Quarter Holder - Design Kickoff

Challenge designed by Drew Zdeblick
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Challenge

Design and build a device that can hold a quarter against the underside of the table as far from the edge as possible.

- The device must start entirely within the footprint of the build platform.
- All components of the device must be physically connected to at all times from starting position to measurement.
- The device may be manually positioned by the user.
- The user may only interact with the mechanism above the top plane of the table while both hands are in contact with the tabletop or build platform.
- The device may touch the table surface during articulation.
- The user can call for a measurement at any time, as many times as they'd like.
- Each user will be allowed a final measurement at the end of time.
- The user may place the quarter in the measuring position, but the device must hold it there.
- The quarter can not be bonded or adhered to anything, and must be able to be removed from the device at the end of the test without damaging the quarter.
- The device must hold the quarter for a minimum of 5 seconds against the underside of the table without the user touching the device or any surface in play.
    - During this time, the device may only touch the build plate and the quarter.
- The longest distance recorded will determine the winner.
    - If two users reach the same distance, the lighter mechanism wins.

The competition will take place over 3 weekly meetings.

1. 30 minute - design session 1 (7/18/2024)
    - Kit of materials will be present, but no building may take place.
2. 30 minute - design session 2 (7/25/2024)
    - Kit of materials will be present, but no building may take place.
    - Cad will be saved out as a pack and go at the end of this time.
    - A note detailing which parts are to be printed and any print settings may be sent outside of the 30 minute window.
3. 60 minutes - built and Competition (8/1/2024)
    - The user will receive their kit of parts along with any 3d printed components they previously designed

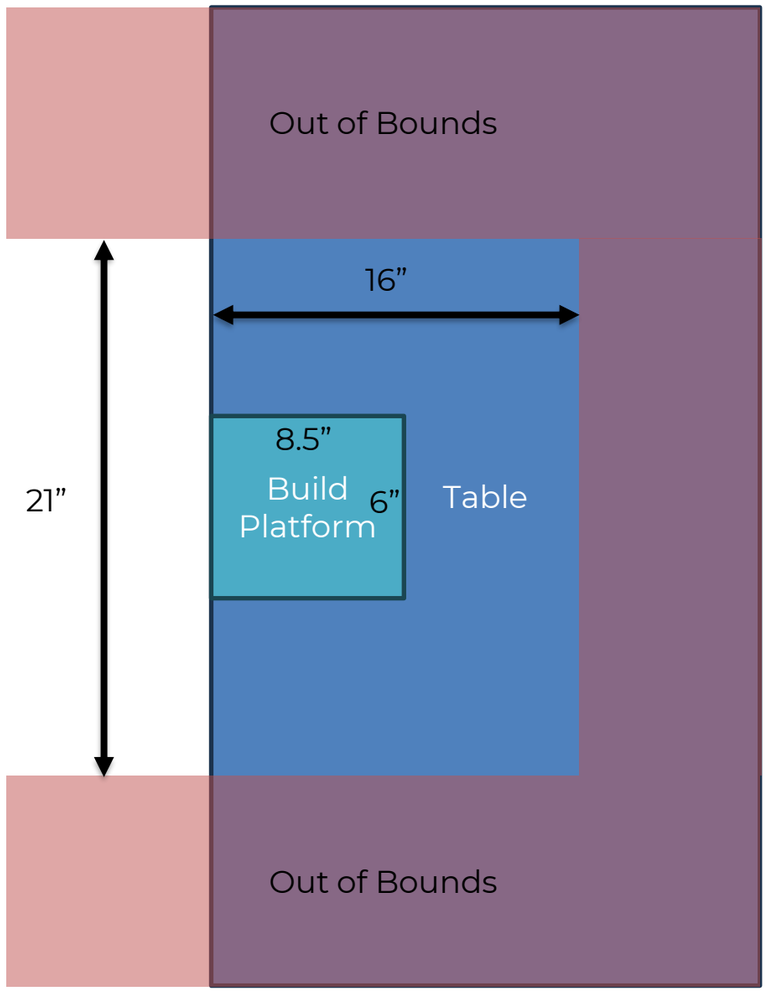
Competition Arena

The out of bounds areas will be marked out with tape.
These boundary lines represent planar boundaries extending up form the table surface.

