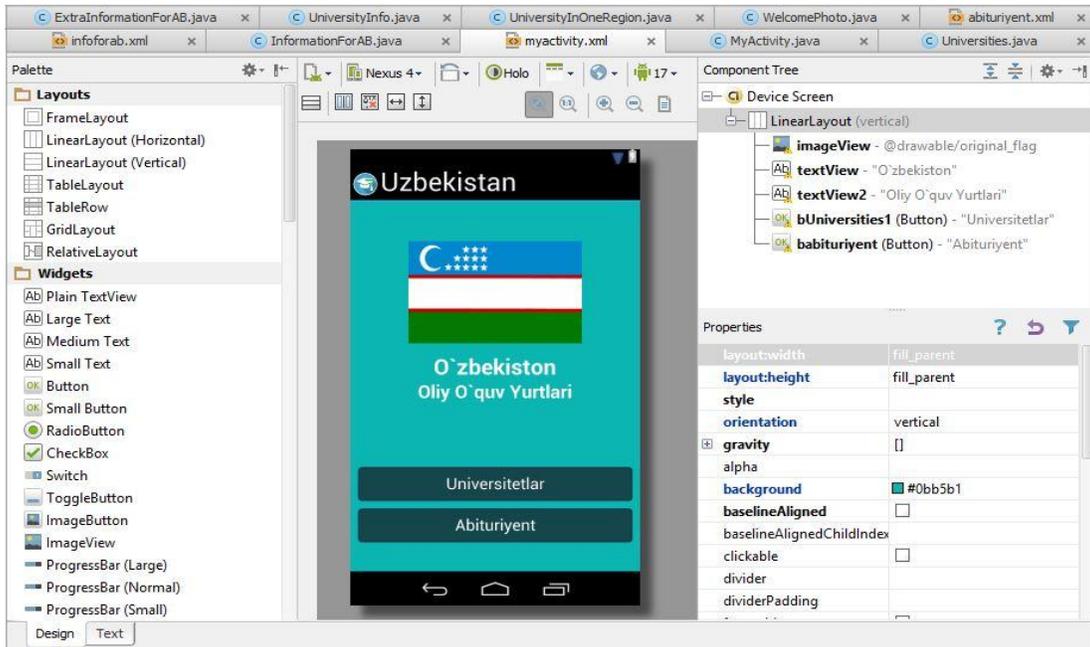


Figure 3.12. MyActivity.xml file in IntelliJ IDEA

In the following figures show different files which used for creating Android application of “Higher Education Institutions of Uzbekistan” for instance: assets folder to store database and HTML files, drawable folder to store all photos, layout folder, menu folder and values folder to store XML files, src folder to store Java files as shown in Figure 3.13.

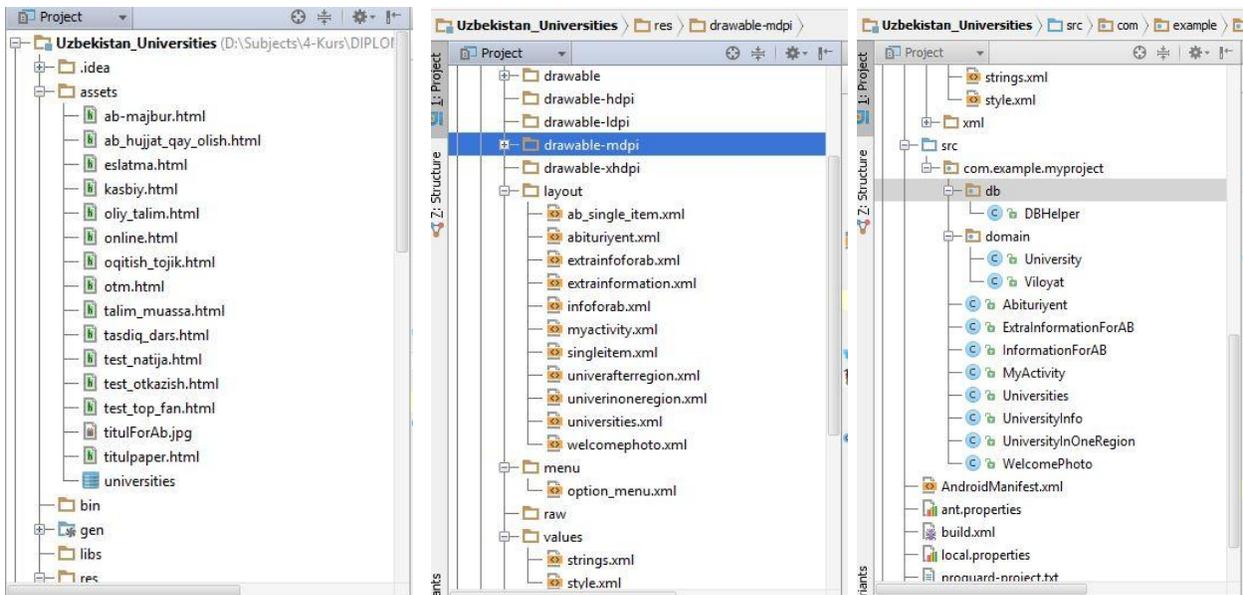


Figure 3.13. Folders to store all files, used for creating Android application

In the following figures show an icon launcher, users can see on the smartphone's screen, and splash image, which I programmed for 2 second while loading whole software as shown in Figure 3.14 and Figure 3.15.

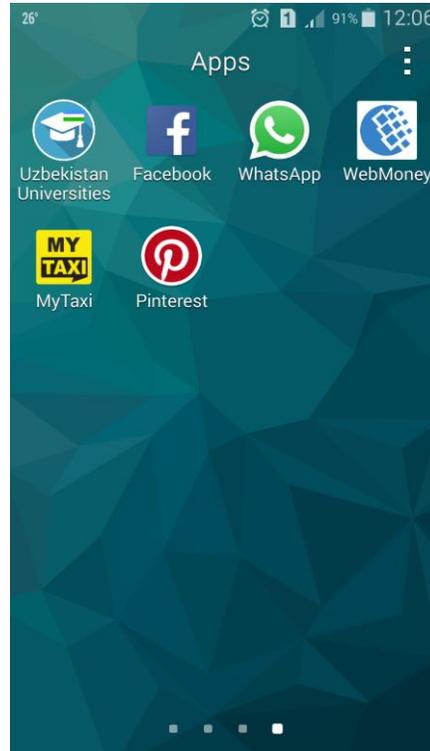


Figure 3.14. “Higher Education Institutions of Uzbekistan” icon launcher



Figure 3.15. “Higher Education Institutions of Uzbekistan” splash image

When we click the icon launcher this android application starts working and show Main Window, there are two menu “Universitetlar” and “Abituriyent” as shown in Figure 3.16.

In addition, this view contains Uzbekistan national flag in the top-center of layout for designing appropriate welcome view. By clicking one of the button “Universitetlar” or “Abituriyent” this software allows users to other activity, according to which button was clicked.

