**STD – PuzzLink**

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1. **Introduction**

PuzzLink was created to offer a unique space for collaboration and creativity in the digital world. The platform blends puzzle-solving, real-time communication through chat, and creative expression, allowing users to work together seamlessly. It was designed to overcome the limitations of traditional virtual interaction by enabling users to collaborate in a shared, interactive space. PuzzLink focuses on fostering connection and communication, whether for couples, friends, or colleagues. The platform offers a dynamic way for people to create and engage together, regardless of physical distance.

1. **Test Cases -**

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| Test Case ID | Description | Preconditions | Test Steps | Expected Result | Actual Result |
| TC-001 | Register new user | Backend and DB running | 1. Go to signup page 2. Enter unique username,email,and password 3. Submit form | User account is created and redirected to homepage | Same as Expected Result |
| TC-002 | Attempt to register with existing username | Username already registered | 1. Open signup page  2. Enter existing username  3. Submit form | Error message: "Username already exists" | Same as Expected Result |
| TC-003 | Login with valid credentials | Valid user account exists | 1. Navigate to login page  2. Enter correct username and password 3. Submit | User is logged in and redirected to home | Same as Expected Result |
| TC-004 | Login with invalid password | Valid user account exists | 1. Open login page 2. Enter valid username, incorrect password 3. Submit | Error message: "Invalid credentials" | Same as Expected Result |
| TC-005 | Create room with puzzle upload | User logged in | 1. Click "Create Room" 2. Upload a valid puzzle file  3. Click "Create" | New room is created and user is redirected to it | Same as Expected Result |
| TC-006 | Attempt to create room without puzzle | User logged in | 1. Click "Create Room" 2. Leave puzzle file empty 3. Click "Create" | Error: "Puzzle file required" | Same as Expected Result |
| TC-007 | Join room via invite link | Valid room exists | 1. Copy invite link  2. Open in browser  3. Authenticate if needed 4. Confirm join | User is added to the specified room | Same as Expected Result |
| TC-008 | Rejoin same room after browser refresh | User is in a room | 1. Join a room  2. Refresh the browser tab | User is automatically rejoined to the same room with current puzzle and chat state restored | Same as Expected Result |
| TC-009 | Send chat message | User in a room | 1. Type message in chat input  2. Press Enter or click Send | Message appears in chat for all users | Same as Expected Result |
| TC-010 | Receive chat from another user | At least 2 users in room | 1. User A sends a message  2. User B observes chat area | User B sees User A's message instantly | Same as Expected Result |
| TC-011 | Move puzzle piece | Puzzle is loaded | 1. Click and drag a puzzle piece  2. Drop it on valid target area | Piece moves and updates on all connected clients | Same as Expected Result |
| TC-012 | Try moving piece out of board | The game is running and a piece is selected | 1. Select a piece on the board. 2. Attempt to drag the piece outside the board area. | The piece returns to its original position on the board | Same as Expected Result |
| TC-013 | Use drawing tool on white board | Drawing mode is enabled | 1. Select drawing tool  2. Draw on canvas using mouse | Drawing appears in real time for all users | Same as Expected Result |
| TC-014 | Drawing state sync on join | Drawing exists before join | 1. Existing user draws 2. New user joins the room | New user sees existing drawing correctly rendered | Same as Expected Result |
| TC-015 | Puzzle sync on join | Puzzle has moved pieces | 1. Users rearrange pieces  2. New user joins room | New user sees current puzzle state instantly | Same as Expected Result |
| TC-016 | Logout process | User is logged in | 1. Click "Logout" button | User is logged out and redirected to login page | Same as Expected Result |
| TC-017 | User is typing...” indicator in chat | Two or more users are in the same room | 1. User A starts typing a message 2. User B observes the chat area | User B sees a “User A is typing...” indicator in real time To be filled during testing | Same as Expected Result |
| TC-018 | Send message while disconnected | Network is off | 1. Type a message  2. Click Send while offline | Message is queued or error shown; not sent | Same as Expected Result |
| TC-019 | Block unauthorized room access | Room is private | 1. Try joining private room via direct URL  2. Authenticate if needed | Access denied message shown | Same as Expected Result |
| TC-020 | Block room access for unauthenticated users | User is logged out or never logged in | 1. Copy a valid room URL 2. Paste and access it in incognito or logged-out browser | Redirected to login page or shown “Access Denied” To be filled during testing | Same as Expected Result |