SUMMER VOCATIONAL TRAINING

REPORT ON

INDIAN OIL CORPORATION LIMITED

BARAUNI REFINERY

PERIOD OF TRAINING

(15th JUNE,2018-14th JULY,2018)

SUBMITTED BY:

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B. TECH- (COMPUTER SCIENCE AND ENGINEERING)

MEERUT INSTITUTE OF TECHNOLOGY

MEERUT

LETTER OF CERTIFICATION

This is to certify that ARPIT SHARMA, has successfully completed the technical project report titled "BR VOICE BUDDY" for the partial fulfilment of the requirements of CS- under BACHELOR OF TECHNOLOGY in COMPUTER SCIENCE AND ENGINEERING of "MEERUT INSTITUTE OF TECHNOLOGY" affiliated to "DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY".

MRS.KRISHNA KUMARI	Mr.S.K. SOLANKI	MR. AJAI VERMA
(AM(L&D))	(DGM (IS Dept))	(HOD CSE DEPT.)

ACKNOWLEDGEMENTS

I would like to take this opportunity to thank the training department of Indian Oil Corporation Limited, Barauni Refinery for granting me this golden opportunity to be a part of this esteemed organisation as a vocational trainee. I would like to thank Mrs. Krishna Kumari, ASSISTANT MANAGER(L&D) for her constant assistance provided during the time of this training. I would also like to thank the fire and safety department, Barauni refinery, Indian Oil Corporation Limited for making me aware of the various risks and potential hazards present in the refinery campus and the measures to control them.

I am grateful to Mr. S.K. SOLANKI (DGM (IS DEPT.)) for their constant guidance and enlightening words during the course of this training. I would like to thank Mr. Ajai Verma of Meerut Institute of Technology, Meerut for permitting me to undergo this vocational training in IOCL.I would also like to thank Mr. Sushil Kumar Sharma to help me in IOCL and helping me to understand how things work here.I would be doing injustice if I forget to thank all the shift in-charges and engineering assistants who made us aware of the process undergoing in the plant. Last but not the least, I would like to thank my parents for their constant help, support and guidance.

TABLE OF CONTENT:

THE NIGHT VIEW OF BARAUNI REFINERY

PREFACE

Industrial training plays a vital role in the progress of future engineers. Not only does it provide insights about the future concerned, it also bridges the gap between theory and practical knowledge. I was fortunate that I was provided with the opportunity of undergoing industrial training at

INDIAN OIL CORPORATION LTD., Barauni. The experience gained during the short period was fascinating to say the least. It was a tremendous feeling to observe the operation of different units and processes. It was overwhelming for me to notice how such a big refinery is being monitored and operated with proper coordination to achieve desired results. During my training I realised that in order to be a successful chemical engineer one needs to put his/her concepts into action. Thus, I hope that this training serves as a stepping stone for me in future and help me carve a niche for myself in this field.

INTRODUCTION

The word ‘petroleum’ has been derived from Latin words ‘Petro’ (meaning rock) and ‘oleum’ (meaning oil). As petroleum is obtained from sedimentary rocks of earth, it is also called mineral oil. Petroleum is a fossil fuel which is formed when dead plants (like sea weeds, marine algae) and lower forms of animals (like plankton) remain buried for several hundred years. It consists of hydrocarbons of various molecular weights (mostly alkanes, cycloalkanes and various aromatic hydrocarbons), organic compounds (like oxygen, nitrogen and sulphur) and trace amounts of metals such as iron, nickel, copper and vanadium.

Petroleum is also called crude oil which is a mixture of various components. Crude oil cannot be used directly. It has to be separated in various fractions and that purpose is fulfilled in a refinery. Crude is the raw material for petrol, diesel, LPG, kerosene, etc which are major conventional fuels used all over the world. The process of manufacture of petroleum products consists of first drilling out of the crude oil from various sources like sea weeds, oil wells and then the various products are separated by the process of refining and then they are treated in different units to maintain the norms and standards.

ABOUT IOCL

Indian Oil Corporation Limited, established in 1959 is India's largest commercial enterprise. It serves mainly India, Sri Lanka, Mauritius and Middle East. The main products are fuels, lubricants and petrochemicals. Indian Oil Corporation Limited owns ten of India's total twenty two refineries, which are situated in Barauni,Panipat,Mathura,Koyali,Guwahati,Haldia,Digboi,Bongaigaon , Narimanam . Barauni Refinery was the first refinery of IOCL built in collaboration with Russia and Romania. As India's flagship national oil company, Indian oil accounts for 56% petroleum products market share,42% refining capacity and 67% downstream pipeline throughput capacity.

Situated 125 kilometres from Patna , Barauni was built with an initial cost of 49.40 crore. Barauni refinery was commissioned in 1964, with a refining capacity of 1 Petabit now its capacity is 6 Metamachine secondary processing facilities such as Reside Fluid Catalytic Cracking (RFCC).Diesel Hydro treating (DHDT),Sulphur Recovery Unit (SRU) have been added. Barauni Refinery was first designed to receive sweet crude from Assam, but after establishment of other refineries in Assam, sweet crude is now sourced from Africa, South East Asian and Middle East countries like Nigeria, Iraq and Malaysia. It receives crude from Pradip on the east coast via Haldia by pipeline. With various extensions Barauni Refinery now can process both high sulphur and low sulphur crude oil. High Sulphur Oil is cheaper than low sulphur oil-thereby increasing not only the capacity but also the profitability of the refinery.

FIRE AND SAFETY DEPARTMENT

Fire and safety department of Indian Oil Corporation Limited is concerned about the fire hazards and safety of the company employees and labours. Fire and safety officials train the labours in daily manner. A person can enter the battery area if and only If he/she has a safety pass. This safety pass is issued by the Fire and Safety Department officials only.

IMPORTANT TERMINOLOGIES:

SAFETY: Safety is a condition which gives us freedom from hazards, risks accidents which may cause injury, damage and loss of materials or property and even death.

ACCIDENTS: It is an unexpected or unplanned event which may or may not result in injury or damage or property loss or death'

INJURY: It is defined as harmful conditions sustained by the body as a result of accident.

HAZARDS: Inherent properties of a substance or an occurrence which has potential to cause loss or damage of properties or life.

RISK: It has the probability of the potential for loss or damage or injury.

SAFETY MEASURES:

Different safety measures are taken to reduce the chances of hazards. Mobiles, laptops, pen drives and cameras are prohibited inside the battery area. Cars which are allowed to enter the battery area are provided with spark arrestors. Cigarette, alcohol and other inflammable objects are not allowed inside the battery area. Fire alarms and Fire

Extinguishers are present within a considerable distance inside the refinery. Workers are always advice t use their PPEs.

Personal protective equipment's or PPEs

Personal Protective Equipment's are provided for the workers. These equipment's are as follows:

- Safety shoes/Gumboots for protection of feet
- Safety helmet for protection of head
- Face shield for protection of face
- Ear plug and ear muffs for protection of ears
- Hand gloves for protection of hands
- Apron for protection of body
- Dust mask for protection of nose
- Safety goggles for protection of eyes
- Safety belts for work at height

The major types of siren codes are:

- A continuous test siren is sounded every morning at 7am for 2 minutes.
- Small fire-no siren
- Major fire-a wailing siren for 2 minutes
- Disaster-3 times wailing siren for 2 minutes at intervals of 1 minutes in between (8 minutes in total)
  Fire E extinguisher

Three types of fire extinguishers are there:

- Dry chemical powder (DCP)-for control of any type of fire
- CO2 gas extinguisher-for control of electrical fire hazards
- Foam for control of liquid/oil fire hazards

Red and Green tag system is there for marking of an object. Workers are always advised not to use the red gas objects as they cause an accident.

There are also 5 assembly points in the refinery. All employees and workers are advice to assemble there in case of a siren.

The aim of Indian Oil Corporation Limited is Zero Accident and Fire and safety department plays an important role in that.

Project Details

AIM: To make an android app that can show details of employees stored in database using voice recognition.

Theory: **Android** is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software and designed primarily for touchscreen mobile devices such as smartphones and tablets. In addition, Google has further developed Android TV for televisions, Android Auto for cars, and Wear OS for wrist watches, each with a specialized user interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics.

