A PROJECT REPORT ON

Air India Android App and Sentiment Analysis Using R Language

Submitted in partial fulfilment for Degree of

BACHELOR OF TECHNOLOGY

Computer Engineering

By

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Under the guidance of

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(Asst. General Manager-Systems, Air India Limited)

Submitted to

Mukesh Patel School of Technology Management and Engineering, Mumbai

ACKNOWLEDGEMENT

We, **Anisha Jain**, **Debolina De**, **Harshita Goel, Sireesha Basamsetty**, take this opportunity to express our profound gratitude and deep regards to our guide **Mr. R. Prasad** (Asst. General Manager-Systems, Air India Limited) for his exemplary guidance, constant encouragement and advice throughout the course of this project.

We are also obliged to the staff members of DIT, Air India for the valuable information provided by them. We are grateful for their cooperation during the period of our assignment.

Lastly, we thank the Almighty and our parents for their constant encouragement without which this assignment would not be possible.

INDEX

ANDROID APP – I

1. ABSTRACT

Air India is the flag carrier airline of India owned by Air India Limited (AIL), a Government of India enterprise. The airline operates a fleet of Airbus and Boeing aircraft serving various domestic and international airports.

The application contains three main components – the contact details – address, phone numbers, FAX, email IDs and location of all stations of Air India all over the world; a cargo tracking interface; and the list of all fights and their schedule. Though this information is available online on www.airindia.com, this application once installed on the device will provide the user with all the contact information and schedule without needing to go online.

Functionalities (Contacts):

- Provide common contact information to the user for India
- Provide a dropdown list of different countries in which Air India is operating from which the user can choose his country
- On selecting the country, the user will now be provided with another dropdown list of different regions in that country from which he can choose
- Store and maintain information of all the contact details of operating stations of Air India
- Maintain the information about the location of each station on Google Map
- Update information on a regular basis
- The following information will be displayed to the user on selection:
  Address, Telephone Number, FAX and E-Mail Address of the City Office. This information will be available for Domestic Airport, International Airport and Cargo as well

Functionalities (Cargo Tracling):

- Provide tracking information regarding shipments sent partially or fully through Air India
- Display appropriate error message in Case of incorrect Airline Number and/or Airway Bill Number
- Display appropriate error message in case the connection times out

Functionalities (Flight Schedule):

- Provide all flight details to the user anywhere in the world
- Provide a dropdown list where the user can search by aircraft, source, destination, or flight number
- On selecting the option from the dropdown, the user will now be to see details of flights corresponding to his selection

2. INTRODUCTION

Company Profile:

Air India Pvt. Ltd.:

Air India Limited is a company that was formed as National Aviation Company of India Limited by the Government of India to oversee the merger of Air India. Air India is India's national flag carrier. The urge to excel and the enthusiasm, which characterised Air India's first flight, way back on October 15 1932, is quintessential even today – thanks to Air Indians who have kept alive the tradition of flying high.

Air India is India's finest flying Ambassador. The merger of Air India and Indian, the countries leader in the domestic sector, has helped the airline to emerge as a major force in the airline industry. The rebranding exercise is currently underway and passengers are getting to see the unified face of the new invigorated Air India.

The merged entity, which presently has a fleet of 124 aircrafts, offers passengers seamless travel across domestic and international routes.

Services:

- Hotel Corporation Of India Limited
- Air India Air Transport Services Limited
- Air India Engineering Services Limited
- Air India Charters Limited
- IAL Airport Services Limited
- Airline Allied Services Limited

Project Introduction:

The project 'Air India Mobile App' has been developed keeping in mind the need for contact information of any Air India office, flight schedules and quick tracking of cargo by any customer at any time. Though this information is available online on the Air India website – www.airindia.com, this project maintains an offline database of all these contacts and the flight schedules in one compact application. These details shall be available to the customer even offline. The application contains all the details about the addresses, phone number, FAX, e-mail IDs, and map location of each office of Air India all over the world. Information regarding address, phone number, FAX and e-mail IDs shall be available to the customer offline but to access the map location, the customer will need to have internet access on his device. Similarly for the cargo tracking also the user needs to have internet access but flight schedule is available offline

Overall Description:

Different Modules in the system:

- Splash Screen module
- Home Page module
- Contacts module
- Station module
- View Map module
- Cargo tracking module
- The result page module
- The flight schedule module

Description of each module:

1. Splash Screen module

This module contains the splash screen. This is the screen that will be loaded when the application starts. This screen will be displayed for a duration of 5 seconds.

2. Home Page module

This module will contain the links of all the three services mentioned above. This automatically opens after the Splash Screen

3. Contacts module

This module contains the common contact information for all regions in India. The contact information will consist of the following fields:
Online Bookings Helpdesk which consists of the landline number, FAX and E-Mail ID, Call Centre Email IDs, Toll Free for Frequent Flyer, and Email Addresses for FFP members.

4. Station module

This module contains the information relevant to a particular station. The following fields will be displayed to the user provided the information is available in the database:
Station Name, Address, Telephone Number, FAX, E-Mail for Airport, City Office and Cargo, and an option to view to location of the station on the map.

5. View Map module

This module will be provided by a link. This link will be available for each station and it will direct the user to a Google Map View of the station's location. The user can use GPS to find his location and track the nearest station possible. He can be directed from his location to the station's location using Street View.

6. The Cargo tracking module

This module contains the UI for inputting the Airline code and the Airway Bill Number as well as the submit and clear buttons. When the user enters the details and presses submit, the details are sent to the server. If there is no raised exception, then the user is redirected to the result page. If there was an exception then exception message is displayed below the shown UI.

7. The Result Page Module

This module will display the results that are received from the server for the given AWB. It converts the XML response to a format more understandable by the user.

8. The Flight Schedule module

This module contains the flight details for all flights of Air India all over the world. The flight details will consist of the following fields:

Source, Destination, Flight number, Departure time from source, Arrival time at destination, days of operation, Aircraft number. It will also contains the information relevant to a particular selection made by the user. The following fields will be displayed to the user provided the information is available in the database:

Aircraft Number, Source, Destination, Departure time, Arrival time, Flight Number, Operating days.

3. SYSTEM PLANNING AND ANALYSIS

EXISTING SYSTEM:

The effectiveness of the system depends on the way in which the data is organised. The existing system is an online web site and it can be very time consuming to access the information using the mobile network. So, the same information can be integrated into a mobile application.

The major limitations are:

- Much time consuming
- Requires internet connection for accessing any information

PROPOSED SYSTEM:

The proposed system is designed to meet all the disadvantages of the existing system. The proposed system is better and more efficient than the existing system. It is designed keeping in mind all the drawbacks of the present system to provide a permanent solution to them.

The primary aim of the new system is to speed up the process. User-friendliness is another peculiarity of the proposed system. The main advantage of the proposed system is the reduction in labour as it will be possible to search the details of various places offline. Every record in the database is checked for completeness and accuracy.

4. SOFTWARE REQUIREMENT AND SPECIFICATION

SOFTWARE REQUIREMENTS:

Operating System:	**Android (Gingerbread 2.2 to Kitkat 4.4.2)**
User Interface:	**XML**
Programming Language:	**JAVA**
IDE/Workbench:	**Eclipse 2014**
Database:	**SQLite**

HARDWARE REQUIREMENTS (minimum):

- **QVGA (240 x 320 pixels) touchscreen Virtual keyboard support**
- **Must have a USB connection that connects to a standard USB-A port**
- **92MB RAM**
- **150MB user storage**
- **2-megapixel camera**
- **Home, Menu, and Back functions available at all times**
- **Wireless high-speed data standard capable of supporting 200Kbps; like EDGE, EV-DO, HSPA, 802.11g (Android 1.6 requires Wi-Fi)**
- **Accelerometer**
- **Compass**
- **GPS receiver**
- **Bluetooth transceiver**

5. ESTIMATION PLANNING

Feasibility Study:

A feasibility study is an evaluation and analysis of the potential of the proposed project which is based on extensive investigation and research to give full comfort to the decision makers. Feasibility studies aim to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats as presented by the environment, the resources required to carry through and ultimately the prospects for success.

In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained. As such, a well-designed feasibility study should provide a historical background of the business or project, description of the product or the service, accounting statements, details of the operations and management, marketing research and policies, financial data and legal requirements. Generally, feasibility studies precede technical development and project implementation.

5.1 Feasibility Analysis:

Feasibility analysis is important to determine whether project is feasible or not in terms of cost, resource, technology, schedule, organization for a mobile application.

There can be following types of feasibility:

5.1.1 Economic Feasibility:

This type of feasibility includes development cost and operational cost.

5.1.1.1 Development Cost:

This cost includes salaries of four developers and one guide. There were costs of software installation by DIT Department.

5.1.1.2 Operational Cost:

For this project there is least operational cost.

5.1.2 Technological Feasibility:

This project is technologically feasible because it needed technologies like JAVA for mobile application development and SQLite database browser.

5.1.3 Organisational Feasibility:

This project is feasible considering organisational issues because there is no loss of employment or any political issues. This project makes it easier to access all the contact details.

5.1.4 Schedule Feasibility:

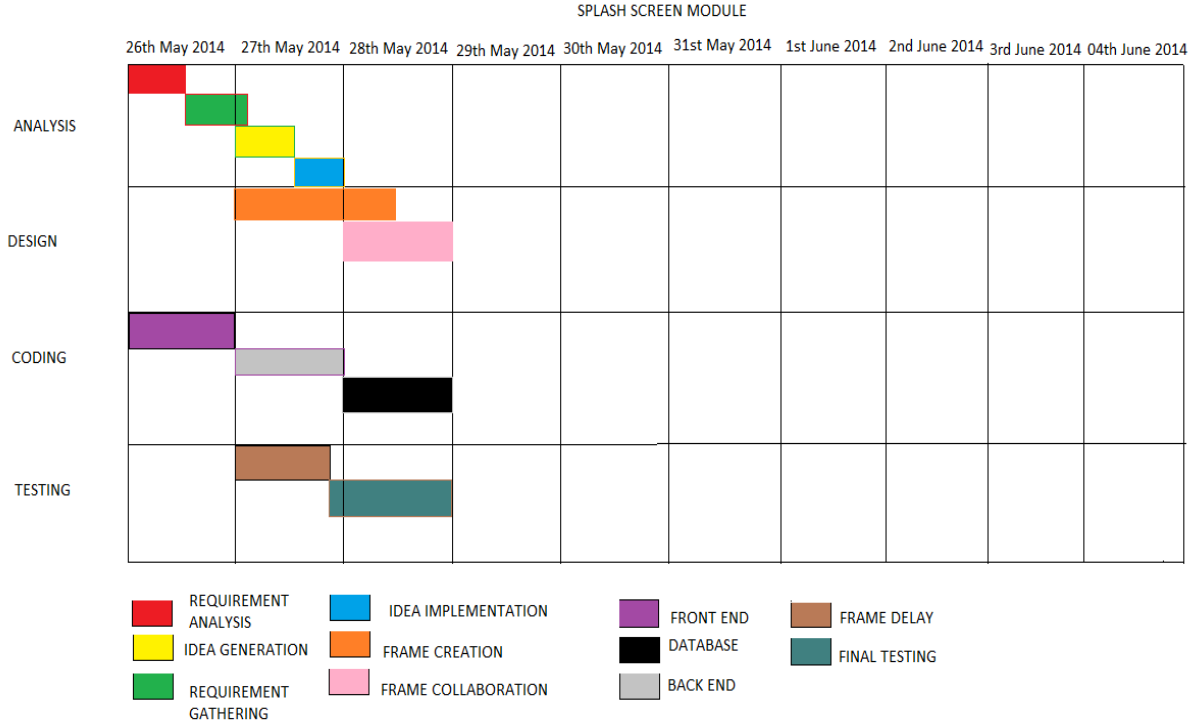
Schedule feasibility includes whether the project will be completed within the given time period or not. For this project we have 2 weeks duration. It is considered that 80% of the project will be completed within 1 week.

5.1.5 Resource Feasibility:

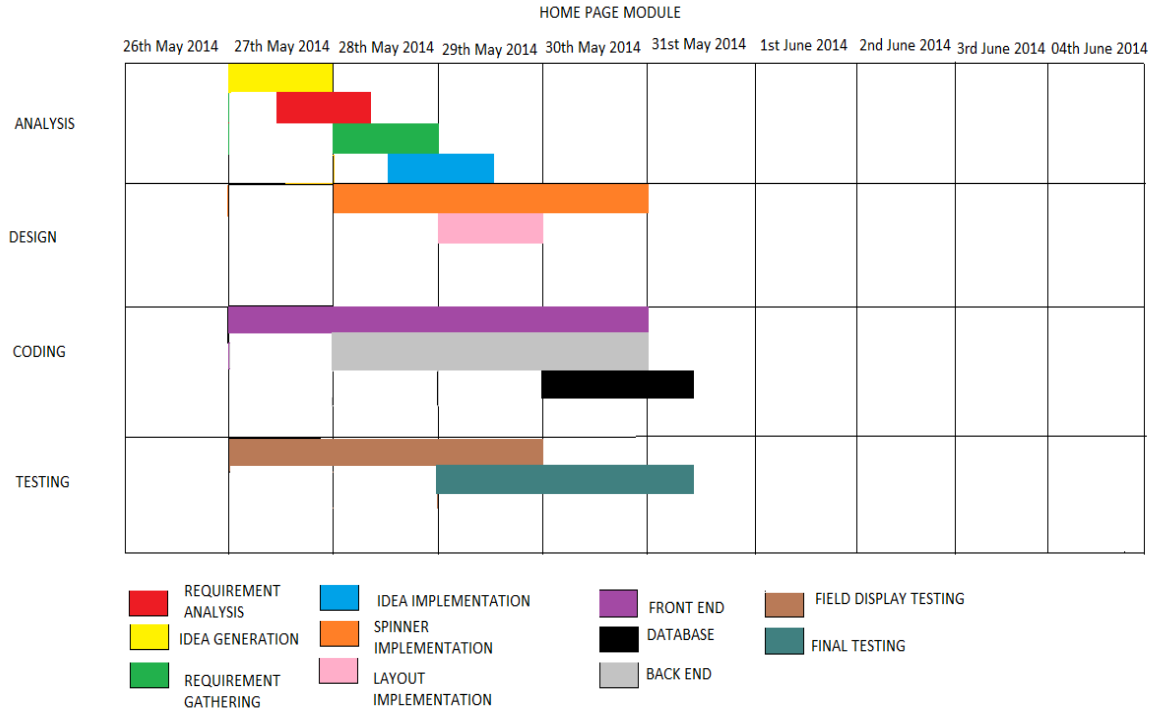
This project is feasible in terms of resources. Four developers and one guide are sufficient considering the scope of this project.

GANTT CHART:

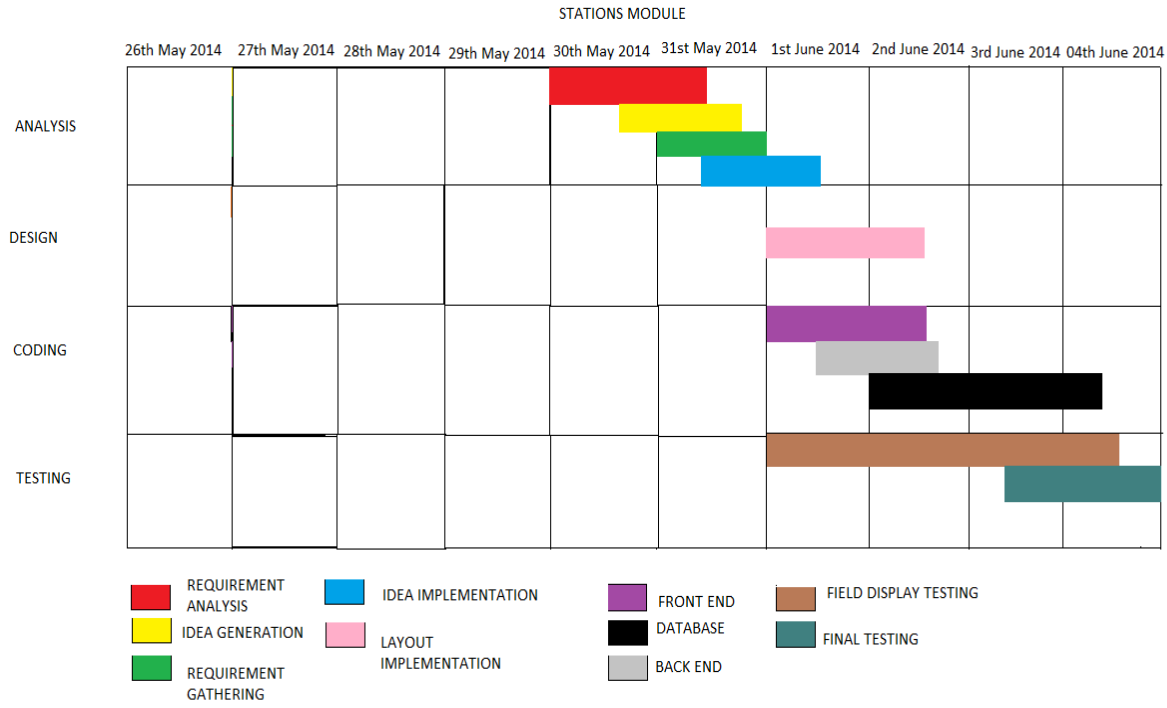
1) SPLASH SCREEN:



