

Android Project Report on

TESTURBRAIN

Aprameya Dash – 191IT209

Suyash Chintawar – 191IT109

Anshul Patel – 191IT208

Mohit Awachar – 191IT231

Department of Information Technology, NITK Surathkal

Date of Submission: 14 June 2020

in partial fulfillment for the award of the degree

of

Bachelor of Technology

In

Information Technology

At



Department of Information Technology

National Institute of Technology Karnataka, Surathkal

June 2020

Department of Information Technology, NITK Surathkal
Android Project
Second Semester Evaluation Report (June 2020)

Course Code: IT150

Course Title: Android Project

Project Title: TestUrBrain

Project Group:

Name of the Student	Register No.
Aprameya Dash	191IT209
Suyash Chintawar	191IT109
Anshul Patel	191IT208
Mohit Awachar	191IT231

Place: NITK, Surathkal

Date: 14 June 2020

Contents

1	Introduction	1
2	Work Done	2
3	Results and Discussion	5
4	Conclusion and Future work	13

Welcome!



TestUrBrain

1. Introduction

From the stone age to the modern era, we have covered a long way and indeed, technology has been the driving force of this evolution of ours. Technology has progressed tremendously and has made our lives easier. But, hands down, the greatest marvel of technology is the creation of mobile phones. It is hard to even imagine a world without mobile phones as they have become an integral part of our daily lives. The first true mobile phone was invented in 1973 and since then this industry has progressed by leaps and bounds. Giants like Apple, Google, Samsung etc. have revolutionized this industry and have completely changed the form factor of mobile phones giving rise to what we call smartphones.

Smartphones are essentially cell phones that allow you to do more than make phone calls and send messages. With intelligent AI driven software, touch screen capabilities, camera systems, internet browsing ability and a host of apps and games, smartphones have greatly influenced our daily lives. The operating system (OS) of a smartphone is the interface between smartphones and users. Today there are many smartphone operating systems like iOS, Android etc. of which Android OS enjoys the biggest market share. This OS was first developed by Android. Inc, a software company located in Silicon Valley before it was acquired by Google in 2005.

"**TestUrBrain**" is an android app designed by our group as a **Mini Project** for the fulfillment of course **IT150** under the guidance of **Prof. Manjunath Vanahalli**. The main objective behind creating this app was to give users a way to assess their intellectual ability and to provide users with knowledge in various fields. It provides interesting challenges and quizzes and also includes a fun game, tic-tac-toe presently. The app contains carefully formatted quizzes on a variety of topics that will help users to test their knowledge in those fields. Presently, the app also contains a game, Tic-tac-toe which is a 2- player game in which each player takes turns by marking X's and O's in a 3x3 grid. The player who succeeds in placing three of their marks horizontally, vertically, or diagonally is the winner.

The aim of this app is to give a platform to users where they can test their expertise in various fields by undertaking the quizzes provided in the app. Further, we also aim to include games like Tic Tac Toe which can help users to think strategically and logically and allow them to predict the consequences of their actions. The app also has a beautiful and user- friendly interface to provide a hassle- free experience to users.

This app was developed using Java language in Android Studio and is supported for all devices having Android 5.0 (Lollipop) or above. The source code is provided in the attached folder. Please check it out.

2. Work Done

Firstly, upon opening the app, it prompts the user to sign-in, which is an activity comprising of text views, edit texts to enter name and password, image buttons to hide and unhide password and buttons to login. If the user doesn't have an account, he/she is prompted to create a new account by pressing a clickable text view just below the login button. Similarly, the Sign-up activity comprises of text views, edit texts for entering the name and email of the user as well as to create password, image buttons to show and hide the passwords, and sign up button to create a new account.

To store the data that user has entered, **Shared preferences** has been used to store data locally. Shared preferences is a way in which one can store and retrieve primitive data as key- value pairs to a file in the device that makes up your preferences in an XML file inside the app on the device storage. In the sign- up activity, when the user creates a new account, a key value pair is created in a shared preferences file in which the username is the key and the password is the value. Further, when the user logs in, first we check if the username exists in the file and if the username exists, then, we check if the password matches correctly. If the password also matches, then the user is directed to the Home- Page activity.

