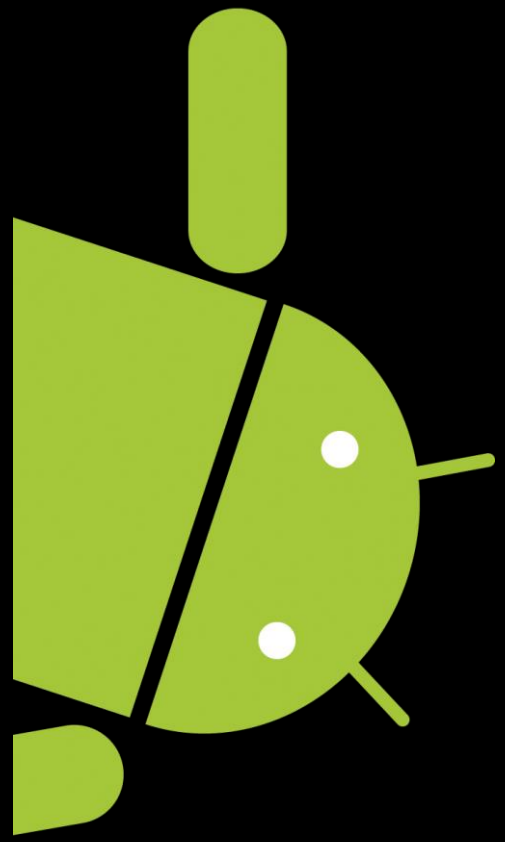
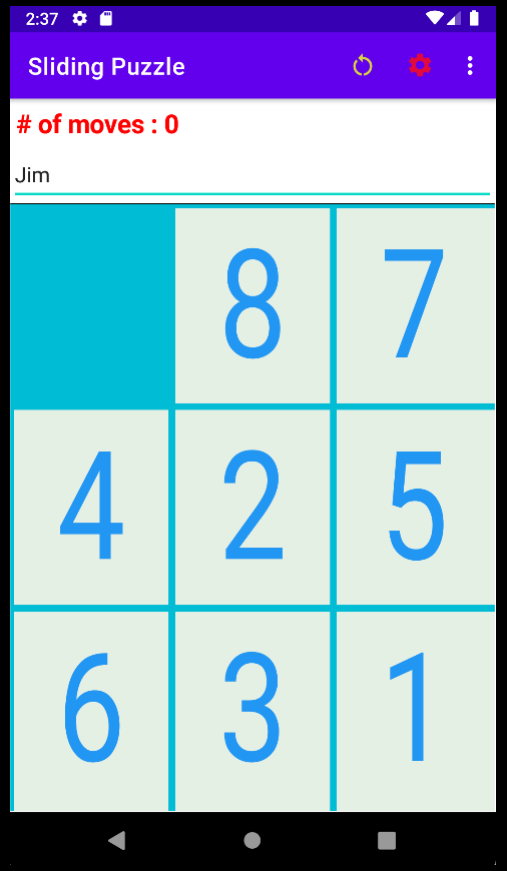




Sliding Puzzle

Tanund Sakpoonsup

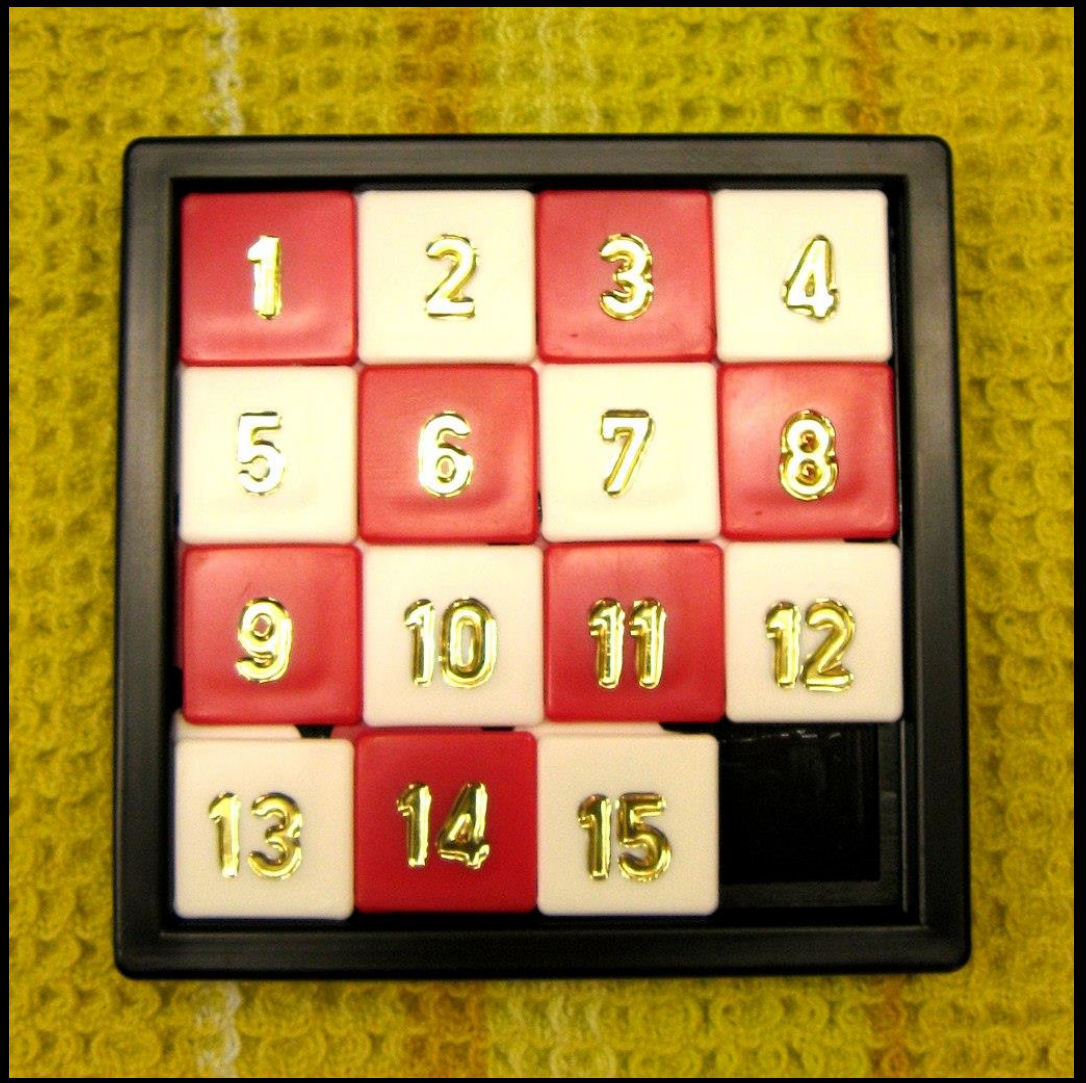
ID 123176

Table of contents

- Introduction
- Literature Review
- Objectives
- Methodology
- Live Demo
- Summary and Future works

Introduction

- A sliding puzzle, sliding block puzzle, or sliding tile puzzle is a combination puzzle that challenges a player to slide (frequently flat) pieces along certain routes (usually on a board) to establish a certain end-configuration.