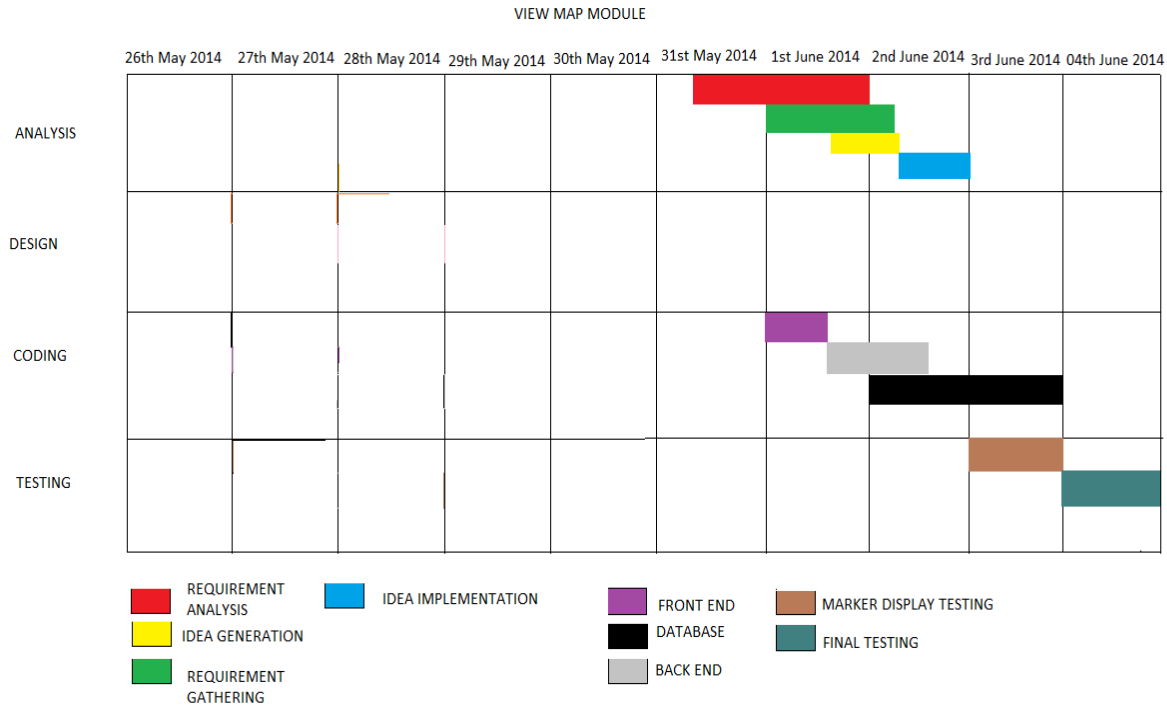
2) CONTACTS PAGE:



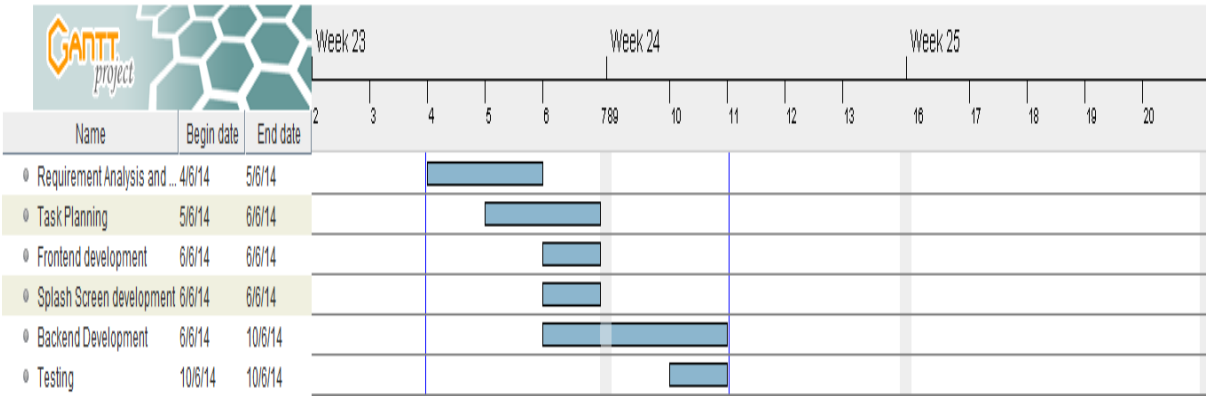
3) STATIONS PAGE:



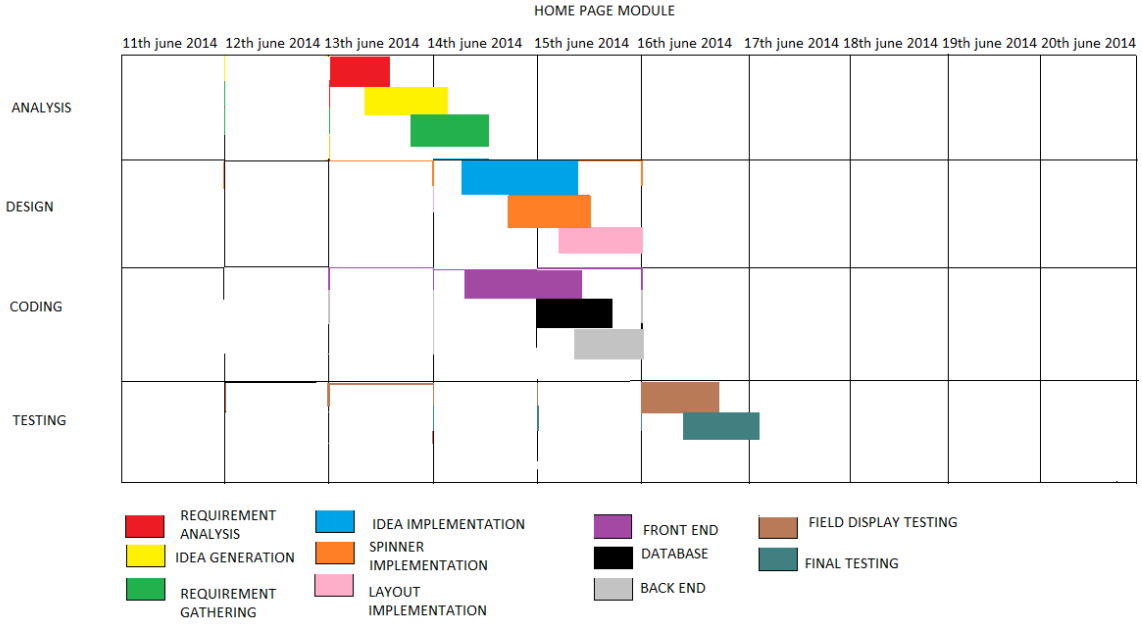
4) VIEW MAP:



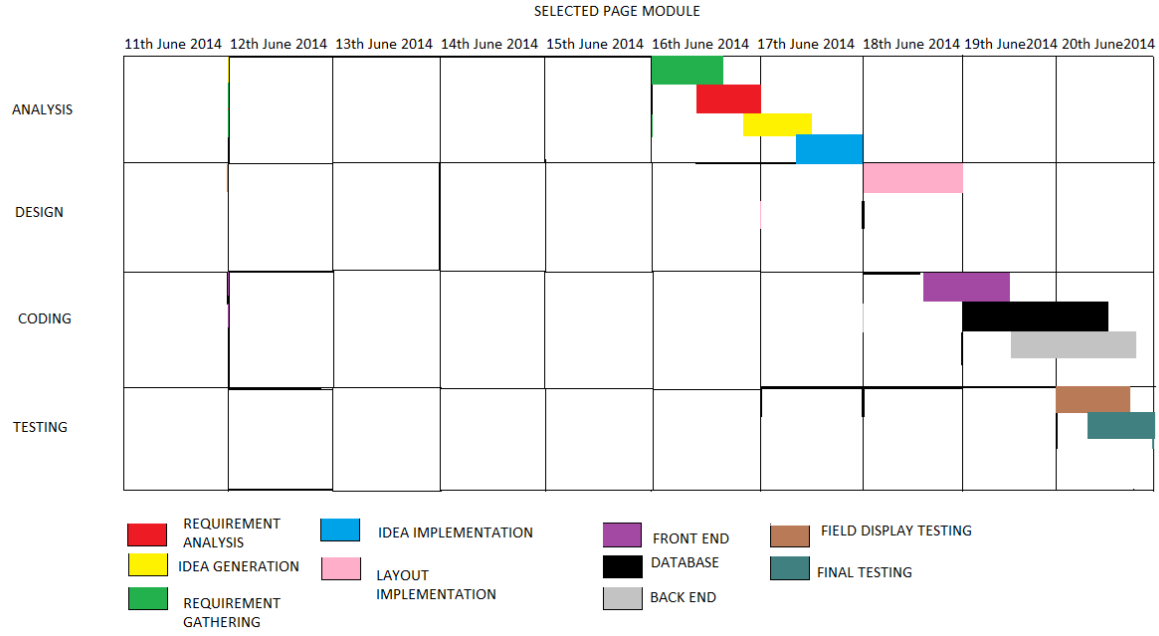
5) Cargo Tracking



6) Flight Schedule Front End



7) Flight Schedule Search

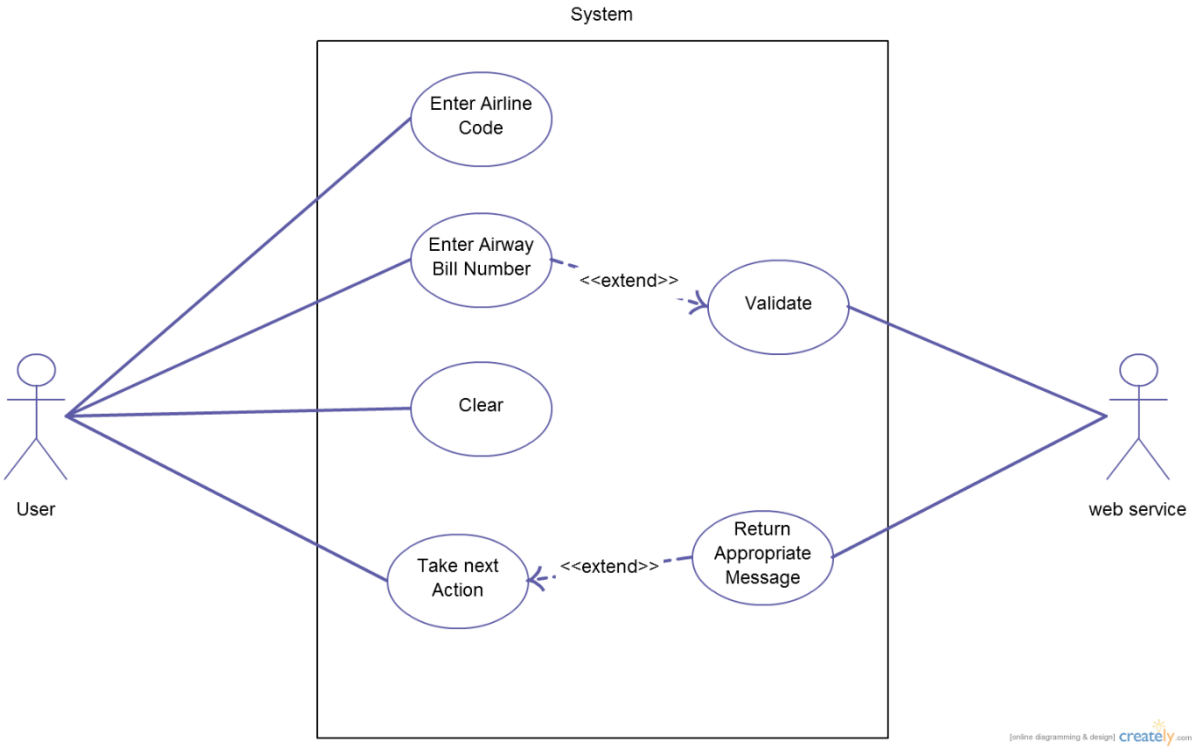


6. SYSTEM DESIGN

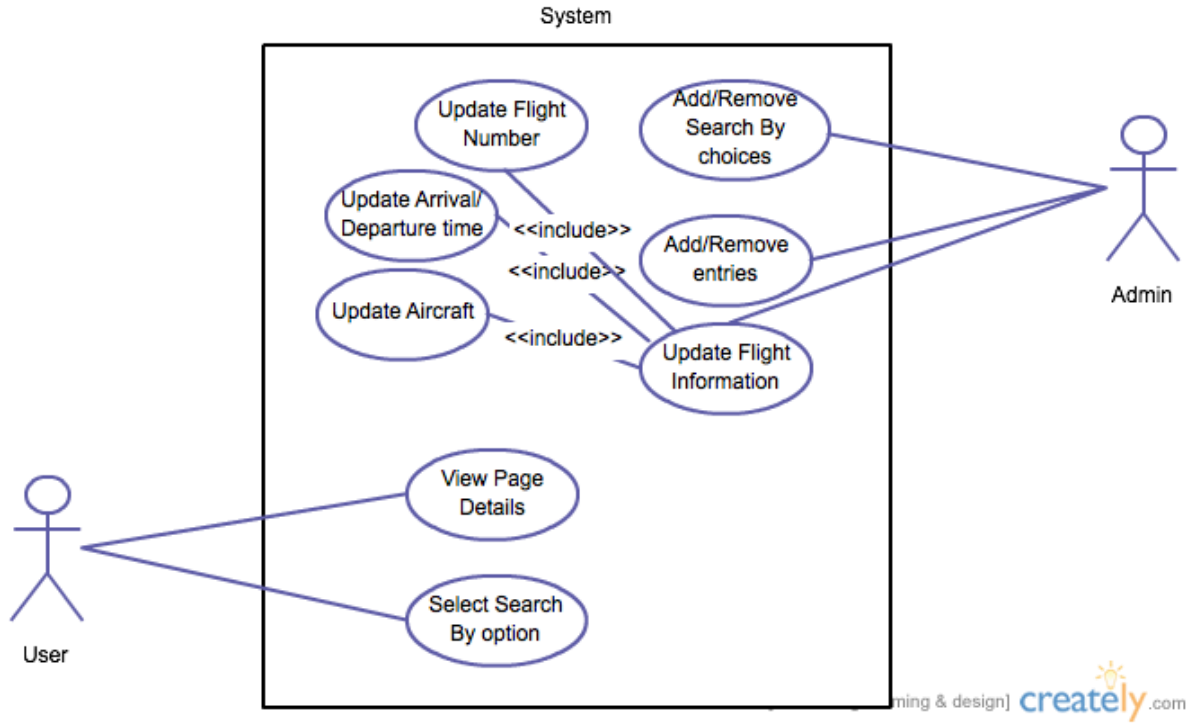
1) USE CASE DIAGRAM

a. Contacts Page

b. Cargo

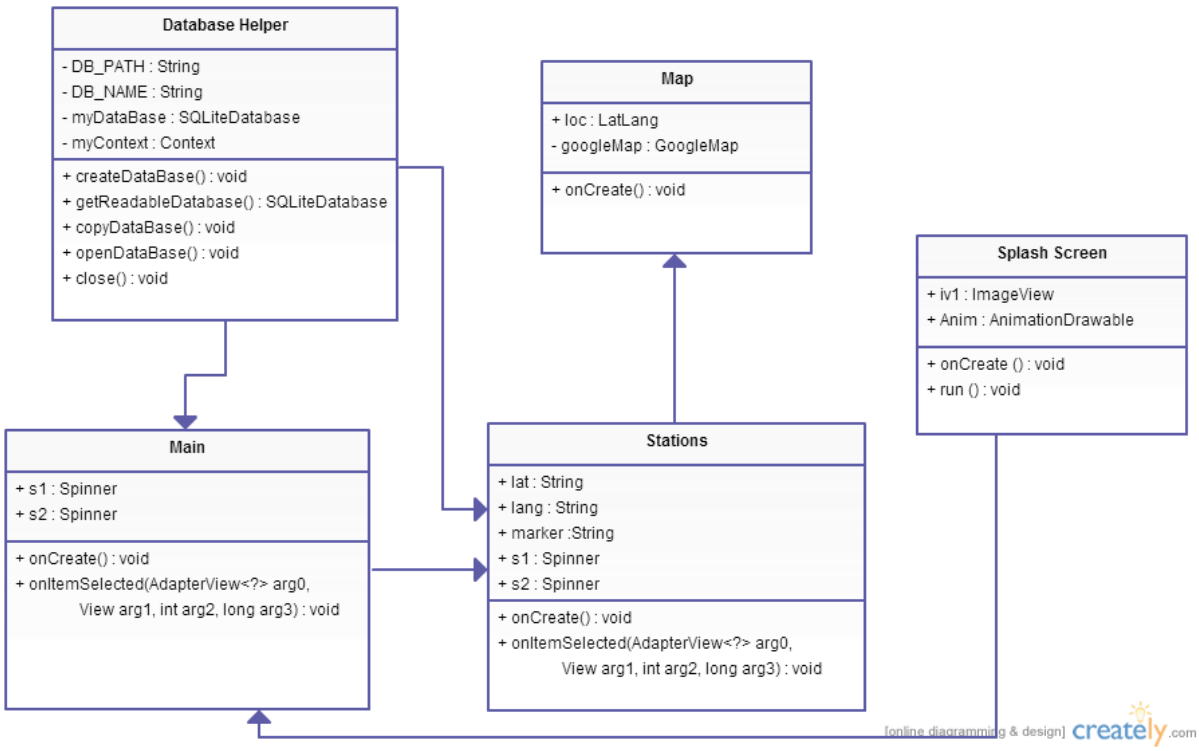


c. Schedule

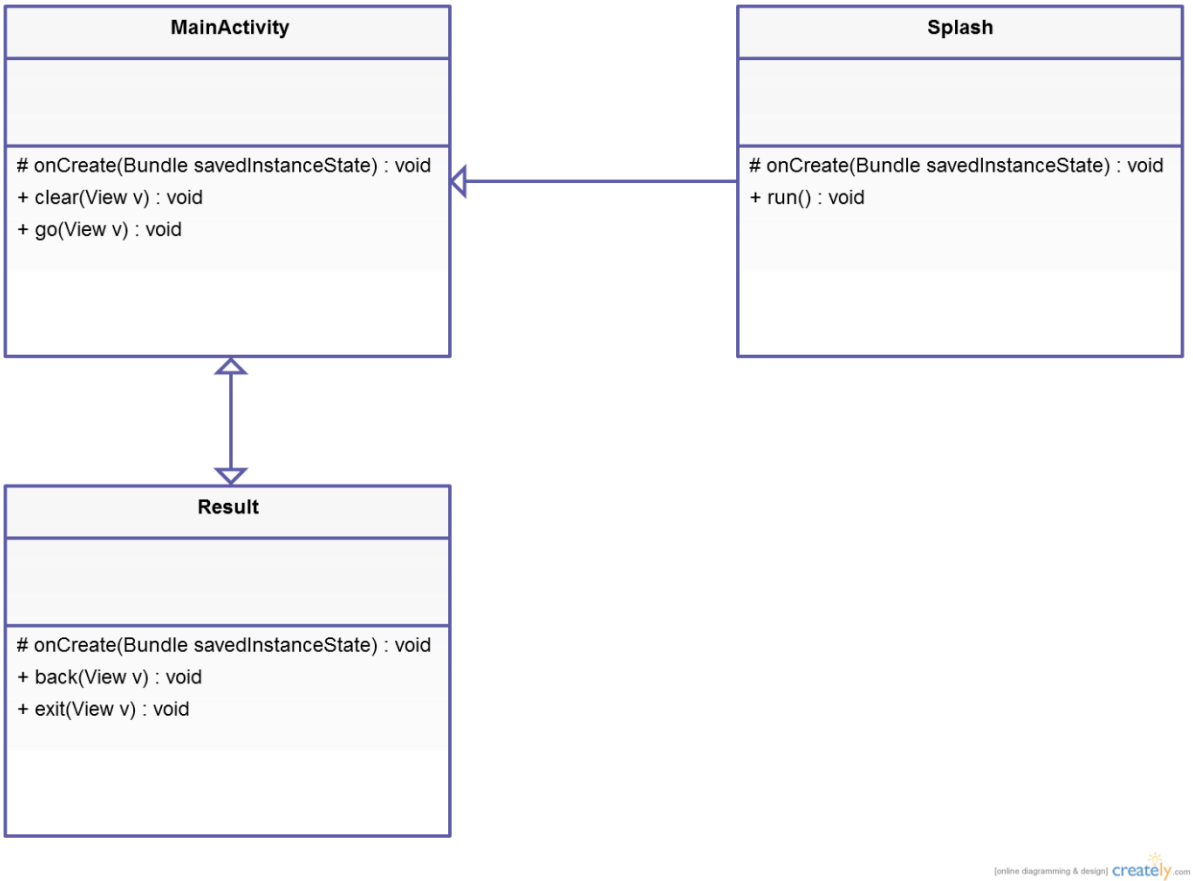


2) CLASS DIAGRAM

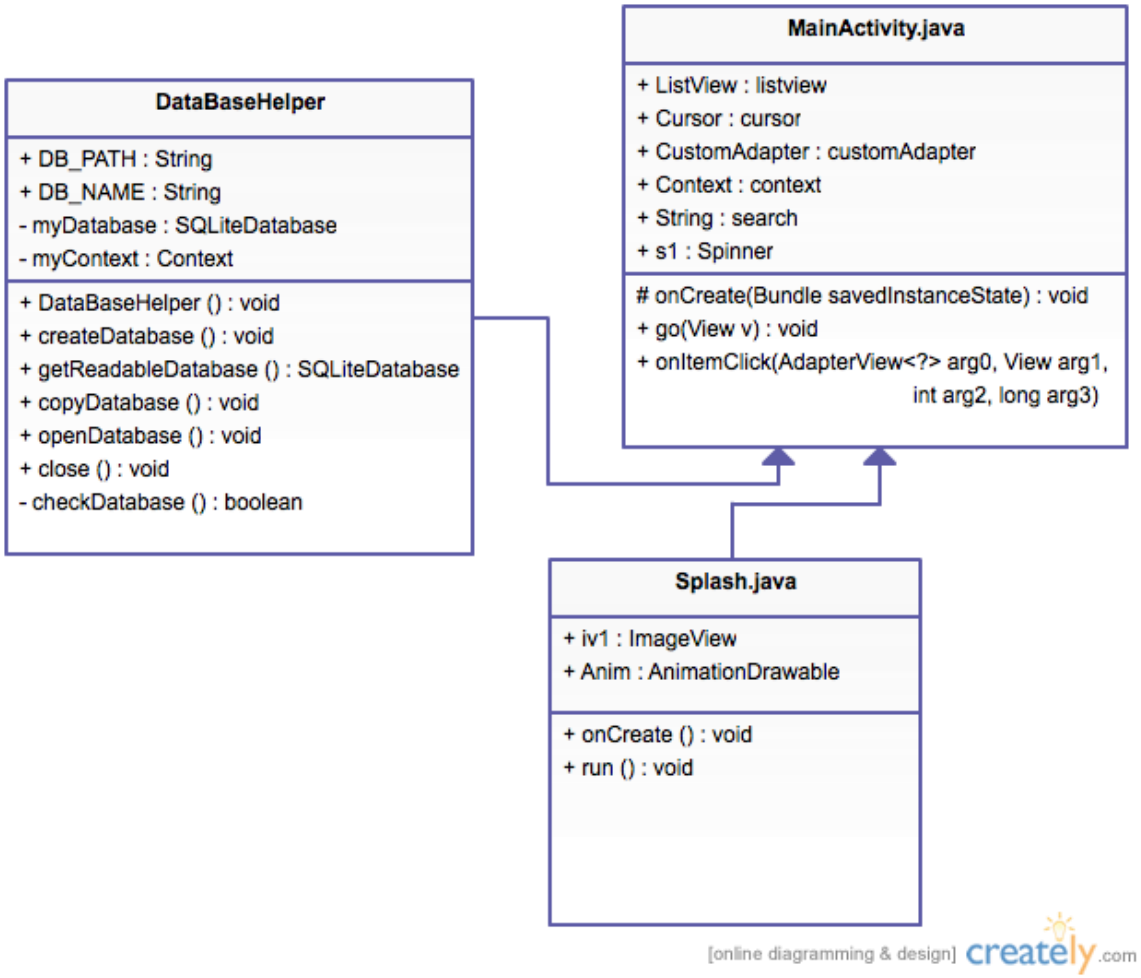
a. Contacts



b. Cargo



c. Schedule


DataBaseHelper
+ DB_PATH : String
+ DB_NAME : String
- myDatabase : SQLiteDatabase
- myContext : Context
+ DataBaseHelper () : void
+ createDatabase () : void
+ getReadableDatabase () : SQLiteDatabase
+ copyDatabase () : void
+ openDatabase () : void
+ close () : void
- checkDatabase () : boolean
MainActivity.java
+ ListView : listview
+ Cursor : cursor
+ CustomAdapter : customAdapter
+ Context : context
+ String : search
+ s1 : Spinner
# onCreate(Bundle savedInstanceState) : void
+ go(View v) : void
+ onItemClick(AdapterView<?> arg0, View arg1, int arg2, long arg3)
Splash.java
+ iv1 : ImageView
+ Anim : AnimationDrawable
+ onCreate () : void
+ run () : void
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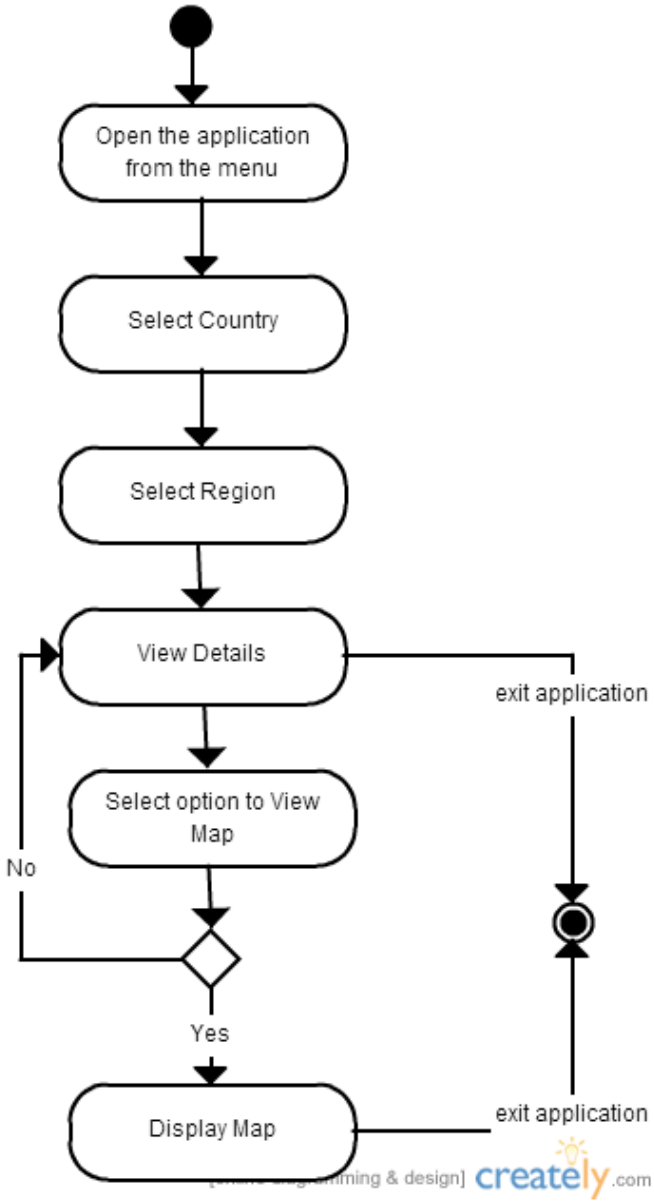
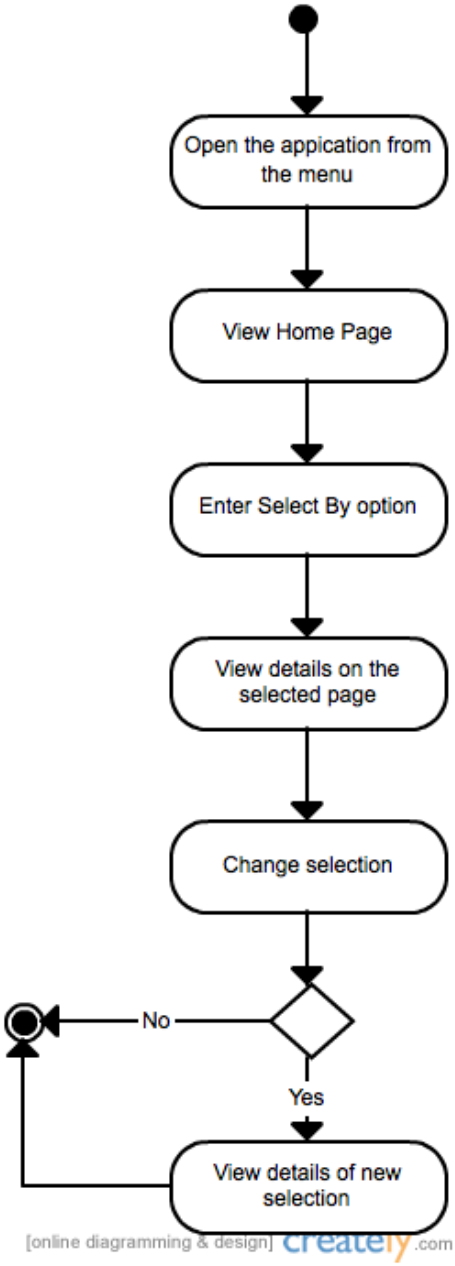
3) ACTIVITY DIAGRAM

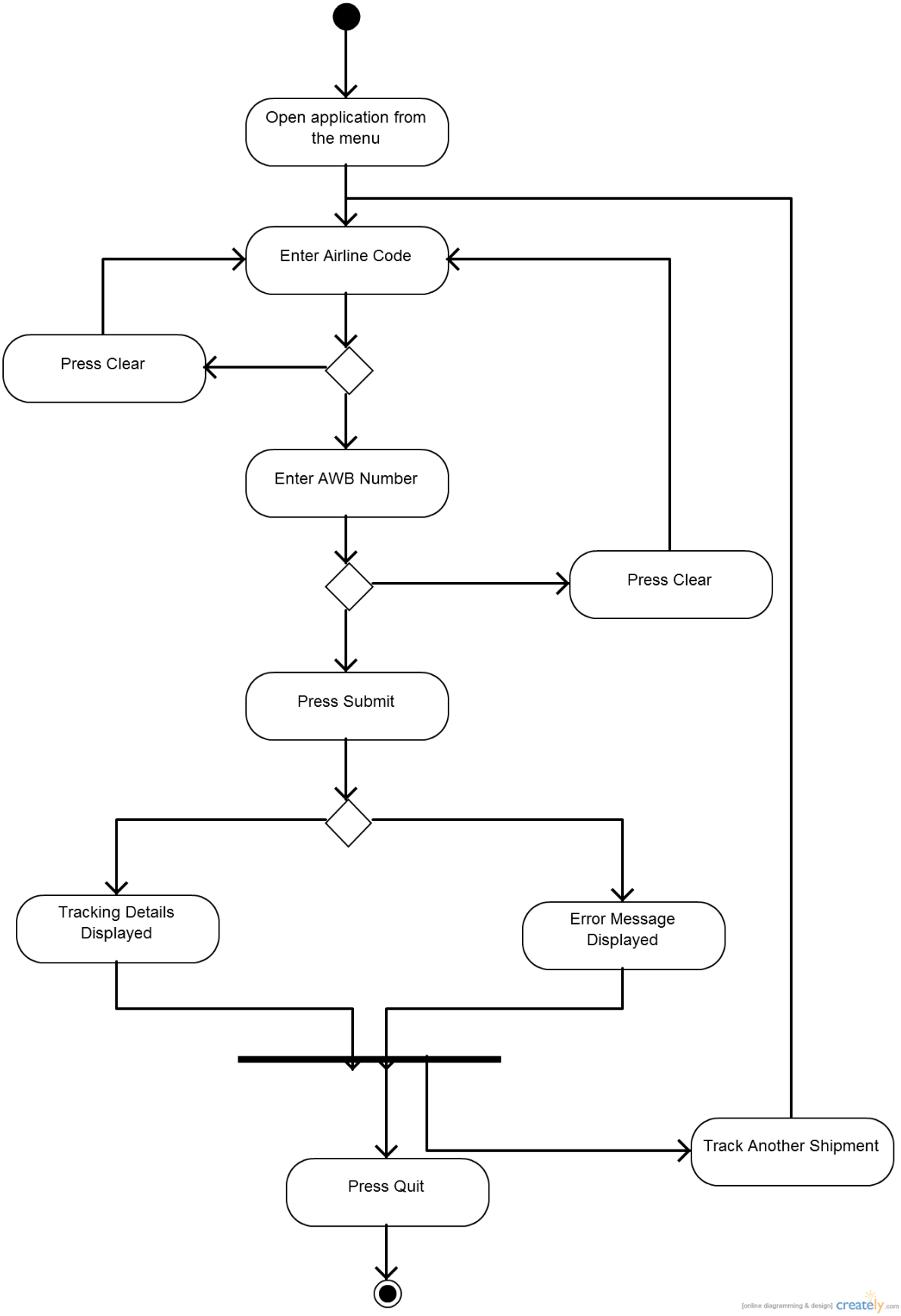
a. Contacts



c. Flight Schedule



b. Cargo


Open application from the menu
Enter Airline Code
Press Clear
Enter AWB Number
Press Clear
Press Submit
Tracking Details Displayed
Error Message Displayed
Track Another Shipment
Press Quit
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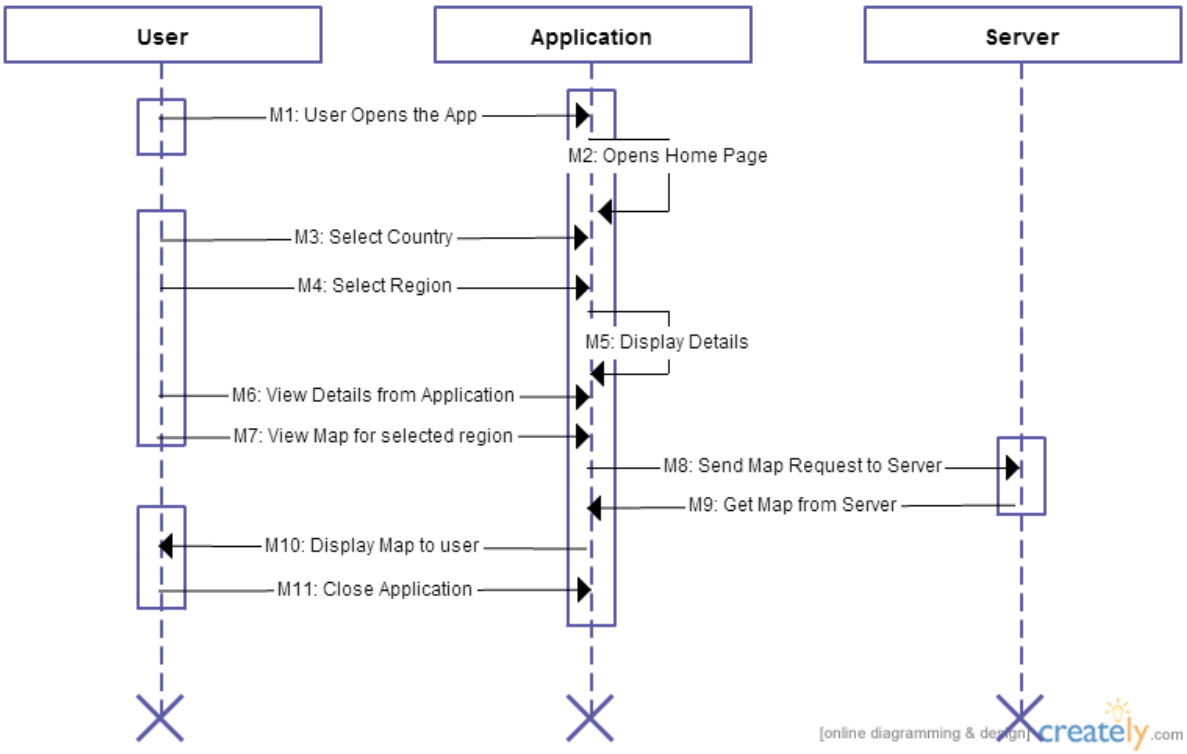
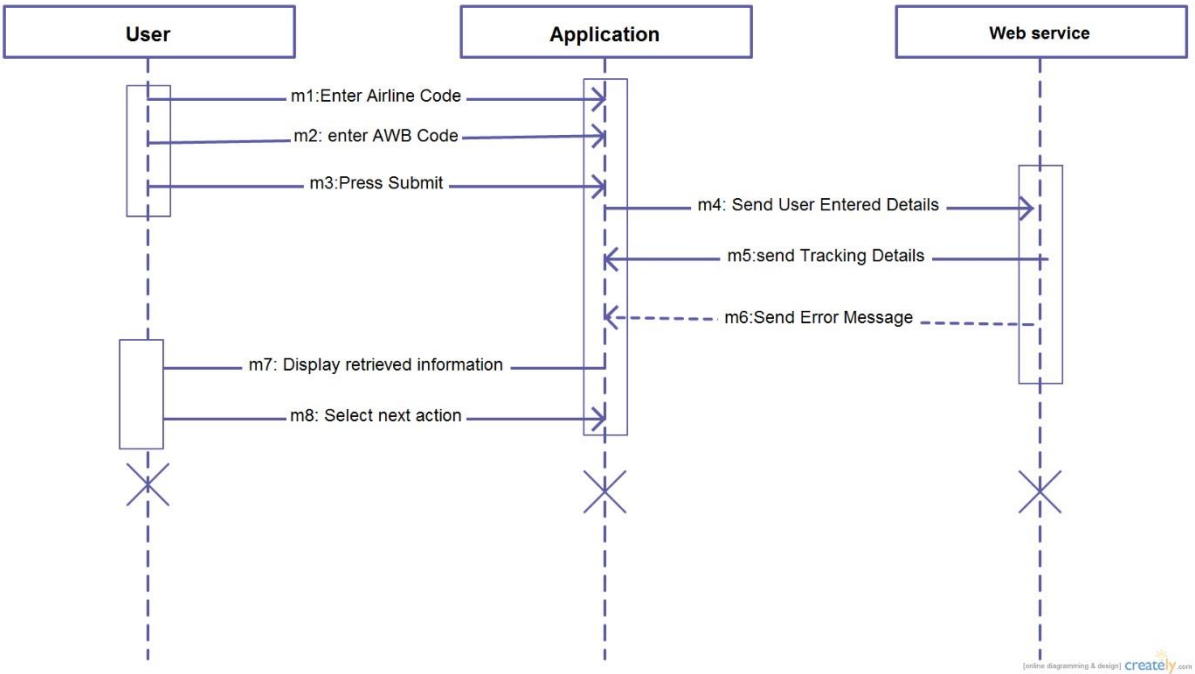
4) SEQUENCE DIAGRAM

