

Assignment 2: Minimalist UI for Ubicomp

The development of the interactive party game features on the Circuit Playground was a journey of exploration and creativity, highlighting the potential of simple interfaces to create engaging user experiences. Each design decision, from button assignments to LED color coding, was guided by the goal of intuitive interaction and gameplay. Facing and overcoming challenges such as ambient noise interference and limited LED representation underscored the importance of flexibility and innovation in game design.

Phase 1: Spin Wheel

The project commenced with the creation of a "Spin Wheel" game, aimed at providing an entertaining and interactive experience for multiple players.

UI Decisions:

- **Activation by Shake:** Utilizing the CP's accelerometer, the game initiates with a shake. This method capitalizes on the natural motion of shaking to start an action, making the game start intuitive and physically engaging.
- **Adjusting Player Numbers:** The incorporation of the CP's buttons allowed players to adjust the number of participants. The right button increases the count, while the left decreases it, aligning with conventional associations and the representation of LEDs.
- **Player Representation:** Each LED lights up in a random color to represent individual players, and the spinning will slow down towards the end. Together they leverage the visual capabilities to enhance the game's engagement and accessibility.

Phase 2: Hot Potato

Building on the Spin Wheel, the "Hot Potato" game was added, introducing a new gameplay feature to select a losing player.

UI Decisions:

- **LED Countdown Display:** The LEDs show the countdown during Hot Potato gameplay, providing a visual timer that decreases as the game progresses.
- **Beep on Timeout:** A beep sound signals the end of a player's turn, serving as an auditory cue that complements the visual countdown. This dual-sensory

feedback ensures players are aware of the game state when they are passing it and not necessarily looking at the lights.

- Switching between: Initially, the physical switch toggled between "Hot Potato" and "Spin Wheel" modes. Then to enhance intuitiveness and utilize the CP's sound detection capabilities, the "Spin Wheel" was later activated by a loud noise, such as a snap or clap. However, this method faced challenges with ambient noise interference, leading to reconsideration of the activation mechanism, which later is the capacitive touch.

Phase 3: Turn Timer

Without the need for the switch, it allows the CP to have the third feature - a turn timer, offering a new layer of strategy and time management to the gameplay.

UI Decisions:

- Capacitive Touch for Time Adjustment: Beyond the buttons, capacitive touch sensors were employed for a novel interaction method, it provided an additional, more nuanced method of interaction.
 - Touching could trigger the "Spin Wheel" or confirm actions in the timer functionality. This method also opened possibilities for creative physical interfaces, like connecting the sensors to conductive objects (e.g., lemons) for a more tactile experience.
 - It allows players to have another layer of adjustment besides participant numbers - which is the turn timer duration. As participant number requires more precision and time requires faster and wider adjustments, it's reasonable to use two capacitive touches for time, and the natural switching of the led display between the two when pressing different buttons is also very effective..
- Time Representation with LEDs: A significant challenge was devising a method to represent a wide range of time durations (1-99 seconds) with only ten LEDs. Initial attempts included using different colors for subsequent ten-second intervals. However, this approach proved complex for users to follow. The final implementation utilized a color-coding scheme where each LED represented one second in green, tens were indicated by blue, and overlaps were shown in yellow, allowing for a straightforward yet effective representation of durations up to 99 seconds.