Once the user has logged in, the next activity is the Home Page Activity. The Home page basically contains 2 clickable linear layouts: Quiz- time and Game- time inside a Scroll- View. If the user clicks on the clickable linear layout for quiz, a new activity, i.e. Quiz- List Activity opens which shows a list of 7 clickable linear layouts inside a Scroll-View, each representing a quiz of a unique category. Presently, we have the following categories: Space and Technology, OOPS, General Knowledge, Indian Politics, Sports, General Science and Famous Places. Otherwise, if the user clicks the clickable linear layout for games, a new activity, i.e. Game- List Activity opens which presently contains only one game: Tic Tac Toe.

Here, we have used an external library called **Glide**, which is an external library supported by Android Devs. The Glide library contains a large number of methods and is primarily used to load and fit images into image- views by resizing, cropping images etc. In this project, we have used Glide to perfectly fit images into image- views and thus enhance the design of the activities.

Each quiz is a set of 10 questions and each question has four options and only one of them is correct. Every Quiz Activity has been created by the use of text views to display question number, to display the question and to show the current score. A radio group having four radio buttons is used to list the options. Buttons are used to submit the chosen option or to quit the quiz. Moreover, every quiz activity has a common layout file which enhances the visuality on the screen. Each of the quiz topics have their own source code but have a common layout file.

After answering each question, the text views get modified by over-writing the

previous question and its options. Each quiz topic contains three String arrays: one for storing the questions, the second one for storing the options for each question and the last one for storing the correct options corresponding to each of the questions. The questions are selected from the first String-array of 10 questions and handled by the use of a flag value which simultaneously runs the selection of question and their corresponding 4 options from the String-array of options. The flag value starts from 0 and keeps on incrementing till 10 as the user progresses through the quiz. For example, when flag is 0, the question-string at index 0 of Question-array and the option-strings at indices 0, 0+1, 0+2, 0+3 of Options array are displayed.

When the user selects an option and clicks the 'Next Question' button, the text of the option chosen by the user is retrieved. The correct answer is known by the string comparison of the text of chosen option with the string which is present at 'flag' index of the String-array of answers. For example, in the above example (see previous paragraph), we compare the retrieved text with the string at 0th index of Answer- array. If the string matches, a counter of correctly answered questions is incremented and it is shown in the text view which displays the score. After that, the flag value is incremented by one and the new question and its corresponding options are displayed.

When the quiz is completed, a Result Activity appears on the screen which displays the score and rating of the user. An image view is used to display the stars obtained out of three. This activity allows the user to take another quiz by pressing the provided button which further leads the user to the Quiz- List Activity. Alternatively, the user can also jump to the game of tic-tac-toe by clicking on the button displayed.

The Game- list activity currently contains one game: Tic Tac Toe. Tic-tac-toe is a 2-player game in which each player takes turns by marking X's and O's in a 3x3 grid. The player who succeeds in placing three of their marks horizontally, vertically, or diagonally is the winner.

When the user selects the clickable linear layout for Tic Tac Toe, he is directed to Tic1Activity, which contains a text- view to display the title, two edit- texts in which the name of the two players has to be inputted and two buttons: one to start the game and the other to display instructions about the game. On clicking the first button, the user is directed to Tic2Activity which contains text- views to display the name of the players and to display the result of the game. It also contains buttons arranged in a 3x3 grid. Further there is a button to reset the game, a button to swap the name of the players and a button to quit the game.

The players take turns in marking X's and O's in each of the 9 buttons arranged in 3x3 grid. Each of the button can be marked only once in a game as the buttons are disabled after being clicked once by a player. Whenever a player marks a button, the code checks if the row, column or diagonal containing that button are also marked by the same letter (X or O). Further, there is also a counter which starts from 0 at the start of the game and increments by 1 whenever a player marks a button in the 3x3 grid. If a

certain row, column or diagonal contains the same mark (X or O), then the game gets completed. All the buttons present in the grid get disabled and the winner player is displayed in a text- view at the top of the activity. Alternatively, if the counter reaches 9 and still there is no winner, then also the game is completed and the message 'DRAW' is displayed in a text- view at the top of the activity.

