PONG
GAME

USING JAVA SWINGS

INTRODUCTION-

What is JAVA swing?

- Java Swing is a graphical user interface (GUI) toolkit for Java programs that allows developers to create user interfaces for desktop applications. It provides a rich set of graphical components, such as buttons, text boxes, labels, tables, and menus, which developers can use to create sophisticated and interactive graphical interfaces.

- Swing was introduced as a part of Java Foundation Classes (JFC) in Java 2 and has become the standard GUI toolkit for Java developers.

- It is platform-independent and can be used to create GUIs on any operating system that supports Java.

Components-

1. **GameFrame**

2. **GamePanel**

3. **Paddle**

4. **Ball**

5. **Score display**

GameFrame-

- The "GameFrame" class defines a class that extends the "JFrame" class to create a game window for the Pong game.

- It creates a new "GamePanel" object, sets it as the content pane of the window, and sets various properties of the window such as title, background color, and default close operation.

- Overall , this class provides the basic structure for a Pong game and a game window.

PONG GAME

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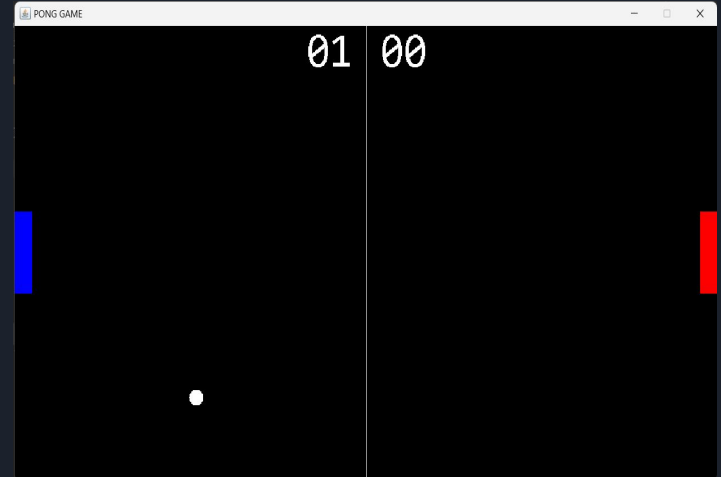
GamePanel-

- In a typical game, a game panel is a component that is added to a game frame and is responsible for rendering the game graphics and implementing the game logic. It is usually an extension of the "JPanel" class in Java.

- The game panel may also contain game objects such as characters, obstacles, or items, and may manage their interactions and movements. It can also handle collisions between game objects and detect when the game is over or won.

- Overall, the game panel is a crucial component of any graphical game as it handles the game logic and graphics and is responsible for creating an engaging and interactive game experience.

Paddle

- A Paddle is an object that the player controls and uses to interact with the game environment. The paddle is typically represented as a rectangle that moves vertically along one or both sides of the game screen.

- The Paddle object can receive input from the player through the use of a keyboard or other input device.

- When the player presses a key to move the paddle up or down, the Paddle object updates its position and velocity accordingly.
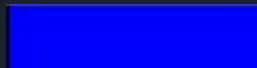
BALL

- In a Pong game, the ball is an object that moves around the screen and bounces off the paddles .

- Its movement is controlled by setting its x and y velocity, which determines the direction and speed of its movement

- When the ball collides with a paddle, its x velocity is reversed, simulating a bounce off the paddle.

- If the ball collides with the top or bottom wall, its y velocity is reversed, simulating a bounce off the wall.

BALL
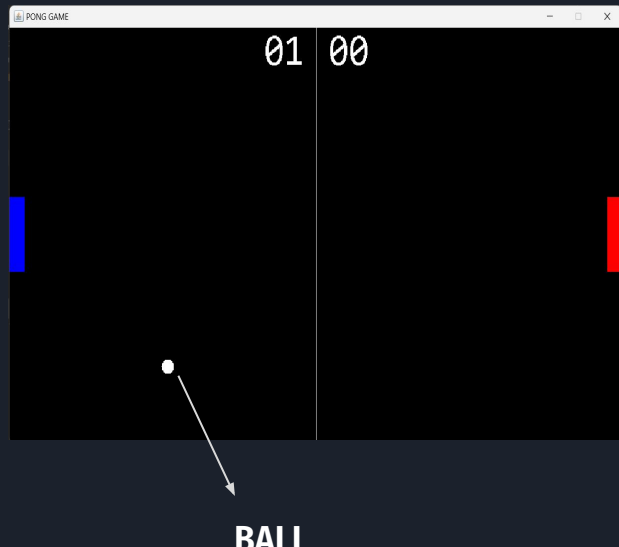
Score Display of Two Players-

- In this game, the score is displayed as two numbers, one for each player, separated by a vertical line in the middle of the screen.

- To display the scores of the players, the draw method of the Score class can be called from within the paint method of the GamePanel class.

- The GamePanel class can keep track of the scores of the players and update the Score object accordingly. The Score object can then be drawn on the game screen to display the scores.

Player 1   **Player 2**

The Main Class - PongGame

Code-

```java
public class PongGame {

    public static void main(String[] args){

        GameFrame frame = new GameFrame();

    }

}
```

This code defines a public class named PongGame with a single static method main(). This is the entry point for running the Pong game. The main() method creates an instance of GameFrame, which is the main frame of the game. The game is launched by creating a GameFrame object and displaying it on the screen.

Conclusion-

In conclusion, the Pong game is a classic two-player game that involves hitting a ball with paddles back and forth between players. The game is built using Java programming language and is structured using Object-Oriented Programming (OOP) concepts. The game consists of different components such as the ball, paddles, score, and game frame. These components are implemented using classes and objects. The game uses AWT and Swing libraries for graphical user interface (GUI) and event handling. Overall, the Pong game is a simple and fun game that showcases the application of OOP concepts in game development.

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