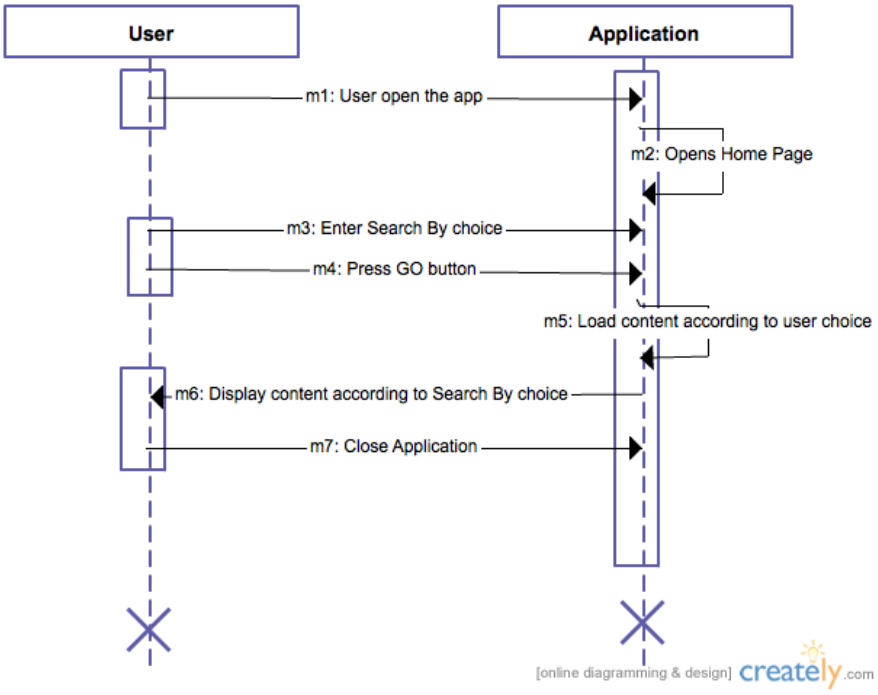
a. Contacts



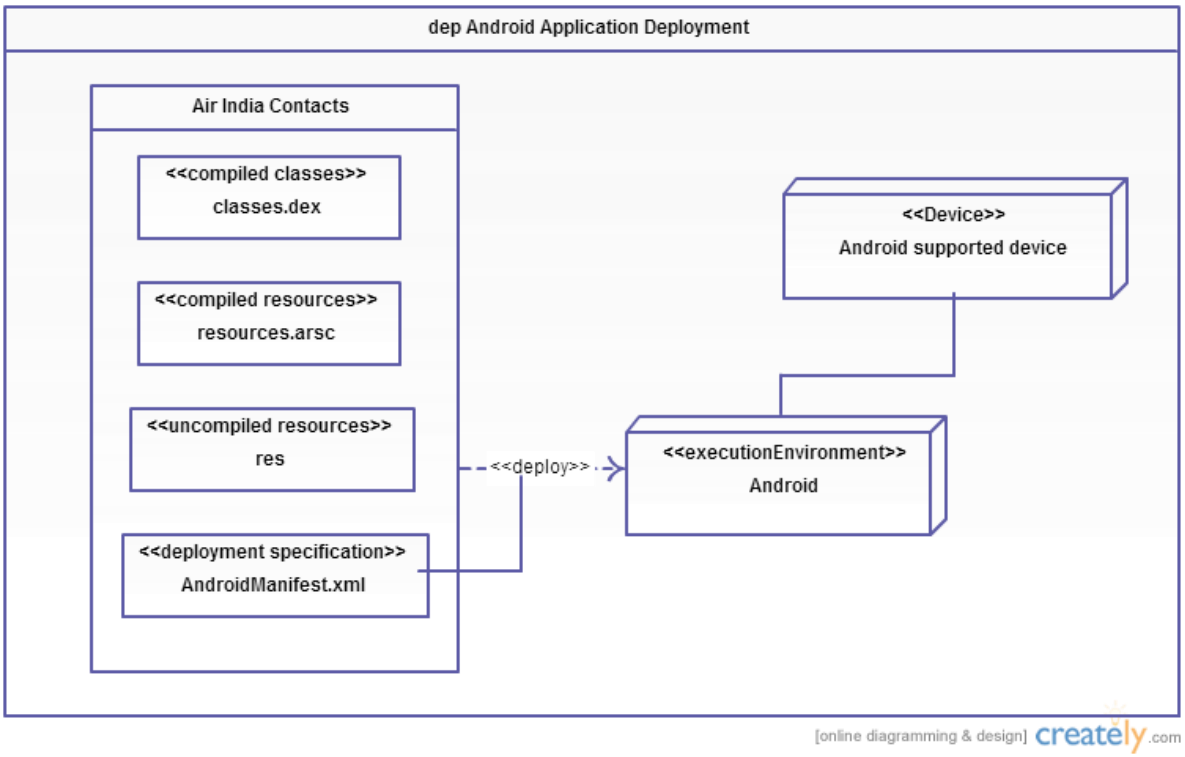
b. Cargo



c. Schedule



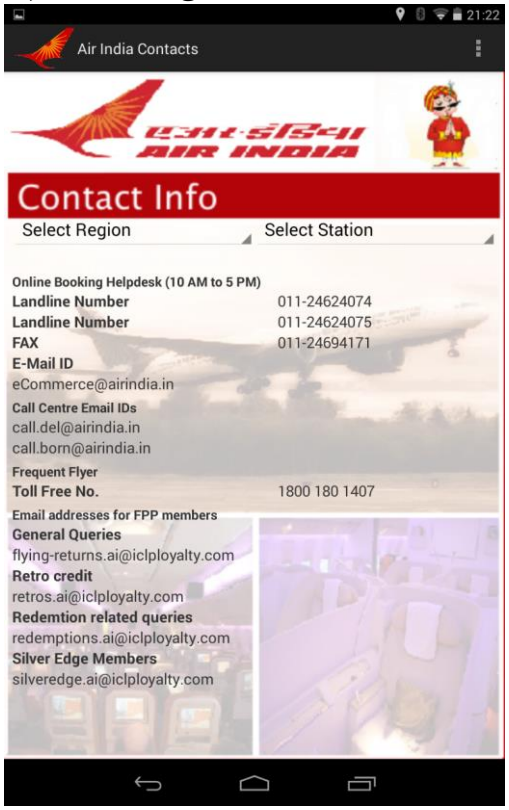
5) DEPLOYMENT DIAGRAM



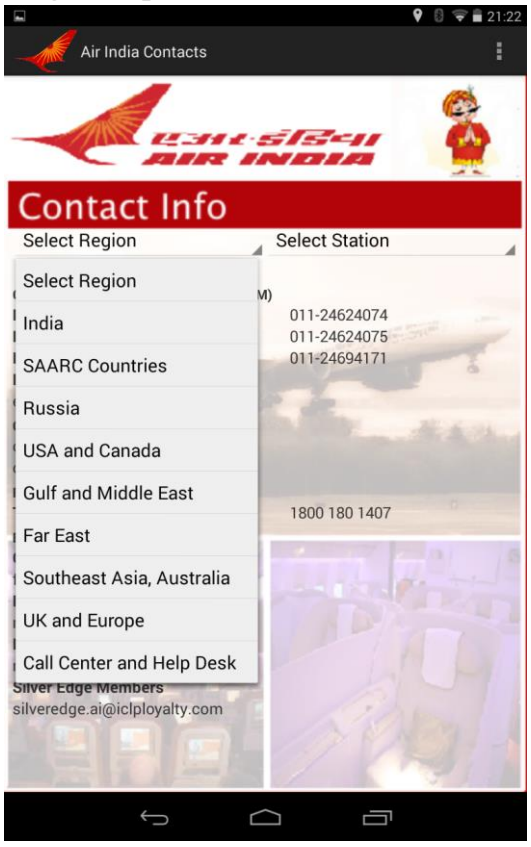
7. SCREENSHOTS

1) Splash Screen

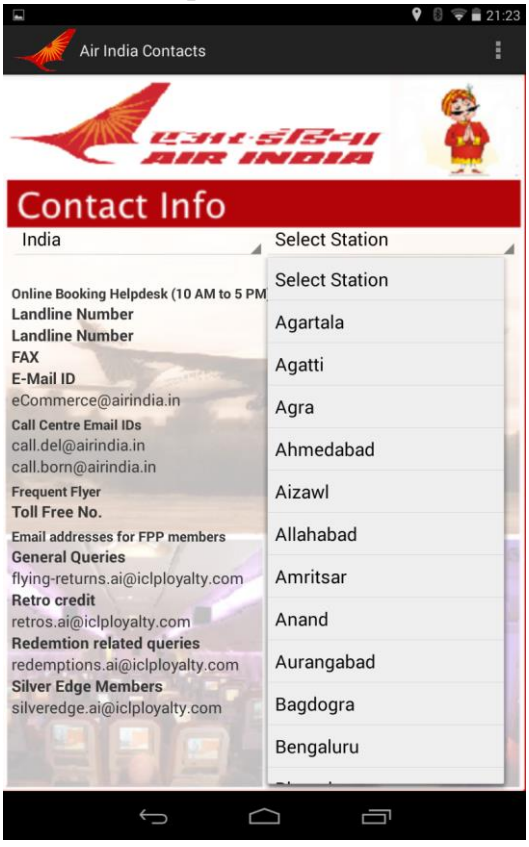
2)Home Page



3) Region Spinner



4) Station Spinner



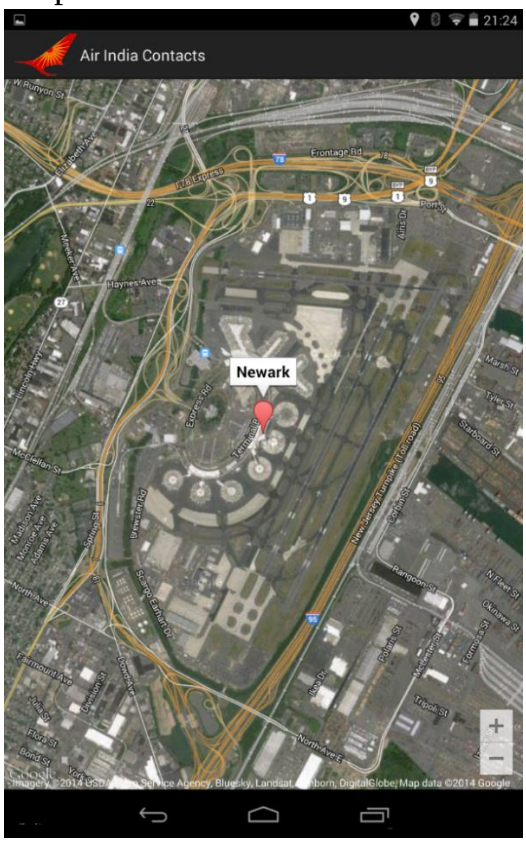
5) Selected Region India, Selected Station Chennai

6) Selected Region SAARC Countries, Selected Station Kathmandu

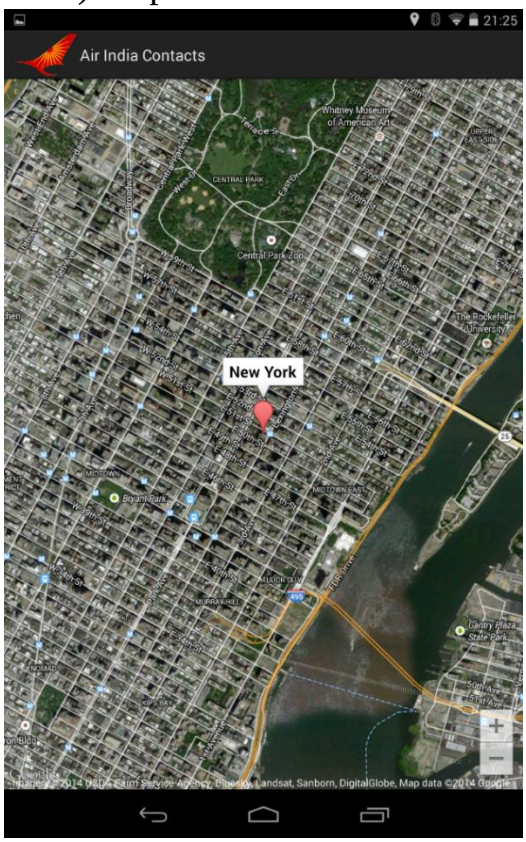
7) Selected Region Russia, Selected Station Moscow

8) Spinner for USA and Canada

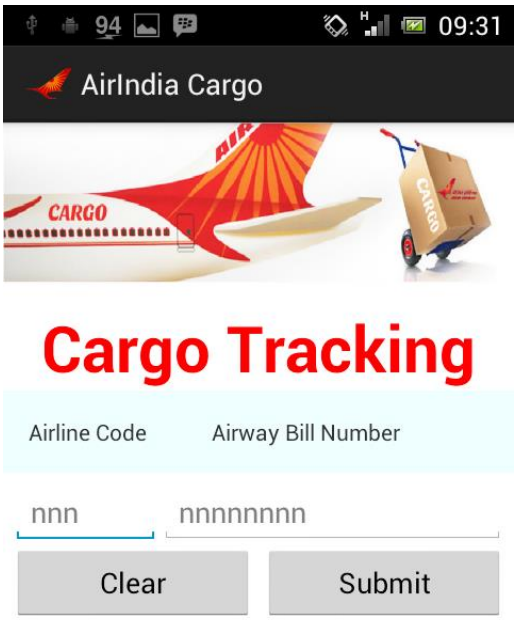
9) Map for Newark



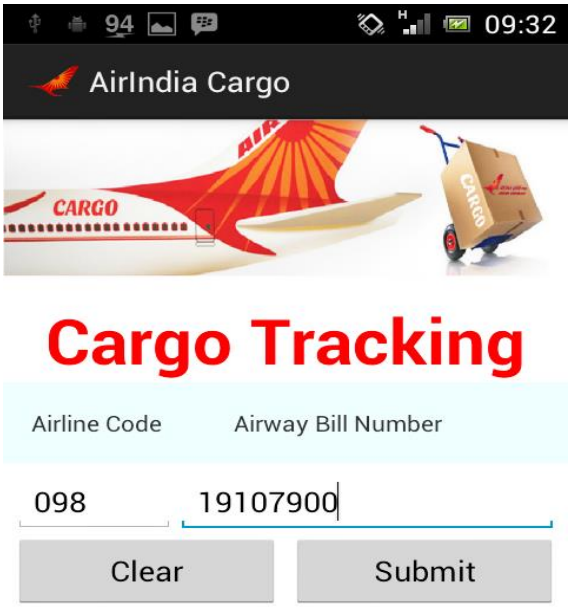
10) Map of New York



11) Cargo

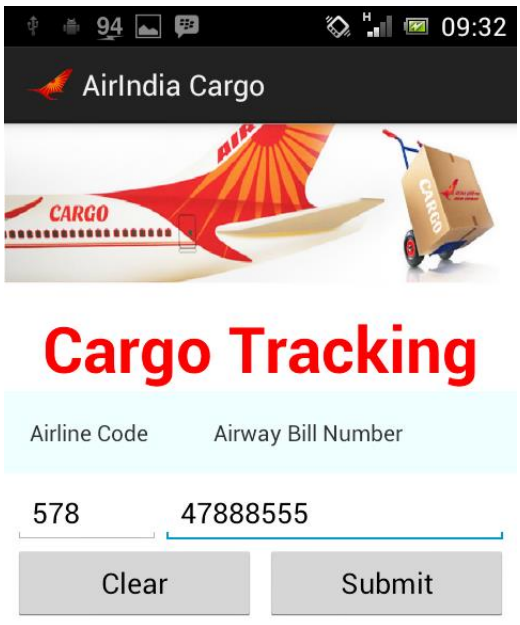


12) Correct Input

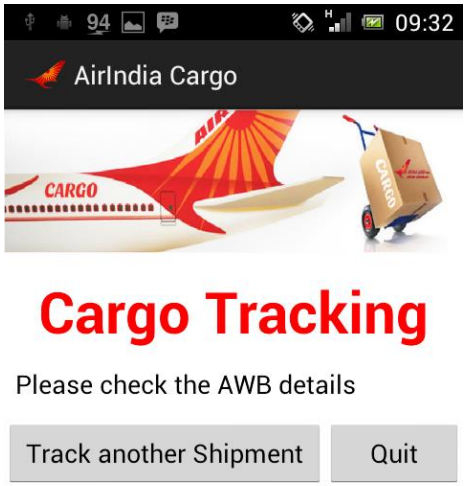


13)Its Output

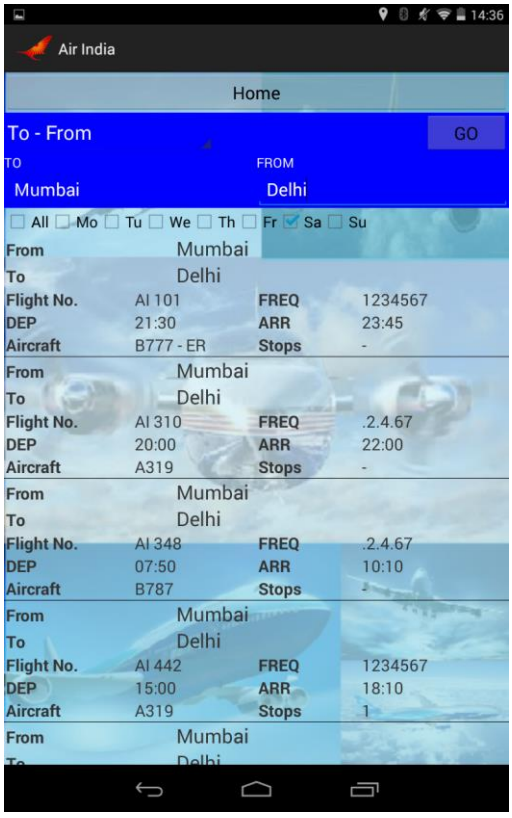
14) Incorrect Input



15)It’s Output



16)Schedule page



17)Selection spinner

18)

8. TESTING DETAILS

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under testing. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and to understand the risk of software implementation. Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs (errors and other defects).