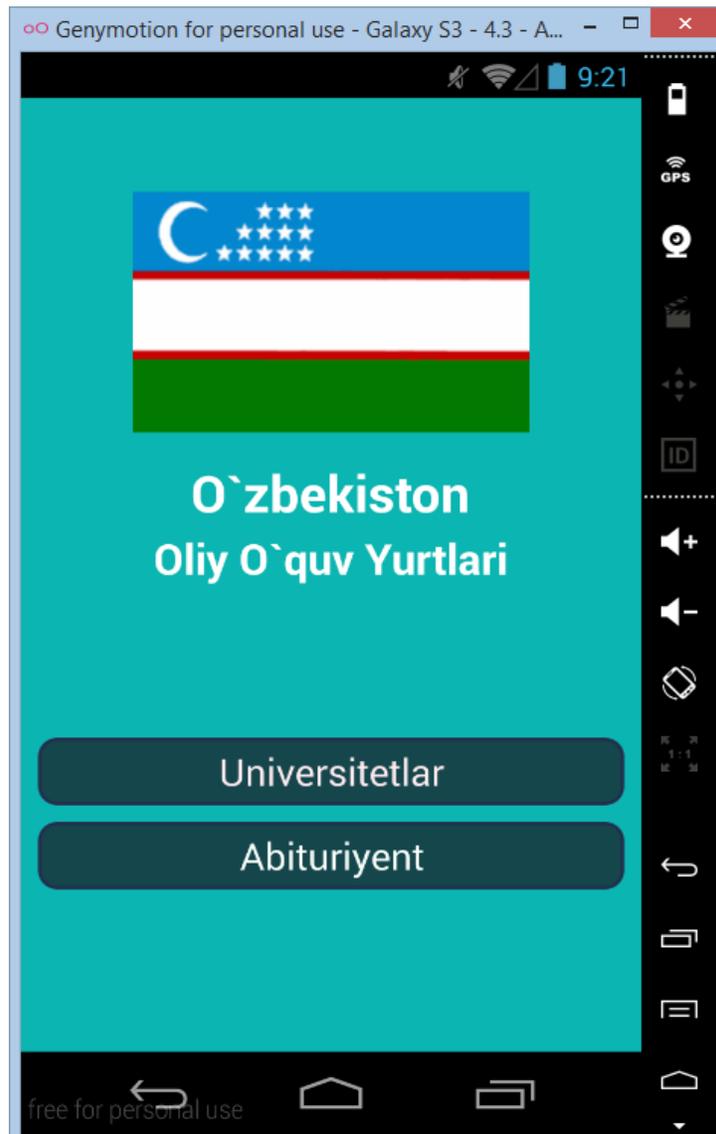


Figure 3.16. Main Window of Android application running on Genymotion Emulator

If users click a “Universitetlar” button and we will see following figure which contains 12 regions’ names, 1 autonomy Karakalpakstan Republic and 1 capital city of Uzbekistan. Furthermore, there is search function, which added in the label of software as shown in Figure 3.17.

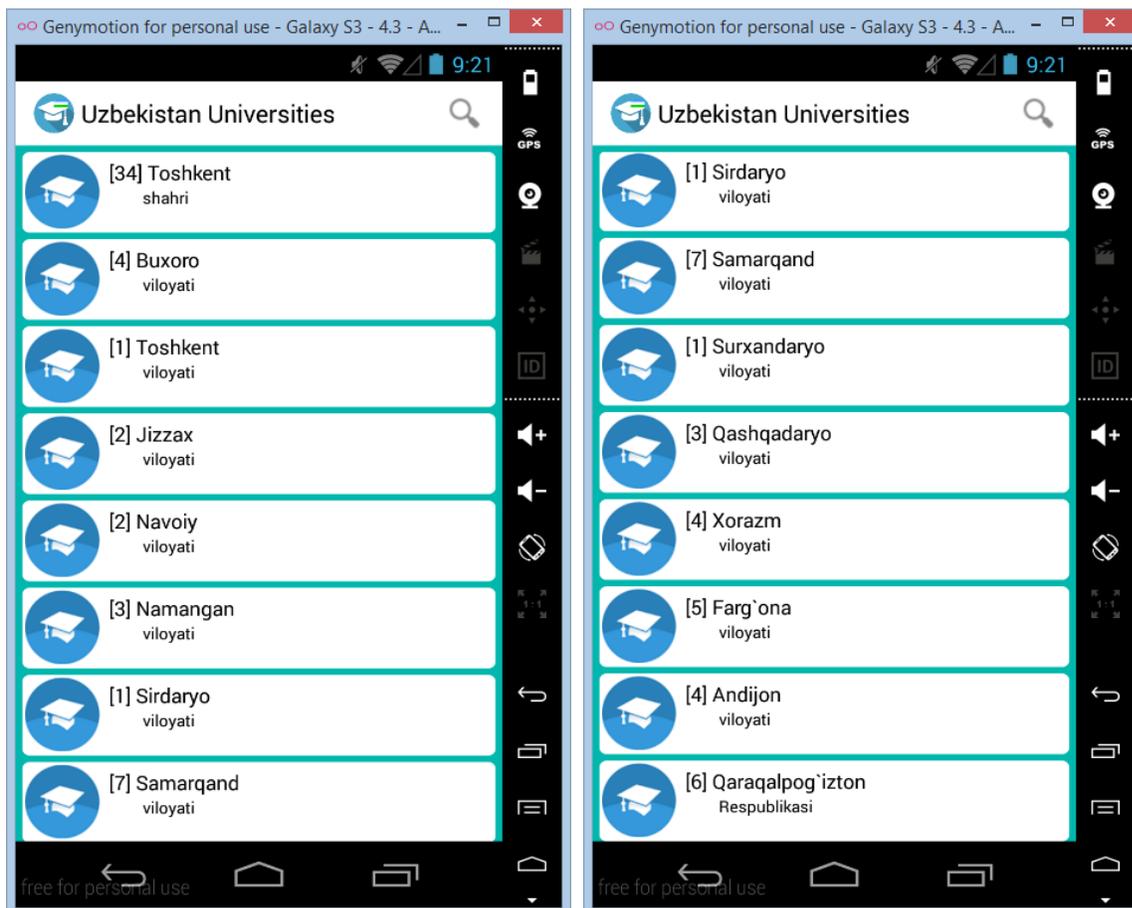


Figure 3.17. List of Regions in Uzbekistan

In this activity, users can search higher education institutions of Uzbekistan by typing University name or its short name (description) even just typing any Latin letter. I mean by that, this program’s search engine looks for the target name by matching appropriate letter. For example, if users type “tatu”, “axborot”, “buxoro”, “toshkent” etc. and then they would take a list of Universities, name or short name have these letter as shown in Figure 3.18 and Figure 3.19.