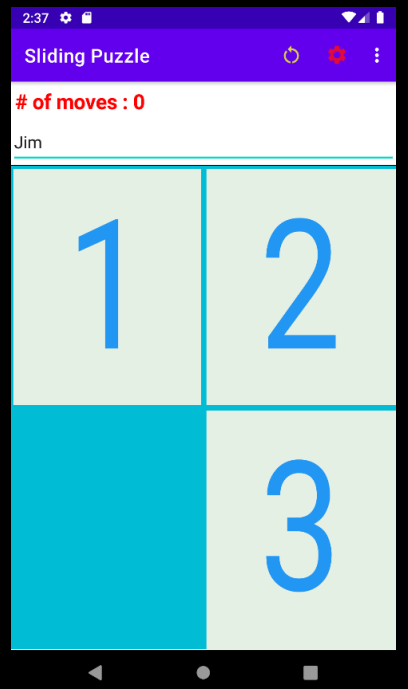
https://en.wikipedia.org/wiki/Sliding_puzzle

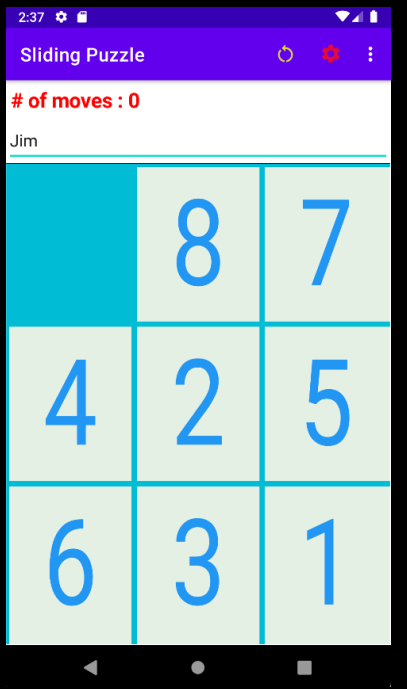
Introduction

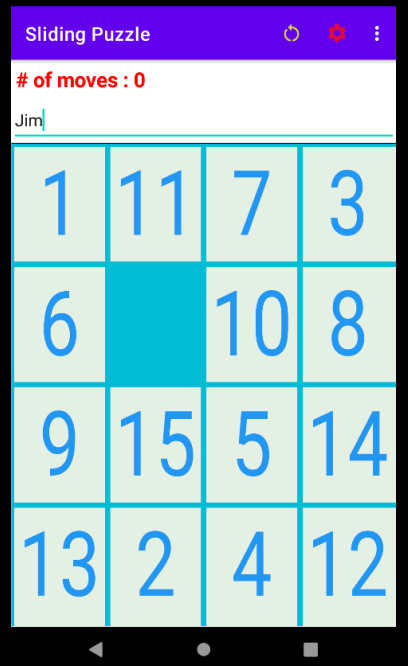
What can this app do?

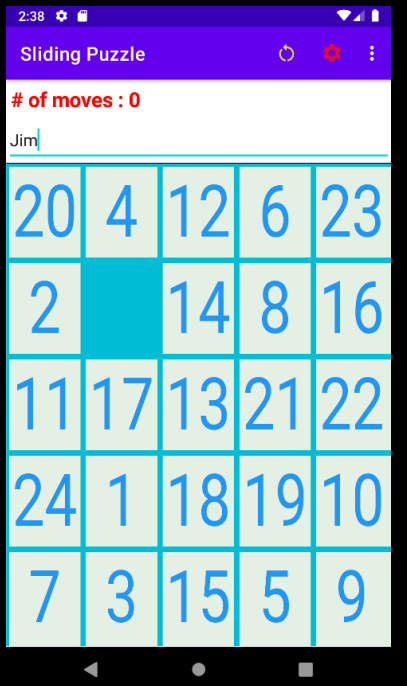
It can create 4 different board sizes.

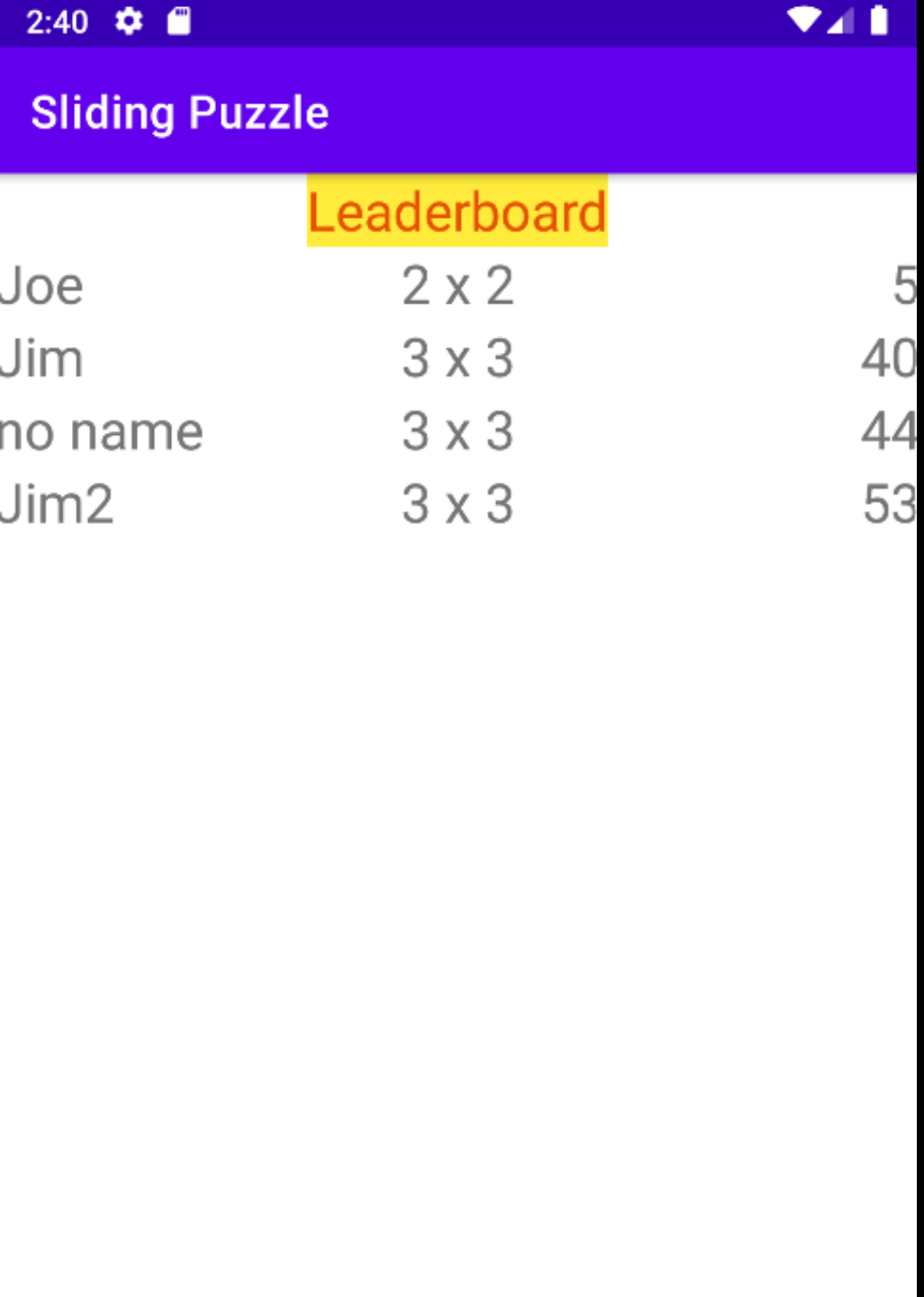
- 2x2 - easy
- 3x3 - medium
- 4x4 - hard
- 5x5 – expert