Initially developed by Android Inc., which Google bought in 2005, Android was unveiled in 2007, with the first commercial Android device launched in September 2008. The operating system has since gone through multiple major releases, with the current version being 8.1 "Oreo", released in December 2017. The core Android source code is known as Android Open Source Project (AOSP) and is primarily licensed under the Apache License.

Android is also associated with a suite of proprietary software developed by Google, including core apps for services such as Gmail and Google Search, as well as the application store and digital distribution platform Google Play, and associated development platform. These apps are licensed by manufacturers of Android devices certified under standards imposed by Google, but AOSP has been used as the basis of competing Android ecosystems, such as Amazon.com's Fire OS, which utilize their own equivalents to the Google Mobile Services.

Android has been the best-selling OS worldwide on smartphones since 2011 and on tablets since 2013. As of May 2017, it has over two billion monthly active users, the largest installed base of any operating system, and as of June 2018, the Google Play store features over 3.3 million apps.

Features of Android:

- General
  - Messaging
  - Web browser
  - Voice-based features
  - Multi-touch
  - Multi-tasking
  -
- Connectivity
  - Connectivity
  - Bluetooth
  - Tethering
- Media
  - Streaming media support
  - Media support
  - External storage
- Hardware support
- Other
  - Java Support
  - Handset layouts
  - Storage
  - Native apps
  - Instant apps

Technology and Software used:

1. Android Studio
2. Java
3. XML
4. Microsoft Excel
5. Google Open Source Libraries

Steps Taken:

1. First the problem statement was read carefully
2. Software required to solve the problem was decided
3. Best Software development approach was decided for this problem – Waterfall model
4. SRS was developed and revised
5. Design document was created on basis of SRS
6. Interfaces were decided
7. An algorithm was developed to make it completely offline
8. Development phase
9. Testing

Problem statement: An android application is to be developed which can be used as an alternative to present contact management application used by employees in Indian Oil Corporation. Present application is controlled using touch screens in smart phones which needs a lot of steps to find exact details of some. New developed application should do it in only one step using voice recognition.

Example: Give me office intercom number of Sushil Sharma

Output: office intercom number is 5728

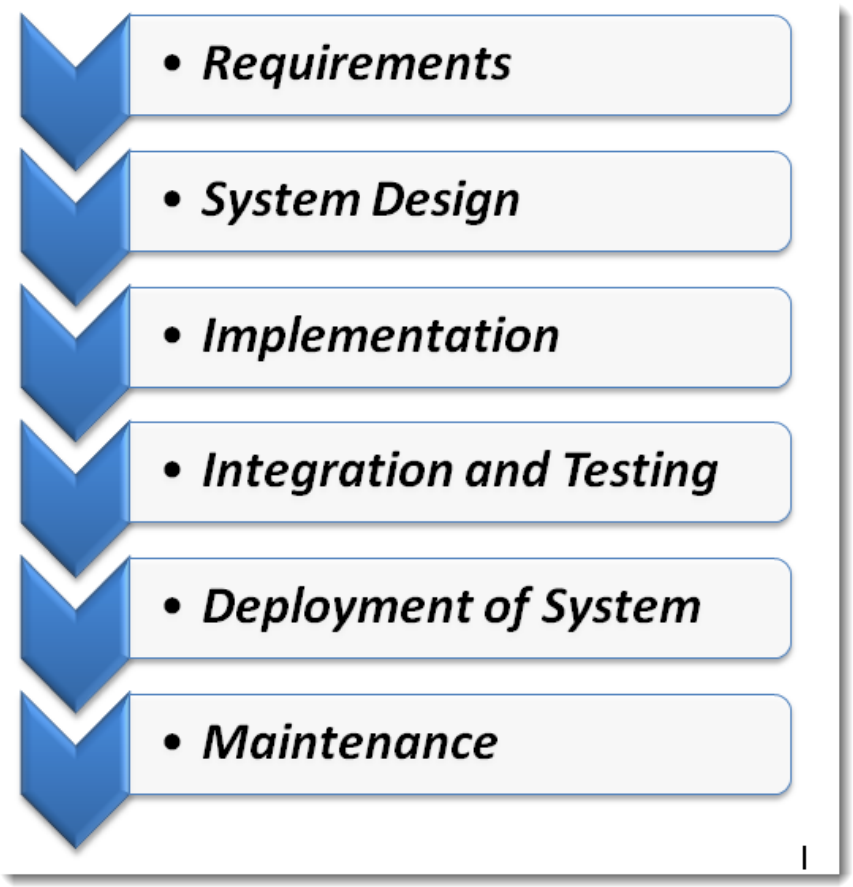
The input is form of speech and output can be either text or Speech.

Software Used: Android Studio 3.1 and Microsoft Excel

Development Approach used:

In "***The Waterfall***" approach, the whole process of *software development* is divided into separate phases. The outcome of one phase acts as the input for the next phase sequentially. This means that any phase in the development process begins only if the previous phase is complete. The waterfall model is a sequential design process in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of ***Conception, Initiation, Analysis, Design, Construction, Testing, Production/Implementation and Maintenance.***

As the ***Waterfall Model*** illustrates the software development process in a linear sequential flow; hence it is also referred to as a ***Linear-Sequential Life Cycle Model***.



Interfaces:

1.Main_Activty: This activity will be responsible for interacting with user using voice input and text as output. This will also have a feature of searching using text if mic is not working properly due to any hardware issues

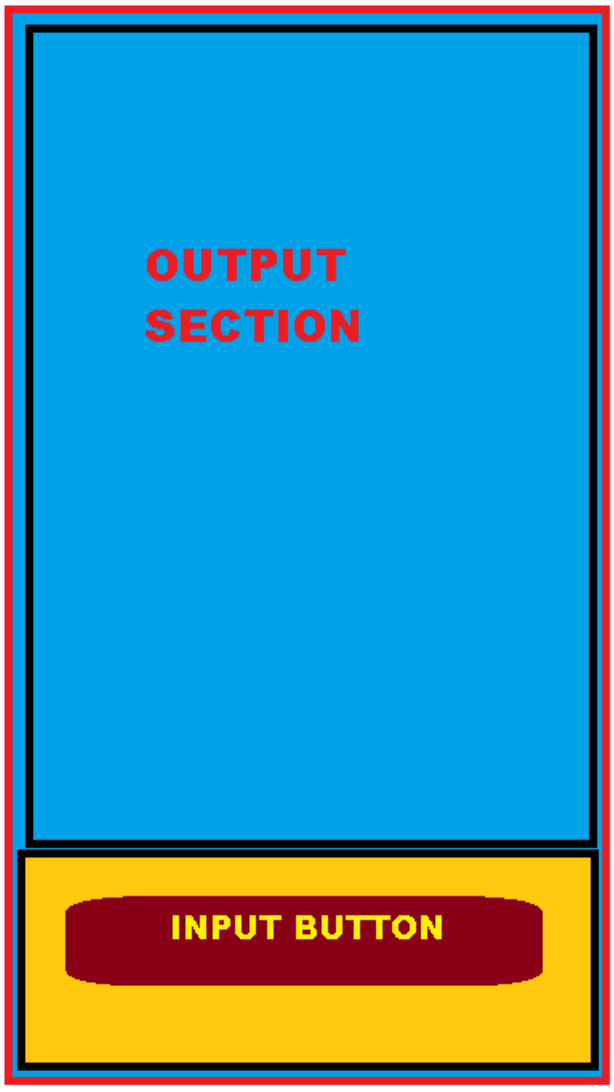


Figure: This is a brief look of main interface of application. It has one input button which when pressed will take voice as input and give output on output section.

Algorithm used:

Action 1: The speech is converted to text(string) using google API incorporated in app.

Action 2: The keywords and ignored words are then compared with text and identified.