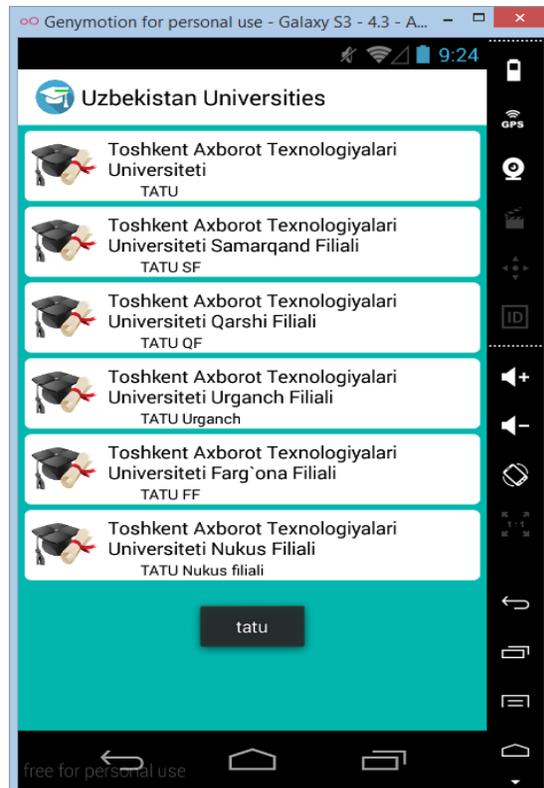
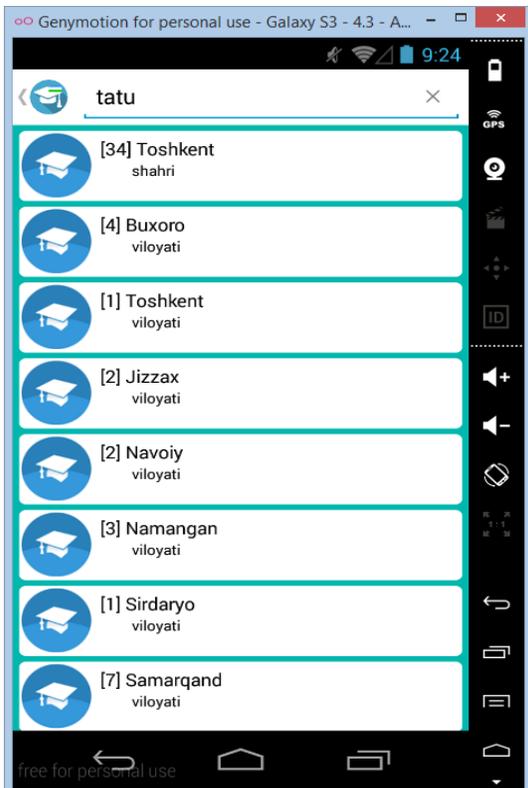


Figure 3.18. Search a “tatu” and get the result for this word.

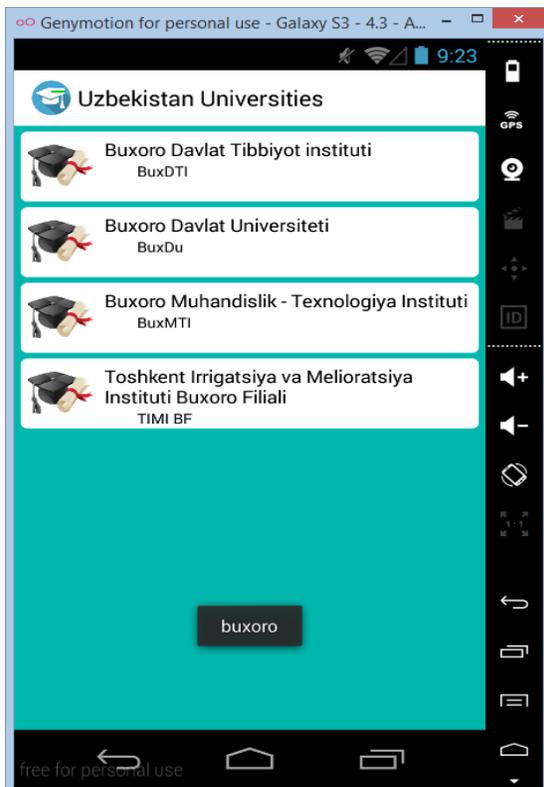
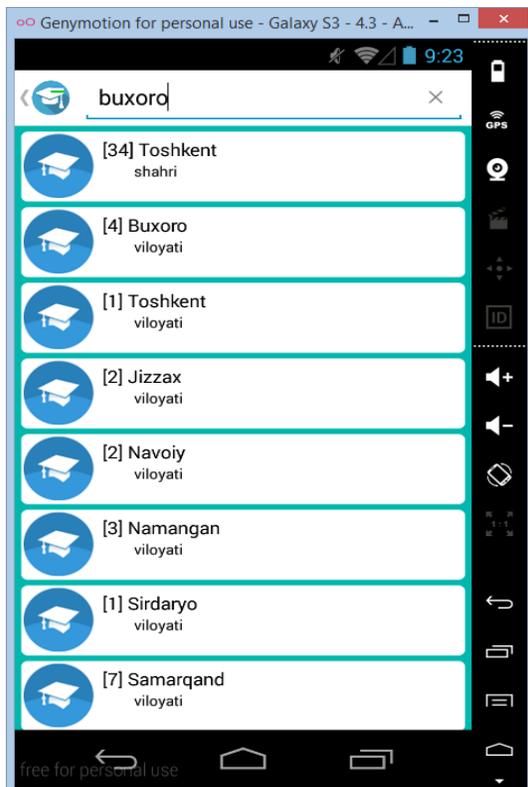


Figure 3.19. Search a “buxoro” and get the result for this word

In the following figure shows a general and important information of universities by clicking on university name button. This information includes university name, short name, address, phone number, faculty and major number, web sites, e-mail etc. as shown in Figure 3.20.