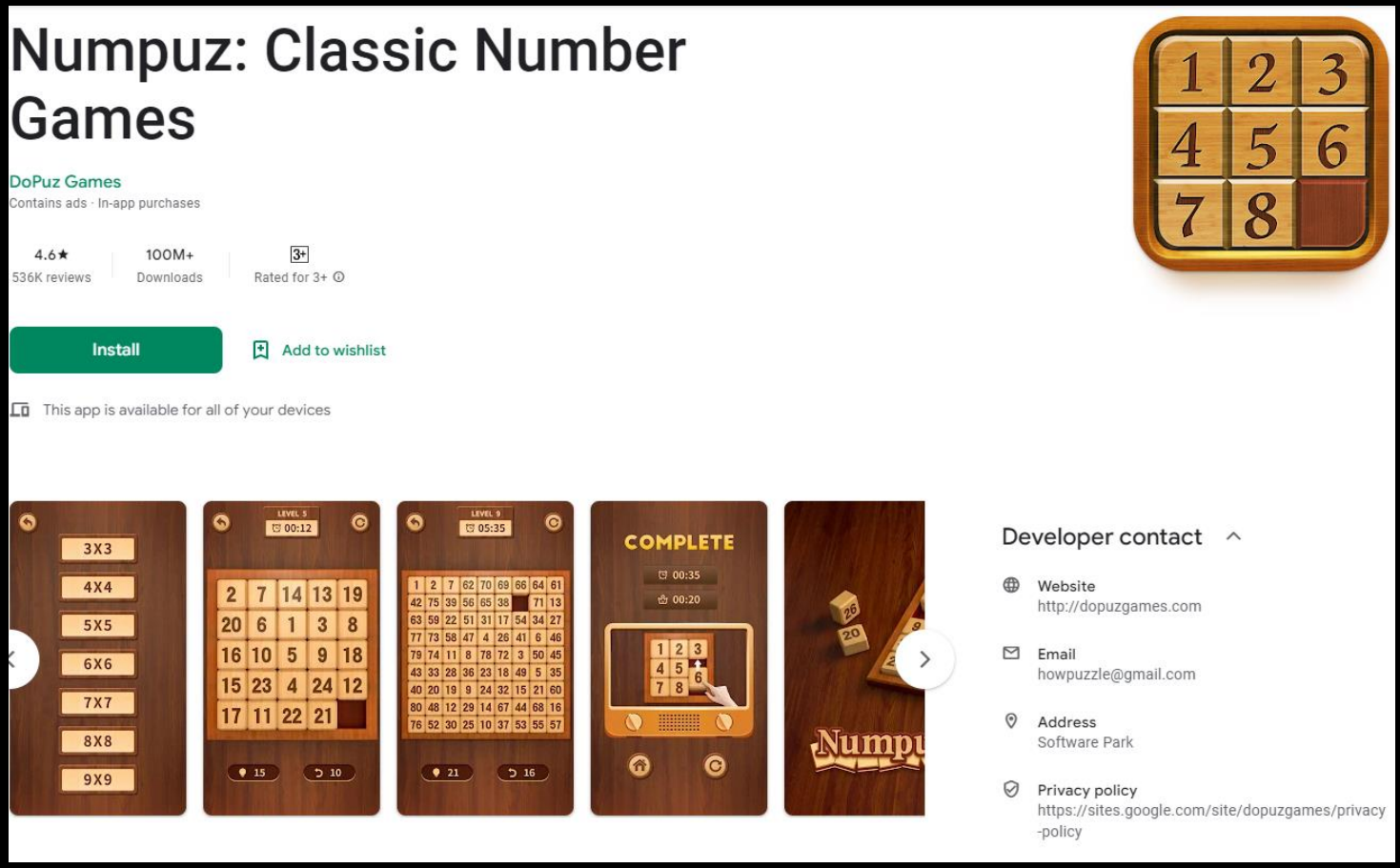


What can this app do?

- The number of moves you use to finish the game will be recorded to the server and shown on the Leaderboard which is shared among players.

Literature Review

- Numpuz is one of the most downloaded Puzzle games with more than 100,000,000 installs.
- It has many board configurations

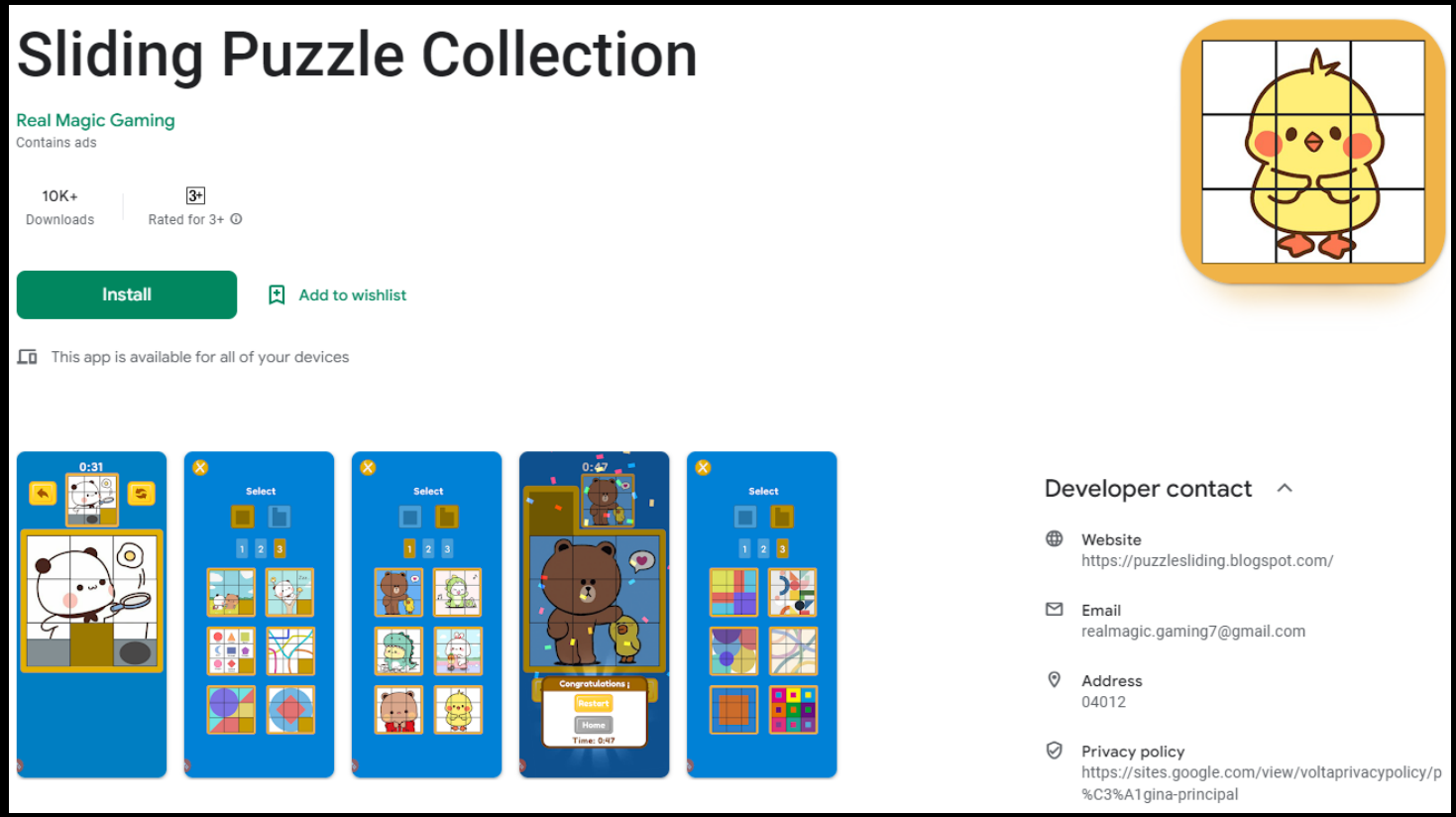


https://play.google.com/store/apps/details?id=com.dopuz.klotski.riddle&hl=en

Literature Review

- It has the style of play that millions of players around the world love!

