

# ANDROID APPLICATION

## TIC-TAC-TOE

BY

Kilari Venkata Sai Sanjana

(192011124, CSE)

Harini. A

(192011344, CSE)

### Java code:

```
package com.dataflair.ticgame;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle; import
android.view.Menu; import
android.view.MenuItem; import
android.view.View; import
android.widget.Button; import
android.widget.TableLayout; import
android.widget.TableRow; import
android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    private int grid_size;
    TableLayout gameBoard;
    TextView txt_turn;
    char [][] my_board;
    char turn;    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        grid_size = Integer.parseInt(getString(R.string.size_of_board));
        my_board = new char [grid_size][grid_size];
        gameBoard = (TableLayout) findViewById(R.id.mainBoard);
        txt_turn = (TextView) findViewById(R.id.turn);

        resetBoard();
        txt_turn.setText("Turn: "+turn);

        for(int i = 0; i< gameBoard.getChildCount(); i++){
            TableRow row = (TableRow) gameBoard.getChildAt(i);
            for(int j = 0; j<row.getChildCount(); j++){
                TextView tv = (TextView) row.getChildAt(j);
                tv.setText(R.string.none);
                tv.setOnClickListener(Move(i, j, tv));
            }
        }

        Button reset_btn = (Button) findViewById(R.id.reset);
```

```

        reset_btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
Intent current = getIntent();
finish();

                startActivity(current);

            }

        });
    }

    protected void resetBoard(){
turn = 'X';
        for(int i = 0; i< grid_size; i++){
for(int j = 0; j< grid_size; j++){
my_board[i][j] = ' ';
        }

    }

    protected int gameStatus(){

        //0 Continue
        //1 X Wins
        //2 O Wins
        //-1 Draw

        int rowX = 0, colX = 0, rowO = 0, colO = 0;
for(int i = 0; i< grid_size; i++){
if(check_Row_Equality(i, 'X'))
return 1;
        if(check_Column_Equality(i, 'X'))
return 1;
        if(check_Row_Equality(i, 'O'))
return 2;
        if(check_Column_Equality(i, 'O'))
return 2;
if(check_Diagonal('X'))
return 1;
if(check_Diagonal('O'))
return 2;
    }

        boolean boardFull = true;
for(int i = 0; i< grid_size; i++){
for(int j = 0; j< grid_size; j++){
if(my_board[i][j]==' ')
boardFull = false;
        }

    }

        if(boardFull)
return -1;
        else
return 0;
    }

    protected boolean check_Diagonal(char player){
int count_Equal1 = 0, count_Equal2 = 0;
for(int i = 0; i< grid_size; i++)
if(my_board[i][i]==player)
count_Equal1++;
        for(int i = 0; i<
grid_size; i++)
if(my_board[i][grid_size -1-i]==player)

```



```

        count_Equal2++;
        if(count_Equal1== grid_size || count_Equal2== grid_size)
return true;        else return false;
    }
    protected boolean check_Row_Equality(int r, char player){
int count_Equal=0;
        for(int i = 0; i< grid_size; i++){
if(my_board[r][i]==player)
count_Equal++;
        }

        if(count_Equal== grid_size)
return true;        else
        return false;
    }
    protected boolean check_Column_Equality(int c, char player){
int count_Equal=0;
        for(int i = 0; i< grid_size; i++){
if(my_board[i][c]==player)
count_Equal++;
        }

        if(count_Equal== grid_size)
return true;        else
        return false;
    }
    protected boolean Cell_Set(int r, int c){
return !(my_board[r][c]==' ');
    }
    protected void stopMatch(){
        for(int i = 0; i< gameBoard.getChildCount(); i++){
TableRow row = (TableRow) gameBoard.getChildAt(i);
for(int j = 0; j<row.getChildCount(); j++){
            TextView tv = (TextView) row.getChildAt(j);
tv.setOnClickListener(null);
        }
    }
}

View.OnClickListener Move(final int r, final int c, final TextView tv){

    return new View.OnClickListener() {
        @Override
        public void onClick(View v) {

            if(!Cell_Set(r,c)) {
my_board[r][c] = turn;                if
            (turn == 'X') {
tv.setText(R.string.X);
turn = 'O';
            } else if (turn == 'O') {
tv.setText(R.string.O);                turn
            = 'X';
            }
        }
    }
}