Software testing can be stated as the process of validating and verifying that a computer program or an application or a product:

- Meets the requirements that guided its design and development,
- Works as expected,
- Can be implemented with the same characteristics,
- And satisfies the needs of the stakeholders

8.1 Testing the Software includes:

- Verify that it behaves "as specified"
- Detects errors
- Validate whether the outputs are as expected
  (Validation is: *are we building the right product?)*
- Verification is the checking or testing of items, including software, for conformation and consistency by evaluating the results against pre-specified requirements.
  (Verification is: *are we building the product right?)*
- Error detection: Testing should internally attempt to make the software take extreme values, so that we can find out the boundary values. This way we can find the error in our system. Validation looks at the system corrections, i.e. the process of checking that what has been specified is what the user wanted.

8.2 Testing is done in three stages:

UNIT TESTING:

In this step, each module of this system is tested individually. The GUI testing includes the verification and validation of menus, buttons, validation conditions and navigation conditions etc. In unit testing, abnormally work is done on purpose to ensure that the system rejects such an invalid selection. Checking in this fashion is carried for each module of this system to confirm that each module is working properly and is error free.

INTEGRATION TESTING:

Although each module is verified individually during unit testing, it is important to determine if the module is working properly when linked together. This referred to as integration testing.

In this step, the output is compared with the manually calculated output. This comparison gives the result of system testing. This finally ensures that the system is working properly.

SYSTEM TESTING:

System testing is the testing of the complete system prior to the delivery. The purpose of system testing is to identify defects that will only survive when a complete system is assembled, i.e. defects that cannot be attributed to individual components or the interaction between two components. System testing includes testing of performance, security and configuration, sensitivity, start up and thus the accuracy and reliability of the system is tested.

TEST CASES:

Test Case 1: Populating Second spinner

Sr. No.	Test Case ID	Steps of test	Expected Result	Actual Result	Remark
1.	TC01_01	1. Select India from first spinner	All stations for India must be populated in the second spinner	Populated all stations for India	Success
2.	TC01_02	1. Select SAARC Countries from first spinner	All stations for SAARC Countries must be populated in the second spinner	Populated all stations for SAARC Countries	Success
3.	TC01_03	1. Select Russia from first spinner	All stations for Russia must be populated in the second spinner	Populated all stations for Russia	Success
4.	TC01_04	1. Select USA and Canada from first spinner	All stations for USA and Canada must be populated in the second spinner	Populated all stations for USA and Canada	Success
5.	TC01_05	1. Select South East Asia, Australia from first spinner	All stations for South East Asia, Australia must be populated in the second spinner	Populated all stations for South East Asia, Australia	Success
6.	TC01_06	1. Select Gulf and Middle East from first spinner	All stations for Gulf and Middle East must be populated in the second spinner	Did not display Abu Dhabi	Problem fixed by changing the illegal database character '&' to 'and'.
7.	TC01_07	1. Select UK and Europe from first spinner	All stations for UK and Europe must be populated in the second spinner	Populated all stations for UK and Europe	Success

8.	TC01_08	1. Select Far East from first spinner	All stations for Far East must be populated in the second spinner	Populated all stations for Far East	Success

Test Case 2: Information on station page

Sr. No.	Test Case ID	Steps of test	Expected Result	Actual Result	Remark
1.	TC02_01	1. Select India from first spinner 2. Select Station Anand from second spinner	1. All details for Anand must be displayed from the database. 2. The details that are not available must be hidden	Unable to hide empty Email ID field	Problem fixed by deleting the record for Anand and re-entering it into the database.
2.	TC02_02	1. Select UK and Europe from first spinner 2. Select Amsterdam from second spinner	1. All details for Amsterdam must be displayed from the database. 2. The details that are not available must be hidden.	Shows an extra string 'ams' after a field	Problem fixed by deleting the record for Amsterdam and re-entering it into the database.
3.	TC02_03	1. Select Gulf and Middle East from first spinner 2. 2. Select Bahrain from second spinner	1. All details for Amsterdam must be displayed from the database. 2. The details that are not available must be hidden.	Unable to hide empty Internationa l Email Is field	Problem fixed by deleting the record for Bahrain and re-entering it into the database.
4.	TC02_04	1. Select UK and Europe from first spinner 2. Select Madrid from second spinner	1. All the details for Madrid must be displayed from the database. 2. The details that are not available must be	Shows FAX field empty although it has a value	Problem fixed by deleting the record for Amsterdam and re-entering it into the database.

			hidden.		
5.	TC02_05	1. Select UK and Europe from first spinner 2. Select Vienna from second spinner	1. It should display all the stations listed for the Region 2. The details that are not available must be hidden	Shows extra digits in the phone number	Problem fixed by deleting the record for Amsterdam and re-entering it into the database.
6.	TC02_06	1. Select South East Asia, Australia from first spinner 2. Select Shanghai from second spinner	1. All details for Shanghai must be displayed from the database. 2. The details that are not available must be hidden.	Unable to hide unavailable text fields	Problem fixed by deleting the record for Amsterdam and re-entering it into the database.
7.	TC02_07	1. Select India from first spinner 2. Select any station from second spinner	1. All details for each station must be displayed from the database. 2. The details that are not available must be hidden.	All details displayed properly and unavailable fields were hidden	Success
8.	TC02_08	1. Select Russia from first spinner 2. Select Moscow from second spinner	1. All details for Moscow from the database must be displayed. 2. The details that are not available must be hidden.	All details displayed properly and unavailable fields were hidden	Success

Test Case 3: Checking Cargo Tracking Result

Sr. No.	Test Case ID	Steps of test	Expected Result	Actual Result	Remark
1.	TC01_01	2. Enter a valid AWB Number	Tracking Details are displayed	Tracking Details are displayed	Success
2.	TC01_02	2. Enter an invalid AWB number	Error message must be displayed	Error message must be displayed	Success

Test Case 4: Display all flights on Schedule Page

Sr. No.	Test Case ID	Steps of test	Expected Result	Actual Result	Remark
1.	TC01_01	3. Open the app	All flights and its details for all sources to all destinations to be displayed	Flight from Mumbai to Ahmedabad not displayed	Problem fixed by re-entering entry for Flight from Mumbai to Ahmedabad
2.	TC01_02	3. Open the app	All flights and its details for all sources to all destinations to be displayed	Flight from Delhi to Goa not displayed	Problem fixed by re-entering entry for Flight from Delhi to Goa
3.	TC01_03	2. Open the app	All flights and its details for all sources to all destinations to be displayed	Flight from Delhi to Mumbai not displayed	Problem fixed by re-entering entry for Flight from Delhi to Mumbai
4.	TC01_04	2. Open the app	All flights and its details for all sources to all destinations to be displayed	Missing flight details for Delhi – Guwahati flight	Problem fixed by re-entering entry for Flight from Delhi to Guwahati
5.	TC01_05	2. Open the app	All flights and its details for all sources to all destinations to be displayed	Displayed all details for Mumbai – Goa flight	Success

Test Case 2: Information on selected option Schedule page

Sr. No.	Test Case ID	Steps of test	Expected Result	Actual Result	Remark
1.	TC02_01	3. Select Aircraft from spinner 4. Enter value	3. Show content for Aircraft chosen by the user	Few flights were unable to display	Problem fixed by re-entering those records into the database.
2.	TC02_02	3. Select Source from spinner 4. Enter value	1. Show content for Source chosen by user	Content displayed properly	Success
3.	TC02_03	3. Select Destination from spinner 4. Enter value	1. Show content for Destination chosen by user	Content displayed properly	Success
4.	TC02_04	3. Select Flight Number from spinner 4. Enter value	3. Show content for Flight number chosen by user	Shows a few extra records for some other flight number	Problem fixed by re-entering those records into the database.

9. FUTURE ENHANCEMENTS AND LIMITATIONS

User requirements keep changing as the system is being used. Some of the future requirements that can be done to the system are:

FUTURE ENHANCEMENTS:

1. The database in the application will be changed as and how there is any change in the listed phone numbers or address or any other detail.
2. Instead of giving only the location name in the map marker, we may include the full address of the location.

LIMITATIONS:

1. Only limited contact details have been displayed to the user.
2. For viewing the map, internet connection is required which may not be available at all times.

10. BIBLIOGRAPHY

1. www.stackoverflow.com
2. www.developer.android.com
3. www.github.com

ANDROID APP – II (ECC)

1. ABSTRACT

Air India is the flag carrier airline of India owned by Air India Limited (AIL), a Government of India enterprise. The airline operates a fleet of Airbus and Boeing aircraft serving various domestic and international airports.

This application has been developed to make the management within the airlines even stronger and more reliable through provision of all emergency command centre contacts in one platform.

Functionalities:

- It shall provide the emergency command centre numbers on the first page.
- Consequently the user will have to select an organisation from the first dropdown available.
- On the basis of what is selected in the first dropdown, the second dropdown will be populated with the respective departments one wishes to communicate with.
- Information regarding the selected department will be displayed
- The information displayed will consist of the following fields: Name, Designation, Contact No, Address, e-mail address, Department, Alternate's Name, Contact No, e-mail address.

2. INTRODUCTION

Company Profile:

Air India Pvt. Ltd.:

Air India Limited is a company that was formed as National Aviation Company of India Limited by the Government of India to oversee the merger of Air India. Air India is India's national flag carrier. The urge to excel and the enthusiasm, which characterised Air India's first flight, way back on October 15 1932, is quintessential even today – thanks to Air Indians who have kept alive the tradition of flying high.

Air India is India's finest flying Ambassador. The merger of Air India and Indian, the countries leader in the domestic sector, has helped the airline to emerge as a major force in the airline industry. The rebranding exercise is currently underway and passengers are getting to see the unified face of the new invigorated Air India.

The merged entity, which presently has a fleet of 124 aircrafts, offers passengers seamless travel across domestic and international routes.

Services:

- Hotel Corporation Of India Limited
- Air India Air Transport Services Limited
- Air India Engineering Services Limited
- Air India Charters Limited
- IAL Airport Services Limited
- Airline Allied Services Limited

Project Introduction:

This application has been developed to make the management within the airlines even stronger and more reliable through provision of all emergency command centre contacts in one platform

Overall Description:

Different Modules in the system:

- Splash Screen module
- Home Page module
- View information module

Description of each module:

9. **Splash Screen module**

   This module contains the splash screen. This is the screen that will be loaded when the application starts. This screen will be displayed for a duration of 5 seconds.

10. **Home Page module**

    This module contains the emergency command centre contact information common to all departments. The contact information will consist of three emergency command centre numbers.

11. **View Information module**

    This module contains the information relevant to a particular department. The following fields will be displayed to the user provided the information is available in the database:
    Name, Designation, Contact No, Address, e-mail address, Department, Alternate's Name, Contact No, e-mail address.

3. SYSTEM PLANNING AND ANALYSIS

PROPOSED SYSTEM:

The proposed system is designed to provide all staff with immediate access to emergency command centre contact information for efficient management. It is designed keeping in mind the requirement and immediate need.

The primary aim of the new system is to speed up response time during emergencies. User-friendliness is another peculiarity of the proposed system. The main advantage of the proposed system is better connectivity and hence faster aid. Every record in the database is checked for completeness and accuracy.

4. SOFTWARE REQUIREMENT AND SPECIFICATION

SOFTWARE REQUIREMENTS:

Operating System:	Android (Froyo 2.2 to Kitkat 4.4.2)
User Interface:	XML
Programming Language:	JAVA
IDE/Workbench:	Eclipse 2014
Database:	SQLite Browser

HARDWARE REQUIREMENTS:

Processor:	200Mhz
Hard Disk:	32MB Storage
RAM:	32MB RAM
Minimum SDK:	Gingerbread 2.3

5. ESTIMATION PLANNING

Feasibility Study:

A feasibility study is an evaluation and analysis of the potential of the proposed project which is based on extensive investigation and research to give full comfort to the decision makers. Feasibility studies aim to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats as presented by the environment, the resources required to carry through and ultimately the prospects for success.

In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained. As such, a well-designed feasibility study should provide a historical background of the business or project, description of the product or the service, accounting statements, details of the operations and management, marketing research and policies, financial data and legal requirements. Generally, feasibility studies precede technical development and project implementation.

5.1 Feasibility Analysis:

Feasibility analysis is important to determine whether project is feasible or not in terms of cost, resource, technology, schedule, organization for a mobile application.

There can be following types of feasibility:

5.1.1 Economic Feasibility:

This type of feasibility includes development cost and operational cost.

5.1.1.1 Development Cost:

This cost includes salaries of four developers and one guide. There were costs of software installation by DIT Department.

5.1.1.2 Operational Cost:

For this project there is least operational cost.

5.1.2 Technological Feasibility:

This project is technologically feasible because it needed technologies like JAVA for mobile application development and SQLite database browser.

5.1.3 Organisational Feasibility:

This project is feasible considering organisational issues because there is no loss of employment or any political issues. This project makes it easier to access all the contact details.

5.1.4 Schedule Feasibility:

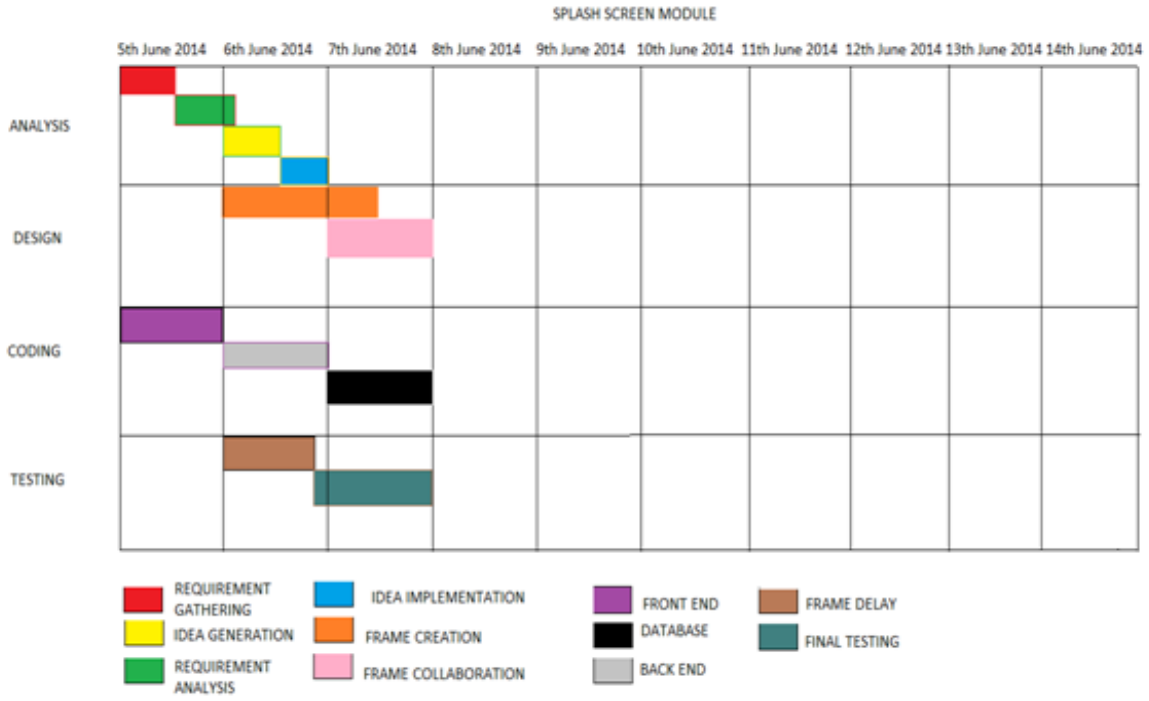
Schedule feasibility includes whether the project will be completed within the given time period or not. For this project we have 2 weeks duration. It is considered that 80% of the project will be completed within 1 week.

