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**Java: Discovering Its Power**

Final Project Proposal - The 15 puzzle Game

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# PROJECT OVERVIEW

The ultimate goal of this final project is to successfully develop a logically correct, well-functioned, cross-platform portable and independently executable 15 Puzzle game.

The 15 Puzzle game is a famous little puzzle game with 15 sliding tiles each has a number of 1 to 15. Those 15 tiles are put into a frame or a game board with 4 tiles in height and 4 tiles in width, which are commonly known as “4x4”, and in the same time there will be one unoccupied tile space that allows other adjacent tiles to be able to slide either vertically or horizontally. The goal of playing the 15 Puzzle game is to place each numbered tile in the correct numerical order (which will be from 1 to 15) starting from the left-upper corner to the right-bottom corner.

Beside basic sliding functions, there are also some extra features such as menu bar, key-pressing and score calculation implemented alongside the game. A player could aim to finish this game by using as less steps of moving tiles as he/she can.

# TECHNICAL OVERVIEW

Based on the requirements and dependencies limitation pointed out in the instruction and my lack of knowledge in other programming languages (especially front-end programming languages), all the syntax and knowledge used in completing this final project are 100% pure Java. Here are all the concepts actually used to create this project and this game

* Java Swing – JFrame, JLabel, JDialog
* Java AWT – KeyListener, ActionListener
* Inheritance
* Constructor and Object Instantiation
* Interfaces Implementation
* Multidimensional Array (2-Dimensional)
* Simple Algorithm – Tiles Movement, Cheat Code, Shuffling…etc.
* Create a Maven Project
* Convert Maven Project to Executable Jar File

# HOW TO RUN THE PROJECT

Since this project will be converted into an executable Jar file, one can simply unzip the compressed file and execute the runnable file by double-clicking and the game window shall appear successfully.

# SOME GAME SCREEN SAMPLES