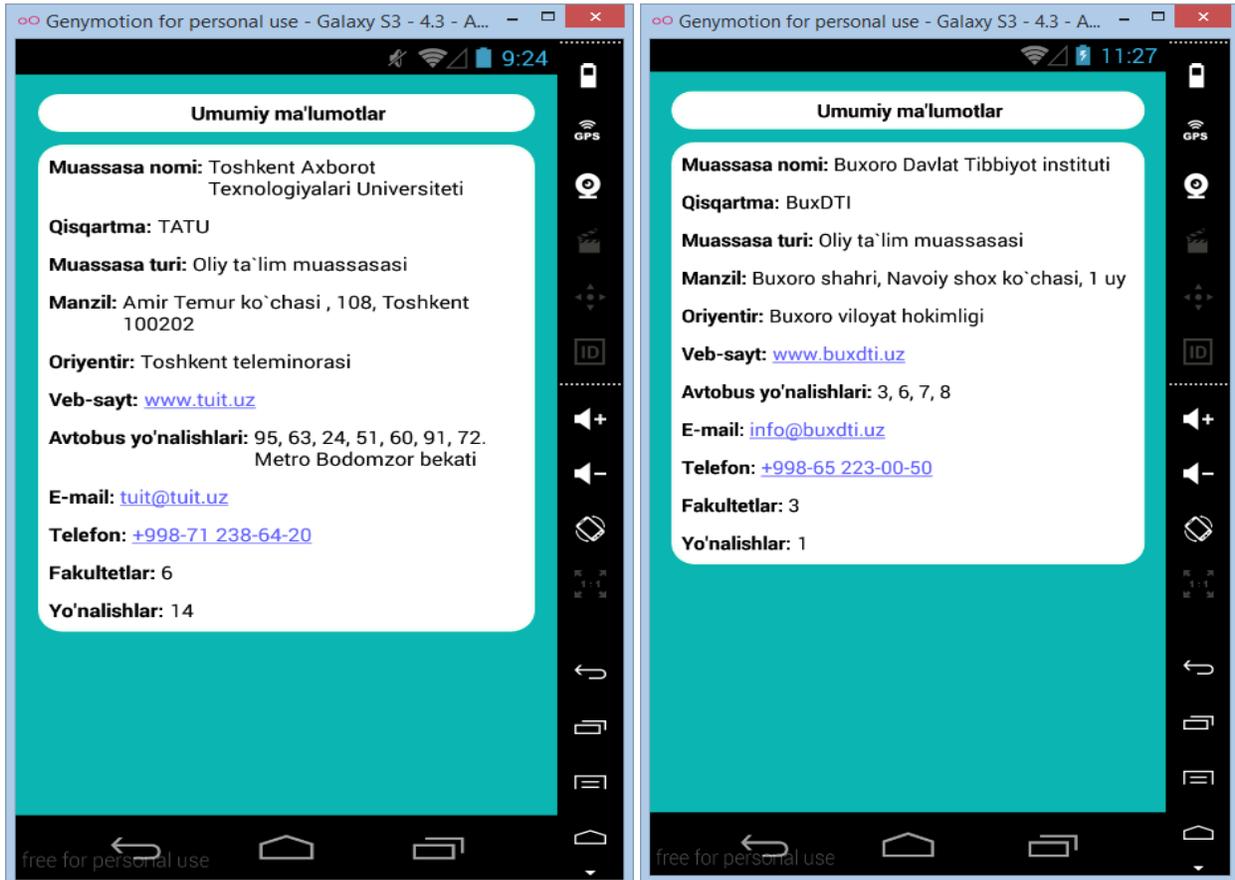


Figure 3.21. Important information of Higher Education Institutions

In this part of software has interactive features for instance: if users click on web site, e-mail and phone number of university and software would send this information to Android OS system by using links and users can connect university web site to know more information about chosen university or users can send e-mail to university mail for asking some sort of information in efficient way or users can call university reception office by just clicking on phone number of university and calling system run automatically without dialing number as shown in Figure 3.22.

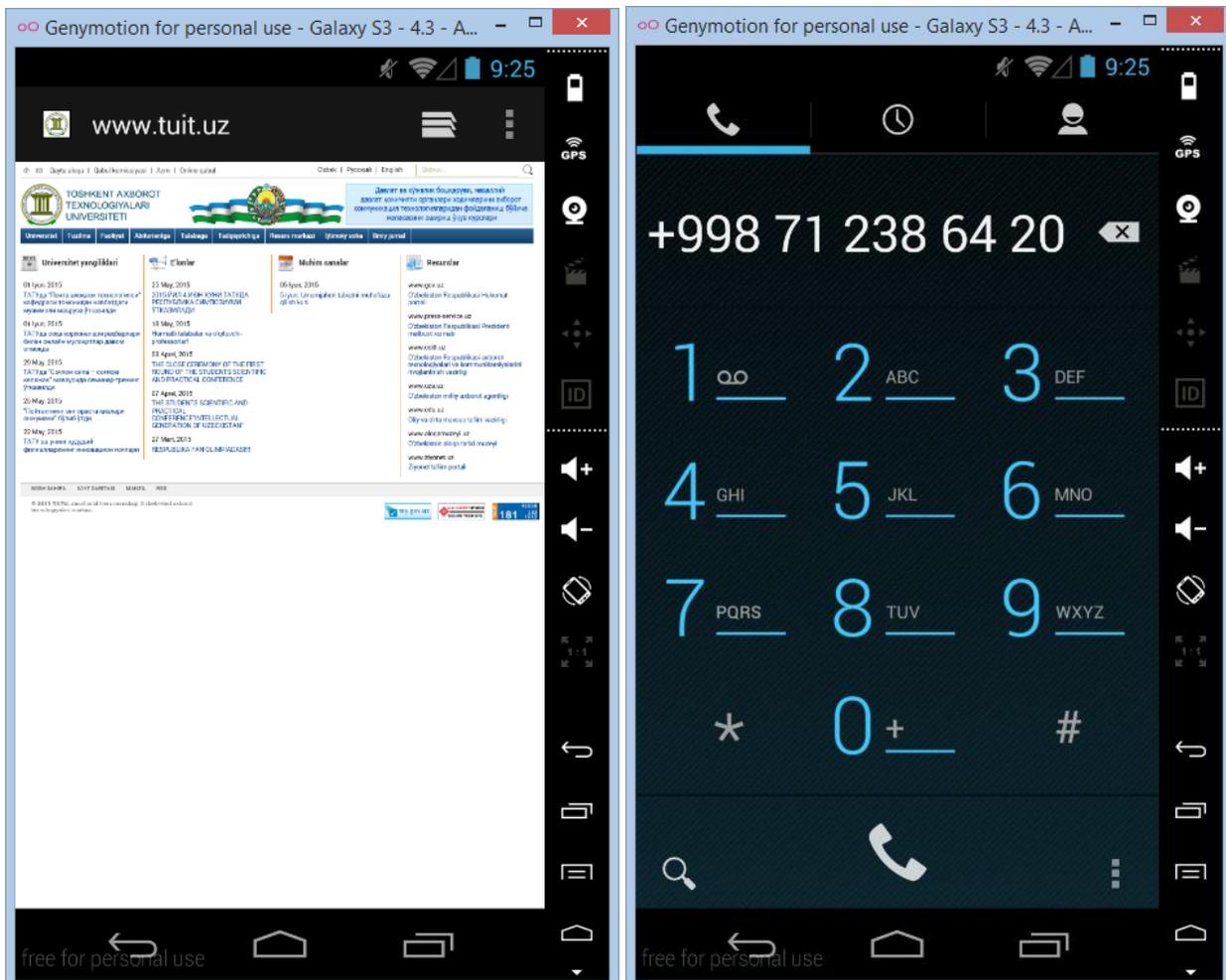


Figure 3.22. Interactive features for calling and mailing to universities

Second menu, “Abituriyent” mainly for entrant student because of there are almost all information for them. In this section, there are following sub-menu exist: “Abitutiyyentlarga eslatma”, “Titul varog’i”, “Tasdiqlangan darsliklar ro’yhati”, “Test topshiradigan fanlar ro’yhati”, “Abituriyentlarning vazifalari, majburiyatlari va huquqlari”, “Hujjatlar to’plamini qaytarib olish uchun elektron ariza berish”, “Test o’tkazish qoidalari”, “2014-2015 o’quv yili uchun o’rtacha o’tish ballari”, “Ta’lim muassasalari ta’lim yo’nalishlari ro’yhati”, “OTM mutahassisliklar ro’yhati”, “Online test tizimi”, “Kasbiy (ijodiy) imtihonlar o’tkaziladigan ta’lim yo’nalishlari ro’yxati”, “O’qitish tojik, qozoq, turkman va qirg’iz tillarida olib boriladigan ta’lim yo’nalishlari ro’yxati” and “Foydali manbalar” in Figure 3.23.