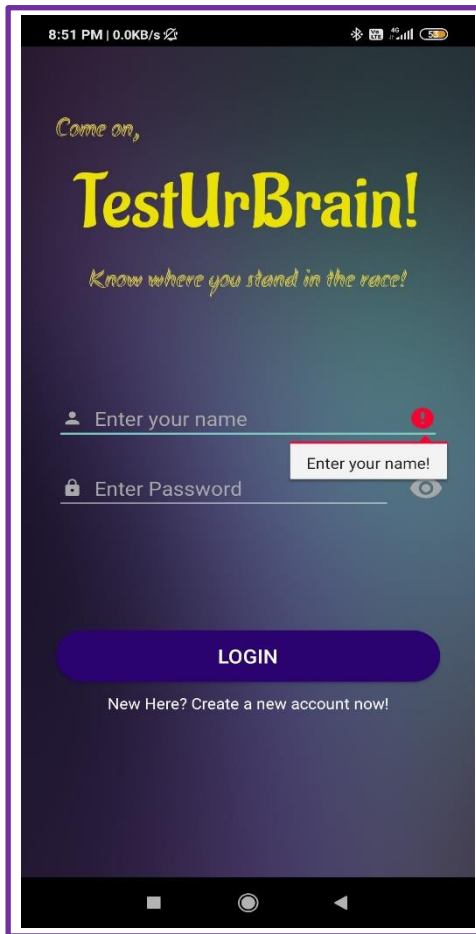
The game can be re- started by clicking the reset button which basically removes all the marks from the buttons present in the 3x3 grid and enables the buttons again. It also restores the counter to 0 and removes the 'winner' message from the text- view. Alternatively, if the players want, then they can click the swap button which swaps the players. Further, the players can quit the game any time by clicking the Quit button which takes them back to the Game- list activity.

The last part of the app is the 'About' section present in the home- page activity. When the user clicks the clickable linear layout named 'About' in the Home- Page activity, they are directed to a page which displays information about the app and its developers. It also displays the names and emails of the developers.

This app was developed by the coordinated efforts of our team members and the work load for this app was distributed evenly among each of the members. Each of the member contributed in perfecting a part of this whole project and due to all these efforts, this project could be completed.

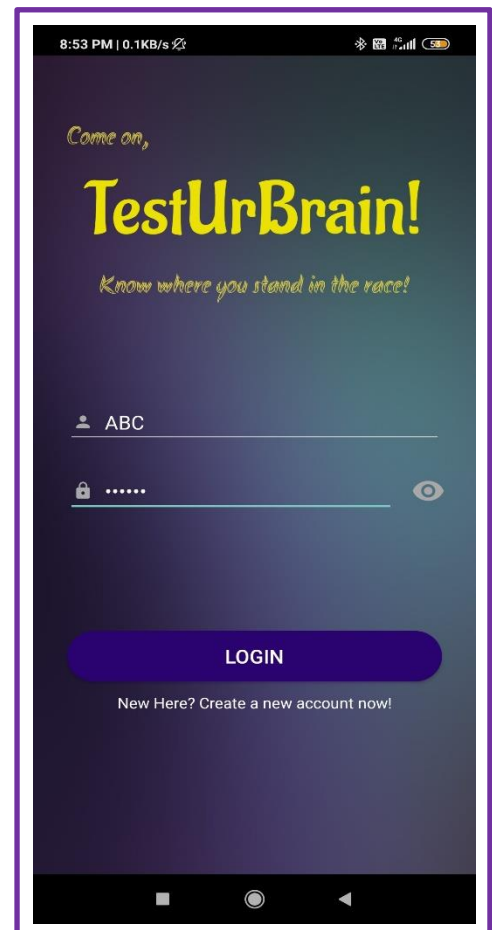
So, we hope that you have a pleasant experience while using our app and find it useful and meaningful!

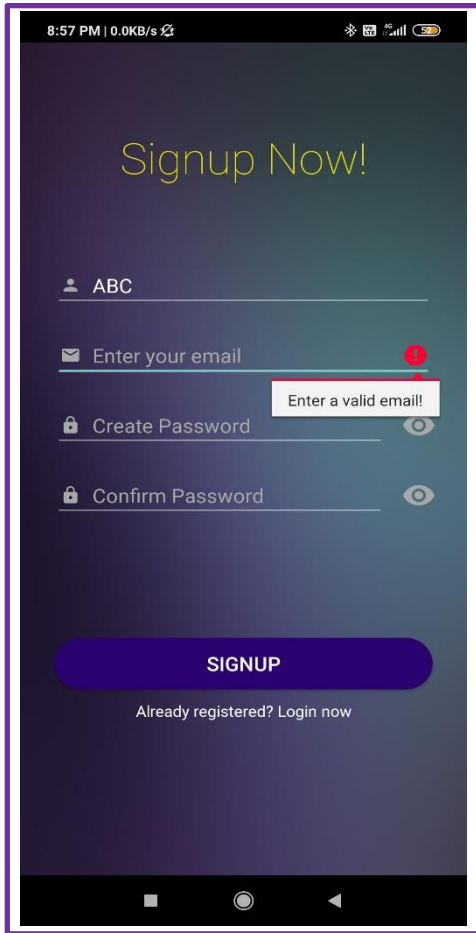
3. Results and Discussion



This is the first activity on opening the app. Here the user is prompted to login and if any of the field is empty, setError() method is used to show error and to bring the focus of the user.

