

Team 675C's Guide to Design



Design: It's an important part of the engineering process.

For a rookie team, it's intimidating to start building a robot. The new parts and lack of experience may seem overwhelming. However, team 675C is here to tell you, you can do it! In our first VRC season, we've learned about the design process, and we're ready to share.

Team 675C's 5 Step Design Process

Step 1: Evaluate the Game

Step 2: Create Design Criteria

Step 3: Brainstorm Ideas

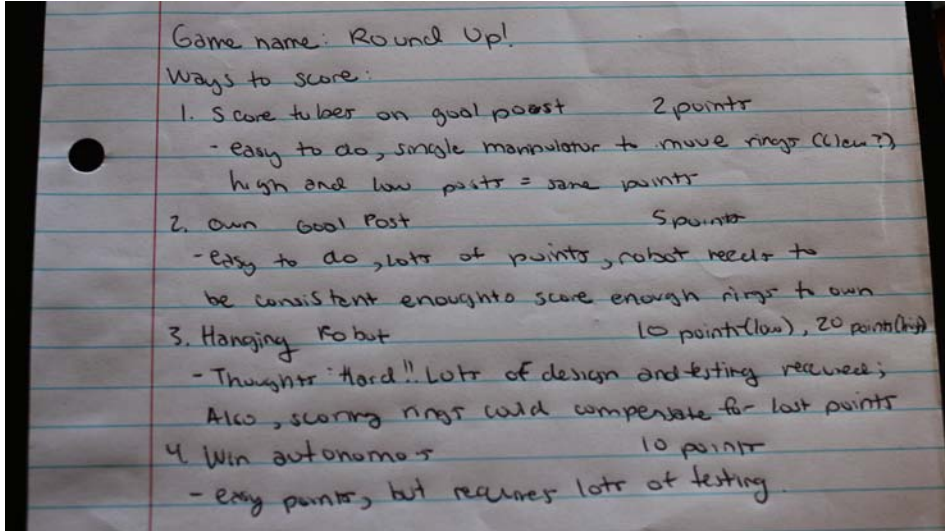
Step 4: Sketch It Out!

Step 5: Document the Journey

Step 1: Evaluate the Game!

An important part of the design process is designing your robot to win. Take time to watch the game animation and evaluate the game. Think about the ways that you can score, and what your robot would have to do to score!

Our team came up with this:



Game Name: _____

Ways to Score:

1. _____ points

Thoughts on how to win these points:

2. _____ points

Thoughts on how to win these points:

3. _____ points

Thoughts on how to win these points:

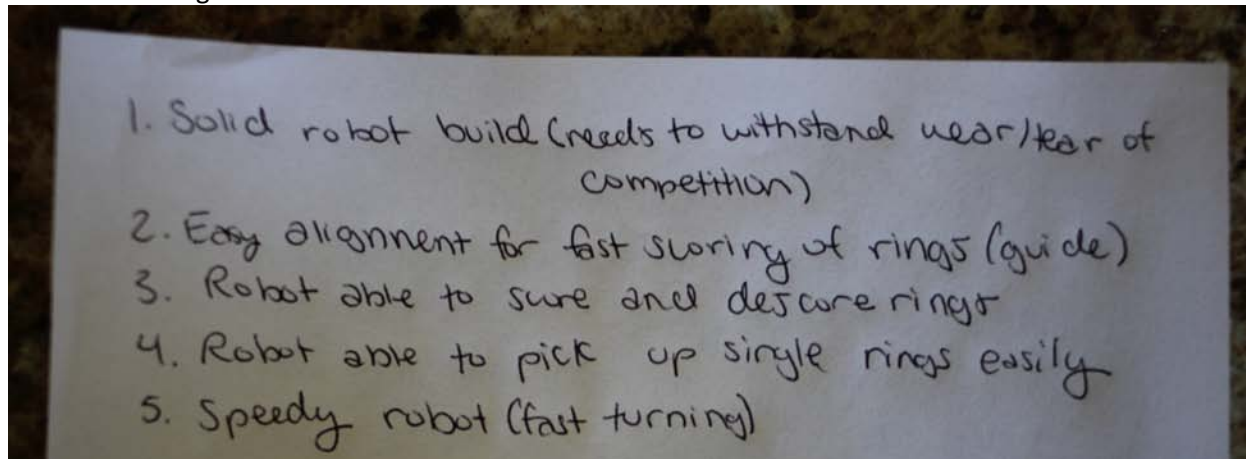
4. _____ points

Thoughts on how to win these points:

Step 2: Create Design Criteria

Set design criteria before brainstorming any ideas. Having a set of standards to judge each idea is vital to choosing the optimum design for accomplishing what the team wants the robot to do.

Our team's design criteria:



As a team, come up with some design criteria!