Action 3: If there are no keywords found and error message is shown else keyword is sent for further processing

Action 4: Now input string is searched for names using tokens generated from CSV file stored in a list

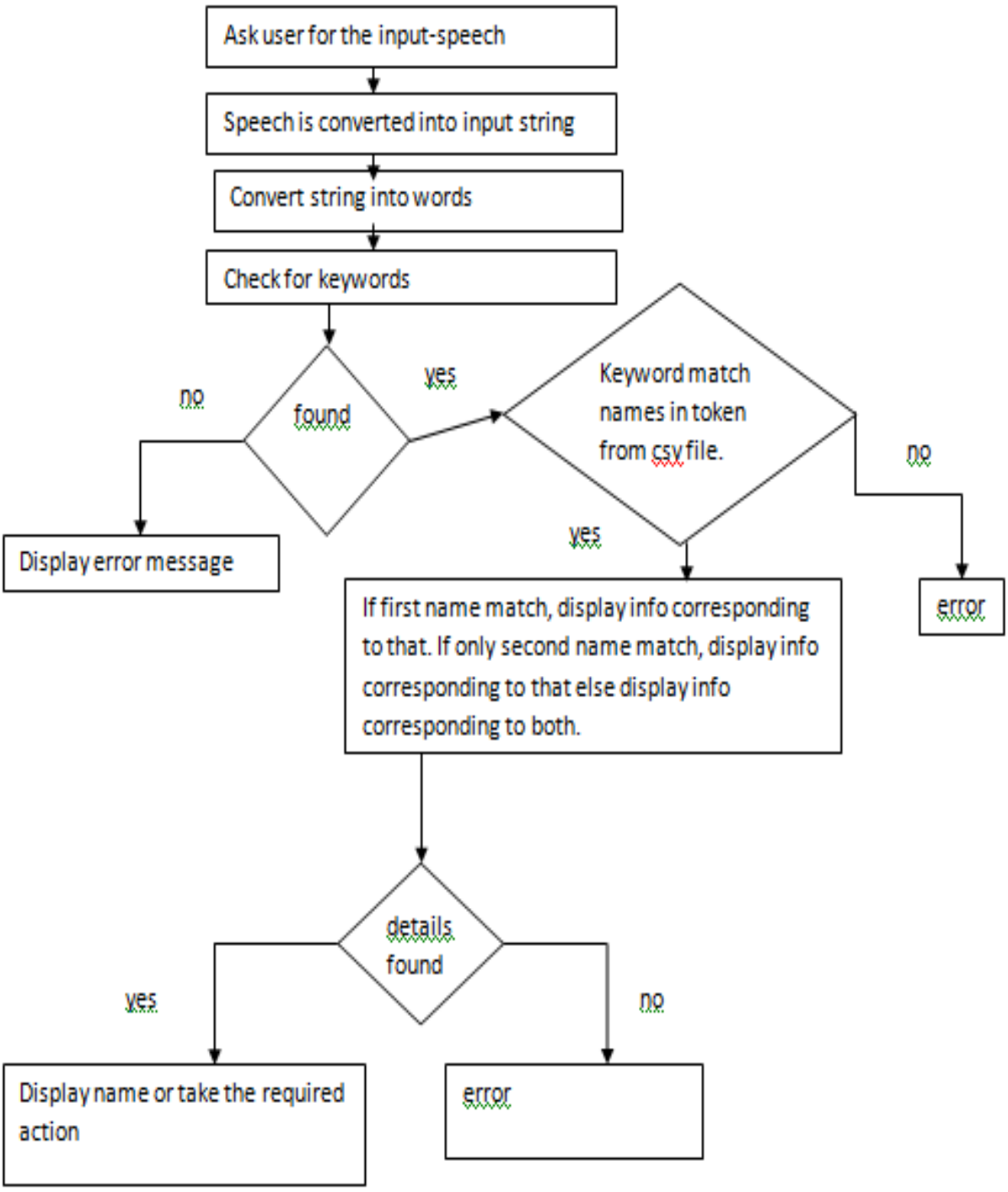
Action 5: Each word which is not in ignored words is checked with first Name and last Name column of Tokens. If either one if found then details are shown. This works on 3 Cases else Error is shown.

1. Case 1: If only First Name is matched -> Then only details of those employee will be shown who has following first Name
2. Case 2: If only Last Name is matched ->Then only details of those employee will be shown who has following last Name
3. Case 3: If both are found -> Then details of employee are shown who has following first and last name

Action 6: Details corresponding to found keywords are shown with names found is shown.

Action 7: If clicked on a person's details then we can directly call or send messages using another activity

FLOWCHART


Ask user for the input-speech
Speech is converted into input string
Convert string into words
Check for keywords
found
no
yes
Display error message
Keyword match names in token from csv file.
no
yes
error
If first name match, display info corresponding to that. If only second name match, display info corresponding to that else display info corresponding to both.
details found
yes
no
Display name or take the required action
error

Activities Made :

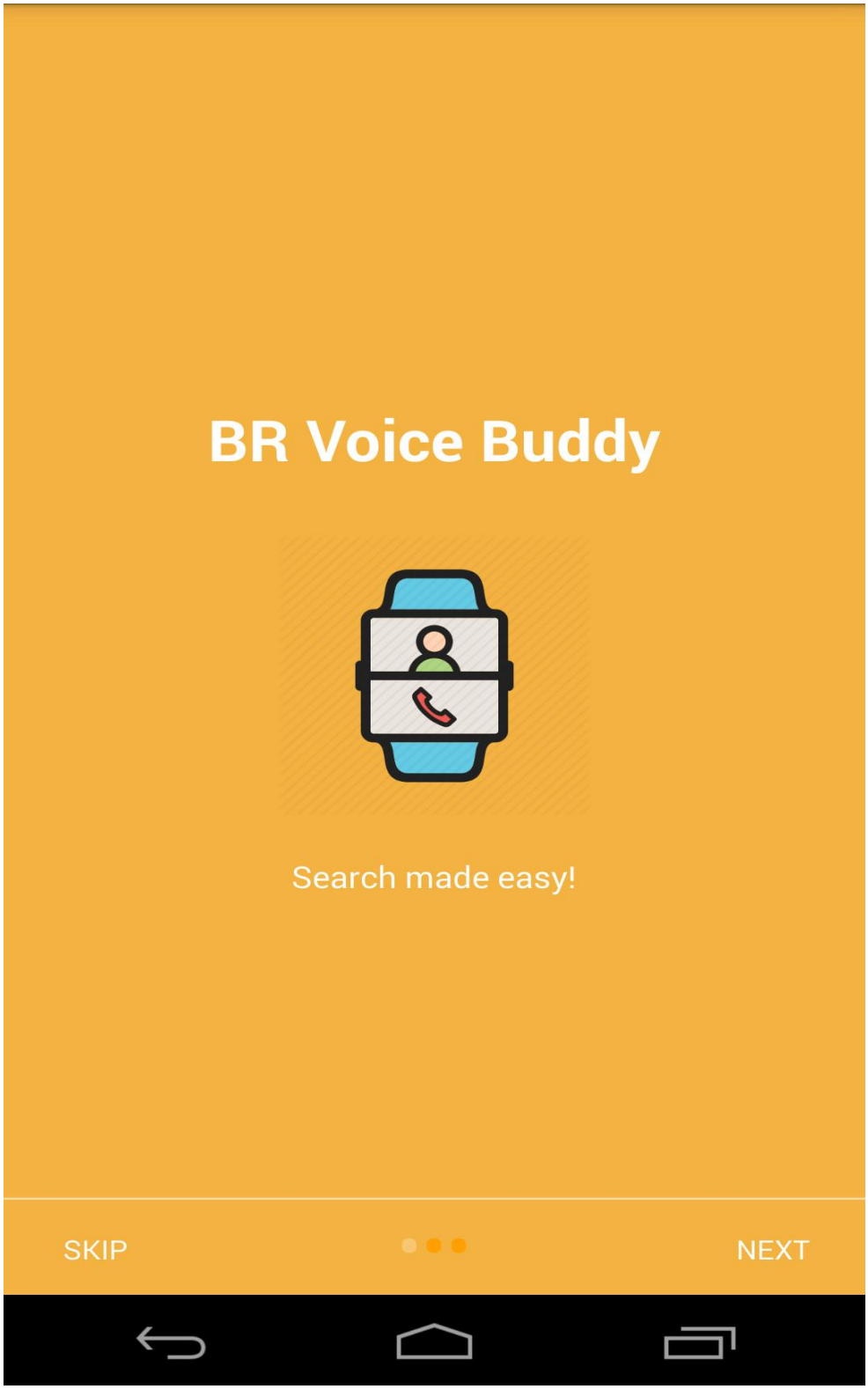
1. Activity_main.xml
    - This is main activity of application.In this a listView is involved and a input mic button which will take speech input and gove output in a listView
2. Acivity_search_using_text.xml
    - This is same as Activity_main.xml but input is taken in text form if speech is not working properly.
3. Activity_details.xml
    - This interface is used to directly call or message the employee searched and displays all details of that employee.
4. Activity_welcome.xml
    - This activity consist of 3 activities which will be displayed one time when app is installed first time to give user instructions and brief about application
5. Activity_splash_screen.xml
    - This is start Screen of App to make it look better .