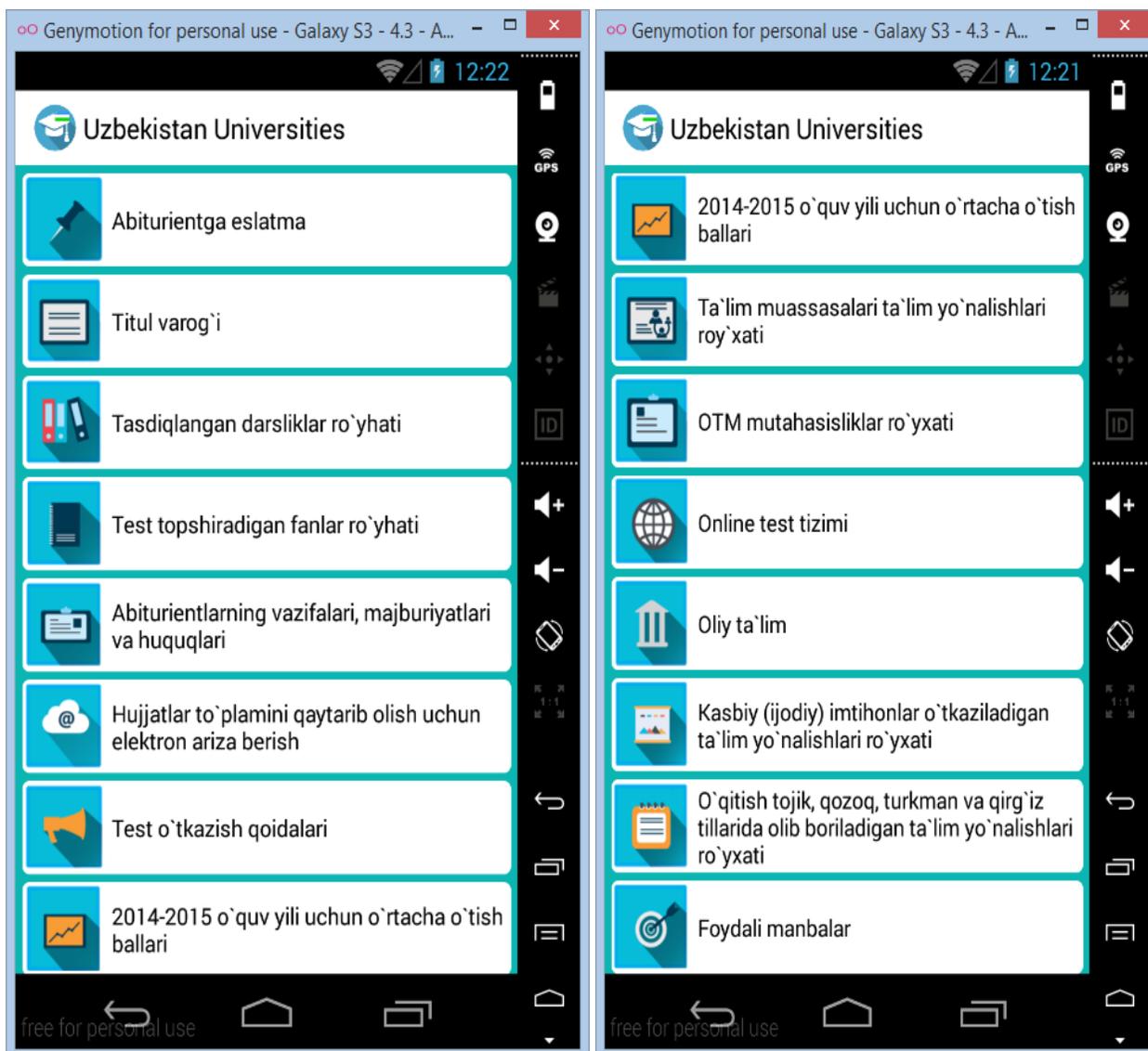


Figure 3.23. Information for entrant student, Sub-menu of Abiturient main menu.

In the following figures show some information “Hujjatlar to’plamini qaytarib olish uchun elektron ariza berish” and “Titul varog’i”, which carry out when the sub-menu clicked by users as shown in Figure 3.24 and Figure 3.25.