Criteria	Order
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

After your team has created a list of criteria, rank them. No design is going to have ALL the elements of your ideal robot! Ranking criteria will help you avoid discarding a great idea!

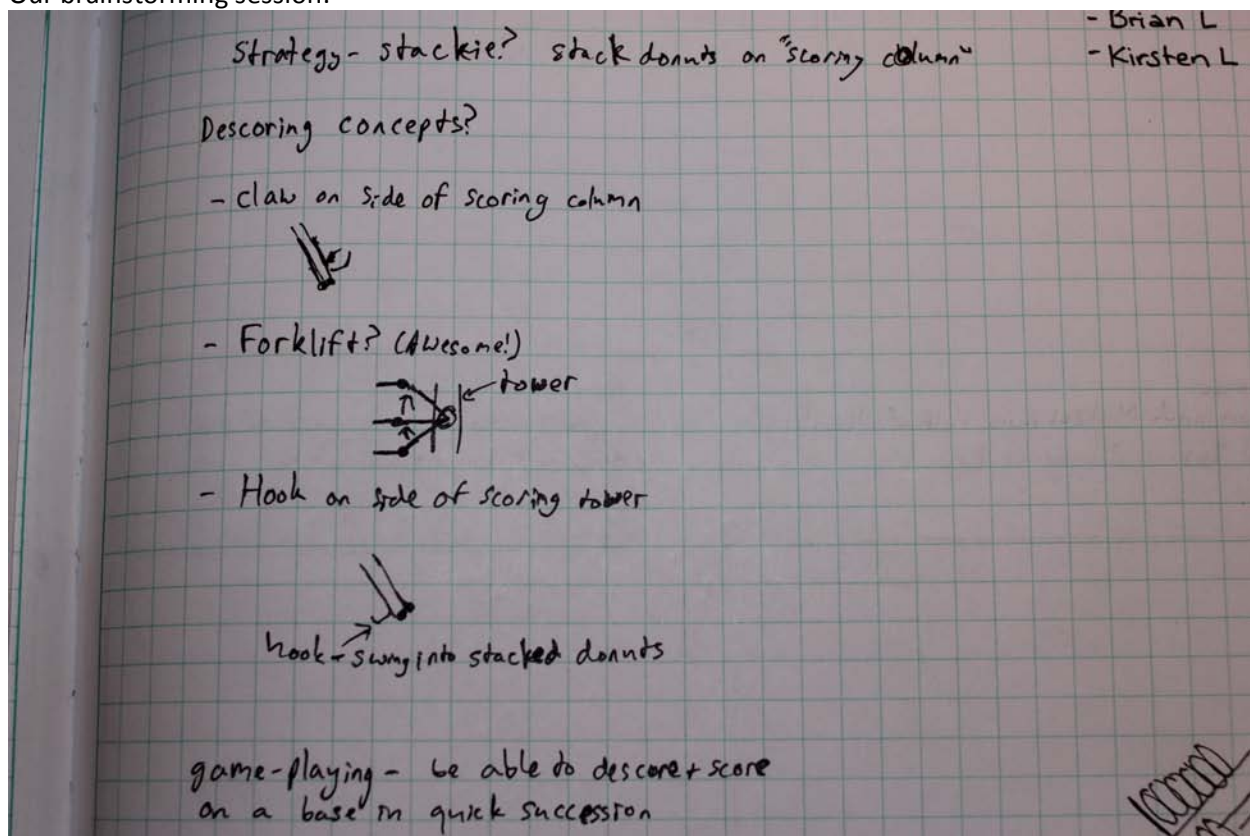
Step 3: Brainstorm Ideas

Brainstorming sessions are where ideas are born! Use markers, pencils, paper, white board, etc. to think about ideas for the individual elements of your robot. For example, considers ways to manipulate the scoring elements. Think of creative ways to interpret the game! A unique design can be the deciding factor in your robot's success!

WARNING

Many teams get stuck during brainstorming because they're too worried about "how to make things work." When you're brainstorming, don't be too worried about how things will work mechanically. When your team begins to build, you'll learn about the VEX parts, and mechanically, things will make more sense!

