1. INTRODUCTION

The WHO (World Health Organization) statistics about the blind shows that 285 million people are estimated to be visually impaired worldwide of that 39 million are blind and 246 have low vision. The visually challenged people are more sensitive to touch at the fingertip when compared to the normal individuals as they have the good sensation at their fingertip [1]. The blind people use braille language and it is determined by fashion of system of reading and writing that could be a bridge of communication between the blind and the sighted one. The first ten letters of the alphabet, $a$–$j$, use the upper four dot positions: $⠁⠃⠉⠙⠑⠋⠛⠓⠊⠚$, these stand for the ten digits 1–9 and 0 in a system parallel to Hebrew gematria and Greek isopsephy. Though the dots are assigned in no obvious order, the cells with the fewest dots are assigned to the first three letters (and lowest digits), $abc = 123 (⠁⠃⠉)$, and to the three vowels in this part of the alphabet, $aei (⠁⠑⠊)$, whereas the even digits, 4, 6, 8, 0 ($⠙⠋⠓⠚$), are corners/right angles. The next ten letters, $k$–$t$, are identical to $a$–$j$, respectively, apart from the addition of a dot at position 3 (red dots in the table): $⠁⠃⠉⠙⠑⠋⠛⠓⠊⠚⠁⠃⠉⠙⠑⠋⠛⠓⠊⠚$. The main objective of this application is to provide an effective way of communication by eliminating the elaborated search for a specific object location on touch screen and switching between layers. This app is developed by using device with an Android version 7.0 and by means of Android studio.
2. OBJECTIVES

The main aim of the project is to enable blind and visually impaired people to send a text and make calls in multi-touch screen mobile phones using the Braille language. This aim is fulfilled by reaching the following objectives:

- Identifying the difficulties with multi-touch screen mobile phones text entry for blind and visually impaired people.
- Designing some interface layouts to input Braille cells in a multi-touch screen phone.
- To make device accessible and useful for blind people for all the basic purposes like message and calls.

3. METHODOLOGY

V-Braille is a simple mechanism for conveying Braille using the touchscreen and vibration on a mainstream phone. The system is programmed using Android Studio, which is software provided by Google for Application development. This application has three main modules:

- Call
- Message
- Dictionary

Here we discuss those modules specifications in detail:
• **CALL**

In the call module, the user enters the number or contact name using braille keyboard. The system checks the availability of that particular number or contact in phone database and makes calls.

• **MESSAGE**

In the message module, the user enters the contact details and types the messages to be sent to the destination.

• **DICTIONARY**

The dictionary module is same as message module, but the only difference is instead of typing certain messages, we will have set of default messages which are predefined.

4. **RESULT**

The VBraille application contains mainly three modules: Call, Message, Dictionary. User can select the option by clicking on the option.
Call Module

Call module provides braille keyboard to the user. User can enter the contact number using braille keyboard. After entering the contact number press “CALL” button in the bottom left corner of the screen.

Message Module

Message module allows user to type message of his interest. It will speak out the text which is typed by the user. The user can send the message by entering the contact number in the next page.
Dictionary Module

Dictionary module provides six default messages. User can select the message by long pressing of particular button on the screen.

5. CONCLUSION

This project we have introduced an application that enables the blind people to enter the text and send message, and also enables user to make a call to concerned person more easily on touch screen devices by using touch screen and text to speech Braille keyboard, than with existing alternatives. Existing System requires hardware specifications to enable the communication over the mobile devices. This application doesn’t require any hardware specifications, it is easy to carry for the blind people to send message and make call by using Android mobile phone.

6. SCOPE FOR FUTURE WORK

- The further enhancement can be done in the message module such as the messages can be made to receive through this application with the help of text-to-speech.

- Studies are being carried out to make the braille keypad more simple and user friendly.