5.1.5 Resource Feasibility:

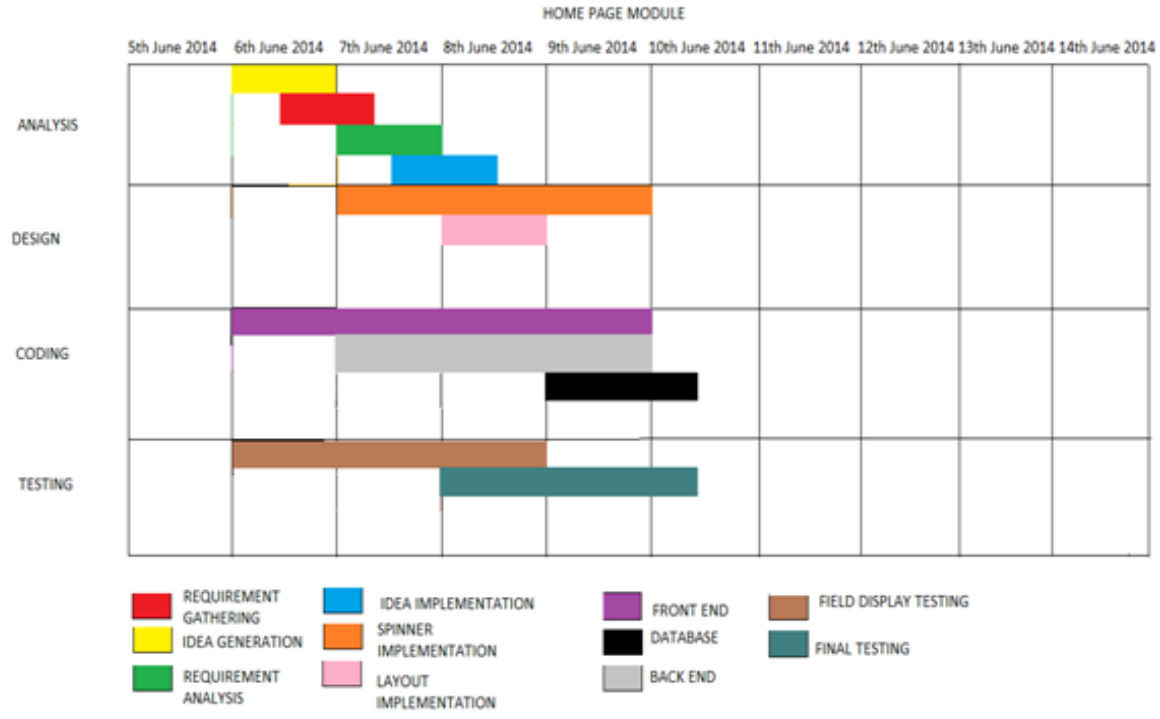
This project is feasible in terms of resources. Four developers and one guide are sufficient considering the scope of this project.

GANTT CHART:

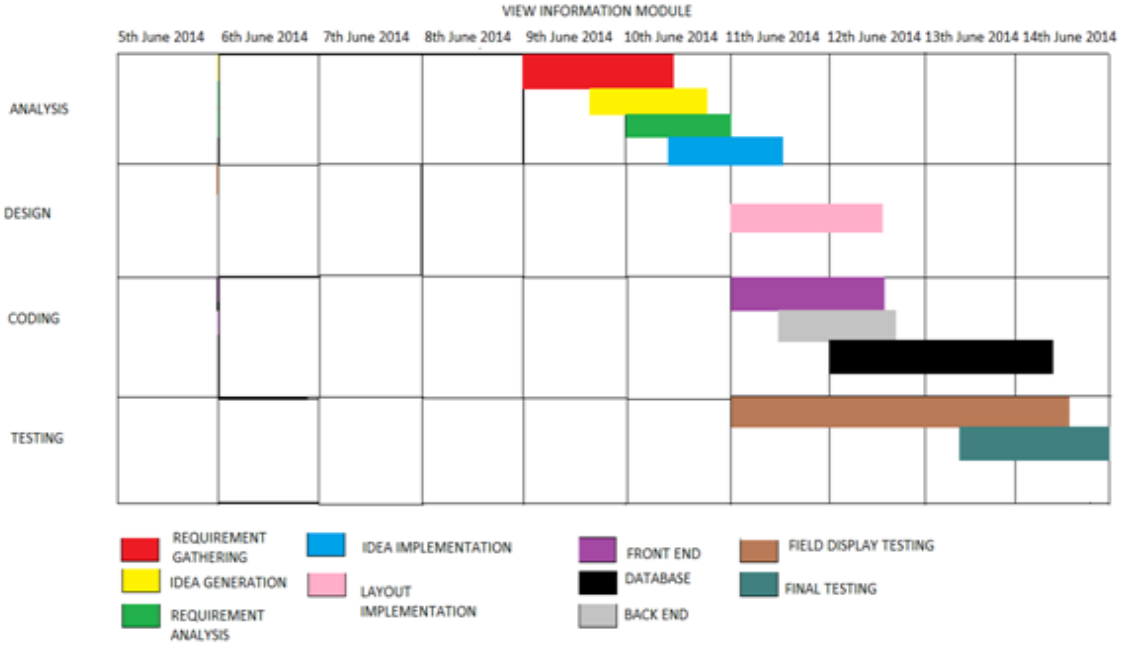
8) SPLASH SCREEN:



9) HOME PAGE:

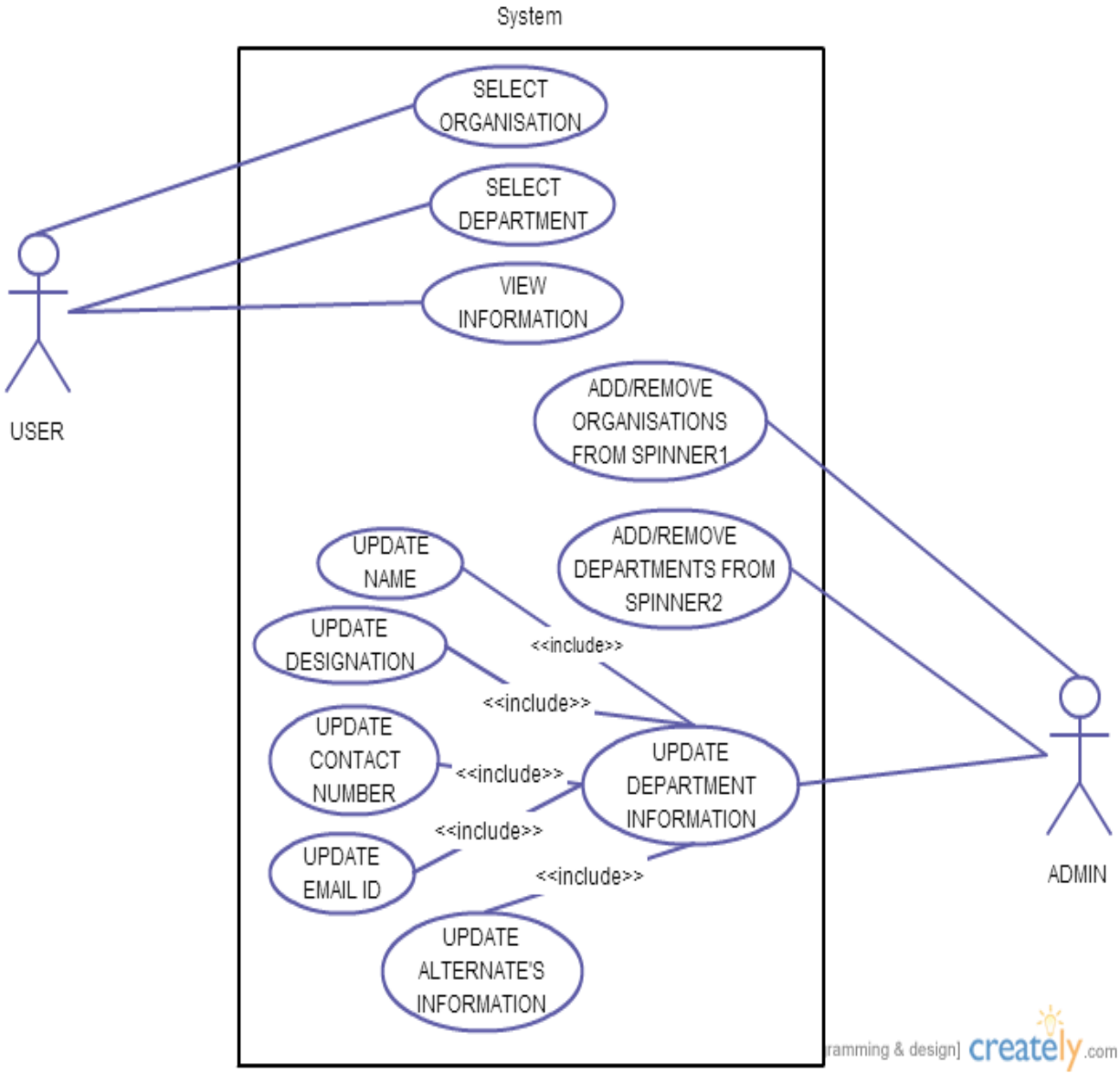


10) INFORMATION DISPLAY MODULE:

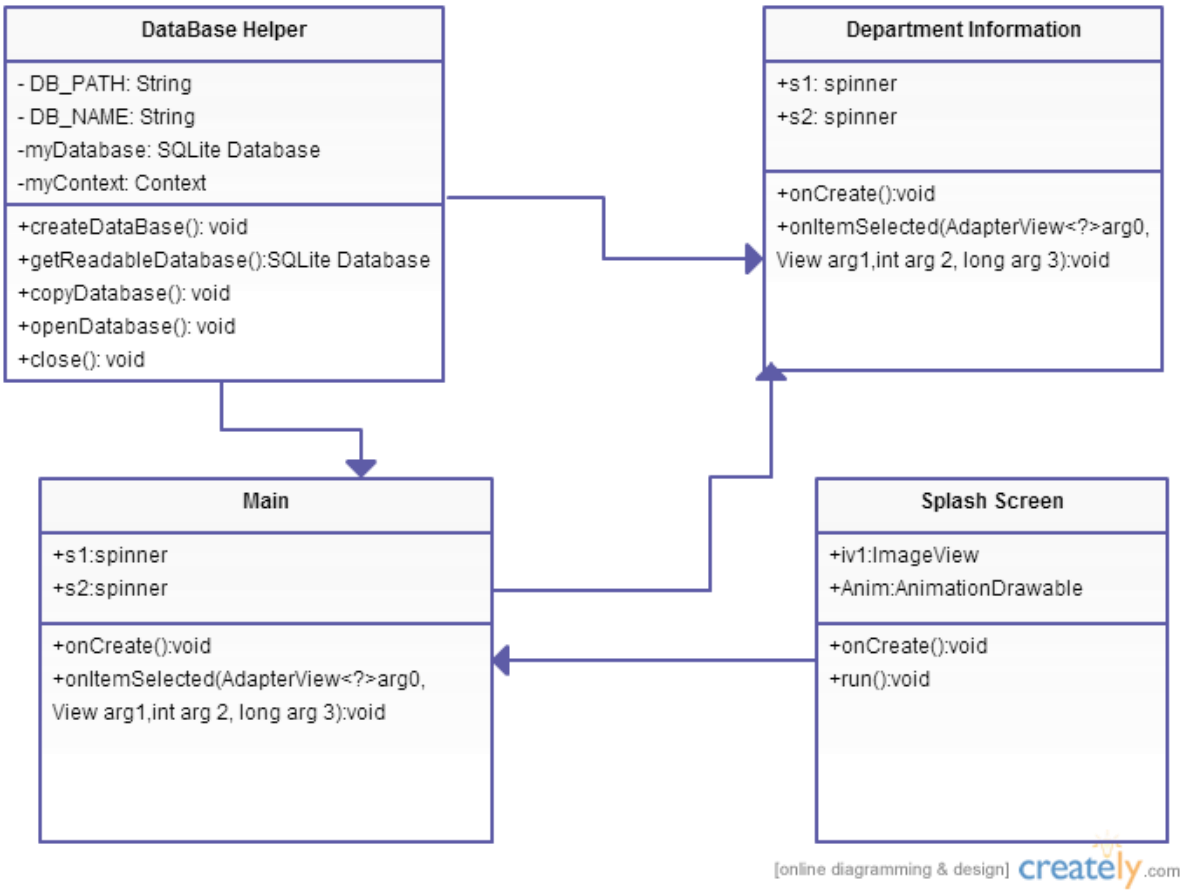

VIEW INFORMATION MODULE
5th June 2014
6th June 2014
7th June 2014
8th June 2014
9th June 2014
10th June 2014
11th June 2014
12th June 2014
13th June 2014
14th June 2014
ANALYSIS
DESIGN
CODING
TESTING
REQUIREMENT GATHERING
IDEA GENERATION
REQUIREMENT ANALYSIS
IDEA IMPLEMENTATION
LAYOUT IMPLEMENTATION
FRONT END
DATABASE
BACK END
FIELD DISPLAY TESTING
FINAL TESTING