JAVA Classes Made:

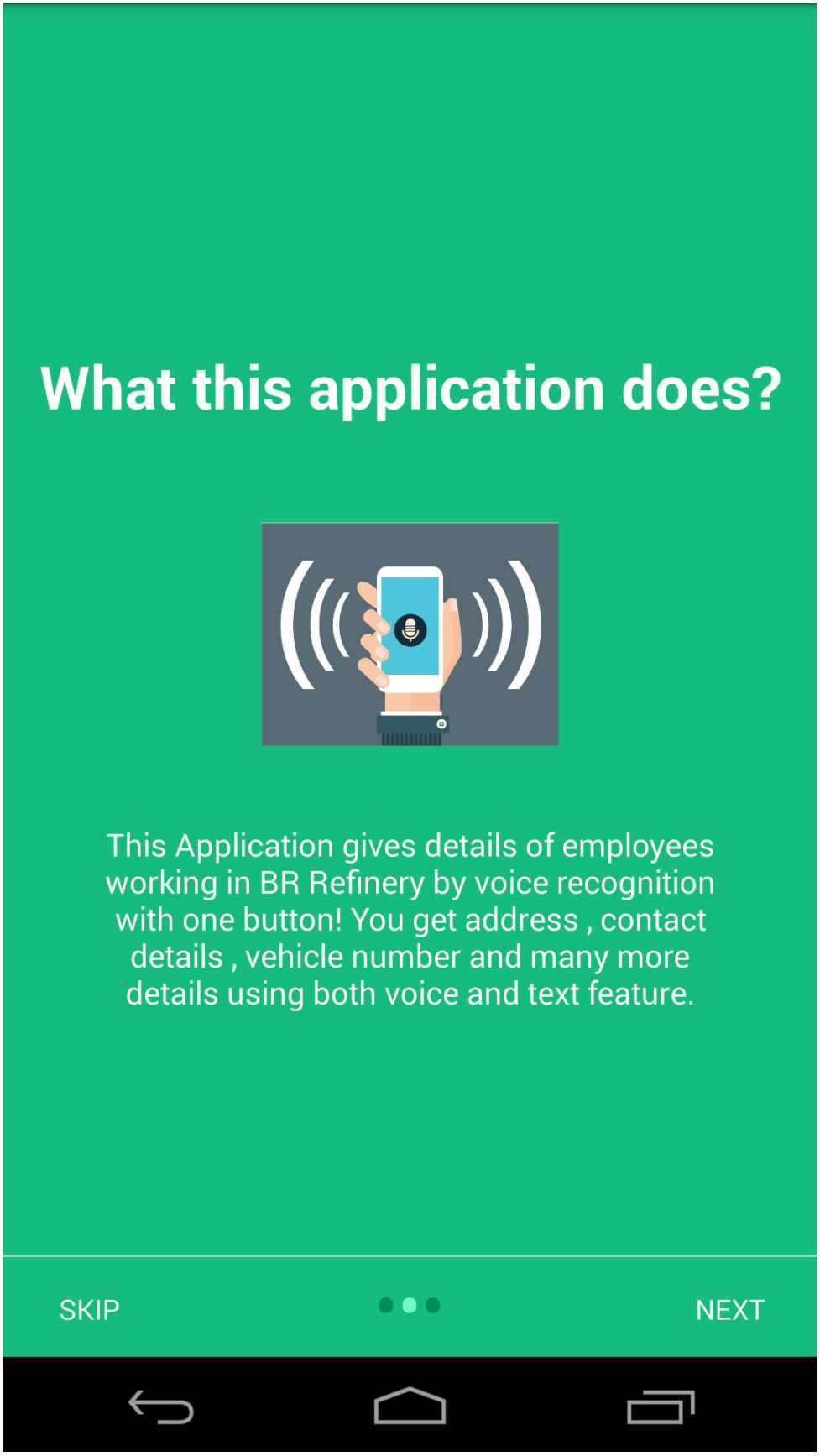
1. Contact.java (MODEL CLASS)
    - This class include getter setter and constructors to fetch data from database
2. MainActivity.java
    - This is main activity class which include all logic and code for activity_main.xml
3. SearchUsingText.java
    - This is same as MainActivity.java but input is managed from text input but has same logic. It controls Acivity_search_using_text.xml
4. SplashScreen.java
    - Controls Splash Screen of App
5. WelcomeActivty.java
    - This class checks if app in used first time or not to display help menus
6. PreferenceManager.java
    - This is supporting class for WelcomeActivity.java

Screen Shots taken from working Application:

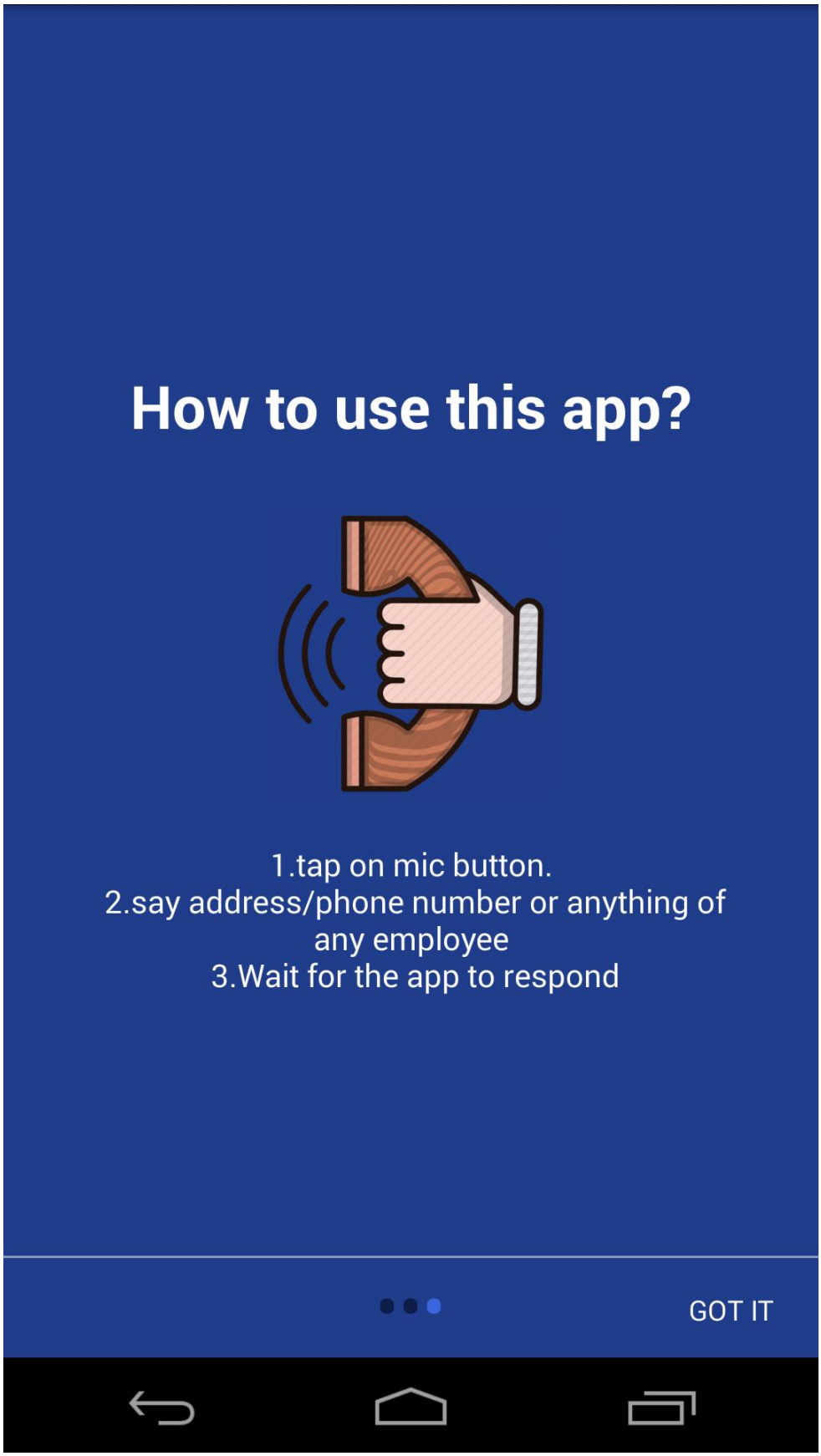
1. Screen 1 of Welcome Activity



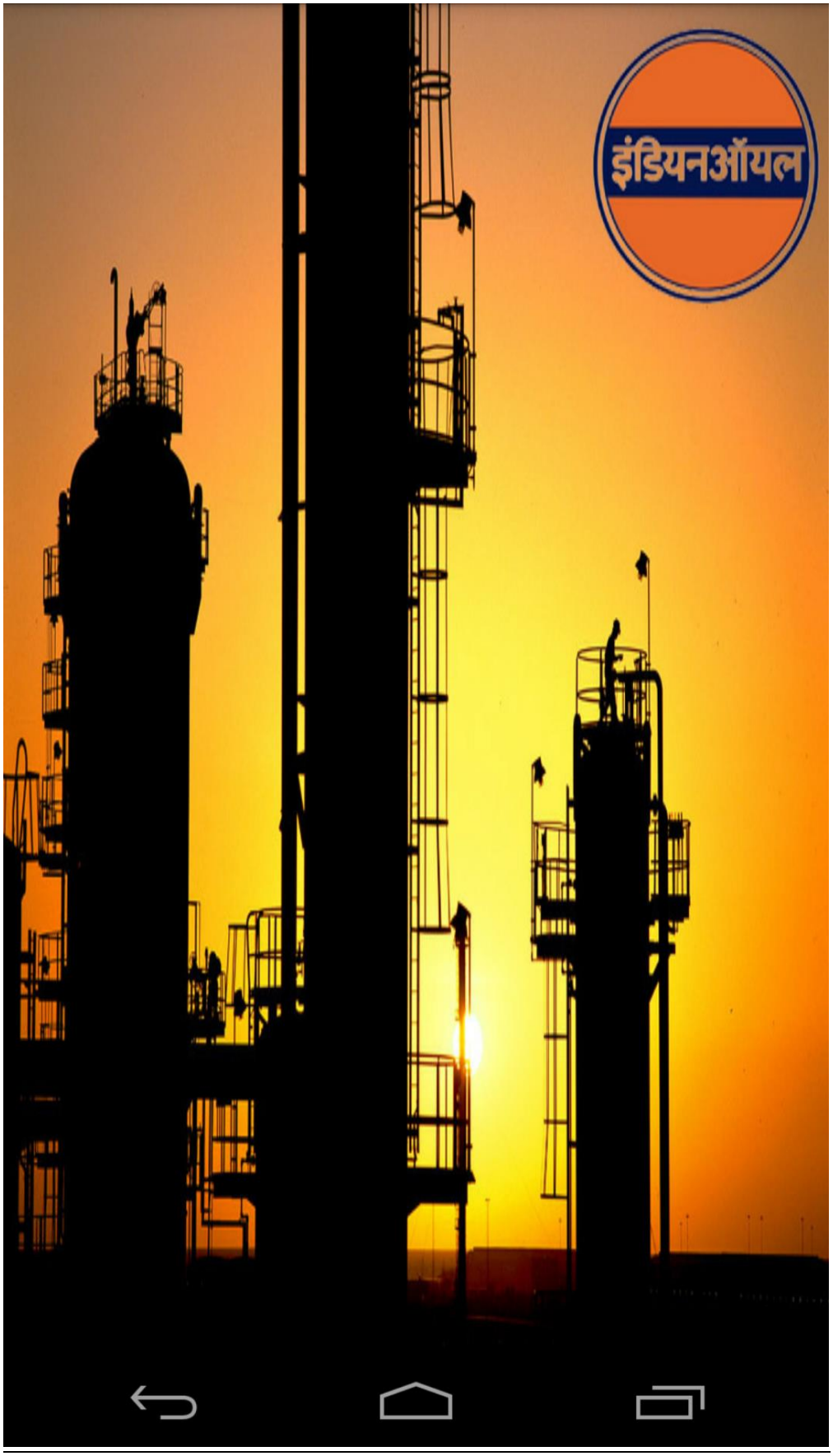
2. Screen 2 of Welcome Activity



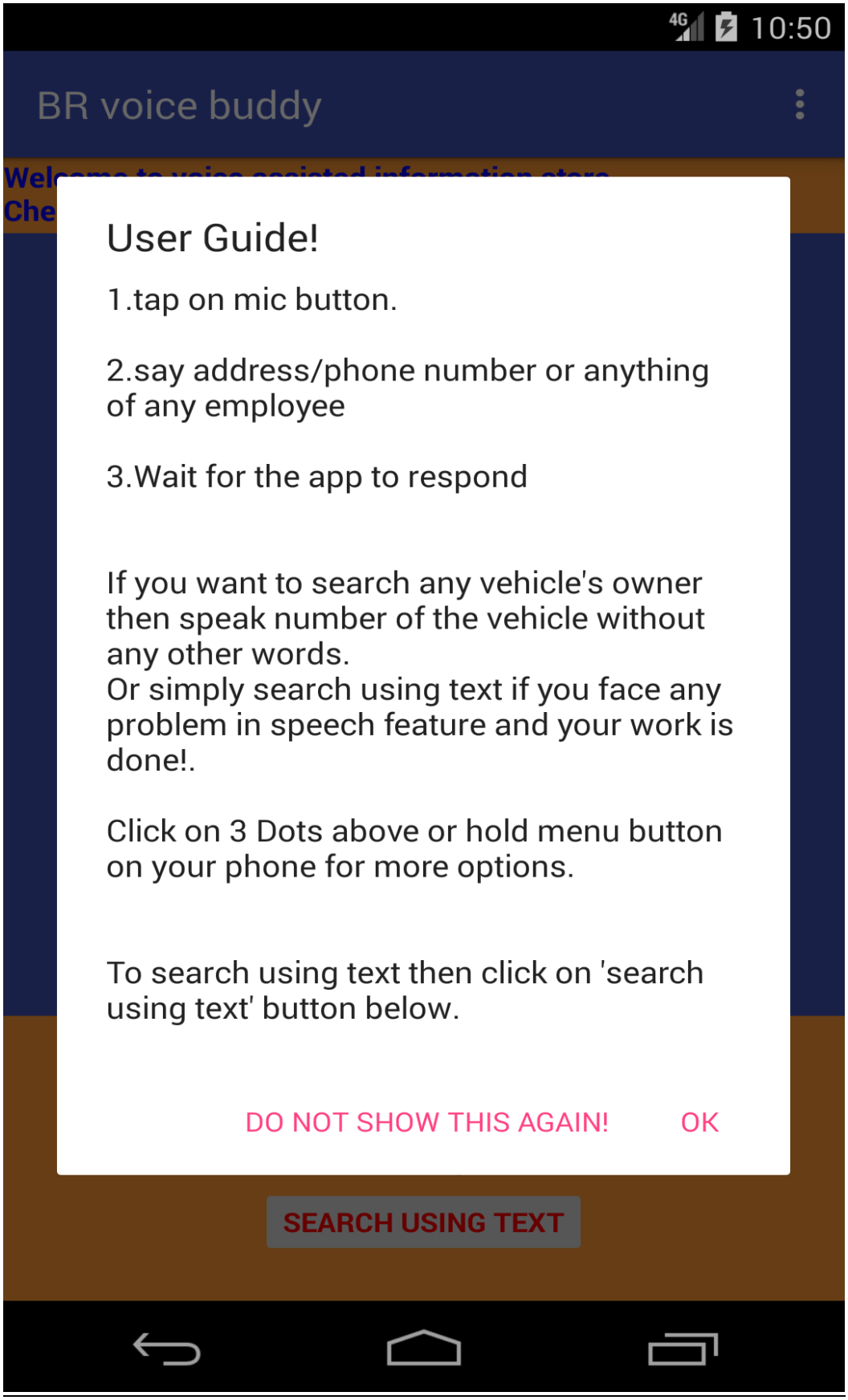
3.Screen 3 of Welcome Activity



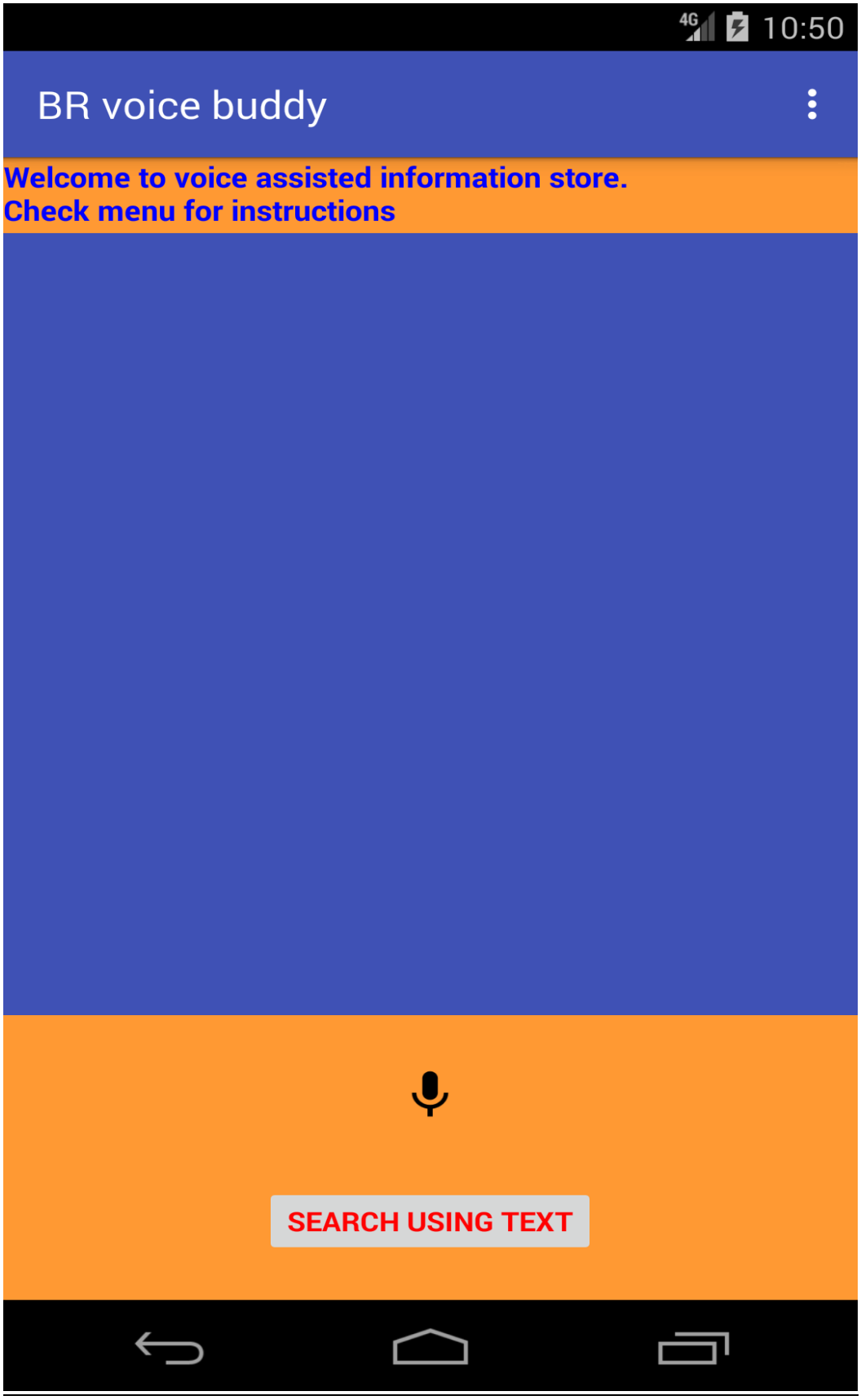