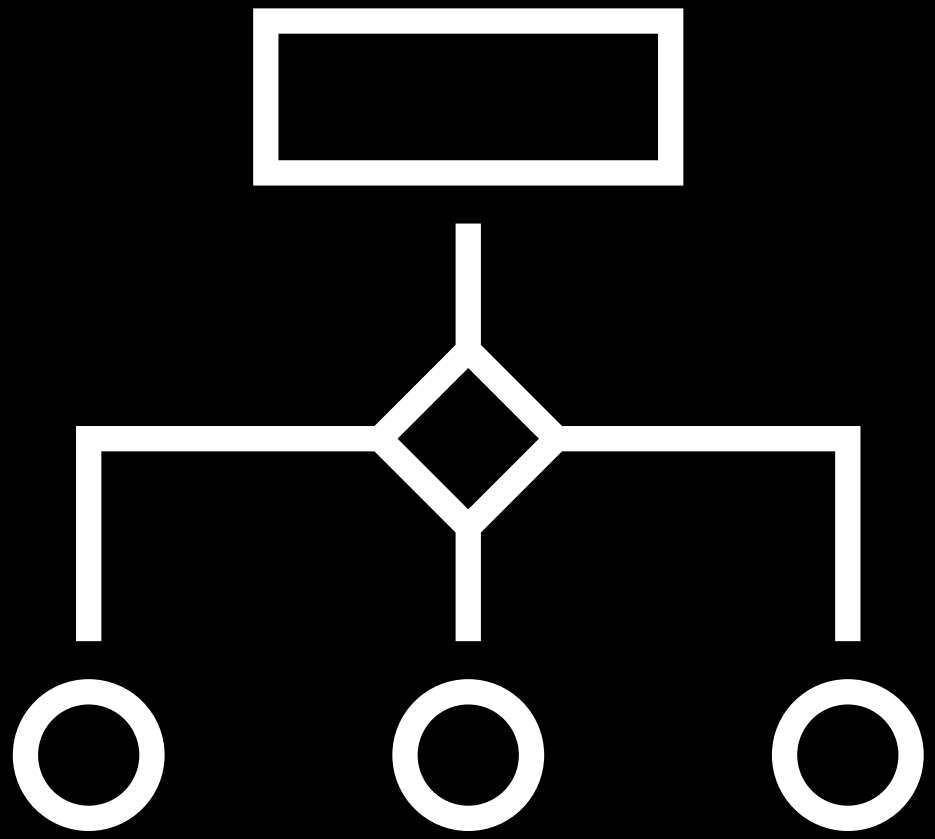
- It used picture instead of number which is more challenging for player.



https://play.google.com/store/apps/details?id=volta_puzzle.puzzleslindingcollection&hl=en

Objectives

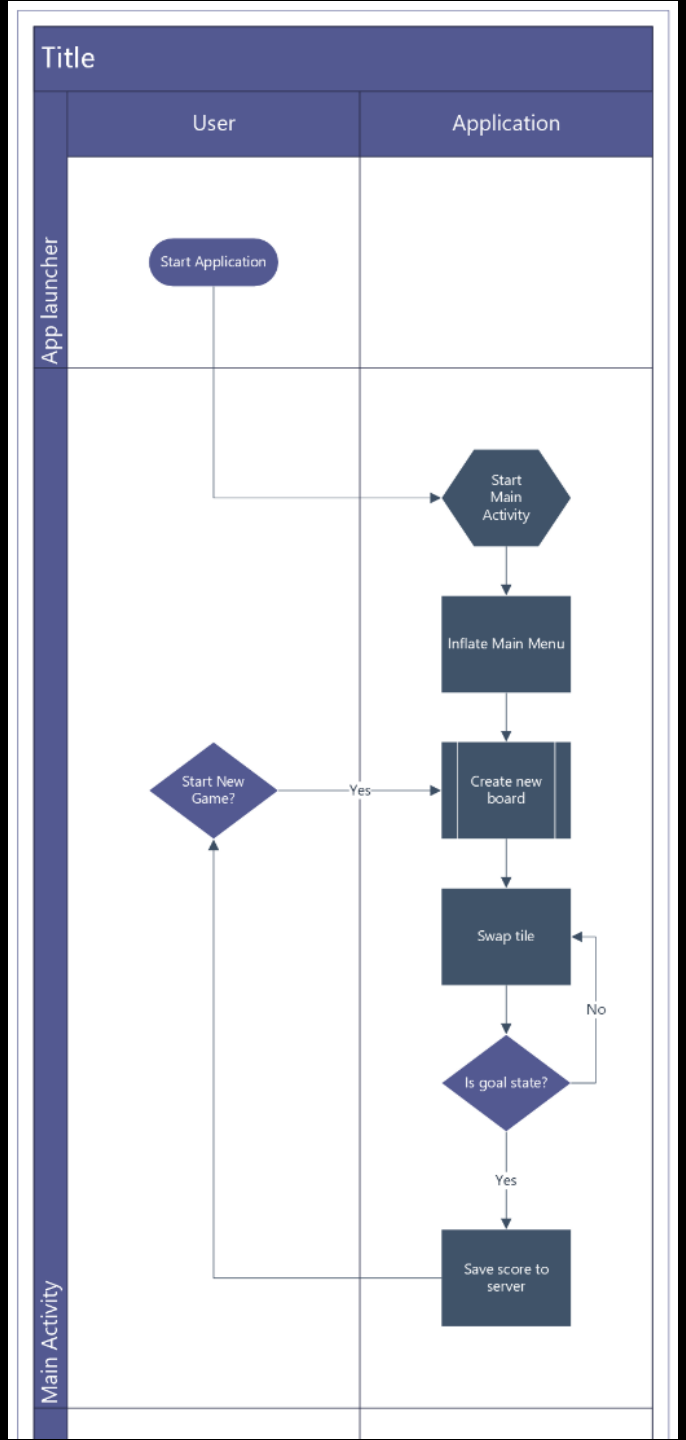
- Develop a brain activation, relax and time killing game application.
- Competition between users.