Once the user has filled the details, the password can be viewed by clicking on the eye (image button). If the user doesn't have an account a toast will be displayed prompting the user to create a new account.





8:57 PM | 0.0KB/s

Signup Now!

ABC

Enter your email

Enter a valid email!

Create Password

Confirm Password

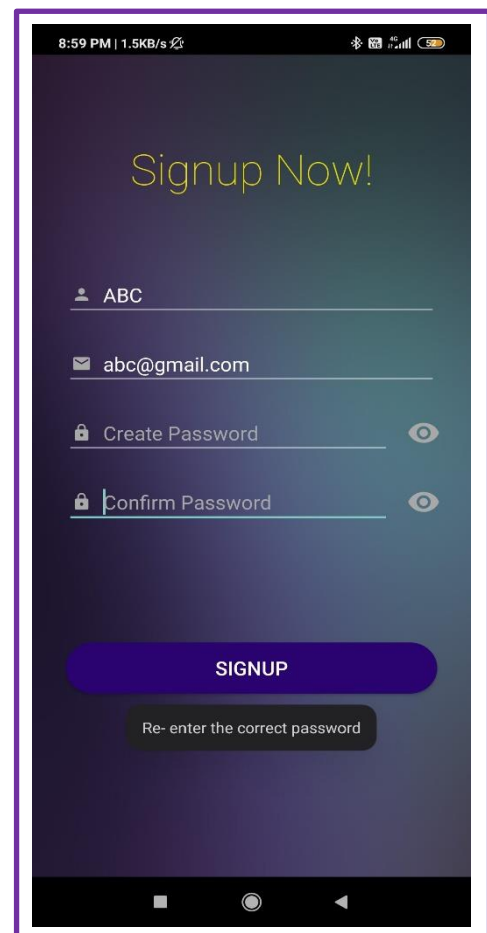
SIGNUP

Already registered? Login now



If the user doesn't have an account, he/ she will be re-directed to this Sign-up activity. All the fields are compulsory. Email should be of standard format else it displays error.

The password must be at least 6 characters long. And if the passwords don't match, a toast will be displayed as shown. Here also the user can view the password by clicking the eye button.



8:59 PM | 1.5KB/s

Signup Now!

