

**De La Salle University- Manila**

**Gokongwei College of Engineering**

LBYCPA1

Programming Logic and Design Laboratory

Project Proposal

<Jigsaw Puzzle>

<Shi, HongXiao>

<Santos, Tyra B>

**Project Description**

Project Overview:

The objective of this project is to develop a jigsaw puzzle game that allows players to challenge themselves by piecing together images or pictures that have been divided into several pieces. The game will be designed to provide a fun and engaging experience for users while also promoting critical thinking, problem-solving, and spatial reasoning skills.

Technical Objectives:

Develop a user-friendly interface that allows players to navigate and play the game with ease.

Implement a random shuffling algorithm that divides images into several pieces and shuffles them in a random order before the game begins.

Create a piece swapping feature that enables players to click around the blank blocks to swap their positions until all the pieces are back in their original positions.

Implement sound effects for actions such as clicking, swapping pieces, completing the puzzle,

Project Execution:

The game will be developed using a responsive design approach to ensure compatibility with different devices such as smartphones, tablets, and desktop computers. The puzzle image will be divided into several pieces using a random shuffling algorithm and will be shuffled in a random order before the game begins. The game will have sound effects for actions such as clicking, swapping pieces, completing the puzzle

**IPO**

*Input:*

The input is the mouse click events on the canvas, which are captured and processed by the mouse click function

*Process:*

The process includes updating the game state (the board list) and the game statistics (the steps variable and the label1 label)

*Output:* .

. The output is the visual representation of the game board on the canvas, which is drawn by the drawBoard function.

**Methodology**

System Flowchart:

1. Load the images for the puzzle from a local directory using the Python Imaging Library (PIL).
2. Initialize the puzzle board with randomly shuffled images.
3. Display the puzzle board on the canvas using Tkinter.
4. Allow the player to click on a puzzle piece to move it to an adjacent empty spot.
5. Update the puzzle board on the canvas after each move.
6. Keep track of the number of moves made by the player.
7. Check if the puzzle is solved after each move.
8. If the puzzle is solved, display a message congratulating the player and offer the option to start a new game.

Python Concepts Used:

Object-oriented programming (OOP)

The Tkinter library is used for GUI development.

The random module is used to shuffle the puzzle pieces at the start of the game.

Event-driven programming is used to handle user input.

The messagebox module from Tkinter is used to display a congratulatory message when the puzzle is solved.

**Schedule of Activities**

|  | SHI | SANTOS |
| --- | --- | --- |
| March 24 to 30 | Prepare python and required functions, learn tutorials | Discuss opinions together, prepare project proposal, |
| April 1 to 7 | Start programming, responsible for mouse click events on the canvas, which are captured and processed by the mouse click function | visual representation of the game board on the canvas, |
| April 8 to 14 | Check and add more features | Prepare reports and presentations |

**References**