Methodology

Flow chart

Title
User
Application
App launcher
Start Application
Main Activity
Start Main Activity
Inflate Main Menu
Start New Game?
Yes
Create new board
Swap tile
No
Is goal state?
Yes
Save score to server
Menu New Game
Click New Game
Start New Game?
Yes
Create new board
Menu Setting
Click Setting
Select board size Fragment
Create new board
Menu Help
Click Help
Open Help Dialog
Menu Leaderboard
Click Leaderboard
Leaderboard Activity
Start Leaderboard Activity
Get data from server
Start Recycle Fragment for Leaderboard
Click BACK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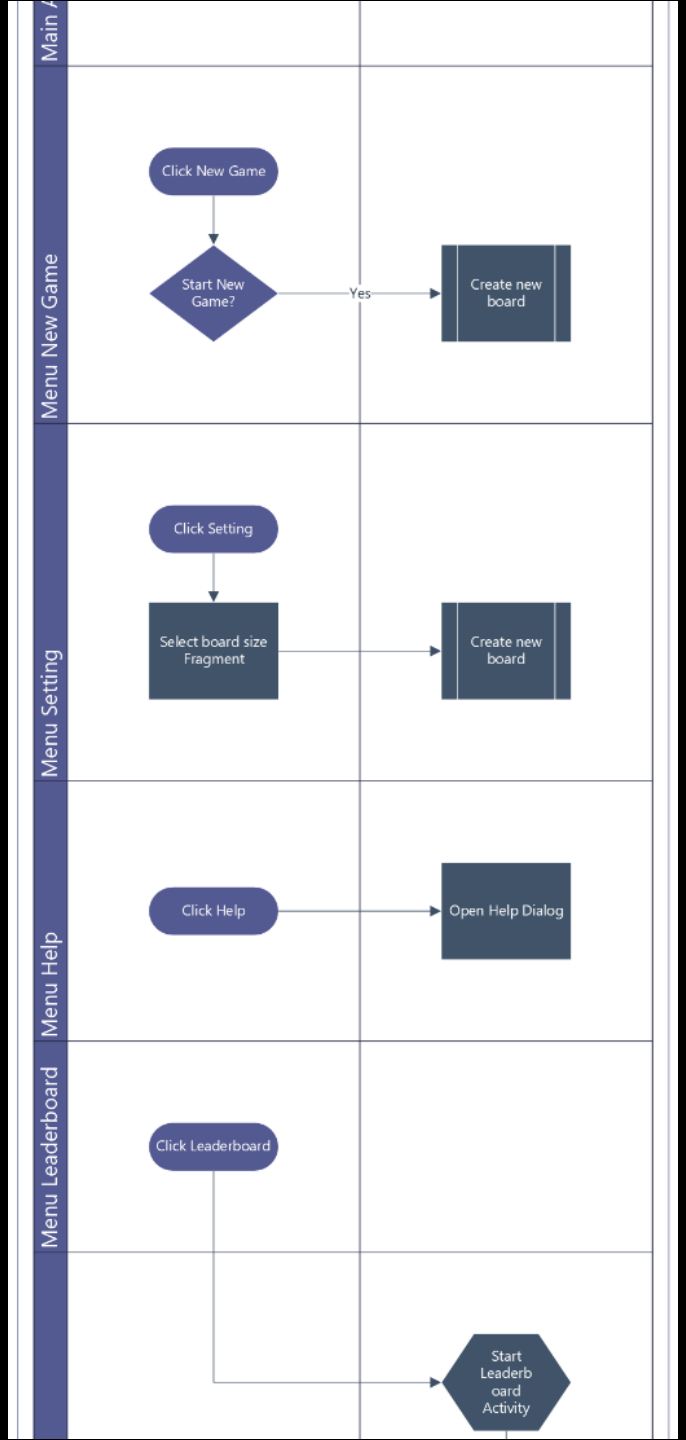
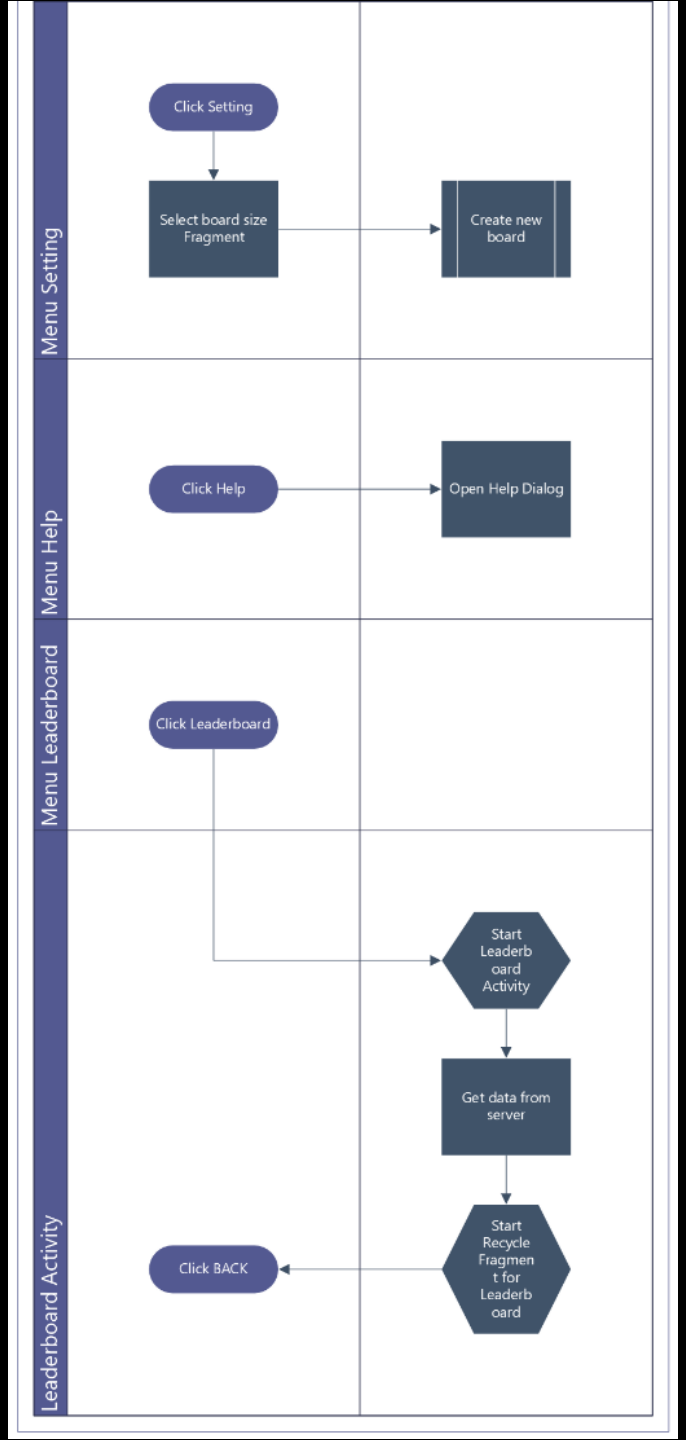
User
Application
App launcher
Start Application
Start Main Activity
Inflate Main Menu
Start New Game?
Yes
Create new board
Swap tile
No
Is goal state?
Yes
Save score to server
Main Activity


Main A
Menu New Game
Click New Game
Start New Game?
Yes
Create new board
Menu Setting
Click Setting
Select board size Fragment
Create new board
Menu Help
Click Help
Open Help Dialog
Menu Leaderboard
Click Leaderboard
Start Leaderb oard Activity


