**GoMoKu Game Setup Guide**

Welcome to **GoMoKu**! This guide will assist you in setting up and running the GoMoKu game on your Windows 11 PC. Follow the instructions below to ensure a smooth installation and gameplay experience.

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**1. System Requirements**

Before setting up GoMoKu, ensure your PC meets the following requirements:

* **Operating System:** Windows 11
* **Java Runtime Environment (JRE):** Java 21.0.4
* **Hardware:**
  + Minimum 2 GB RAM
  + At least 100 MB of free disk space
* **Permissions:** Administrative privileges for installing software and modifying system settings.

**2. Installation Steps**

**a. Install Java 21.0.4**

1. **Download Java 21:**
   * Visit the [Oracle Java Downloads](https://www.oracle.com/java/technologies/javase-jdk21-downloads.html) page.
   * Download the appropriate installer for your system (e.g., Windows x64 Installer).
2. **Install Java:**
   * Run the downloaded installer.
   * Follow the on-screen instructions to complete the installation.
   * **Note:** Ensure that the JAVA\_HOME environment variable is set automatically during installation. If not, you will need to set it manually.
3. **Verify Installation:**
   * Open **Command Prompt** (Win + R, type cmd, and press Enter).
   * Type the following command and press Enter:

java -version

* + You should see output indicating Java version 21.0.4 is installed.

**b. Download and Extract GoMoKu Files**

1. **Download the GoMoKu Package:**
   * Obtain the gomoku.zip file from the source provided.
2. **Extract the Package:**
   * Right-click on gomoku.zip.
   * Select Extract All....
   * Choose the destination folder, e.g., C:\gomoku.
   * Click Extract.
3. **Locate the Extracted Folder:**
   * After extraction, navigate to C:\gomoku\gomoku to access the project files.

**3. Running the Server**

The server manages game sessions and facilitates communication between clients. Follow these steps to start the server:

1. **Navigate to the Project Directory:**
   * Open **File Explorer**.
   * Go to C:\gomoku\gomoku.
2. **Start the Server:**
   * Locate the run\_server.bat file.
   * **Double-Click** run\_server.bat to launch the server.
   * A Command Prompt window will open, indicating the server is starting.
   * Once the server starts successfully, the Command Prompt will display a confirmation message.
   * **Note:** Do not close this window while the server is running.
3. **Ensure Server is Running:**
   * Verify that port 8888 (as specified in serverconfig.xml) is not being used by another application.

**4. Running the Clients**

Each client represents a player with unique attributes. Follow these steps to start each client:

**a. Client 1: Alice**

1. **Navigate to the Project Directory:**
   * Open **File Explorer**.
   * Go to C:\gomoku\gomoku.
2. **Start Alice's Client:**
   * Locate the run\_client1.bat file.
   * **Double-Click** run\_client1.bat to launch Alice's client.
   * A Command Prompt window will open, indicating the client is starting.
   * Once the client starts successfully, the GoMoKu game window for Alice will appear.
   * **Note:** Do not close the Command Prompt window while the client is running.

**b. Client 2: Bob**

1. **Navigate to the Project Directory:**
   * Open **File Explorer**.
   * Go to C:\gomoku\gomoku.
2. **Start Bob's Client:**
   * Locate the run\_client2.bat file.
   * **Double-Click** run\_client2.bat to launch Bob's client.
   * A Command Prompt window will open, indicating the client is starting.
   * Once the client starts successfully, the GoMoKu game window for Bob will appear.
   * **Note:** Do not close the Command Prompt window while the client is running.

**c. Client 3: Charlie**

1. **Navigate to the Project Directory:**
   * Open **File Explorer**.
   * Go to C:\gomoku\gomoku.
2. **Start Charlie's Client:**
   * Locate the run\_client3.bat file.
   * **Double-Click** run\_client3.bat to launch Charlie's client.
   * A Command Prompt window will open, indicating the client is starting.
   * Once the client starts successfully, the GoMoKu game window for Charlie will appear.
   * **Note:** Do not close the Command Prompt window while the client is running.

**5. Configuration Files**

Each client and the server use specific configuration files to operate correctly. These files are located in the C:\gomoku\gomoku directory.

**a. Server Configuration (serverconfig.xml)**

<?xml version="1.0" encoding="UTF-8"?>

<server>

<ip>localhost</ip>

<port>8888</port>

<matches>256</matches>

</server>

* **ip:** The server's IP address. For local setups, it's localhost.
* **port:** The port number the server listens on. Ensure this port is free.
* **matches:** The maximum number of concurrent matches the server can handle.

**b. Client Configurations**

Each client has a unique configuration file:

1. **Client 1 (client1config.xml - Alice):**

<?xml version="1.0" encoding="UTF-8"?>

<client>

<name>Alice</name>

<gender>female</gender>

<age>30</age>

<from>USA</from>

<image>1</image>

<ip>localhost</ip>

<port>8001</port>

<serverIp>localhost</serverIp>

<serverPort>8888</serverPort>

</client>

1. **Client 2 (client2config.xml - Bob):**

<?xml version="1.0" encoding="UTF-8"?>

<client>

<name>Bob</name>

<gender>male</gender>

<age>25</age>

<from>UK</from>

<image>2</image>

<ip>localhost</ip>

<port>8002</port>

<serverIp>localhost</serverIp>

<serverPort>8888</serverPort>

</client>

1. **Client 3 (client3config.xml - Charlie):**

<?xml version="1.0" encoding="UTF-8"?>

<client>

<name>Charlie</name>

<gender>male</gender>

<age>28</age>

<from>Canada</from>

<image>3</image>

<ip>localhost</ip>

<port>8003</port>

<serverIp>localhost</serverIp>

<serverPort>8888</serverPort>

</client>

* **Unique Attributes:**
  + **name:** Player's name.
  + **gender:** Player's gender.
  + **age:** Player's age.
  + **from:** Player's country of origin.
  + **image:** Avatar identifier.
* **Connection Settings:**
  + **ip:** Client's IP address. For local setups, it's localhost.
  + **port:** Unique port number for each client to avoid conflicts.
  + **serverIp:** Server's IP address (localhost for local setups).
  + **serverPort:** Server's listening port (8888).

**Note:** Ensure that each client uses a unique port number to prevent conflicts.

**6. Firewall and Security Settings**

To ensure smooth communication between the server and clients, adjust your firewall settings as follows:

**a. Allow Java Through Windows Firewall**

1. **Open Windows Defender Firewall:**
   * Press Win + S, type Windows Defender Firewall, and press Enter.
2. **Allow an App Through Firewall:**
   * Click on Allow an app or feature through Windows Defender Firewall.
3. **Modify Settings:**
   * Click on Change settings.
   * Scroll through the list to find Java(TM) Platform SE binary.
   * Ensure both Private and Public boxes are checked.
   * If not listed, click Allow another app... and navigate to the Java installation directory (e.g., C:\Program Files\Java\jdk-21.0.4\bin\javaw.exe) to add it manually.
4. **Confirm Changes:**
   * Click OK to apply the changes.

**b. Verify Port Availability**

Ensure that the ports specified in the configuration files (8888, 8001, 8002, 8003) are not being used by other applications.

1. **Check Port Usage:**
   * Open **Command Prompt**.
   * Run the following command for each port:

netstat -aon | findstr :<port\_number>

Replace <port\_number> with 8888, 8001, 8002, or 8003.

1. **Identify Conflicting Applications:**
   * If a port is in use, note the **PID** from the output.
   * Run:

tasklist /FI "PID eq <PID>"

Replace <PID> with the actual Process ID to identify the application.

1. **Resolve Conflicts:**
   * If a port is occupied by an unwanted application, consider closing it or changing the port number in the respective configuration file.