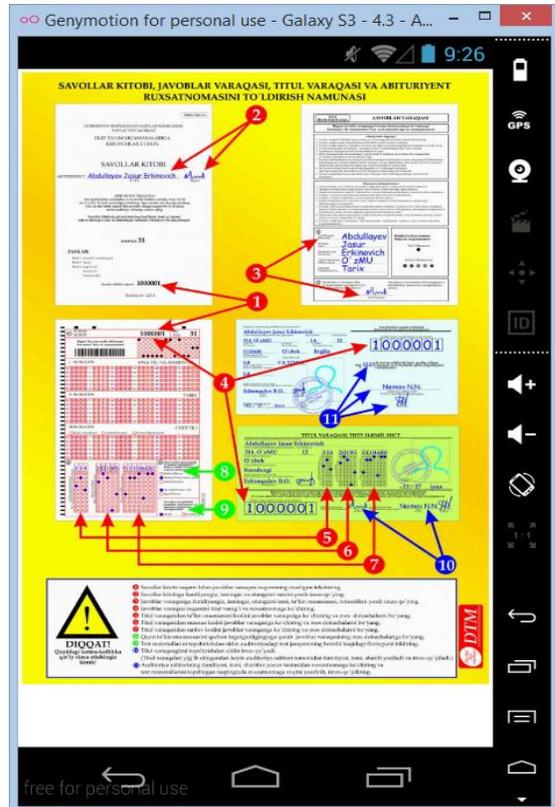


Figure 3.24. Information for entrant student using HTML files

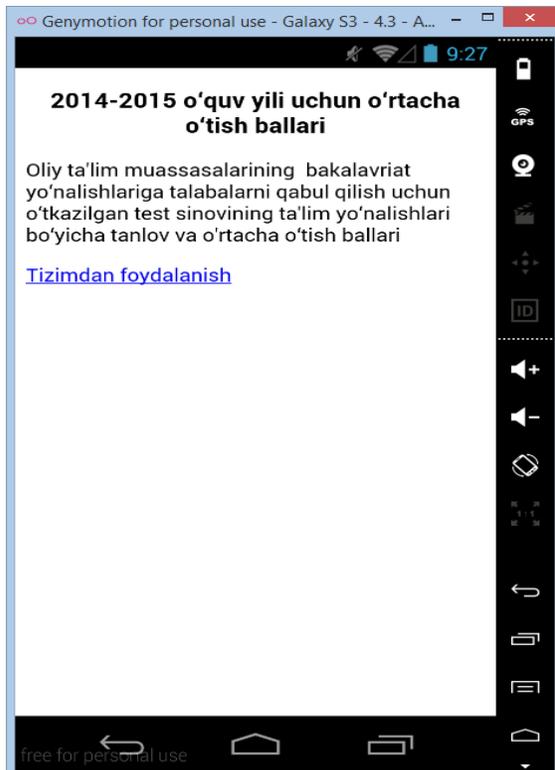


Figure 3.25. Information for entrant student using HTML files

In addition, there is “Foydali ma’lumotlar” which allows users to know and connect useful web sites such as www.dtm.uz, www.edu.uz, www.uzedu.uz, www.my.gov.uz, www.gov.uz, www.eduportal.uz, www.abituriyent.uz as shown in Figure 3.26.



Figure 3.26. “Foydali ma’lumotlar” this is useful web site’s links section

The advantages and disadvantages of this android application

The advantages of software are as follows:

This software works fast and efficient in Android OS and software size is just 2.2 MB it means that users can share or download very fast in the short time. This software is the first software, which includes higher education institutions of Uzbekistan. In addition to this, it allows users working in offline mode without internet traffic. There is also very important information and useful web sites' links for entrant students. User interface is comfortable for users and users can find necessary information with easy way in short time. Furthermore, there is search engine for searching Universities without many steps.

The disadvantages of software are as follows:

This software does not support English and Russian languages. There are general and important information about higher education institutions but there is not detailed information such as universities' history, universities' life or name of faculty, major etc. It is do not uploaded to Google Play Store because of mentioned disadvantages and for other reason. However, Thus disadvantages will be considered and fixed and then try to upload in Google Play Store in the near future.

CHAPTER IV. SAFETY OF VITAL ACTIVITIES AND ECOLOGY

4.1. Rational organization of work place

The complexity of production processes and equipment changed the functions of the person in modern industry: increased responsibility of tasks; increased volume of information perceived by the working and the performance of the equipment. A person's work has become more difficult, increased load on the nervous system and increased physical load. In some cases, the man has become the least reliable link of the system «man-machine». There is a task of providing reliability and safety of persons at work. Solves this task ergonomic sand engineering psychology.

Ergonomics (from the Greek Ergon work and nomos - law) is the scientific discipline that studies the human in terms of its activities related to the use of machines. The goal of ergonomics - optimization of conditions of work in the system "man-machine". Ergonomics defines the requirements of the person to technology and to the conditions of its functioning. The ergonomics of the equipment is the most generalized index of properties and other characteristics of equipment.

The connection of the man with the environment and the parameters of the workplace. Working place, this is the area in which the committed work of the performer or group of performers. Jobs may be individual and collective, universal, specialized and special.

General requirements, which must be observed when designing jobs, the following:

- adequate working space for the person;
- optimum position of the body of the worker;

- sufficient physical, visual and auditory communication between man and machine;
- optimal allocation of working space in the room;
- the permissible level of action of factors of production conditions;
- the optimal placement of the information and the motor field;
- availability of means of protection from hazards.

Design should provide the zone of optimum and easy reach of the motor field of the workplace and the optimal area of the information field of the workplace. Angle of view in relation to the horizontal should be 30-40 degrees. The choice of working arrangements should take into account the efforts expended by the man, the magnitude of the movements, the need for movement, the pace of operations. The choice of working postures should take into account the physiology of man and parameters of working places determined by the choice of the position of the body at work (standing, sitting, a variable). Jobs for work «sitting» are organized in an easy job and middle severity, and the severe - working posture - "standing".

In the design of equipment and organization of a job it is necessary to foresee the possibility of regulating the individual elements, in order to ensure the optimum position of the operator.

In the conditions of growing mechanization and automation of production processes is of special significance means of display of the information about the object of management. Widespread use of the received information model, that is organized according to certain rules information about the status of the object of control.

The information models of the following requirements:

- the content of the information model should adequately display the object of management;

- information model should provide the best information balance;
- the shape and composition of the information of the model must be consistent with the labor process and possibilities of man for the reception of the information.

Working the furniture should be comfortable for the execution of planned operations. The design of the working furniture: table, chairs is of great importance for the creation of healthy environments and highly productive work. Working the furniture is designed with consideration of anthropometric data of a human, technical, aesthetic and economic factors.

In the complete set of the working furniture of great importance is the design of the production of a chair, as it depends on the attitude of the employee and, therefore, energy consumption and the degree of its strain. Operating the seat must have the required dimensions, the relevant anthropometric data of the person and be flexible. The most comfortable chairs and seats with adjustable back tilt and height of seat. Changing the height of the seat from the floor and back angle, you can find the most appropriate labor process and the individual characteristics of the employee.

As a rule, all the surface of the written and desktops should be at the level of the elbow in the position of a person. When choosing the height of the table should be considered a man sits during work or stands.

The inconvenient of the table height reduces the efficiency of work and causes rapid fatigue. The lack of sufficient space for the knees and feet cause constant irritation of the employee. Minimum operating table height should be not less than 725 mm. As practice shows, for the working medium height the height of the desktop is accepted 800 mm. For the employee of another growth you can change the height of the working chair, or the position of the boards so that the

distance from the object processing before the eyes of the working height is equal to approximately 450 mm.

Accommodation of the technical means and the chair of the operator in the working zone should provide easy access to the main functional nodes and units of equipment for conducting technical diagnostics, preventive inspection and repair; the ability to quickly occupy and to leave the work area; the exception of accidental actuation means of control and input of information; comfortable working posture and position of rest. In addition, the scheme of accommodation should meet the requirements of integrity, compactness and technical and aesthetic expressiveness of the working postures.

4.2. Emergencies

In theory SAFETY EMERGENCIES - is a set of events, the result of the onset of which is characterized by one or more of the following signs

- a) Danger to life and health of a significant number of people;
- b) The material violation of the ecological balance in the area of the emergency;
- c) The failure of the life support systems and control, full or partial cessation of economic activities;
- d) Significant material and economic damage;
- e) The need to involve large as the usually external to the area of emergency forces and means for the salvation of men and the elimination of consequences;
- e) Psychological discomfort for large groups of people.

It is characteristic that emergency arises outwardly suddenly, suddenly. Specification of definition of the emergency is achieved by introduction of quantitative measures of the dangers.

The classification of emergencies.

For reasons of emergencies are of natural, man-made, man-made, environmental, and social.

To the natural (natural) emergency situations are dangerous natural phenomena or processes that have extraordinary in nature and lead to a breach of everyday life more or less significant groups of the population, loss of life destruction of material values. These include earthquakes, floods, tsunamis, volcanic eruptions, mudflows, landslides, avalanches, hurricanes and Summer-Chi, massive forest and peat fires, snow and avalanches.