Menu Setting
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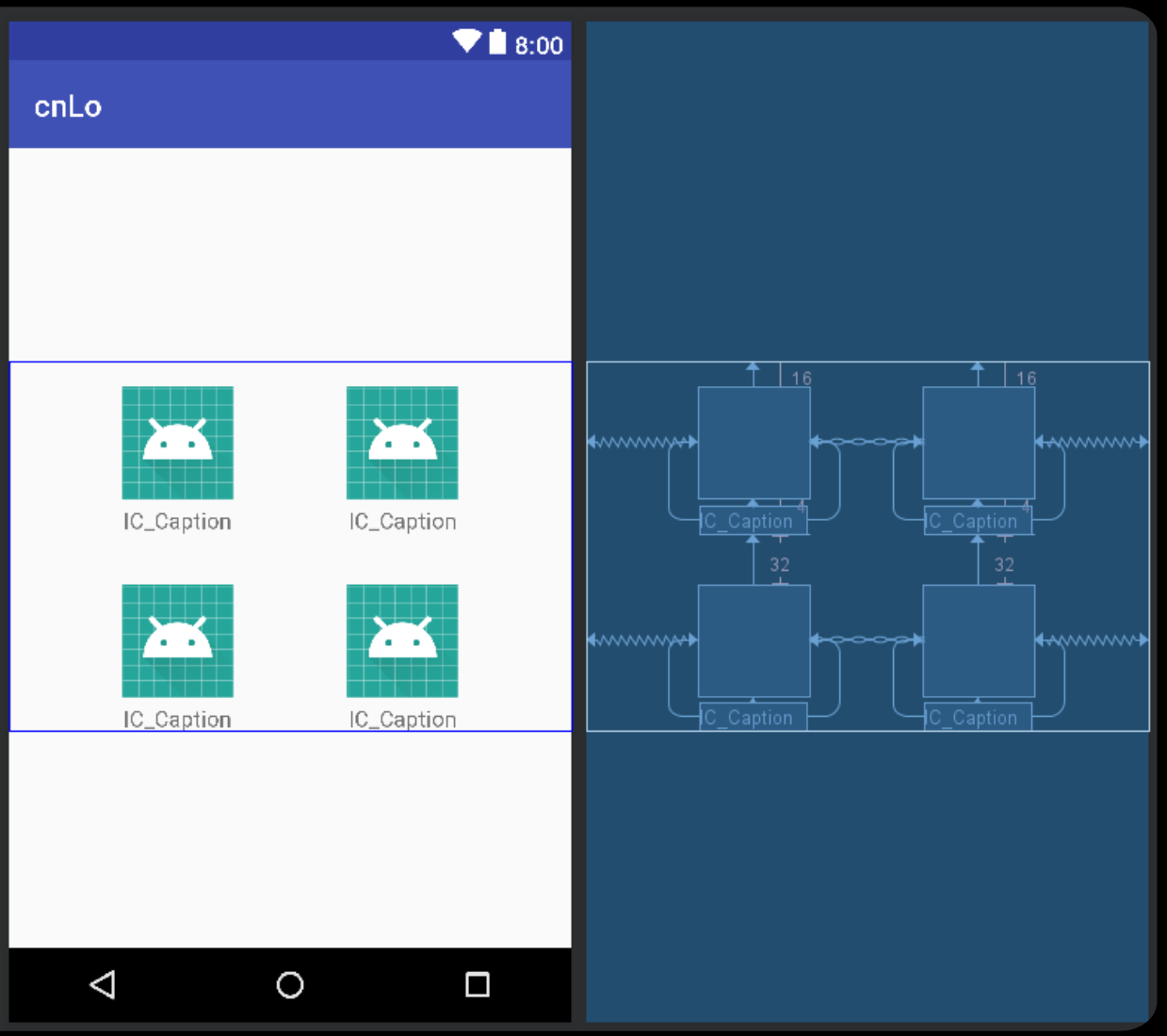


Methodology

Layouts

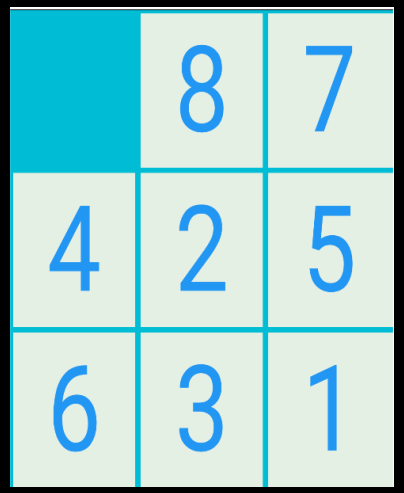
This Photo by Unknown Author is licensed under CC BY-SA

Main Activity

BoardView class extended from View class to draw board and handle Touch Event.

```
class BoardView (context: Context?, private val board: Board): View(context) {

    private var width = 0f
    private var height = 0f
    override fun onSizeChanged(w: Int, h: Int, oldw: Int, oldh: Int) {...}

    private fun locatePlace(x:Float,y:Float):Place?{...}

    override fun onTouchEvent(event: MotionEvent): Boolean {...}

    override fun onDraw(canvas: Canvas?) {...}

    init {...}
}
```

BoardView.kt



Add boardView to mainView in activity_main.xml

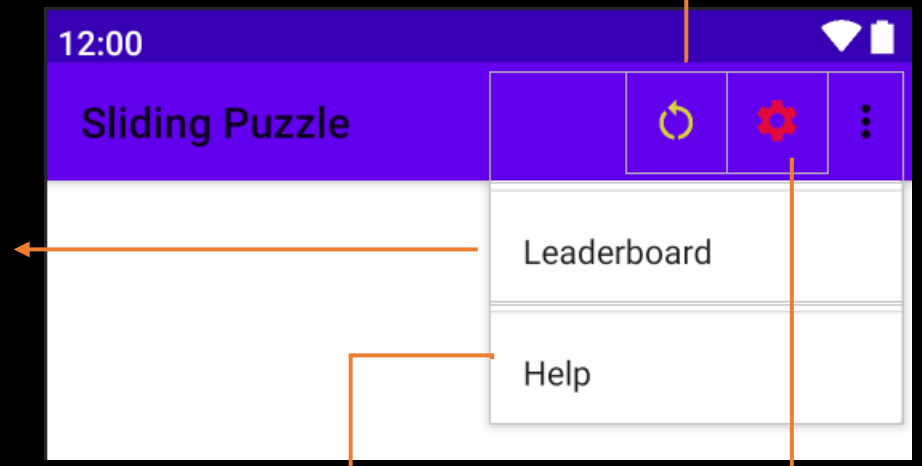
```
boardView = BoardView( context: this, board!!)
mainView!!.addView(boardView)
```