6. SYSTEM DESIGN

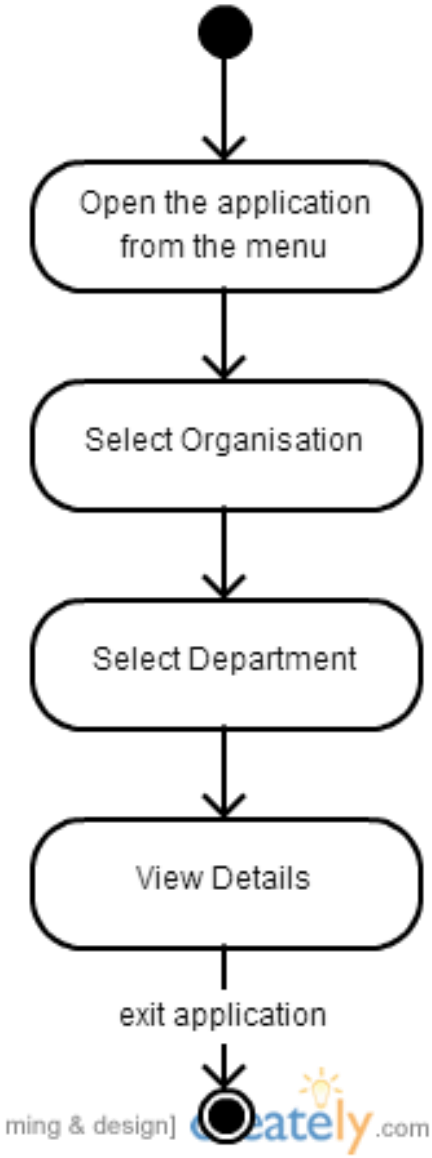
1) USE CASE DIAGRAM



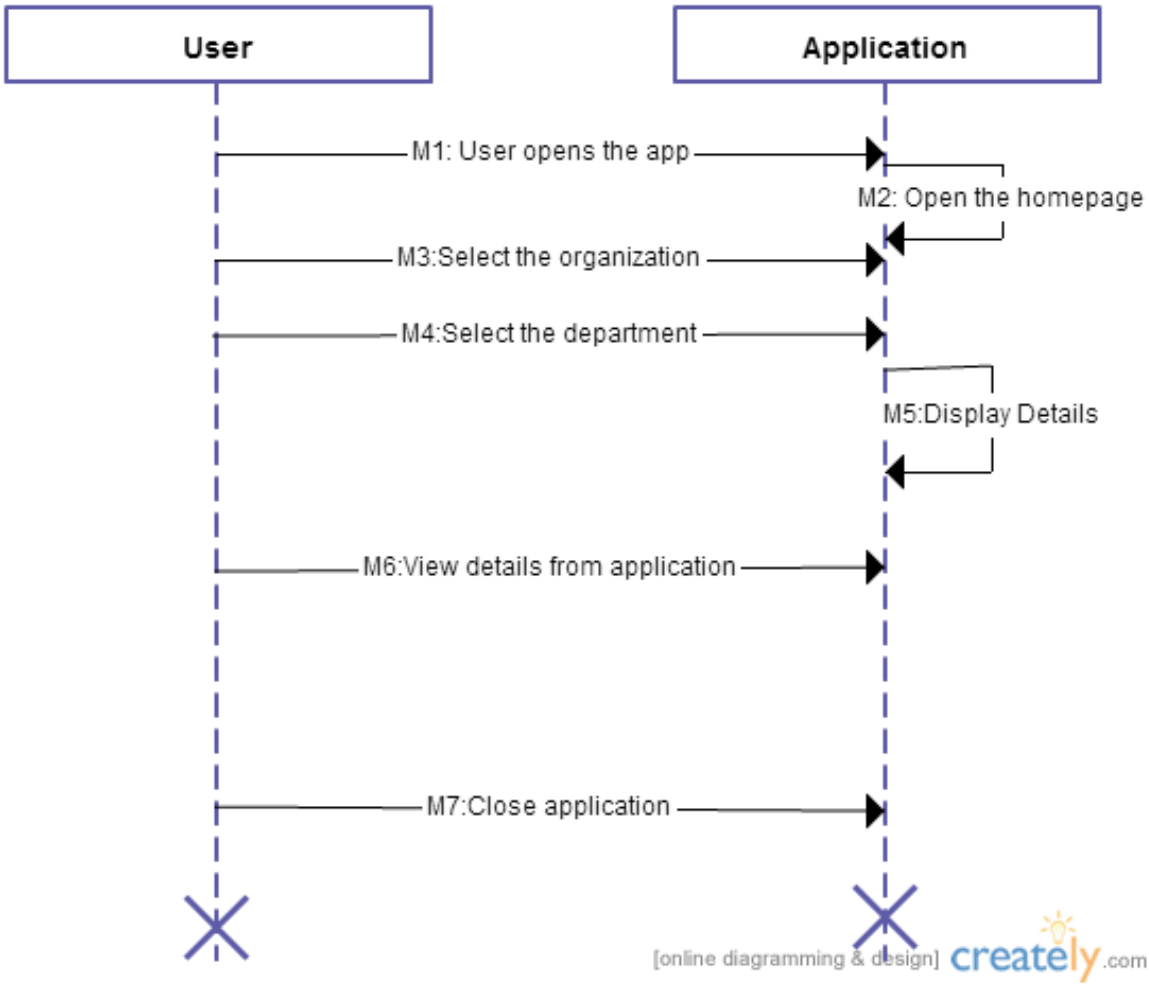
2) CLASS DIAGRAM



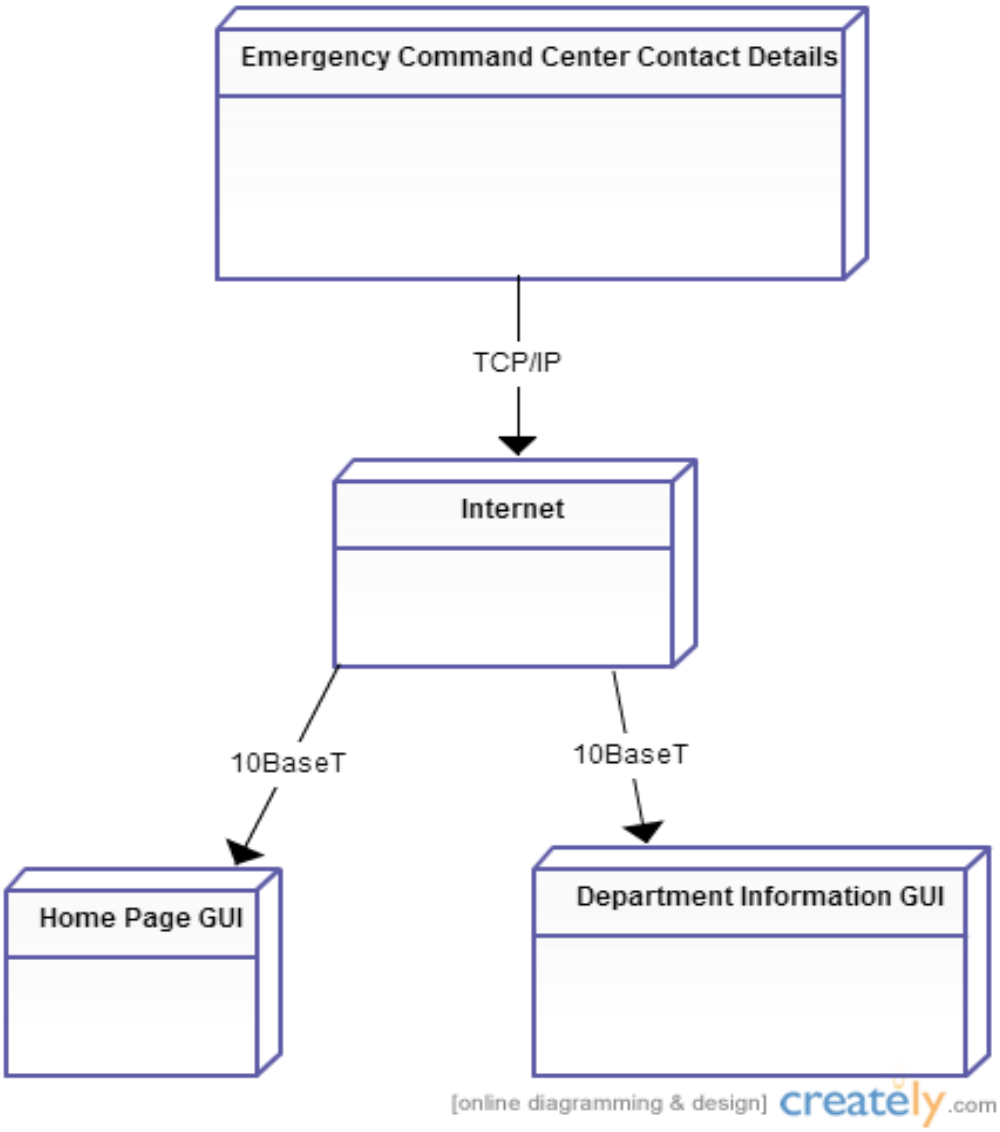
3) ACTIVITY DIAGRAM



4) SEQUENCE DIAGRAM



5) DEPLOYMENT DIAGRAM

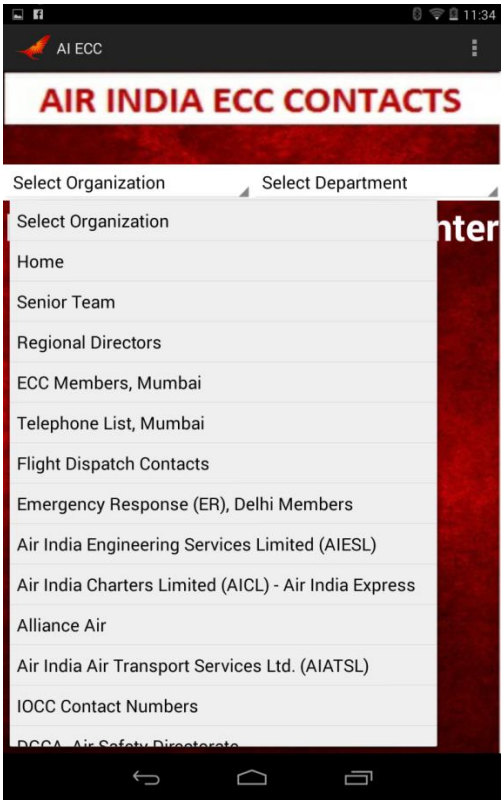


7. SCREENSHOTS

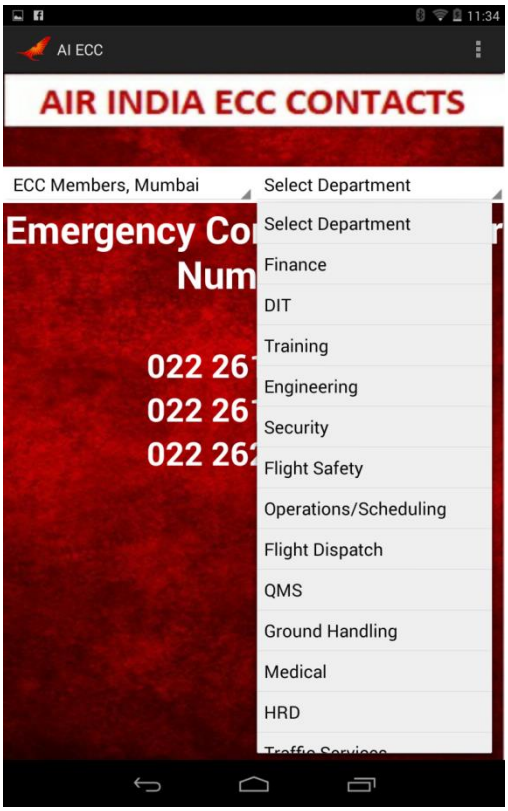
1. SPLASH SCREEN

2. HOME PAGE

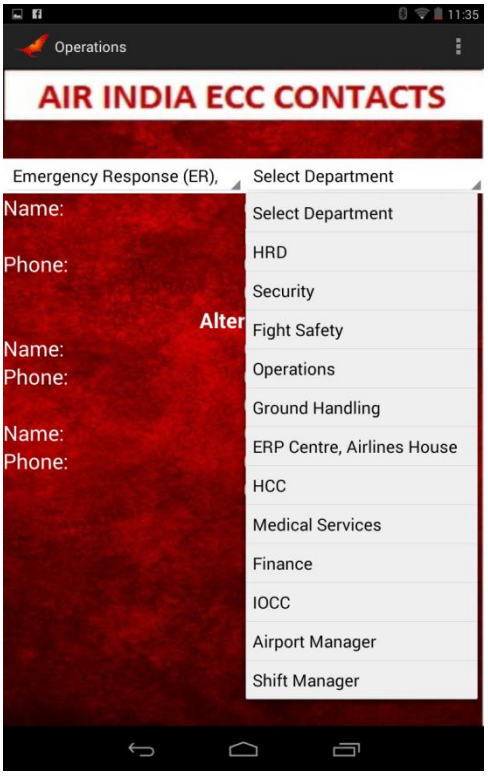
3. DROP DOWN MENU- ORGANISATION



4. DROP DOWN MENU - DEPARTMENT



5. EMERGENCY RESPONSE DROP DOWN



6. EMERGENCY RESPONSE INFO

8. TESTING DETAILS

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under testing. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and to understand the risk of software implementation. Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs (errors and other defects).

Software testing can be stated as the process of validating and verifying that a computer program or an application or a product:

- Meets the requirements that guided its design and development,
- Works as expected,
- Can be implemented with the same characteristics,
- And satisfies the needs of the stakeholders

8.1 Testing the Software includes:

- Verify that it behaves "as specified"
- Detects errors
- Validate whether the outputs are as expected
  (Validation is: *are we building the right product?)*
- Verification is the checking or testing of items, including software, for conformation and consistency by evaluating the results against pre-specified requirements.
  (Verification is: *are we building the product right?)*
- Error detection: Testing should internally attempt to make the software take extreme values, so that we can find out the boundary values. This way we can find the error in our system. Validation looks at the system corrections, i.e. the process of checking that what has been specified is what the user wanted.

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In this step, each module of this system is tested individually. The GUI testing includes the verification and validation of menus, buttons, validation conditions and navigation conditions etc. In unit testing, abnormally work is done on purpose to ensure that the system rejects such an invalid selection. Checking in this fashion is carried for each module of this system to confirm that each module is working properly and is error free.

INTEGRATION TESTING:

Although each module is verified individually during unit testing, it is important to determine if the module is working properly when linked together. This referred to as integration testing.

In this step, the output is compared with the manually calculated output. This comparison gives the result of system testing. This finally ensures that the system is working properly.

SYSTEM TESTING:

System testing is the testing of the complete system prior to the delivery. The purpose of system testing is to identify defects that will only survive when a complete system is assembled, i.e. defects that cannot be attributed to individual components or the interaction between two components. System testing includes testing of performance, security and configuration, sensitivity, start up and thus the accuracy and reliability of the system is tested.

TEST CASES:

Test Case 1: Populating Second spinner

Sr. No.	Test Case ID	Steps of test	Expected Result	Actual Result	Remark
1.	TC01_01	4. Select Senior Team from first spinner	All departments for Senior Team must be populated in the second spinner	Populated all departments for Senior Team	Success
2.	TC01_02	4. Select Regional Directors from first spinner	All regions for Regional Directors must be populated in the second spinner	Populated all regions for Regional Directors	Success
3.	TC01_03	3. Select ECC Members, Mumbai from first spinner	All departments for ECC Members, Mumbai must be populated in the second spinner	Populated all departments for ECC Members, Mumbai	Success
4.	TC01_04	3. Select Telephone List, Mumbai from first spinner	All departments for Telephone List, Mumbai must be populated in the second spinner	Populated all departments for Telephone List, Mumbai	Success
5.	TC01_05	3. Select Flight Dispatch Contacts from first spinner	All information regarding flight dispatch must be displayed	Displayed information	Success
6.	TC01_06	2. Select Emergency Response, Delhi Members	All departments for Emergency Response, Delhi Members must be	Populated all departments for	Success

		from first spinner	populated in the second spinner	Emergency Response, Delhi Members	
7.	TC01_07	2. Select AIESL from first spinner	All names for AIESL must be populated in the second spinner	Populated all names for AIESL	Success
8.	TC01_08	2. Select AICL from first spinner	All names for AICL must be populated in the second spinner	Populated all names for AICL	Success
9.	TC01_09	1. Select Alliance Air from first spinner	All names for Alliance Air must be populated in the second spinner	Populated all names for Alliance Air	Success
10.	TC01_10	1. Select AIATSL from first spinner	All names for AIATSL must be populated in second spinner	Populated all names for AIATSL	Success
11.	TC01_11	1. Select IOCC Contact Numbers from first spinner	All information must be displayed regarding IOCC Contact Numbers	All information is displayed for IOCC Contact Numbers	Success
12.	TC01_12	1. Select DGCA from first spinner	All departments must be populated in second spinner for DGCA	Populated all departments for DGCA	Success
13.	TC01_13	1. Select AAIB from first spinner	All names must be populated in second spinner for AAIB	Populated all names for AAIB	Success
14.	TC01_14	1. Select Angels of Air India from first spinner	All information must be displayed regarding Angels of Air India	All information is displayed regarding Angels of Air India	Success

Test Case 2: Information Page

Sr. No.	Test Case ID	Steps of test	Expected Result	Actual Result	Remark
1.	TC02_01	5. Select Senior Team from first spinner 6. Select MD from	4. All details for MD must be displayed from the	Unable to hide empty Phone field	Problem fixed by deleting the record for MD and re-entering

		second spinner	database. 5. The details that are not available must be hidden		it into the database.
2.	TC02_02	3. Select Senior Team from first spinner 4. Select CEO-AIATSL from second spinner	5. All details for CEO-AIATSL must be displayed from the database. 6. The details that are not available must be hidden.	Unable to hide empty Phone field	Problem fixed by deleting the record for CEO- AIATSL and re-entering it into the database.
3.	TC02_03	3. Select Telephone List from first spinner 4. 2. Select GM-Commercial from second spinner	5. All details for GM-Commercial must be displayed from the database. 6. The details that are not available must be hidden.	Unable to hide empty Internationa l Phone field	Problem fixed by deleting the record for GM-Commercial and re-entering it into the database.
4.	TC02_04	5. Select Emergency Response from first spinner 6. Select HRD from second spinner	4. All the details for HRD must be displayed from the database. 5. The details that are not available must be hidden.	Shows Phone field empty although it has a value	Problem fixed by deleting the record for HRD and re-entering it into the database.
5.	TC02_05	3. Select AIESL from first spinner 4. Select Mr. H.R. Jagannath from second spinner	3. It should display all the information for the selected option. 4. The details that are not available	Shows Phone field empty although it has a value	Problem fixed by deleting the record for Mr. H. R. Jagannath and re-entering it into the database.

			must be hidden		
6.	TC02_06	3. Select AICL from first spinner 4. Select Capt. D. R. Gupta from second spinner	3. All details for Capt. D. R. Gupta must be displayed from the database. 4. The details that are not available must be hidden.	Unable to hide unavailable text fields	Problem fixed by deleting the record for Capt. D. R. Gupta and re-entering it into the database.

9. FUTURE ENHANCEMENTS AND LIMITATIONS

User requirements keep changing as the system is being used. Some of the future requirements that can be done to the system are:

FUTURE ENHANCEMENTS:

Integrating this application into a common application containing all Air India related applications such as Air India Contacts, Air India ECC Contacts, Air India Cargo.

LIMITATIONS:

1. Only limited contact details have been displayed to the user.
2. Details need to be updated every now and then as per change in contact information.

9. BIBLIOGRAPHY

1. www.stackoverflow.com
2. www.android.developer.com
3. www.androidexample.com
4. www.grepcode.com
5. www.compiletimeerror.com

Sentiment Analysis Using R Language

What is R Language?

- ➔ R is a language and environment for statistical computing and graphics. It was based on the S language and environment which was developed at Bell Laboratories (formerly AT&T, now Lucent Technologies) by John Chambers and his colleagues. R can be considered as a different implementation of S. R was started in New Zealand by Robert Gentleman and Ross Ihaka.
- ➔ R is called the Statistical Programming Language for mapping broad social and marketing trends, developing financial and climate models.
- ➔ R provides a wide variety of statistical (linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering, etc.) and graphical techniques, and is highly extensible. The S language is often the vehicle of choice for research in statistical methodology, and R provides an Open Source route to participation in that activity.
- ➔ One of R's strengths is the ease with which well-designed publication-quality plots can be produced, including mathematical symbols and formulae where needed. Great care has been taken over the defaults for the minor design choices in graphics, but the user retains full control.

The R environment

- ➔ R is an integrated suite of software facilities for data manipulation, calculation and graphical display. It includes--

- An effective data handling and storage facility,
- A suite of operators for calculations on arrays, in particular matrices,
- A large, coherent, integrated collection of intermediate tools for data analysis,
- Graphical facilities for data analysis and display either on-screen or on hardcopy, and
- A well-developed, simple and effective programming language which includes conditionals, loops, user-defined recursive functions and input and output facilities.

R Language features

- ➔ R language can be used for analytics, graphics visualization, etc.
- ➔ Analytics includes features of the r language for mathematics and statistics.
- ➔ It requires and additional open source community package from CRAN.
- ➔ We can execute basic mathematics such as complex arithmetic, computation of orthogonal polynomials, cross products, hyperbolic functions, logarithms, logical operations, matrix operations, trigonometric operations, etc.
- ➔ We can also compute basic statistics such as mean, variance, standard deviation, correlation, quartile, etc.
- ➔ Probability distributions such as density, quartiles, probability and simulation for Beta, Binomial, Birthday, Exponential, F Distribution, Gamma, Logistic, Normal, Poisson, Uniform, etc. can also be computed.
- ➔ Graphics and visualization allows us to create bar plots, basic 3D plots, contour plots, histograms, line plots, pie charts, raster charts, spine plots, geographic maps,

projection maps, splines, social network graphs, all kinds of Trellis plots, animated graphic and movies, motion charts, bitmap files, BMP, JPEG, PDF, PostScript, SVG, Raster Graphics, etc.

Applications of R Language

- ➔ Computational Econometrics
- ➔ Empirical finance
- ➔ Statistical genetics
- ➔ Medical image analysis
- ➔ Chemometrics and computational physics
- ➔ Reproducible research

Using R language for sentiment analysis

- ➔ We will first need to install the sentiment package. To install the package, we can use the following script—
  require(devtools)
  install_url(http://cran.r-project.org/src/contrib/Archive/sentiment/sentiment_0.2.tar.gz)
  require(sentiment)
  ls("package:sentiment")
  We might need R 3.x to install this package.
- ➔ AlchemyAPI provides easy to use facilities for extracting positive and negative words from any textual content.
  Posted content is analysed to detect the primary document language, and text sentiment is extracted automatically. These API calls are useful to process posted textual content.
  TextGetTextSentiment is used to extract positive or negative sentiment from some text.
  TextGetTargetedSentiment is used to extract positive or negative sentiment targeted towards a specific phrase inside some text.
  Parameters :
  - i) apikey – your private key (is a required parameter)
  - ii) text - text document content (is a required parameter)
  - iii) url – text document URL
  - iv) outputMode – desired API output format (possible values – xml(default), json, rdf)
  - v) jsonp – desired jsonp callback
  - vi) showSourceText – whether to include the original source text the sentiment was extracted from within the API response (possible values – 1 –enabled , 0 –disabled(default))

  Response format for XML-

  <results>
  <status>**REQUEST_STATUS**</status>

```
    <url>REQUESTED_URL</url>
    <language>DOCUMENT_LANGUAGE</language>
    <text>DOCUMENT_TEXT</text>
    <docSentiment>
      <type>SENTIMENT_LABEL</type>
      <score>DOCUMENT_SENTIMENT</score>
      <mixed>SENTIMENT_MIXED</mixed>
    </docSentiment>
  </results>
```

R code for scoring function-

```
score.sentiment = function( sentences, pos.words, neg.words, .progress='none')
{
        require(plyr)
        require(stringr)
        scores = laply(sentences, function(sentences, pos.words, neg.words)
        {
                sentence = gsub('[[:punct:]]', ' ' , sentence)
                sentence = gsub('[[:cntrl:]]', ' ' , sentence)
                sentence = gsub('\\d+', ' ', sentence)
                sentence = tolower(sentence)
                word.list = str_split(sentence, '\\s+')
                words = unlist(word.list)
                pos.matches = match(words, pos.words)
                neg.matches = match(words, neg.words)
                pos.matches = !is.no(pos.matches)
                neg.matches = !is.no(neg.matches)
                score = sum(pos.matches) – sum(neg.matches)
                return(score)
        }, pos.words, neg.words, .progress=.progress)
scores.df = data.frame(score=scores, text= sentences)
        return(scores.df)
}
```

Key aspects of R-

- ➔ R is used for data analysis: scientists, analysts, statisticians, use R for analysing data , data visualization, and predictive modelling.
- ➔ R is an open source software project: Not only is R freely available for download and use, but also its source code is open for inspection and modification to anyone who wants to see how the methods and algorithms work.
- ➔ R has excellent tools for creating graphics like from bar charts and lattice charts.
- ➔ With R one is not restricted to choosing a predefined set of routines. One can use codes contributed by anyone in the C community or extend R with our own functions.