Natural disasters are a tragedy of the entire state and especially for those areas where they occur. As a result of natural disasters are affecting the economy of the country since the collapse of production of the enterprise the destruction of material values and most importantly there are losses among the people killed their housing and property. In addition, natural disasters pose extremely adverse conditions of life for the population, which may be the cause of outbreaks of infectious diseases.

4.3. Anthropogenic pollution

This chapter focuses on the ecosphere and anthropogenic pollution of the human environment. Anthropogenic pollution is the most obvious and quick negative causal relationship in the ecosphere, "the economy, production, technology, the environment." It makes a significant part of the techno sphere and environmental capacity leads to the degradation of ecosystems, global climate and geochemical changes to the affected individuals. On the prevention of pollution of nature and the human environment focused the main efforts of Applied Ecology. Classification of technological impacts caused by environmental pollution, including such basic categories:

1. Material and energy characteristics of influences: mechanical, physical (thermal, electromagnetic, radiation, acoustic), chemical, biological factors and agents, and their various combinations. In most cases, these agents act as emission (i.e. emission - emissions, effluents, radiation, etc.) of various technical sources.
2. Quantitative characteristics of exposure: the strength and severity (intensity factors and the effects of mass concentration, the characteristics of the "dose - effect", the toxicity, the permissibility of environmental and health and safety standards); spatial extent, distribution (local, regional, global).
3. Timing differences and influences the nature of the effects: short-term and long-term, persistent and non-persistent, direct and indirect, have expressed or hidden trace effects, reversible and irreversible, actual and potential; Threshold effects.
4. Categories of objects Effect: different living recipient (ie the ability to perceive and respond) - people, animals, plants; components of the environment (Wednesday settlements and buildings, natural landscapes, the surface of the land, soil, water, air, near-Earth space); products and facilities.

Within each of these categories the possibility of determining the ranking of the ecological importance of the factors and characteristics of objects. In general, the nature and scale of the actual effects of the most important chemical pollution, as the biggest potential threat associated with radiation.

As for the impact of objects, in the first place, of course, is a man. Recently, a particular danger is not only the growth of pollution, but their cumulative effect is often greater than the effect on the final consequences of the simple summation.

Environmental pollution refers to the unintended, albeit obvious, easy to consciously understood environmental violations.

CONCLUSION

To sum up all of it I can say I gained a lot of new knowledge from the creating this Android application. Currently, smartphones is becoming vital role in the ICT (information and communication technologies) area. For the reason that, we can use smartphones for calling, texting, surfing internet, taking photos and etc, in some cases it is minicomputer in our pocket and near 69% people use smartphones in the world. Android dominated the market with a 78.0% share. Samsung, a number 1 contributor, managed to increase its volumes quarter on quarter with strong sales channel, wide product portfolio, and particularly a greater focus on low-midrange devices.

My purpose is that, I will work on this software and add English and Russian languages as well as other information. In addition to this, I am going to create this software for iOS, Apple smartphones and planning to upload in Google Play Store, Apple Store. This software is free of charge and allows users work in offline system. According to this, it may have many users in the future.

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APPENDIX

MainActivity.java file

```
package com.example.myproject;

import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.View;
import android.widget.Button;
import android.view.View.OnClickListener;

import java.sql.BatchUpdateException;

public class MyActivity extends Activity{
    /** Called when the activity is first created. */
    Button universities1, abiturient1;
    @Override
    public void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);
        setContentView(R.layout.myactivity);

        universities1 = (Button)
findViewById(R.id.bUniversities1);
        abiturient1 = (Button) findViewById(R.id.babiturient);

        universities1.setOnClickListener(new OnClickListener() {
```

```

        @Override
        public void onClick(View view) {
            Intent un = new
Intent(getApplicationContext(),Universities.class);
            startActivity(un);
        }
    });
    abiturient1.setOnClickListener(new OnClickListener() {
        @Override
        public void onClick(View view) {
            Intent ab = new
Intent(getApplicationContext(),Abituriyent.class);
            startActivity(ab);
        }
    });
}}

```

Universities.java file

```

package com.example.myproject;

import android.annotation.TargetApi;
import android.app.Activity;
import android.app.SearchManager;
import android.content.Context;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Build;
import android.os.Bundle;
import android.view.*;
import android.widget.*;
import com.example.myproject.db.DBHelper;

```

```

import com.example.myproject.domain.Viloyat;

import java.util.ArrayList;
import java.util.List;

/**
 * Created by Mukhriddin on 3/17/15.
 */
public class Universities extends Activity implements
AdapterView.OnItemClickListener {

    ListView myGrid;

    @TargetApi (Build.VERSION_CODES.HONEYCOMB)
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.universities);

        handleIntent (getIntent ());

        myGrid = (ListView) findViewById(R.id.gvregions);

        myGrid.setAdapter(new Myadapter(this, getViloyats()));

        myGrid.setOnItemClickListener(this);
    }
    //////////////////////////////////////
    @TargetApi (Build.VERSION_CODES.HONEYCOMB)
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu items for use in the action bar

```

```

        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.option_menu, menu);

//////copy

////////////////////////////////////paste

        SearchManager searchManager =
                (SearchManager)
getSystemService(Context.SEARCH_SERVICE);
        SearchView searchView =
                (SearchView)
menu.findViewById(R.id.search).getActionView();
        searchView.setSearchableInfo(

searchManager.getSearchableInfo(getComponentName()));
        return true;
    }

    @Override
    protected void onNewIntent(Intent intent) {
        handleIntent(intent);
    }

    private void handleIntent(Intent intent) {

        if (Intent.ACTION_SEARCH.equals(intent.getAction())) {
            String query =
intent.getStringExtra(SearchManager.QUERY);
            //use the query to search your data somehow

```

```

        Toast.makeText(this, query,
Toast.LENGTH_LONG).show();

        Intent univerIntent = new Intent(this,
UniversityInOneRegion.class);
        univerIntent.putExtra("search", query);
        startActivity(univerIntent);
    }
}
////////////////////////////////////
@Override
public void onItemClick(AdapterView<?> adapterView, View
view, int i, long l) {
    Viloyat viloyat = (Viloyat)
myGrid.getAdapter().getItem(i);

    Intent myintent = new Intent(this,
UniversityInOneRegion.class);

    myintent.putExtra("viloyats", viloyat);

    startActivity(myintent);

}

class ViewHolder {
    ImageView myregion;
    TextView region_name;
    TextView supregion_name;

    ViewHolder(View v) {

```

```

        myregion = (ImageView)
v.findViewById(R.id.imageView);
        region_name = (TextView)
v.findViewById(R.id.textView);
        supregion_name = (TextView)
v.findViewById(R.id.tvsmall);
    }
}

class Region {
    int imageId;
    String regionsName;
    String supregionsName;

    Region(int imageId, String regionsName, String
supregionsName) {
        this.imageId = imageId;
        this.regionsName = regionsName;
        this.supregionsName = supregionsName;
    }
}

class Myadapter extends BaseAdapter {

    List<Viloyat> list;
    Context context;

    public Myadapter(Context context, List<Viloyat>
viloyats) {
        this.context = context;
        this.list = viloyats;
    }
}