MainActivity.kt

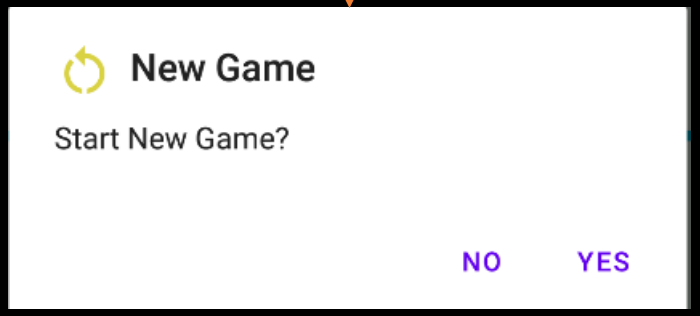
Activity_main.xml

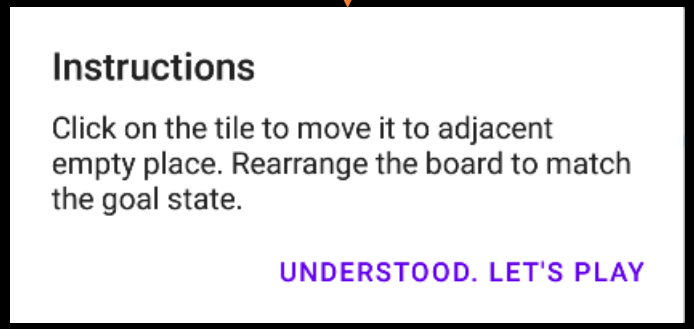
Main menu

AlertDialog

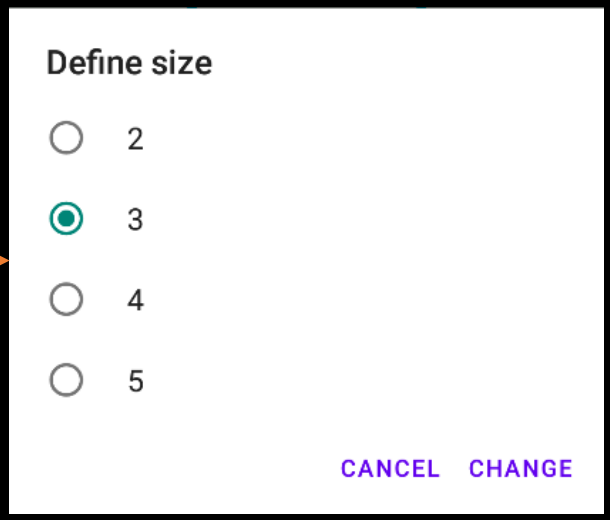


Leaderboard Activity



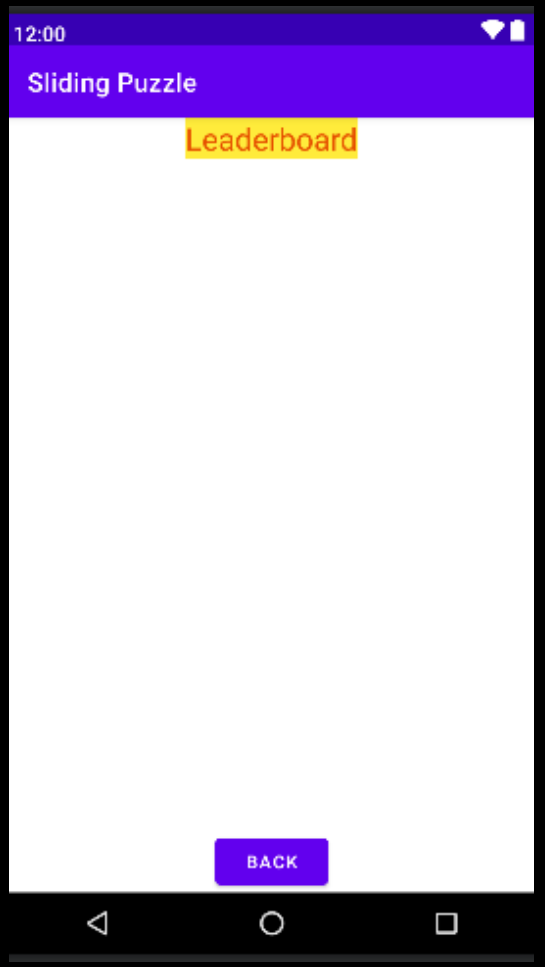


AlertDialog



SettingDialogFragment.kt

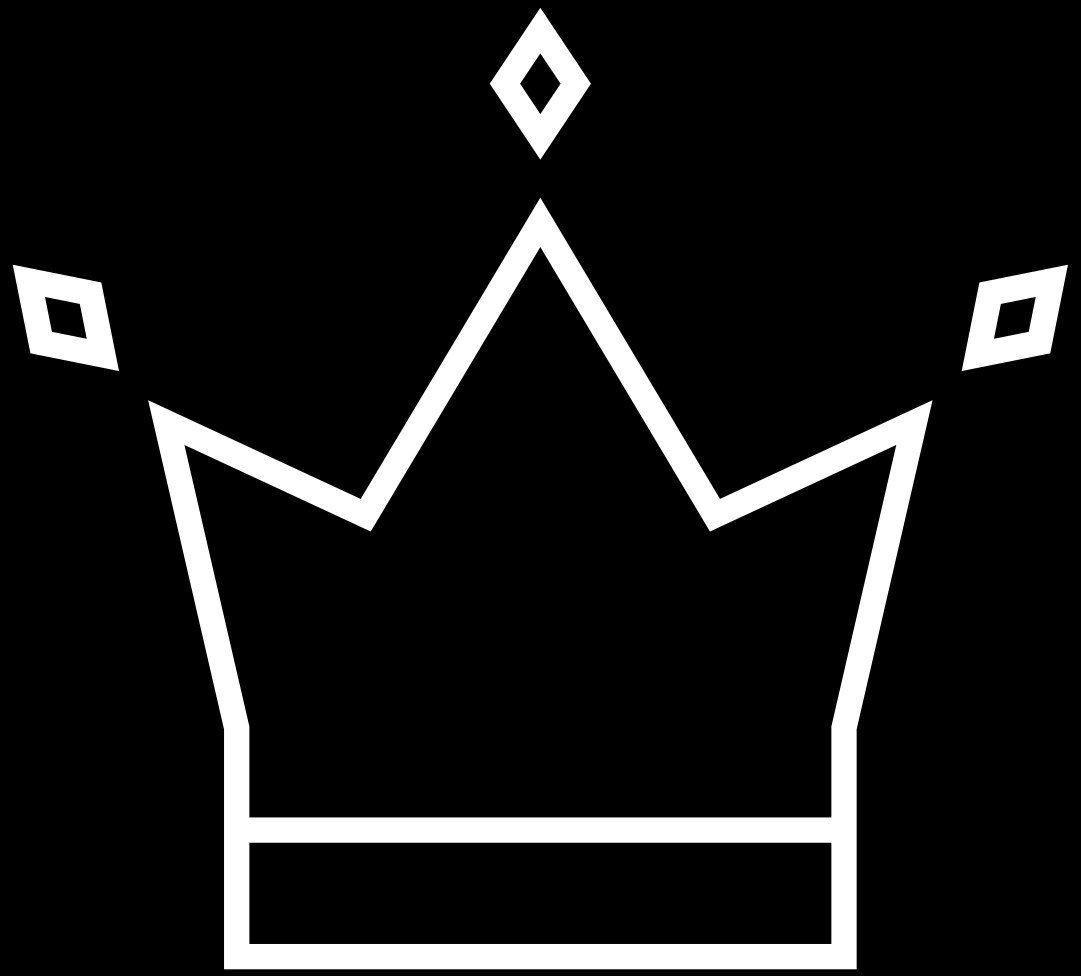
Leaderboard Activity



Activity_leaderboard.xml

Fragment_recycle.xml

User_item.xml

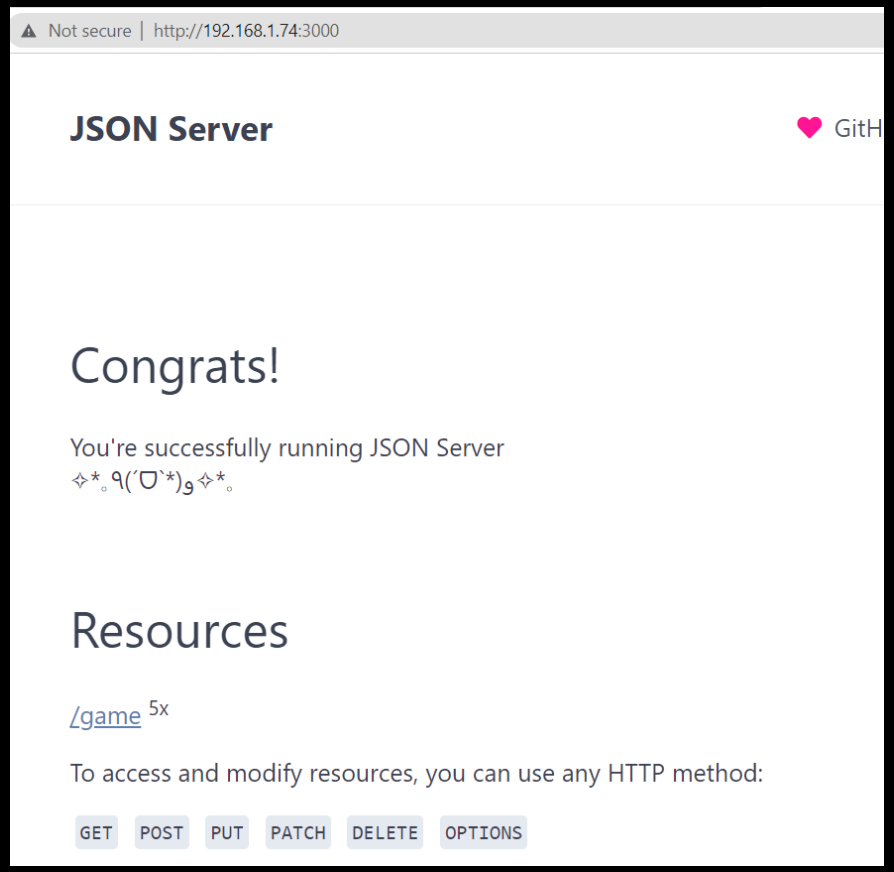


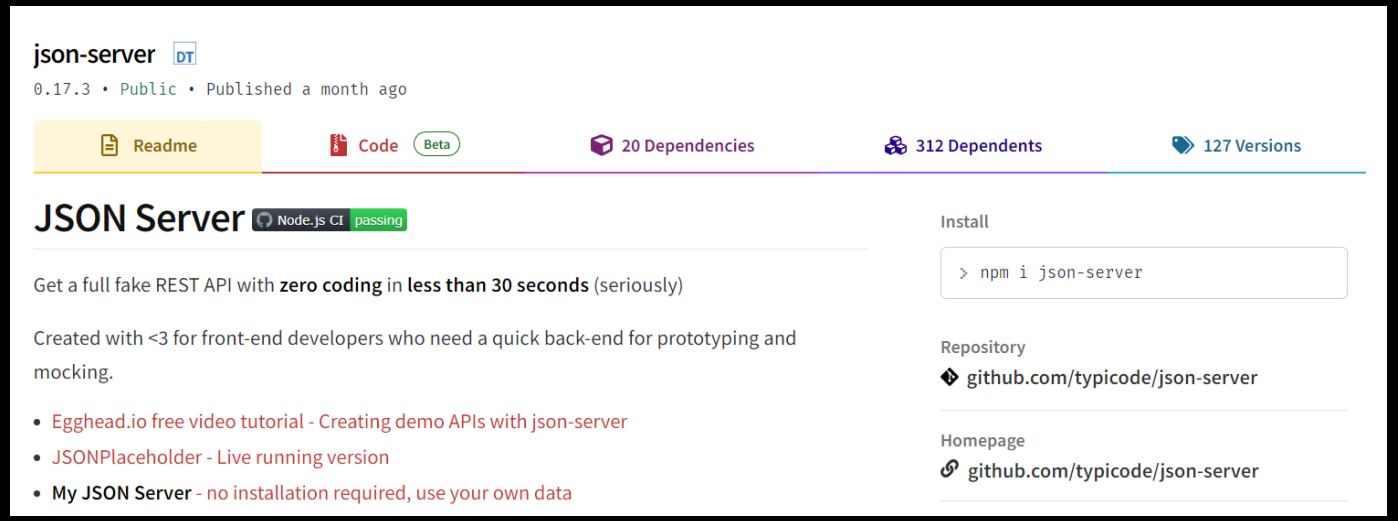
Methodology

Leaderboard server

json-server

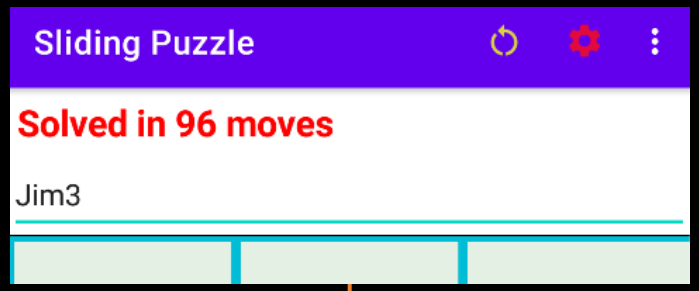
- Easy to set up back-end server for json database



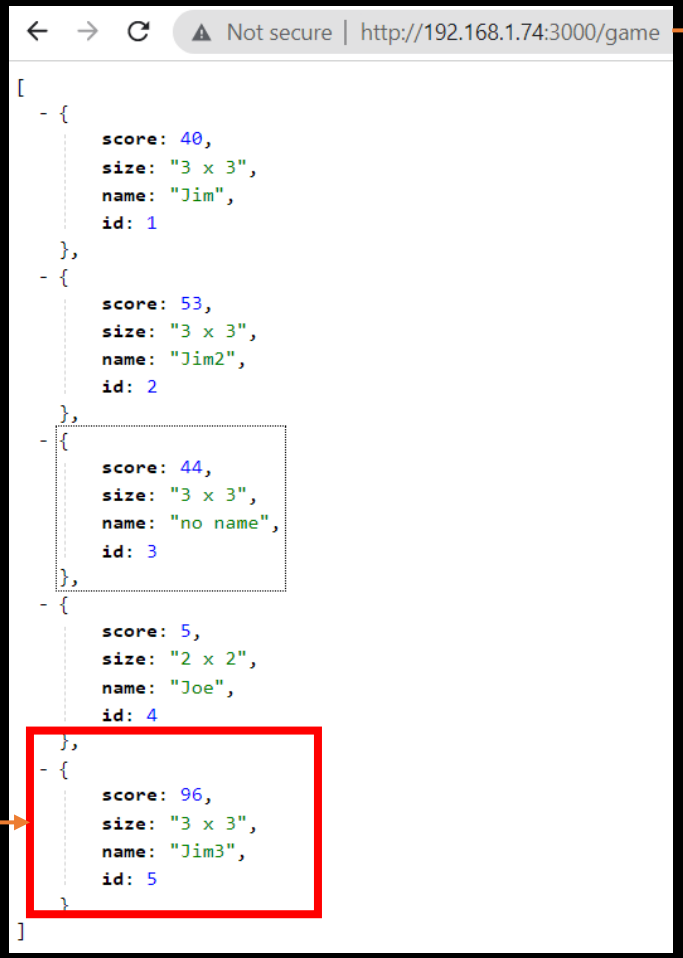


