

Ankush Patel
Michael Ehrenberg
6.111 Final Project – Automated Dartboard

List of Deliverables:

Ankush Patel:

- Latch input from microphones to a TTL valid high after first detection of sound. Can be verified using oscilloscope.
- Interface latched signals with labkit. Can be verified using led's on Labkit.
- Provide a 2.7Mhz enable signal so each cycle represents .000125 meters traveled by sound or every 8 cycles corresponds to 1mm (Divider Module). Verified through user input/output of labkit and oscilloscope.
- Count the time (in 2.7Mhz enable cycles) between the detection of sound of impact between the three microphones (Counter Module). Use Logic Analyzer to logic analyzer pins to verify differences seen with oscilloscope.
- Convert time differences to distance differences in mm. (Simply shift by 3 bits)
- Find real-world x-y position of dart on the dart board (Math Module)
- Convert real-world x-y position to pixel x-y position for display logic (Conversion Module)

Michael Ehrenberg:

- Display a color picture of a dartboard on the screen. (DBPicture Module)
- Display darts at their appropriate location on the screen based on the input coordinates provided (Dart Blob Module)
- Determine score of darts on the screen by converting x-y coordinates to polar coordinates with a square root and inverse tangent module(Scoring Module)
- Display the score of 2 players on the screen. (Screen Text Module)
- Play a game of 301. Two players alternate throwing darts and the game module updates the dart locations and the scores. Can be tested using sample dart data. (301 Module)
- IF TIME PERMITS: Dart location correction on GUI to compensate for lack of microphone precision
- IF TIME PERMITS: Additional Dart Games