Networks 2 Lab Report:

Network Pong Game by Charles BIREN using Pygame, Python Sockets

Author:

- Name: *Charles BIREN*
- Course: Networks 2
- Date: *02.04.2025*

Tools & Languages:

- **Programming Language:** Python 3
- **Libraries Used:** socket, pygame, threading
- **Networking Protocol:** Transmission Control Protocol (TCP)
- **Tested On:** Windows10, localhost & LAN

Concept:

This game is a small remake of the classic Pong game using Python and Pygame, extended to support multiplayer gameplay over a network using TCP sockets. The game logic, ball movement, and scoring are maintained on the server side, while the client sends input and receives game updates in real time.

Architecture:

- **Server:**
    - Runs the game loop
    - Controls ball movement, score, and level
    - Accepts paddle input from the client
    - Sends game state updates to the client
- **Client:**
    - Sends paddle control inputs
    - Receives game updates and runs them locally

Game Mechanics:

- Player 1 (Server): Controls paddle with W/S keys to move UP & DOWN (left side)
- Player 2 (Client): Controls paddle with Arrow Up/Down keys to move UP & DOWN (right side)

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- The ball bounces between paddles
- Score increases when opponent misses the ball
- Levels increase every 20 hits, up to level 5, Ball speeds up +1 every LEVEL
- First player to 3 points wins

Please read the attached "ReadMe" file for questions surrounding game control mechanisms, setup and start.