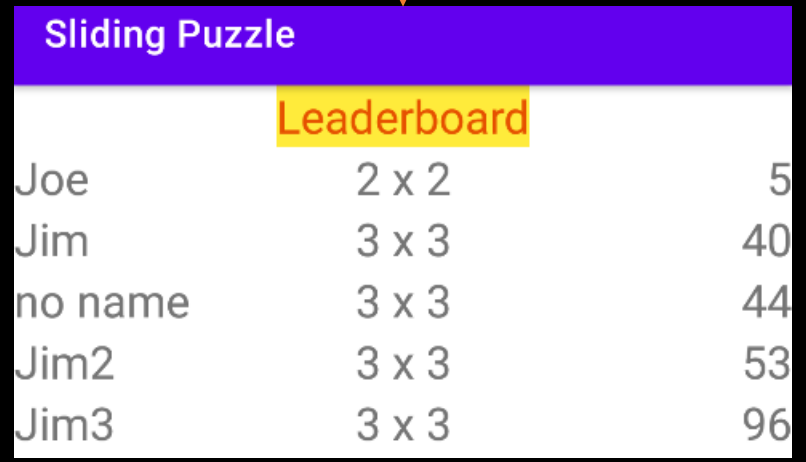
https://www.npmjs.com/package/json-server

Retrofit & json-server



POST /game





GET /game?_sort=size,score&_order=asc

Live Demo

Summary

The application works. Users can play different board configurations.

Competition between users is available in the form of Leaderboard.

Future works

Use the photo taken by user on the tiles instead of plain number, this will be more challenging and increase user interaction with the application.

Currently Leaderboard can only “Add” new entry, the next step is to create Login service so that user can “Update” the existing entry e.g., update name or score.

THANK YOU