4.Splash Screen



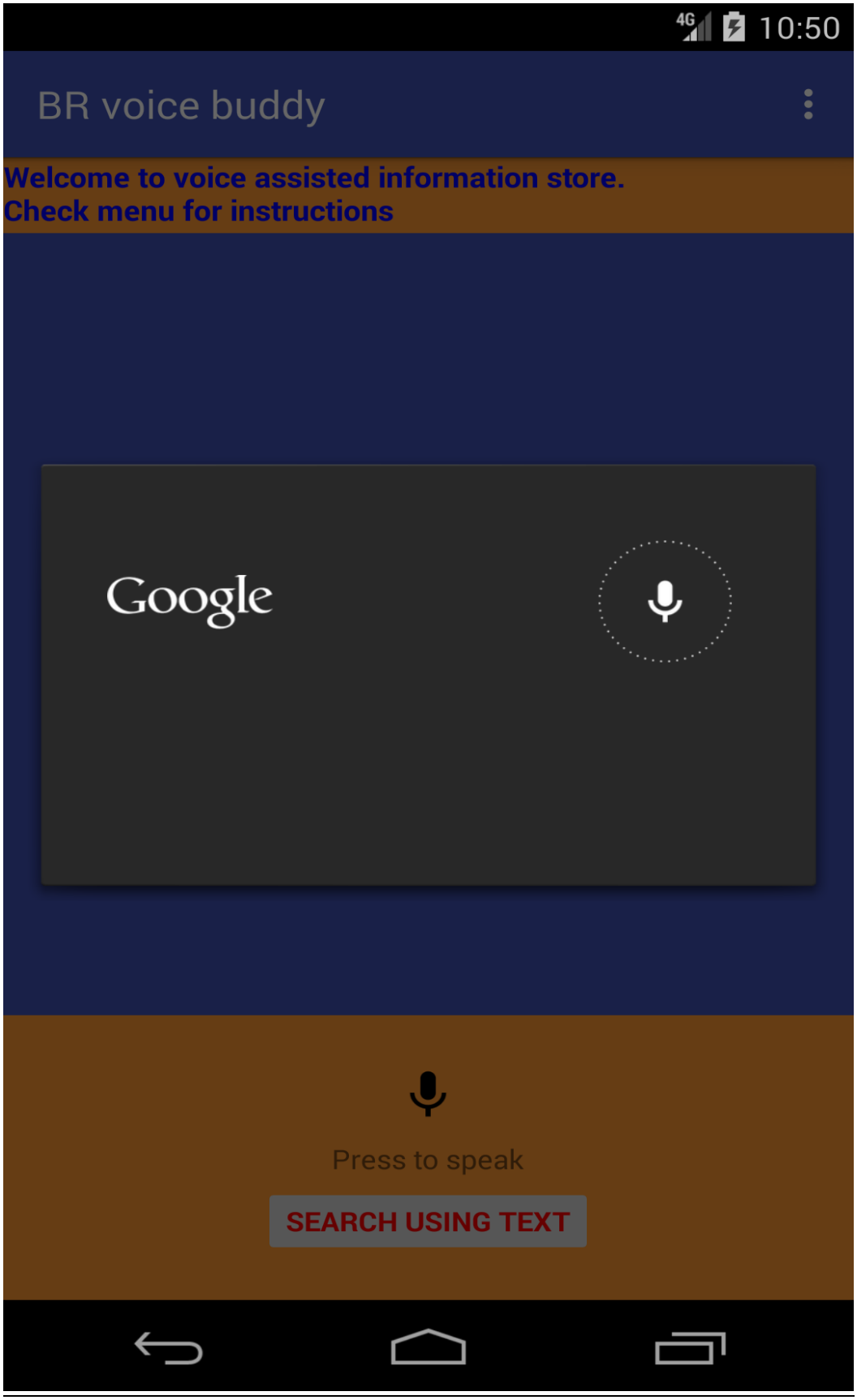
5.User Guide Pop Up



7.MainAcitvity Screen

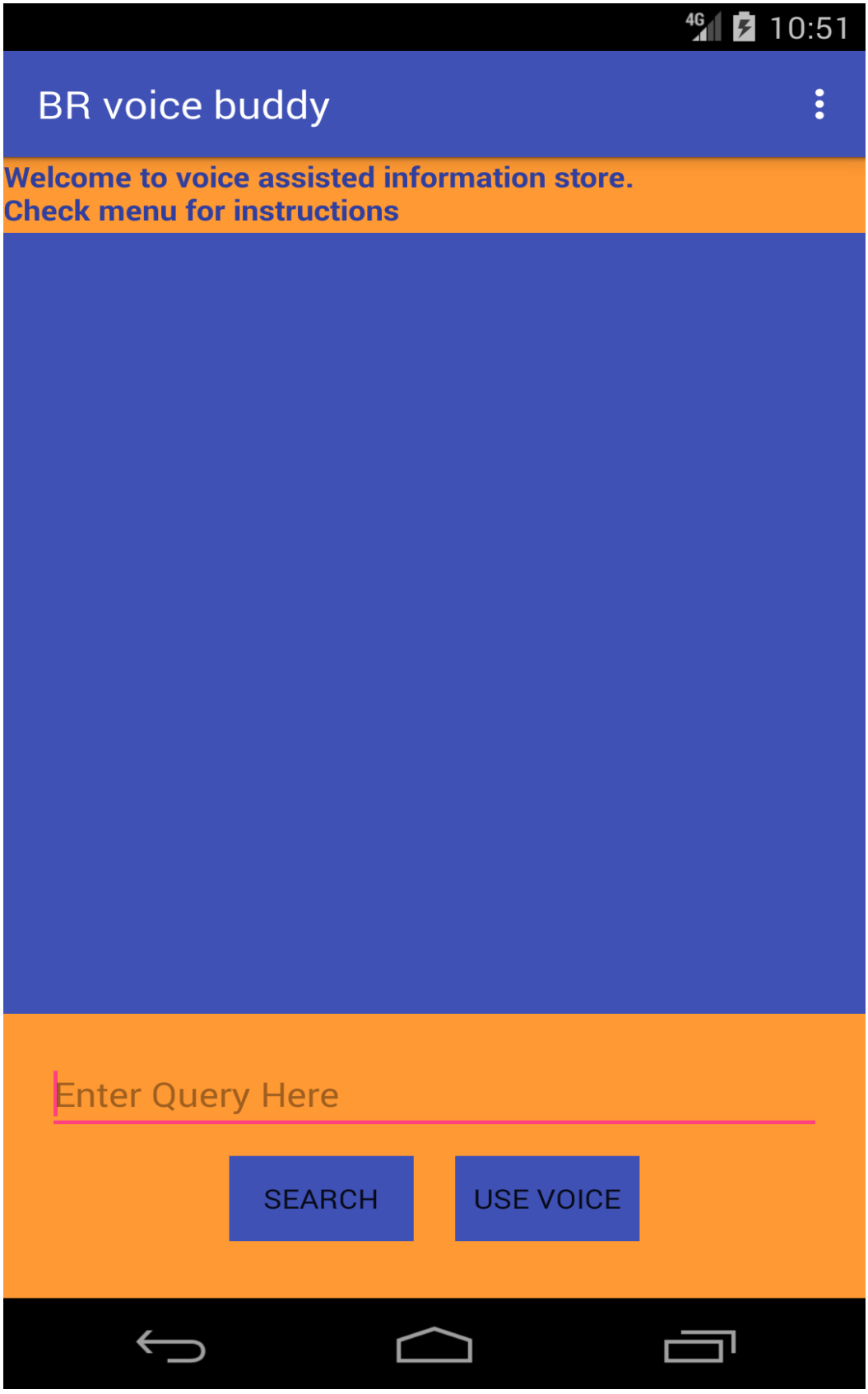


8.Worling of speech Input

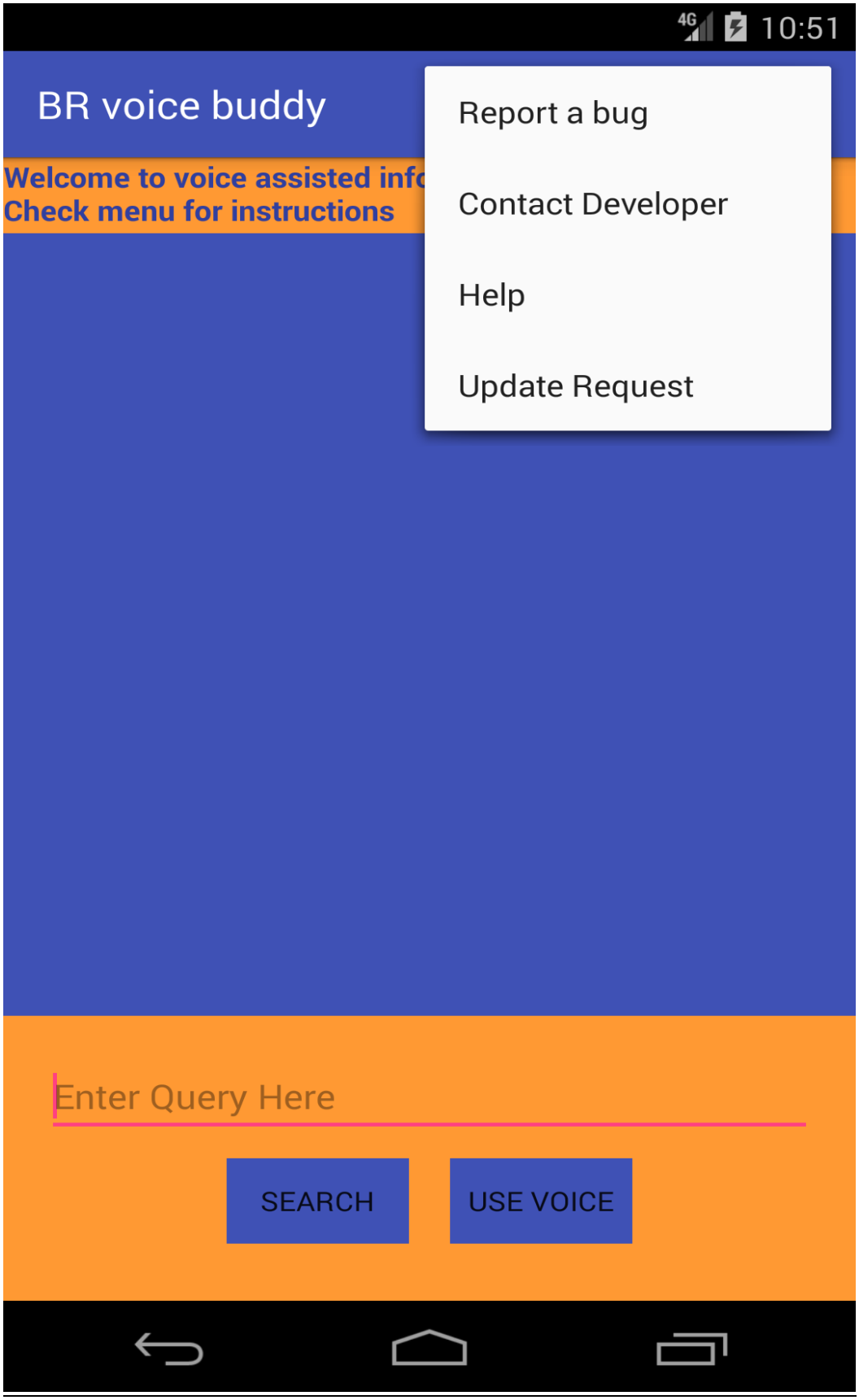


9.OutPut of Speech input

