

# Urbansafari CTF Specification

## *Map Information*

### Types of Cells

- **Walls**
  - A cell which cannot be moved onto without being destroyed by a player with a hammer. Certain cells are unbreakable even with a hammer; if it lines the map border, a home base, or jail, it cannot be destroyed..
  - Walls are colored the same as their territory: red walls indicate red territory and green walls indicate green territory.
- **Non-Wall Cells (Floor, Home, Jail)**
  - Non-wall cells can be moved onto by players if unoccupied. A cell can only hold one player.
  - It can hold one object, either a flag or hammer, which is displayed.
  - They belong to either red or green, but visually are indistinguishable between teams and are represented by grey tiles.
  - Special conditions apply to home and jail cells (winning, jailbreak, etc) which can prevent players from moving onto it, or may trigger a game win situation

### Home Bases

- Home bases are large walled off areas on opposite sides of the map, each with only one entrance. The surrounding walls cannot be broken.
- All new players spawn in their home base in an unoccupied cell.
- Hammers respawn in the home base.

### Jails

- Jails are medium walled off areas in the middle of the map, each with only one entrance. The surrounding walls cannot be broken.
- Players who are the same color as a jail can move freely in and out of it, as well as unjailed opposite color players.
- Captured players are sent to unoccupied enemy jail cells. Once inside, they can move freely within the jail, but cannot leave. If an opposing, unjailed player freely enters, the jailbreak event occurs to free jailed players (detailed further in player interaction).

## *Player Information*

### Entering the game

Type “./client <hostname> <port number>”. The UI will open up with the splash screen. A game will remain at splash screen until at least 2 players have joined. Once your UI has loaded the map, you will see your player has been spawned at the home base.

### Player Attributes

- **Team Color** (Displayed on border and id)
  - Either red or green. Upon connection, the server determines a player's color, and which will never change during the course of a game.
- **ID Number** (Displayed on player)
  - A player can be identified by their unique id number. Once a player leaves, this id can be reused by the server.

## Player States

- **Jailed** (Indicated by a greyed out player icon)
  - A player can be captured and sent to jail, activating the jailed state, detailed further in player interaction and jail rules. By default, a player joins the game with this turned off.
- **Holding an object**
  - Players can hold one of each type of object: a hammer and a flag.
    - *Flag*: When holding a flag, the player is shaded the same color of the flag..
    - *Hammer*: There is no visual difference when a player holds a hammer.

## Player Controlled Actions

- **Movement** (Arrow keys)
  - Players move up, down, left, and right using the respective arrow keys. They can hold down the arrow key for repeated movement in a single direction. Holding down two arrow keys will not move them in a diagonal direction. Players, if not holding a hammer, cannot move into walls. The camera will move along with the player, so the player will always be in the middle of the screen.
  - If the requested move is unsuccessful, the player will remain in the same position until a valid move is made.
- **Breaking walls** (Arrow Keys)
  - If a player moves into a breakable wall and has a hammer, the wall converts to a floor space. Hammer is deleted from inventory and respawned at original position. Player now resides in the new floor space.
- **Take Hammer** (H Key)
  - If the space a player resides in contains a hammer and the player does not already have a hammer, the hammer is added to the player inventory and removed from the cell.
- **Drop Hammer** (J Key)
  - drops a hammer (if in inventory), which respawns at original position in home base. For example, if a red player took the hammer from green base, it would respawn in green base where it originally spawned at.
- **Take Flag** (F Key)
  - If the space a player currently resides in contains a flag and the player does not already hold a flag, then the flag is added to the player's inventory and removed from the cell. Any color player can pick up any color flag.
- **Drop Flag** (G key)
  - drops a flag in closest available non-wall cell.
- **Zoom** (Z to zoom in, SHIFT + Z to zoom out)
  - Zooming out causes all players and walls to be colored their respective colors, and all floor spaces (including home and jail) to be colored black. Flags are colored white and hammers are colored yellow. At any zoom level less than the highest, it is impossible to distinguish players from walls unless they are moving.
- **Panning the camera** (Arrow Keys + Hold SHIFT)
  - Players can move their camera to see other map positions. Once a player moves, all

manual panning is reset and the camera re-centers on the player.

- **Quitting** (CTRL + C or closing the UI window)
  - Quitting disconnects you from the game and removes your player object from the map, and free ups your id on the server.

## Flag Interaction

- At the beginning of the game, all flags are hidden from sight and put in random locations. These locations may be walled off and require a hammer to get to.
- If a player moves within 5 cells of an undiscovered flag, that particular flag is made visible to both teams. The other flag, if undiscovered, remains hidden.
- Players can pick up flags, regardless of team or player color, using the “F” key. Flag will not be picked up if the player is already holding a flag.
- Flags are dropped if the player holding it is captured by another player, or if the player quits. Flags can also be dropped using the “G” key.

## Player Interaction

- **Player Collision**
  - No two players ever exist in the same cell; before a move is made, the game checks for player collision.
  - If on same team, players cannot move into same space as a team member.
  - If on opposing team, the player on opposing territory is sent to the respective jail, and they are unable to leave until jailbroken. The exception to this is if a jailed player in jail collides with an opposing color player, in which case they cannot overlap.
- **Capturing Other Players**
  - When members of opposing teams collide, the one who is in enemy territory (regardless of who triggered the movement) is sent to an unoccupied enemy jail cell. When jailed, players cannot move out of the jail unless jailbroken..
- **Jailbreaking Other Players**
  - To jailbreak players of your own team, an unjailed player must enter the enemy jail. This removes the jailed attribute from all friendly players, allowing them to move freely out of the jail, and to be jailed once again if tagged.

## Winning the Game

The game is won under the following conditions:

1. **Enemy flag is dropped in your home base.**
  2. **All members of your team are currently in home base.**
  3. **Your own flag is in a home base cell.**
- or
1. **All enemy players have been captured or all enemy players have quit**

Upon winning, all player screens will display either “YOU WIN” or “YOU LOSE”, depending on which team they were on.