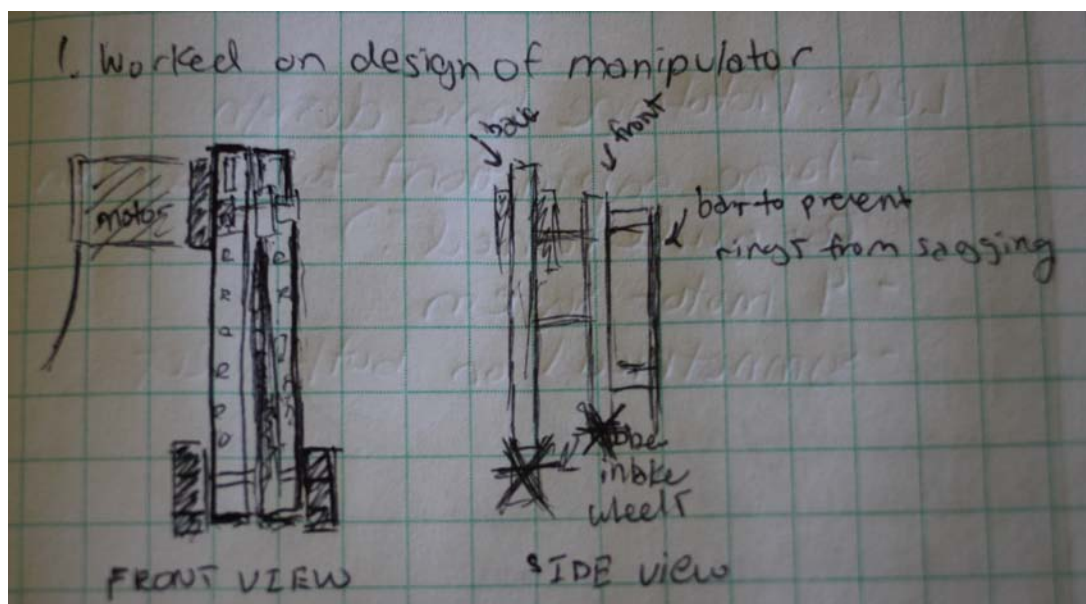
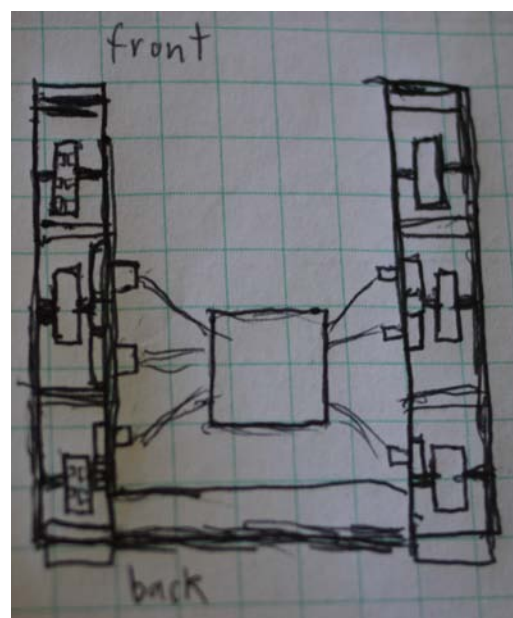
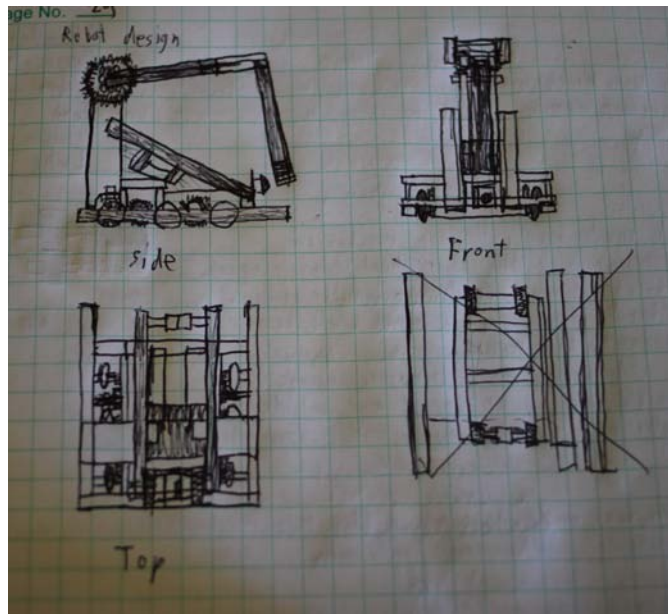
Our brainstorming session:



Step 4: Sketch It Out!

See what materials you have available and research parts that your team doesn't recognize. Then sketch out some robot designs. Draw designs to scale, to realistically visualize what you're trying to build. Computer modeling tools such as Autodesk Inventor can help to virtually create your robot. A plan helps to save time!

Our team's sketches:



Step 5: Documenting the Journey

Once your team has come up with designs, evaluate each based on the ranking of the design criteria. Each design should be presented and documented in the logbook with the reasons why the design meets/fails the design criteria. At the end, the team will be able to look at the records and chose the best design.

Document your journey in a logbook. Documentation allows teams to keep track of past designs and what worked and didn't work.

Tips:

Every day should start out with the: Date, time, and members in attendance.

Record the day's agenda (what happened) and any notes associated with the events.

An example page from our logbook:

