**User Manual for Bingo Simulation Code**

**1. Introduction**

Welcome to the Bingo Simulation application! This program allows you to simulate Bingo games, track the progress, and visualize the results. This user manual will guide you through using the application effectively.

**2. Installation and Setup**

Before running the Bingo Simulation, make sure you have the required libraries installed:

* **pandas**
* **matplotlib**
* **tkinter**

To set up your environment:

* Ensure you have Python installed on your system.
* Install the required libraries using **pip**:

pip install pandas

pip install matplotlib

**3. Launching the Application**

To start the Bingo Simulation program, run the provided GUI code. The main window will appear.

**4. Running Simulations**

* Enter the number of Bingo cards per simulation in the "Number of Bingo Cards per Simulation" field.
* Enter the number of simulations you want to run in the "Number of Simulations" field.
* Click the "Start Simulation" button to begin the simulations.

**5. Simulation Progress**

During the simulation:

* The program generates Bingo cards based on your input.
* It tracks the progress of each simulation, including Bingo and Full House wins.

**6. Viewing Results**

After simulations are complete:

* You can view the initial Bingo cards generated in a separate window by clicking the "Display Initial Cards" button.
* To see a graph of Bingo vs. Turn, click the "Display Bingo vs. Turn Graph" button.
* To view a histogram of first Bingo hits, click the "Display Histogram" button.

**7. Interpreting Results**

* The "Bingo vs. Turn" graph shows the cumulative number of Bingo wins and Full House wins as the game progresses.
* The histogram displays the distribution of the turn numbers when the first Bingo was hit in each simulation.

**8. Quitting the Application**

To exit the application, click the "Quit" button in the main window.