ABC

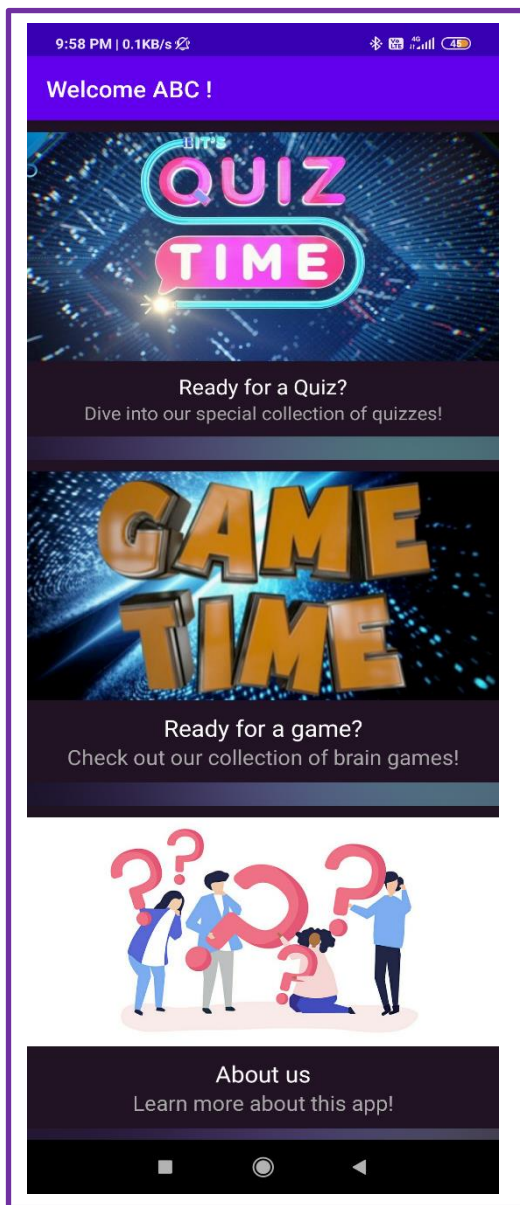
abc@gmail.com

Create Password

Confirm Password

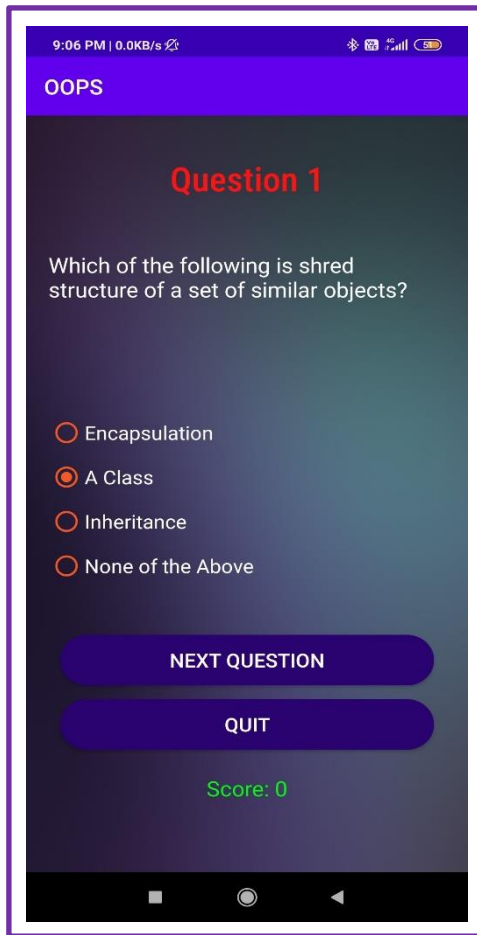
SIGNUP

Re- enter the correct password



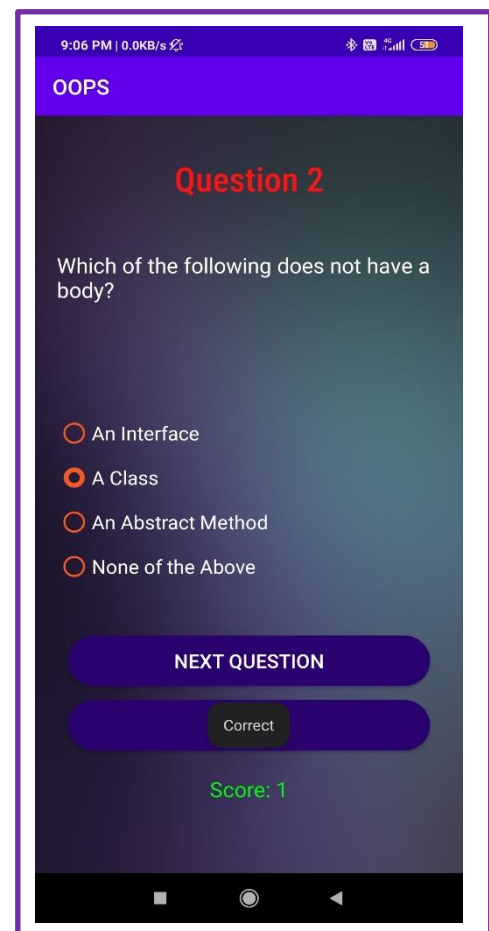
The picture above is the Home Activity which will be visible once user has logged-in. The user can choose between 3 clickable linear layouts based on his/her interest. The 3 items are present within a Scroll-View to enable scrolling. If the user chooses to take a quiz, he/she will be re-directed to a new activity as shown in the picture on the right. The user can further choose to take a quiz amongst 7 categories. All the 7 items are present within a Scroll-View to enable scrolling. The user can also go back to Home Page by pressing the back button in the action bar.

