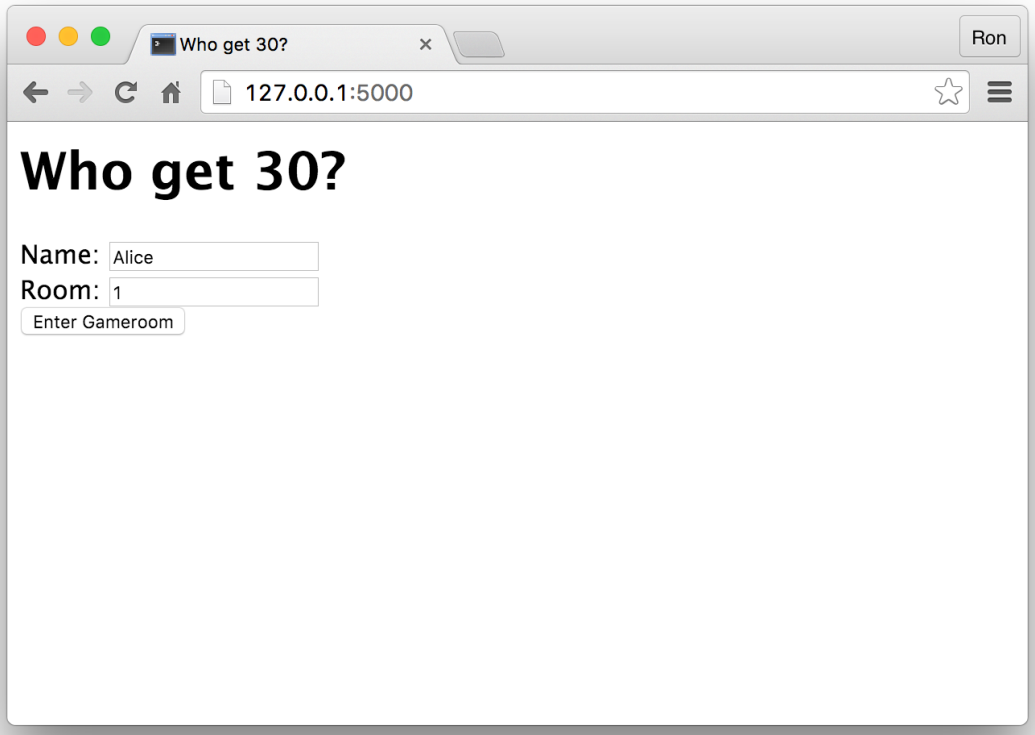
P3 Application: Who get 30?

This is a multi-player real-time game using Paxos implementation called "Who get 30?". It consists of a **web-based** graphic user interface, a **Python** client side and a **Golang** server side.

1. Architecture

The **GUI** is implemented by HTML and JavaScript, providing users with the login page and game rooms. (Can be found in `p3/front/app/templates`)



The **client side** is implemented by Python, Flask and Flask-SocketIO. (Can be found in `p3/front`) To connect players with each other, it use **socket** to broadcast input messages to users in the same channel (aka game room). To connect the client side with server side, it send **POST** or **GET HTTP** request to server side.

The **server side** is implemented by Golang, providing the front-end with **RESTful API** and Paxos implementation. (Can be found in `p3/src/github.com/cmu440-F15/paxosapp/main` and `p3/src/github.com/cmu440-F15/paxosapp/controllers`)

2. Functionality

The general idea comes from a traditional Chinese game "Get 30". We change it from a two-player, turn-based game into a multi-player, current game.

In the login page, users enter their registered names and room numbers in the to enter game room. Players can play in their own game room without interrupting users in other game rooms.

In the game room, players are free to enter numbers from 1 to 30 but it must be current number + 1 or current number + 2, or it will be rejected as invalid value. **If more than one user want to commit their own value in the same round, the backend Paxos implementation would only accept one of them.**

After finish the game, users can click `Leave game` to return login page to quit or enter another game room.