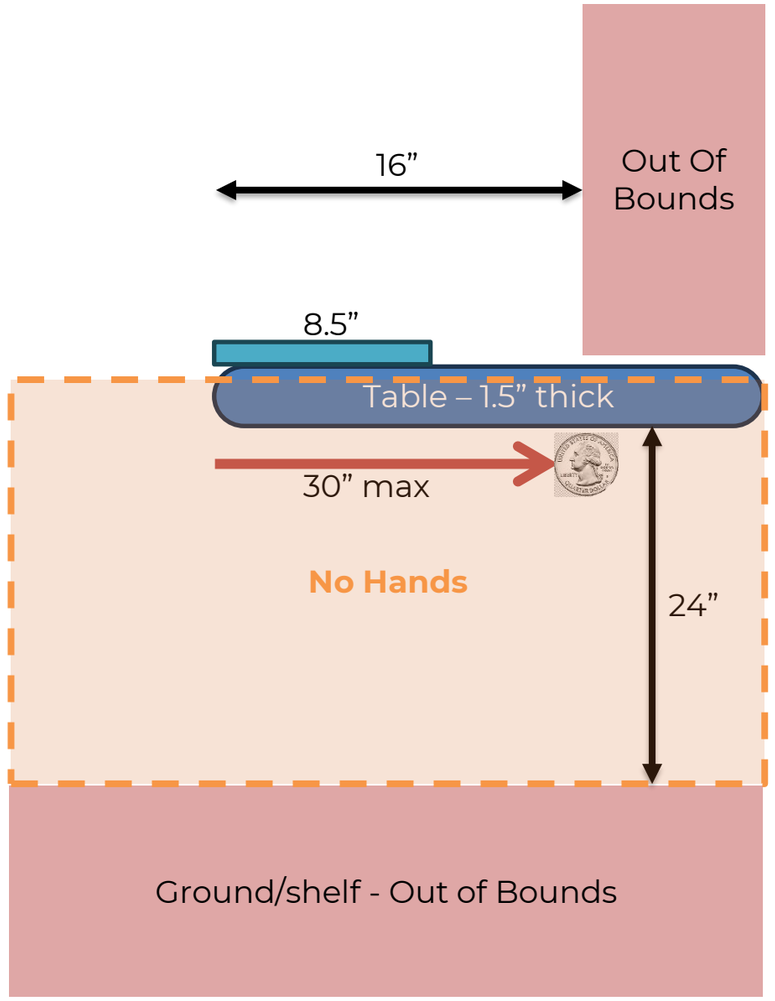
The device may only touch the build plate and quarter when the measurement is being taken.

Build Platform
- 8.5” x 6” x 3/4” plywood
- The build platform may be secured to the table surface with screws, tape, clamps, or gravity.
- Any securing component may not be used as part of the device.