How to use R in social media-

Sentiment analysis can be done by utilising a R package “sentiment” by Timothy Jurka. This package contains two functions-

i) classify_emotion – this functions helps to analyse some text and classify it in different types of emotions- anger, disgust, fear, joy, sadness, surprise, etc. this classification can be performed using two algorithms. One is a naïve Bayes classifier based on Carlo Strapparava and Alessandro Valitutti’s emoticon lexicon and the other is a simple voter procedure.

ii) classify_polarity- this functions allows us to classify some text as positive or negative. This type of classification can also be done using two algorithms. One is using naïve Bayes trained on Janyce Wiebe’s subjectivity lexicon and the other is a simple voter procedure.

Example with tweets talking about "Starbucks"
Step 1: Load the necessary packages

```
# required pakacges
library(twitteR)
library(sentiment)
library(plyr)
library(ggplot2)
library(wordcloud)
library(RColorBrewer)
```

Step 2: Let's collect some tweets containing the term "starbucks"

```
# harvest some tweets
some_tweets = searchTwitter("starbucks", n=1500, lang="en")

# get the text
some_txt = sapply(some_tweets, function(x) x$getText())
```

Step 3: Prepare the text for sentiment analysis

```
# remove retweet entities
some_txt = gsub("(RT|via)((?:\\b\\W*@\\w+)+)", "", some_txt)
# remove at people
some_txt = gsub("@\\w+", "", some_txt)
# remove punctuation
some_txt = gsub("[[:punct:]]", "", some_txt)
# remove numbers
some_txt = gsub("[[:digit:]]", "", some_txt)
# remove html links
some_txt = gsub("http\\w+", "", some_txt)
# remove unnecessary spaces
some_txt = gsub("[ \t]{2,}", "", some_txt)
some_txt = gsub("^\\s+|\\s+$", "", some_txt)
```

```
# define "tolower error handling" function
try.error = function(x)
{
  # create missing value
  y = NA
  # tryCatch error
  try_error = tryCatch(tolower(x), error=function(e) e)
  # if not an error
  if (!inherits(try_error, "error"))
  y = tolower(x)
  # result
  return(y)
}
# lower case using try.error with sapply
some_txt = sapply(some_txt, try.error)

# remove NAs in some_txt
some_txt = some_txt[!is.na(some_txt)]
names(some_txt) = NULL
```

Step 4: Perform Sentiment Analysis

```
# classify emotion
class_emo = classify_emotion(some_txt, algorithm="bayes", prior=1.0)
# get emotion best fit
emotion = class_emo[,7]
# substitute NA's by "unknown"
emotion[is.na(emotion)] = "unknown"

# classify polarity
class_pol = classify_polarity(some_txt, algorithm="bayes")
# get polarity best fit
polarity = class_pol[,4]
```

Step 5: Create data frame with the results and obtain some general statistics

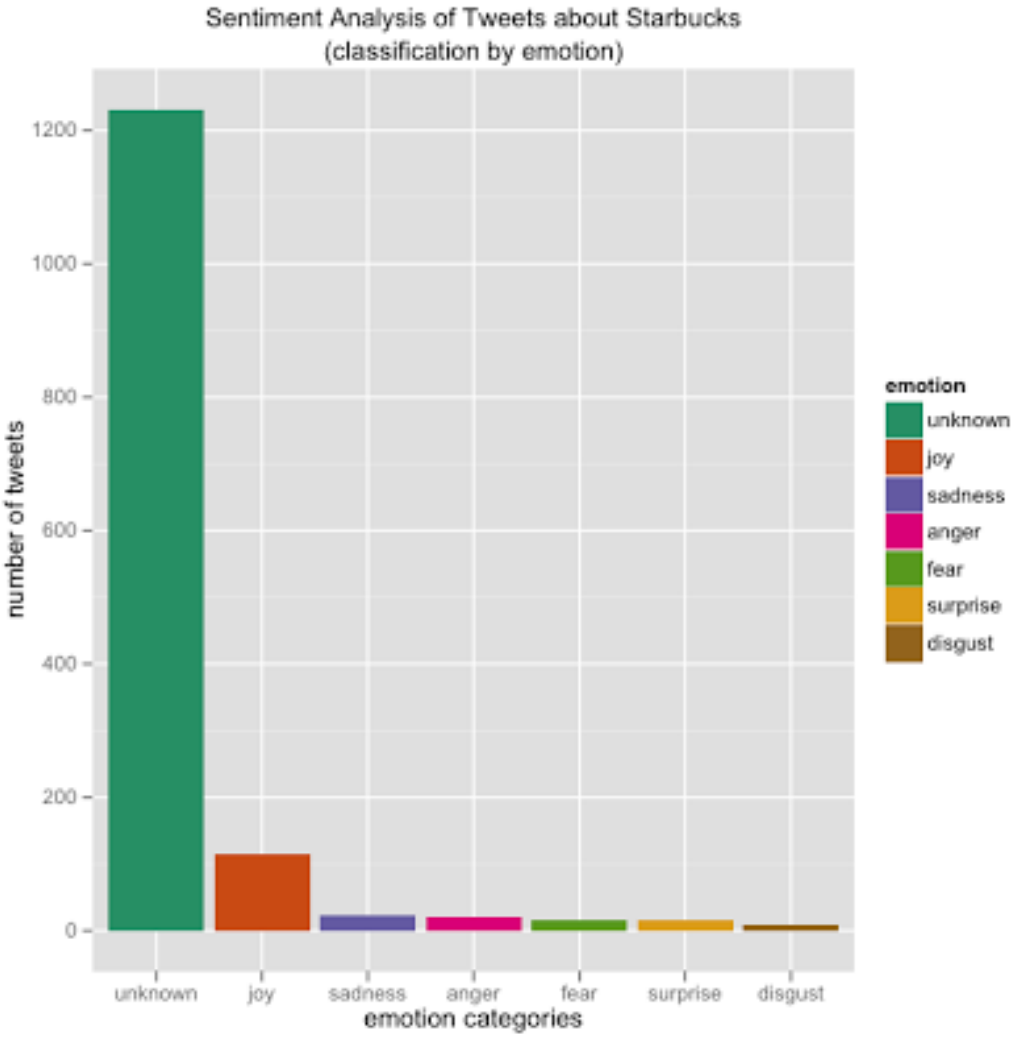
```
# data frame with results
sent_df = data.frame(text=some_txt, emotion=emotion,
polarity=polarity, stringsAsFactors=FALSE)

# sort data frame
sent_df = within(sent_df,
  emotion <- factor(emotion, levels=names(sort(table(emotion), decreasing=TRUE))))
```

This what the first 15 rows of **sent_df** would look like

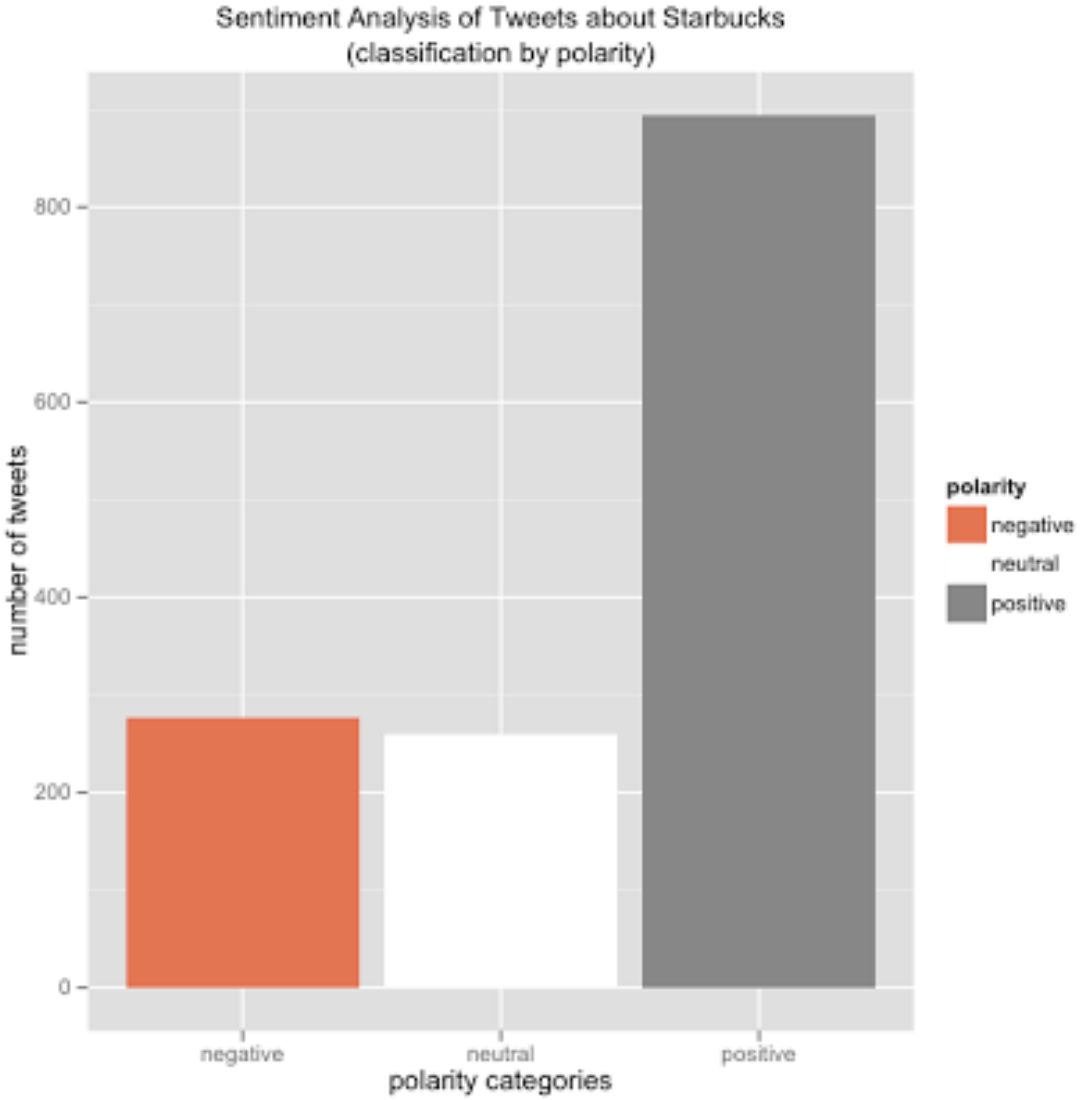
text	emotion	polarity
chad ocho cinco mad as hell some one took his starbucks card ...	anger	negative
even ifdid steal ochocincos starbucks card he wouldnt be able to catch him ...	joy	positive
entrepreneur ships himself to starbucks ceo	unknown	positive
that ocho cinco ideo actually made me laugh dude reminds me the waywould act about loosing ...	unknown	negative
from mcdonalds or starbucks	unknown	positive
patriots stole ochocincos starbucks card making a free frappuccino ...	unknown	neutral
we should go to starbucks or something	unknown	positive
the new facebook photo app people who take deep photos of starbucks cups are bummed	unknown	negative
anos starbucks rock the beatles londres frio tumblr nikon glee gente please stop with this shit	joy	positive
off to bed see you at starbucks holiday inn in kenilworth tomorrow were live ...	anger	neutral
i would love a caramel frappacino right now coffee based starbucks venti	joy	positive
would a starbucks delivery help thanks for theofferbut ive got davids tea	unknown	positive
the photographer was the manager at the starbucks hes worked at when he waslmao	unknown	negative
thank goodness lifesaver wakemeup workbegins starbucksschoolandworkday	unknown	positive
espn is just wrong for making fun of chad and his missing starbucks card	unknown	negative

Step 6: Let's do some plots of the obtained results

```
# plot distribution of emotions
ggplot(sent_df, aes(x=emotion)) +
geom_bar(aes(y=..count.., fill=emotion)) +
scale_fill_brewer(palette="Dark2") +
labs(x="emotion categories", y="number of tweets") +
opts(title = "Sentiment Analysis of Tweets about Starbucks\n(classification by emotion)",
    plot.title = theme_text(size=12))
```



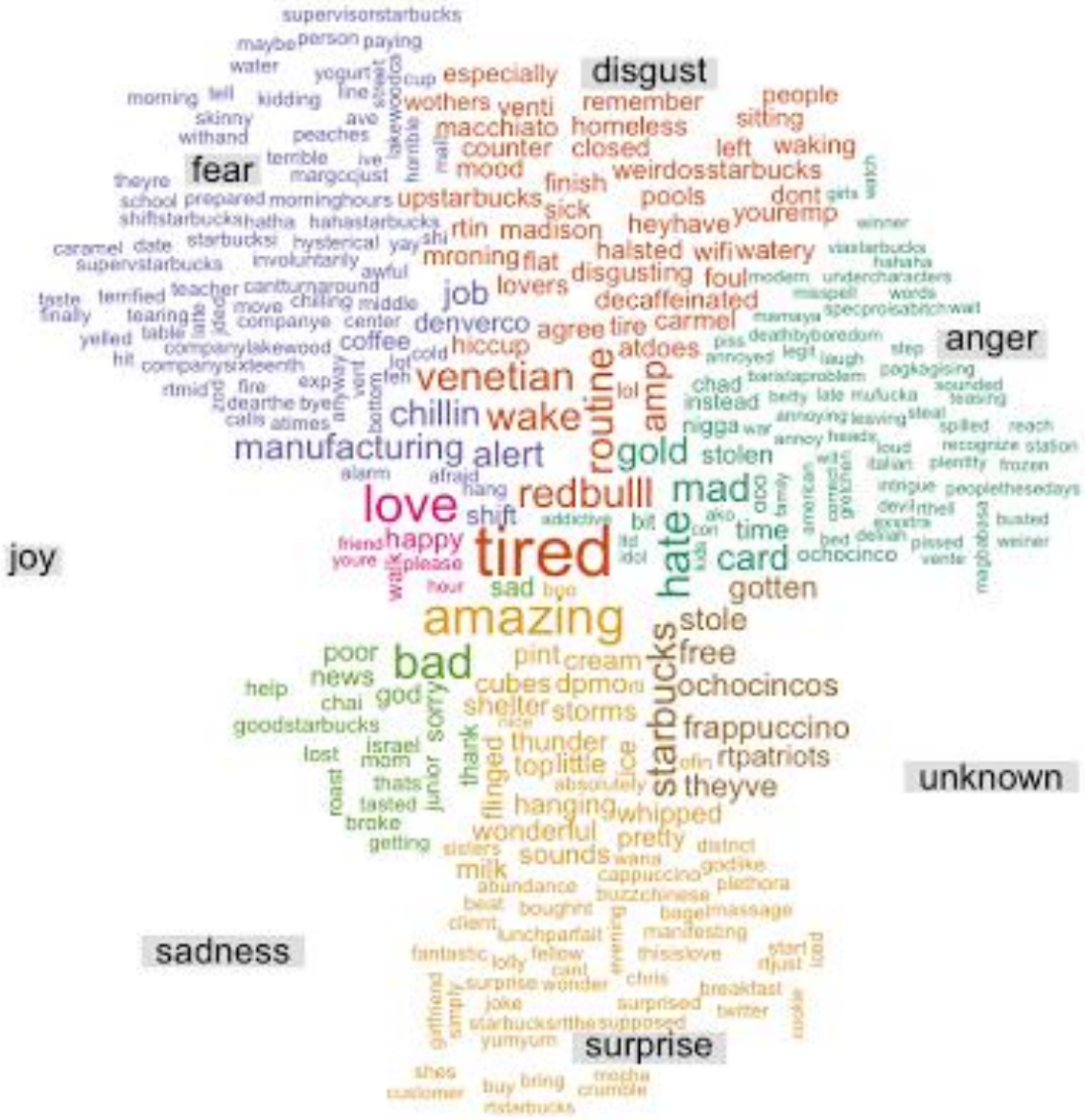
```
# plot distribution of polarity
ggplot(sent_df, aes(x=polarity)) +
geom_bar(aes(y=..count.., fill=polarity)) +
scale_fill_brewer(palette="RdGy") +
labs(x="polarity categories", y="number of tweets") +
opts(title = "Sentiment Analysis of Tweets about Starbucks\n(classification by polarity)",
    plot.title = theme_text(size=12))
```



Step 7: Separate the text by emotions and visualize the words with a comparison cloud

```
# separating text by emotion
emos = levels(factor(sent_df$emotion))
nemo = length(emos)
emo.docs = rep("", nemo)
for (i in 1:nemo)
{
  tmp = some_txt[emotion == emos[i]]
  emo.docs[i] = paste(tmp, collapse=" ")
}
```

```
# remove stopwords
emo.docs = removeWords(emo.docs, stopwords("english"))
# create corpus
corpus = Corpus(VectorSource(emo.docs))
tdm = TermDocumentMatrix(corpus)
tdm = as.matrix(tdm)
colnames(tdm) = emos

# comparison word cloud
comparison.cloud(tdm, colors = brewer.pal(nemo, "Dark2"),
  scale = c(3,.5), random.order = FALSE, title.size = 1.5)
```



Packages used in this example—

1) library(twitter) – Provides an interface to the Twitter web API.
2) library(sentiment) – is an R package with tools for sentiment analysis including Bayesian classifiers for positivity or negativity and emotion classification.
3) library(plyr) – is used for splitting, applying and combining data. It is a set of tools that solves a common problems- we need to divide the problem into smaller modules and then operate on each module.
4) library(ggplot2) – is a plotting system for R based on the grammar of Graphics. It make plotting of data easier and provides easy to produce complex multi-layered graphics.
5) library(wordcloud) – it helps to separate the good (positive) words form the bad (negative) words.
6) library(RColorBrewer) – this package provides palettes for drawing nice maps shaded according to a variable. The main function is brewer.pal, in which we simply give the number of colours we want and the name of the palette which we can choose from by running display.brewer.all()