```

```

        if (gameStatus() == 0) {
            txt_turn.setText("Turn: Player " + turn);
        }
        else if (gameStatus() == -1) {
            txt_turn.setText("This is a Draw match");
        }
        stopMatch();
    }
    else {
        txt_turn.setText(turn + " Loses!");
        stopMatch();
    }
    else {
        txt_turn.setText(txt_turn.getText() + " Choose an Empty
Call");
    }
}

};

}

@Override
public boolean onCreateOptionsMenu(Menu menu) {
    // Inflate the menu; this adds items to the action bar if it is
present.
    getMenuInflater().inflate(R.menu.menu_board, menu);
    return true;
}

@Override
public boolean onOptionsItemSelected(MenuItem item) {
    // Handle action bar item clicks here. The action bar will
    // automatically handle clicks on the Home/Up button, so long
    // as you specify a parent activity in AndroidManifest.xml.
    int id = item.getItemId();

    //noinspection SimplifiableIfStatement
    if (id == R.id.action_settings) {
        return true;
    }

    return super.onOptionsItemSelected(item);
}
}

```

### XML Code:

```

<?xml version="1.0"?>

<LinearLayout tools:context=".MainActivity"
android:paddingBottom="@dimen/activity_vertical_margin"
android:paddingTop="@dimen/activity_vertical_margin"
android:paddingRight="@dimen/activity_horizontal_margin"
android:orientation="vertical"
    android:paddingLeft="@dimen/activity_horizontal_margin"
android:layout_height="match_parent"    android:layout_width="match_parent"
xmlns:tools="http://schemas.android.com/tools"
xmlns:android="http://schemas.android.com/apk/res/android">

```



```

        <TableLayout
            android:id="@+id/mainBoard"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="top|center"
            android:clickable="true"                android:gravity="center"
            android:layout_marginTop="55dp"
            android:nestedScrollingEnabled="false"
            android:padding="10dp">
            <TableRow
                android:id="@+id/row0"
                style="@style/TableRow"
                android:layout_width="match_parent"
                android:layout_height="match_parent">

                <TextView
                    style="@style/LeftCell"
                    android:width="50dp"
                    android:layout_column="0"></TextView>

                <TextView
                    style="@style/MiddleCell"
                    android:width="50dp"
                    android:layout_column="1"></TextView>
                <TextView
                    style="@style/RightCell"
                    android:width="50dp"
                    android:layout_column="2"></TextView>
            </TableRow>

            <TableRow
                android:id="@+id/row1"
                style="@style/TableRow"
                android:layout_width="match_parent"
                android:layout_height="match_parent">

                <TextView
                    style="@style/LeftCell"
                    android:width="50dp"
                    android:layout_column="0"></TextView>
                <TextView
                    style="@style/MiddleCell"
                    android:width="50dp"
                    android:layout_column="1"></TextView>
                <TextView
                    style="@style/RightCell"
                    android:width="50dp"
                    android:layout_column="2"
                    ></TextView>

            </TableRow>

            <TableRow