Top View



Side View

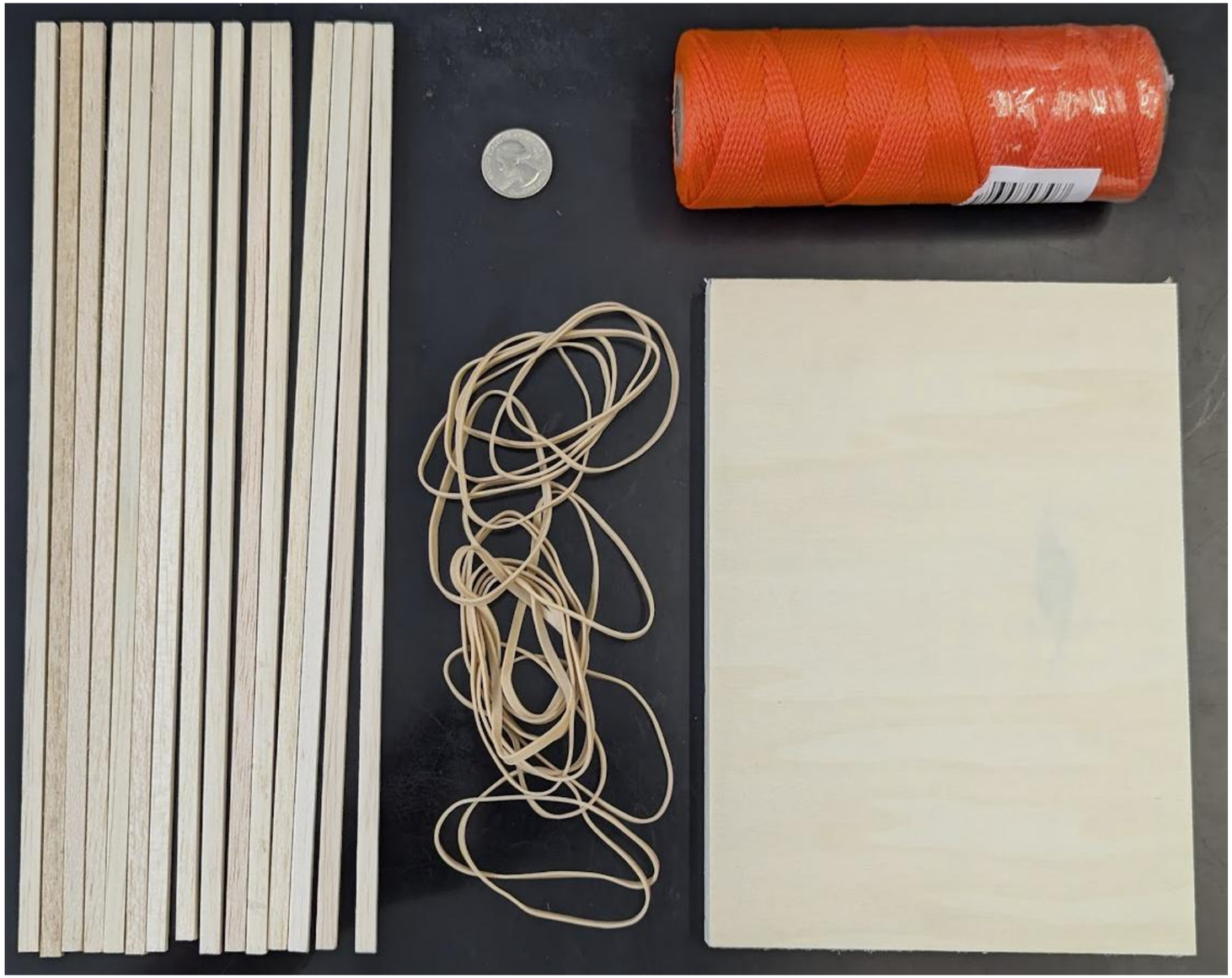


Build Kit

On the build/compete day, each user will be provided with a kit of the following materials as well as their own competition space

- Build Platform – 8.5” x 6” x 3/4” plywood
- 1 standard US issue 25 cent piece
- 3d prints designed on the previous 2 meetings
  - Totaling up to 500g of PLA per person
  - *Printing will be done by the challenge organizer after the second design session*
- Hardware from the shop as needed
- 15x 1/4" x 12“ Square Balsa Wood Dowels
- 20x Rubber bands
- 500 ft string (shared)
- Hot Glue (unlimited glue, with 3 shared hot glue guns)

All tools in the shop will be available during the 60 minute build session



Q&A during design sessions

Q: Does the quarter need to be flat against the underside of the table?
A: No it does not, the quarter only needs to be touching the underside of the table during the 5 second measurement

Q: what is the max distance in front of the build platform?
A: essentially no limit, but his is the side of the table that you will be working from. Functionally, you'll have about 30" of space

Q: What is the 30" max quarter distance?
A: 30" is the maximum amount of space under the table that the quarter can reach before the table ends. This is the max achievable distance for holding the quarter. If two people hold the quarter at the max distance, then the lighter mechanism will be the winner.
A2: 20240725 – 30” max distance is a rough estimate. Actual max may be between 28” and 36” depending on the benches used.