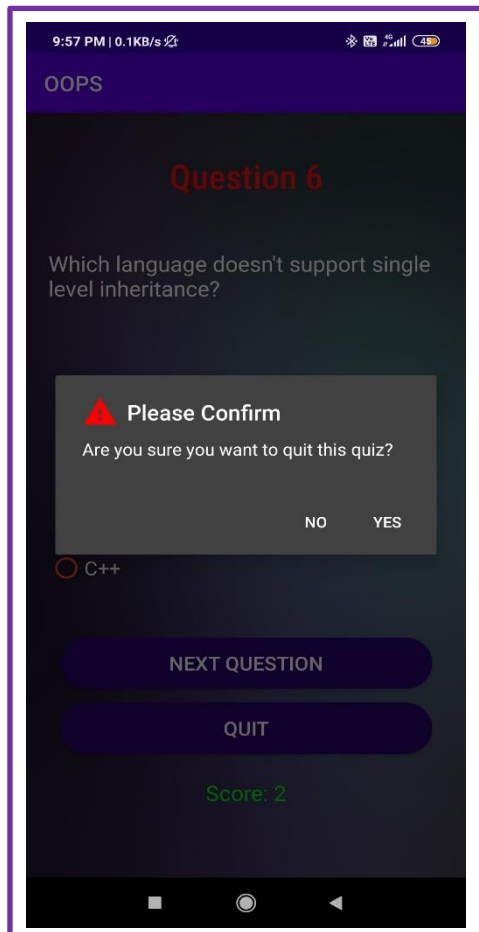




As the user clicks on a category the quiz starts. The user can choose the desired option by clicking on the corresponding radio button. The real-time score of the user is displayed just below the quit button.

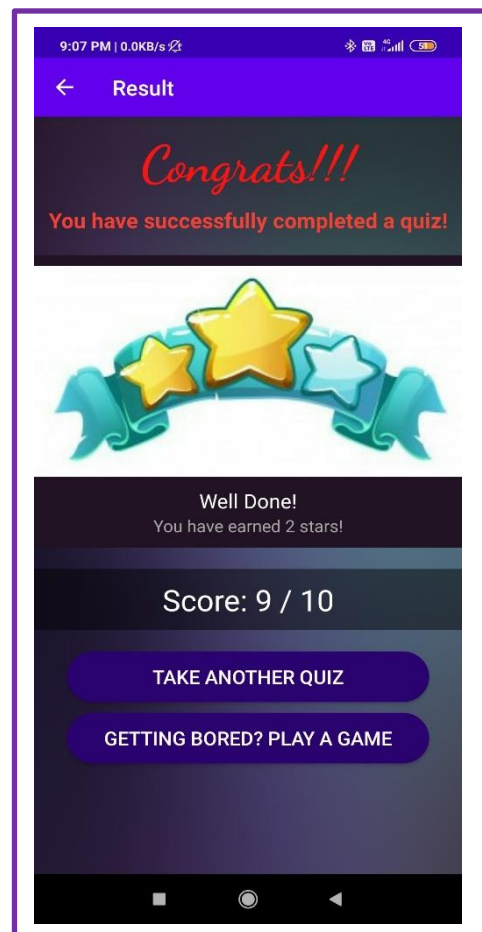
After submitting the answer, the result of the question (correct or wrong) is stated using a toast. Next question appears on the screen and the previously selected option is de-selected.

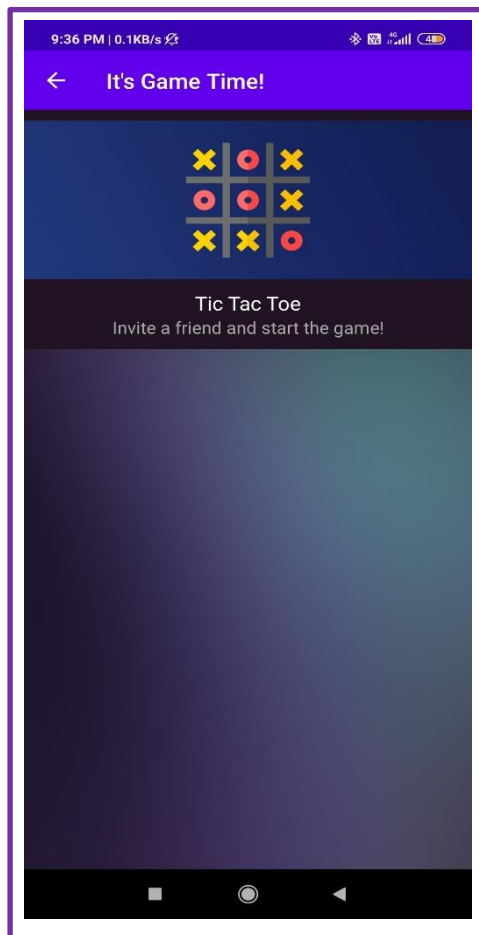




If the user wishes to quit the test anytime, he/she can click on the quit button and a pop-up is displayed as shown. If “NO” is clicked, user can continue the quiz and if “YES” is clicked, user will be taken back to the list of quiz categories.

If the user completely attempts the quiz, the final score will be displayed on the Result Activity. Stars will be awarded on the basis of the score. If the score is 10, 3 stars are awarded, similarly, two, one, or zero stars are awarded if the score is ≥ 7 , ≥ 4 or < 4 respectively. The user can now attempt another quiz or play a game of tic-tac-toe.

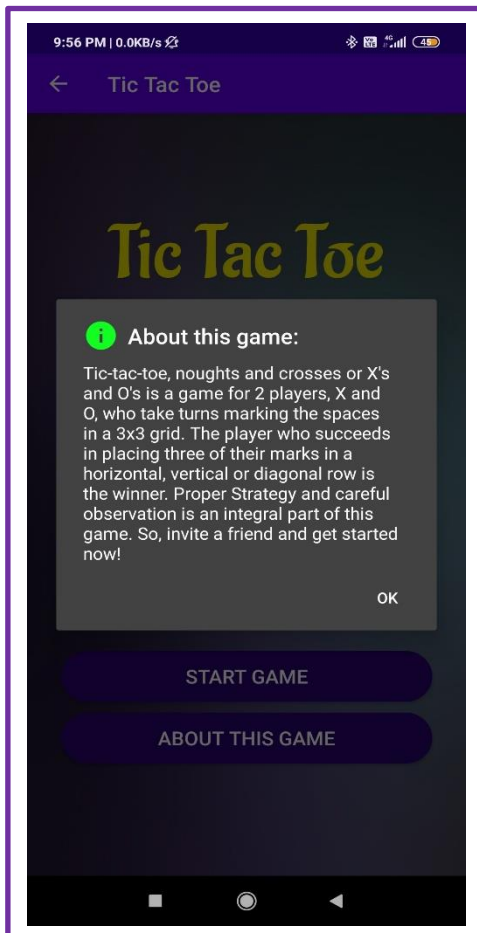




Tic-tac-toe, being a 2- player game tells the user to invite a friend and to continue by clicking on the icon. User can go back by clicking on the back button in the action bar which will take them back to the Home Page activity.

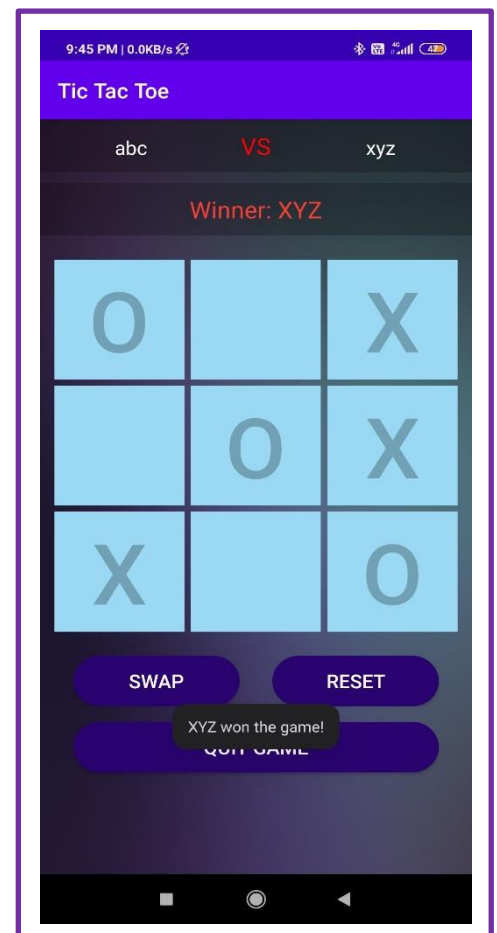
In this activity, user is requested to enter the names of two players. The names cannot be same.

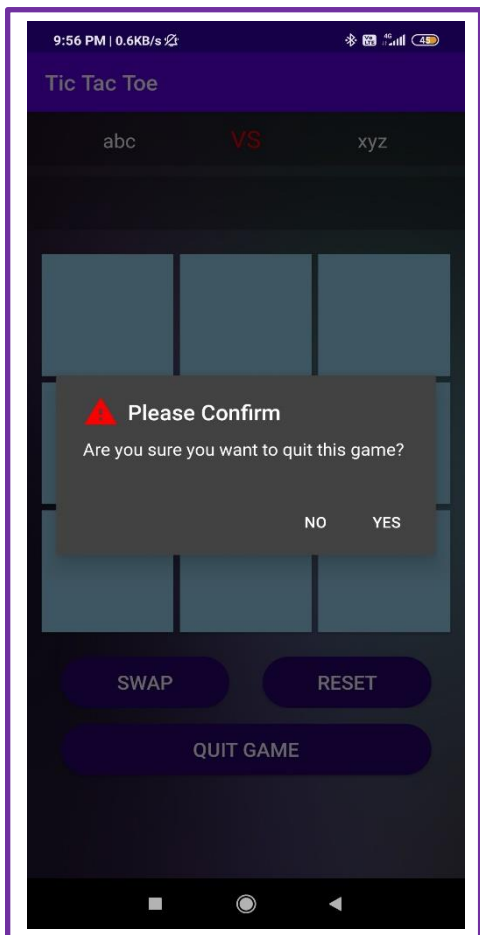




On clicking the “About this game” button, a pop-up appears containing necessary information about the game. Pressing on “OK” will continue the game.

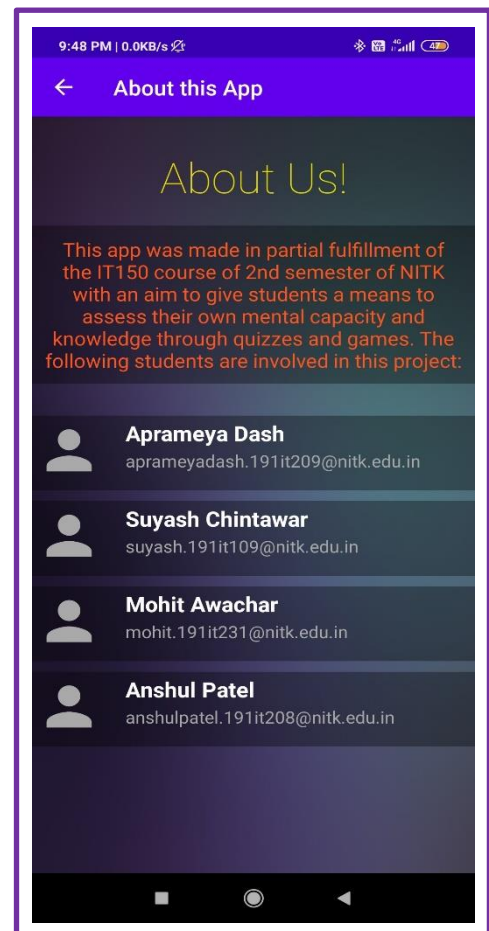
The result of the game appears on a text view with the name of the winner and a toast is displayed. If the game becomes draw, then, appropriate message is shown. The players can either reset or quit the game. The players can swap their places by pressing “SWAP” button.





If the player quits, a pop-up appears requesting again for confirmation and if yes, then user is redirected to the game activity.

Finally, on clicking the "About us" linear layout on home page, this 'About Us' screen appears where information about the app and the app developers is available.



4. Conclusion and Future work

Development of our app 'TestUrBrain' tested our basics of Java as well as Android development. We learnt lot of techniques that can be implemented in making an Android app like how to create login page, etc. This app can also prove helpful in enhancing knowledge of users and in inducing strategic and logical thinking within users through various quizzes and games.

This project also improved us as a team and helped us understand importance of teamwork. We went through every section of app and fixed any glitches and bugs, if found. The app doesn't contain any bugs so far according to us.

We would like to include following features in our project:

1. Include more fun games.
2. Increase variety of topics in quiz section.
3. Include sound and music effects.
4. Quiz gets closed if user tries to visit chrome or closes app forcefully
5. Quizzes can be viewed in different languages.
6. Make the app more user- friendly and bug- proof.
7. Set up timer for a quiz.
8. Make the app online.
9. Create online database to authenticate and store credentials of users.
10. Users can access developers using contact for suggestions, problems, etc.
11. Change the question each time a user visits a quiz.
12. Users can access questions (with answers) of already attempted quizzes.
13. Create a discussion page where users can discuss solutions to answered questions.
14. After every quiz taken player gets some points added to his account
15. Keep ranking of users based on points.
16. Set some prize for top three which will be awarded each week based on total points.
17. Include practice tests for competitive exams like JEE, NEET, UPSC etc.
18. Induct AI based games so that users can test their skills against computer.
19. Monetize the app by including advertisements.
20. Include premium membership. Premium members will have following benefits:
 - a. No advertisements.
 - b. Provide reading material.
 - c. Detailed solutions to undertaken quizzes.
 - d. Access to experts in case of difficulty.
 - e. Specially designed quizzes to improve performance.
 - f. Extra 100 points each day.

THANK YOU!!!