```

```

    }

    @Override
    public int getCount() {
        return list.size();
    }

    @Override
    public Object getItem(int i) {
        return list.get(i);
    }

    @Override
    public long getItemId(int i) {
        return i;
    }

    @Override
    public View getView(int i, View view, ViewGroup
viewGroup) {
        View row = view;
        ViewHolder holder = null;
        if (row == null) {
            LayoutInflater inflater = (LayoutInflater)
context.getSystemService(Context.LAYOUT_INFLATER_SERVICE);
            row = inflater.inflate(R.layout.singleitem,
viewGroup, false);
            holder = new ViewHolder(row);
            row.setTag(holder);
        } else {
            holder = (ViewHolder) row.getTag();
        }
    }

```

```

        Viloyat temp = list.get(i);
        holder.region_name.setText(temp.getVilName());
        holder.supregion_name.setText(temp.getVilDesc());

holder.myregion.setImageResource(R.drawable.university);
        return row;
    }
}

private List<Viloyat> getViloyats() {
    DBHelper helper = new DBHelper(this);
    SQLiteDatabase db = helper.getReadableTwo();

    Cursor cursor = db.query("viloyat", new String[]{"id",
"vil_name", "vil_desc"}, null, null, null, null, null);

    return getListFromCursor(cursor, helper);
}

private List<Viloyat> getListFromCursor(Cursor cursor,
DBHelper helper) {
    try {
        if (!cursor.moveToFirst())
            return null;

        List<Viloyat> cached = new ArrayList<Viloyat>();
        do {
            Viloyat viloyat = getViloyat(cursor);
            if (viloyat == null) {
                continue;
            }
            cached.add(viloyat);
        }
    }
}

```

```

        }
        while (cursor.moveToNext());
        return cached;
    } finally {
        cursor.close();
        helper.close();
    }
}

private Viloyat getViloyat(Cursor cursor) {
    Viloyat viloyat = new Viloyat();

    viloyat.setId(cursor.getInt(cursor.getColumnIndex("id")));

    viloyat.setVilName(cursor.getString(cursor.getColumnIndex("vil_name")));

    viloyat.setVilDesc(cursor.getString(cursor.getColumnIndex("vil_desc")));

    return viloyat;
}
}

```

Abituriyent.java file

```

package com.example.myproject;

import android.app.ActionBar;
import android.app.Activity;
import android.app.ListActivity;
import android.content.Context;
import android.content.Intent;

```

```

import android.content.res.Resources;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.*;
import com.example.myproject.domain.Viloyat;

import java.util.List;

/**
 * Created by Mukhriddin on 4/10/15.
 */
public class Abituriyent extends Activity implements
AdapterView.OnItemClickListener{

    ListView listView;

    String[] abtitles;
    int[] images =
{R.drawable.eslatma,R.drawable.titul,R.drawable.list_darsliklar,
R.drawable.test_top,

R.drawable.vazifalari,R.drawable.elektron_ariza,R.drawable.test_
otkazish,R.drawable.otish_bali,

R.drawable.talim_yonalish,R.drawable.talim_muas,R.drawable.onlin
e_test,R.drawable.oliy_talim,

R.drawable.kasbiy,R.drawable.oqitish_tojik,R.drawable.foydali_ma
nba, };

```

```

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.abiturient);

    listView = (ListView) findViewById(R.id.lvabiturient);

    Resources res = getResources();
    abtitles = res.getStringArray(R.array.abutitles);
    listView = (ListView) findViewById(R.id.lvabiturient);
    Myadapter adapter = new Myadapter(this,
abtitles, images);
    listView.setAdapter(adapter);

    listView.setOnItemClickListener(this);
}
////////////////////////////////////
class Myadapter extends ArrayAdapter<String> {

    Context context;
    int[] images;
    String[] titlesArray;

    Myadapter(Context c, String[] titles, int imgs[]) {
        super(c, R.layout.ab_single_item, R.id.tvabiturent,
titles);
        this.context=c;
        this.images = imgs;
        this.titlesArray= titles;

    }
}

```

```

@Override
public View getView(int position, View convertView,
ViewGroup parent) {

    LayoutInflater inflater = (LayoutInflater)
context.getSystemService(Context.LAYOUT_INFLATER_SERVICE);
    View row = inflater.inflate(R.layout.ab_single_item,
parent, false);

    ImageView myimage = (ImageView)
row.findViewById(R.id.ivabiturent);
    TextView mytitle = (TextView)
row.findViewById(R.id.tvabiturent);

    myimage.setImageResource(images[position]);
    mytitle.setText(titlesArray[position]);

    return row;
}
}
////////////////////////////////////
///

```

```

@Override
public void onItemClick(AdapterView<?> adapterView, View
view, int position, long l) {
    String malumotlar = abtitles[position];
    if (malumotlar != abtitles[14]) {
        try {

```



```
android:layout_height="match_parent"  
android:background="#0bb5b1">
```

```
<LinearLayout android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:background="@drawable/round_un"  
    android:orientation="vertical"  
    android:layout_marginLeft="15dp"  
    android:layout_marginTop="15dp"  
    android:layout_marginRight="15dp">
```

```
<TextView android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:text="Umumiy ma'lumotlar"  
    android:textColor="#010101"  
    android:gravity="center_horizontal"  
    android:textStyle="bold"
```

```
android:paddingLeft="5dp" android:paddingTop="3dp"  
android:paddingRight="3dp"  
    android:paddingBottom="3dp"/>
```

```
</LinearLayout>
```

```
<LinearLayout android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:background="@drawable/round_un"  
    android:orientation="vertical"  
    android:layout_marginLeft="15dp"  
    android:layout_marginRight="15dp"  
    android:layout_marginTop="10dp">
```

```
<LinearLayout android:layout_width="match_parent"
```

```

        android:orientation="horizontal"
        android:layout_margin="5dp"
        android:layout_height="wrap_content">
<TextView android:layout_width="wrap_content"
        android:text="Muassasa nomi: "
        android:layout_height="wrap_content"
        android:textColor="#010101"
        android:textStyle="bold"
    />
<TextView android:layout_width="wrap_content"
        android:textColor="#010101"
        android:id="@+id/un_name"
        android:layout_height="wrap_content"
    />
</LinearLayout>
<LinearLayout android:layout_width="match_parent"
        android:orientation="horizontal"
        android:layout_margin="5dp"
        android:layout_height="wrap_content">
<TextView android:layout_width="wrap_content"
        android:text="Qisqartma: "
        android:textColor="#010101"
        android:textStyle="bold"
        android:layout_height="wrap_content"/>
<TextView android:layout_width="wrap_content"
        android:id="@+id/un_short_name"
        android:textColor="#010101"
        android:layout_height="wrap_content"/>
</LinearLayout>

```