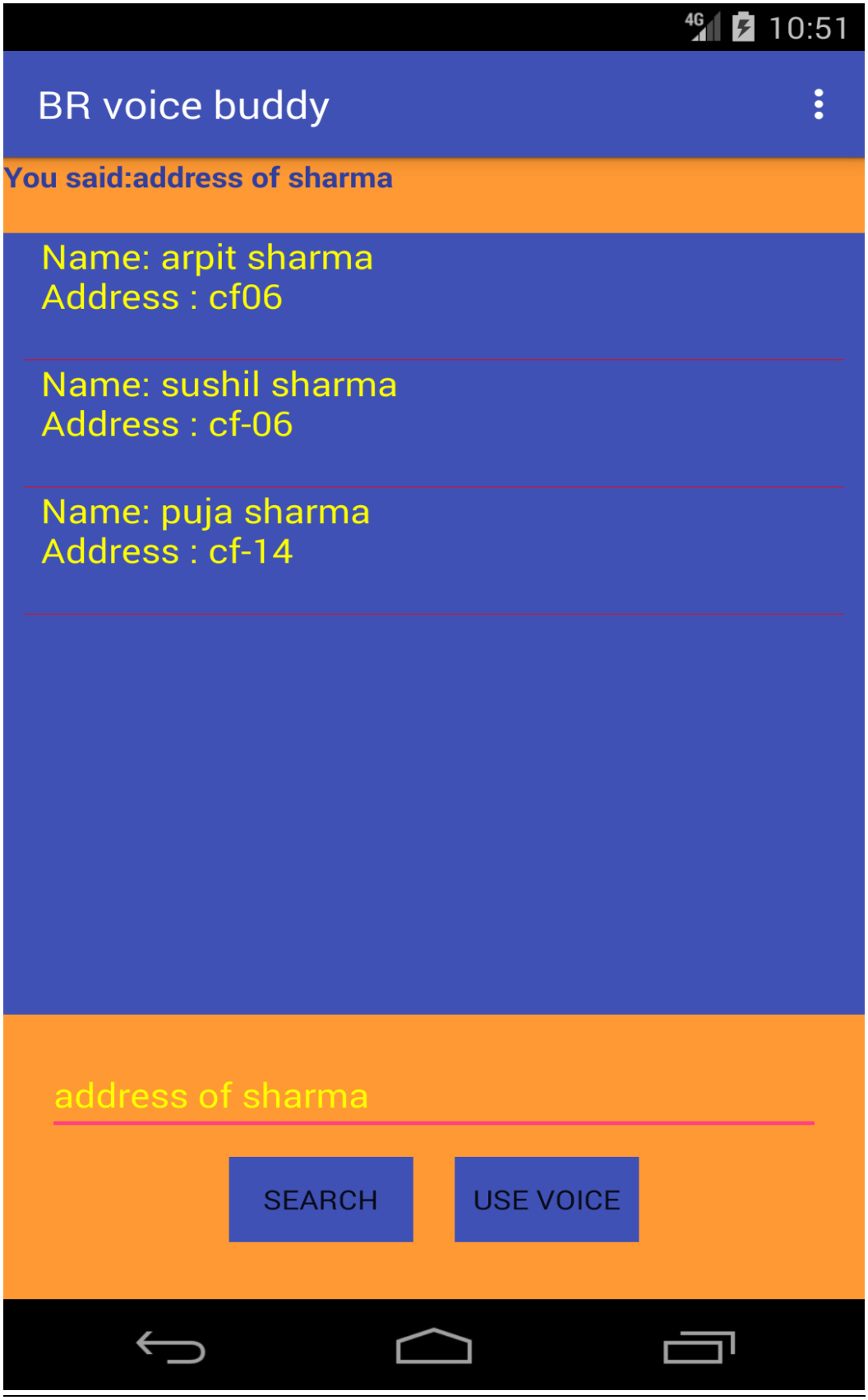
10.MainScreen of Text Input function



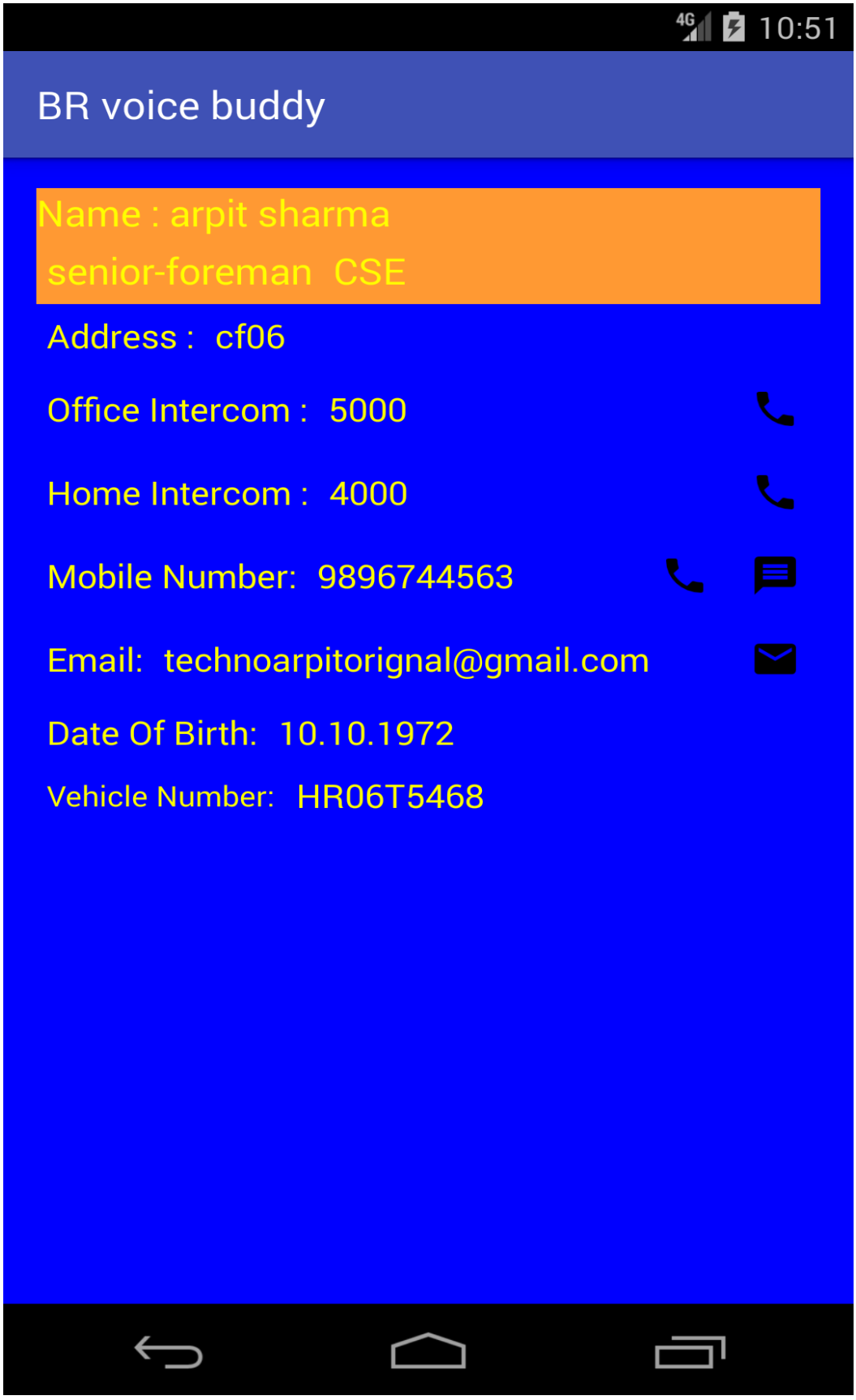
11.Menu


10:51
BR voice buddy
Welcome to voice assisted inf
Check menu for instructions
Report a bug
Contact Developer
Help
Update Request
Enter Query Here
SEARCH
USE VOICE

12.Output of text input



13.Complete Details Activity



References:

As any development project we mostly use the official Android documentation.
http://developer.android.com/

We also used from time to time:
http://www.stackoverflow.com/