```

```

        android:id="@+id/row2"
style="@style/TableRow"                android:layout_width="match_parent"
android:layout_height="match_parent">

        <TextView                                style="@style/LeftCell"
android:width="50dp"
        android:layout_column="0"></TextView>

        <TextView                                style="@style/MiddleCell"
android:width="50dp"
        android:layout_column="1"></TextView>

        <TextView                                style="@style/RightCell"
android:width="50dp"
        android:layout_column="2"></TextView>

    </TableRow>

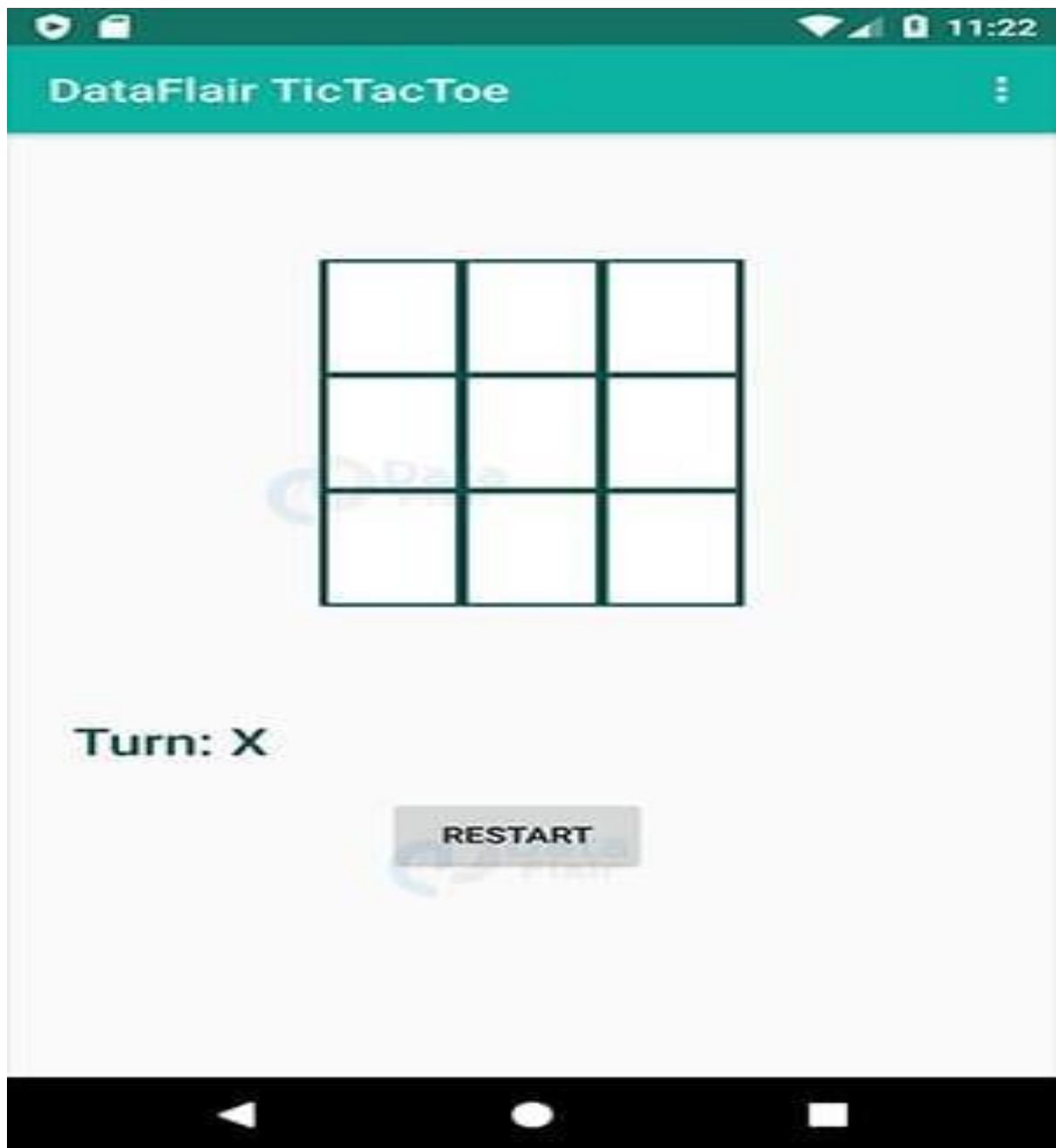
</TableLayout>

    <TextView android:layout_height="wrap_content"
android:layout_width="fill_parent"                android:id="@+id/turn"
android:padding="10dp"                android:layout_marginTop="50dp"
android:gravity="left"                android:textColor="@color/black"
android:fontFamily="sans-serif-medium"                android:textSize="24dp"
android:text="                Turn: " />
    <Button
        android:id="@+id/reset"                android:layout_marginTop="10dp"
android:layout_marginLeft="132dp"
android:layout_width="wrap_content"
android:layout_height="wrap_content"                android:text="        Restart        " />
</LinearLayout>

```

**Output:**







**Click Restart**



**Game has been  
Restarted**