3. How to play

Run the server side:

```
./runBack.sh
```

Run the client side: (include configuration)

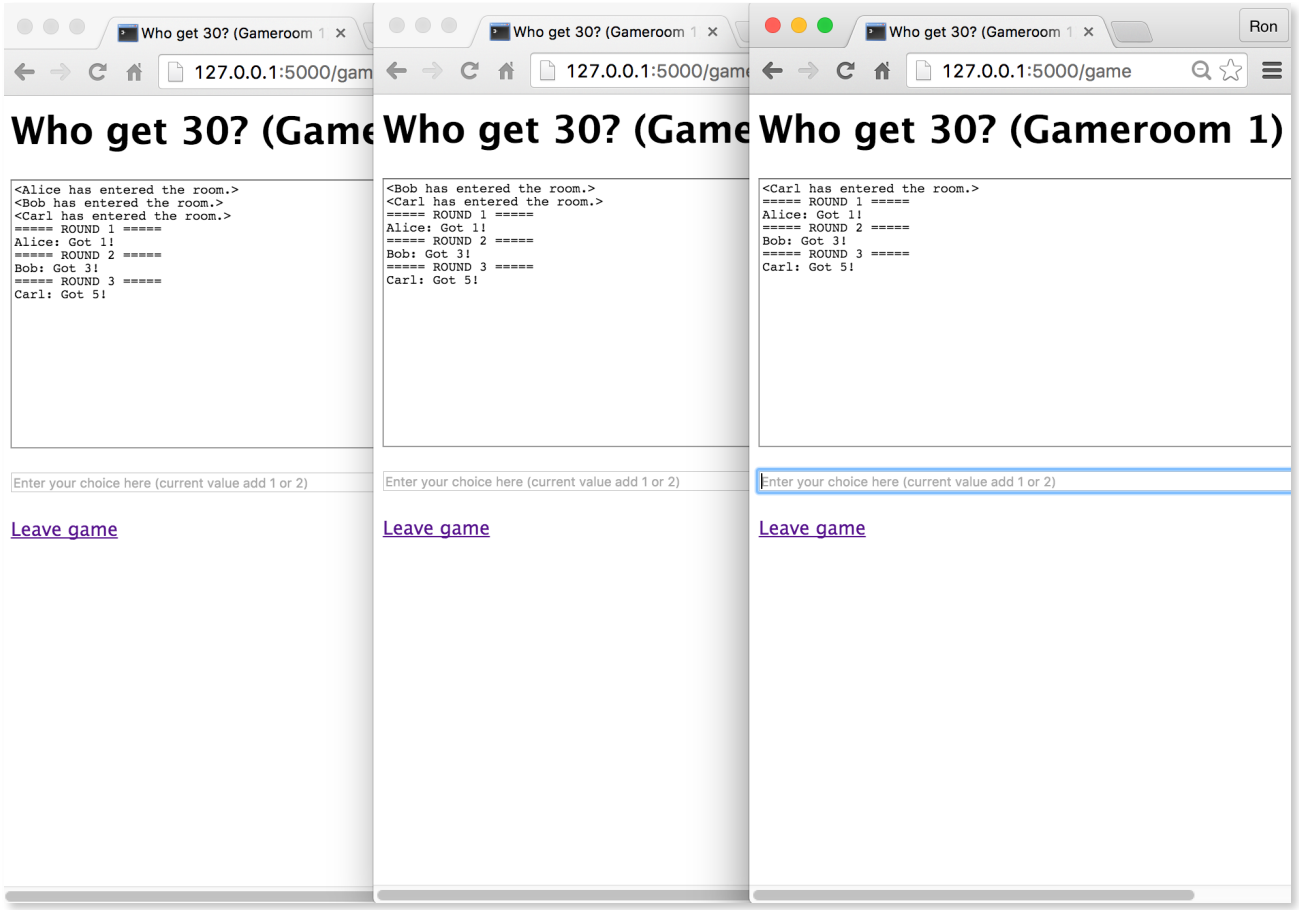
```
cd p3/front
virtualenv venv
. venv/bin/activate
sudo pip install -r requirements.txt
pip install Flask
pip install Flask-SocketIO
pip install Flask-WTF
pip install requests
python game.py
```

Visit `http://127.0.0.1:5000` in the browser.

This game is designed to support 3 users, so please open 3 tabs and enter registered **Names** `Alice`, `Bob`, `Carl` and **Room** number (any number would work as long as they are the same).

Players are free to enter numbers from 1 to 30 but it must be current number + 1 or current number + 2, or it will be rejected as invalid value.

Here is a screenshot:



We have consider rigorous boundary exceptions here, although it hasn't been shown here, such as user doesn't exist, invalid value, invalid input, win, rejected, etc.