Our Team

- Our team was run under the directions of Steven our team captain
- At the beginning of the meeting, Steven would ask us what we were going to do that day, and would help us decide what tasks to work on.
- We handled conflicts in an organized fashion.
- Steven would moderate team discussion. If we could not make a decision, our team captain, Steven, would decide for us.

4 Goals For the Season

1. Win fairly.
2. Everyone learns more about robotics and how to program in Kiss-C
3. Be the best team that we can possibly be.
4. Have fun with Robotics!

Rejected Strategies

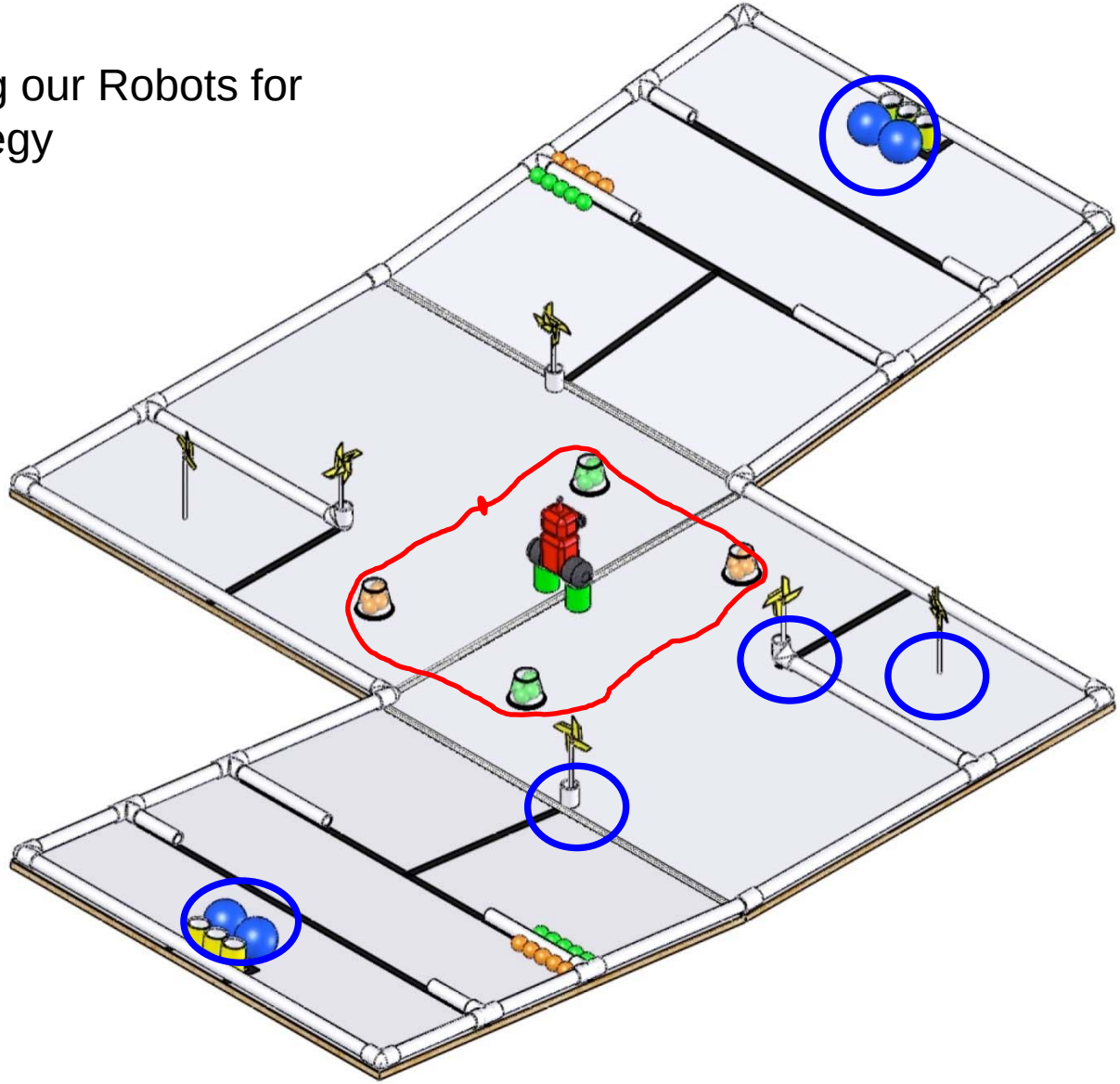
- A fast robot that would drive over and block the opponents from getting out of the starting box.
  - Reason for rejecting: is practically impossible to get a robot to go that fast.
- Having a robot use the energy chain to whip around getting Botguy.
  - Reason for rejecting: It would not be able to reliably get Botguy in our control.
- Having the cbc based robot wait for the create robot to leave base which waits for the light sensor.
  - Reason for rejecting: wastes time and better to start cbc based robot on a platform.
- Having a robot track Botguy and chase after Botguy for the whole match.
  - Reason for rejecting: If Botguy was in the other team's control, there would be no way to take Botguy back.
- Having three robots: the create alone and two based on the cbc.
  - Reason for rejecting: The three robots would not fit and base, the create is hard to program, and there would be not enough pieces.

Point Analysis

	Your Starting Box	Your Slope	Your Peak	
* Fossil fuel (orange pom) paired with a green object (pom or foundation)	1	2	3 X10	30
* Green object (pom or foundation)	1	2	3 X10	30
* Water resource (blue ball)	10	20	30 X2	60
* Wind turbine correctly installed in a foundation	0	20	30 X4	120
Wind turbine not correctly installed in a foundation	0	5	10 X0	0
Mobile holder (plain white PVC connector)	5	0	0 X4	
* Fuel container (clear cup)	5	0	0	20
* Botguy		X 2	X 3	**X3**

* = Create * = Cbc

Designing our Robots for our Strategy



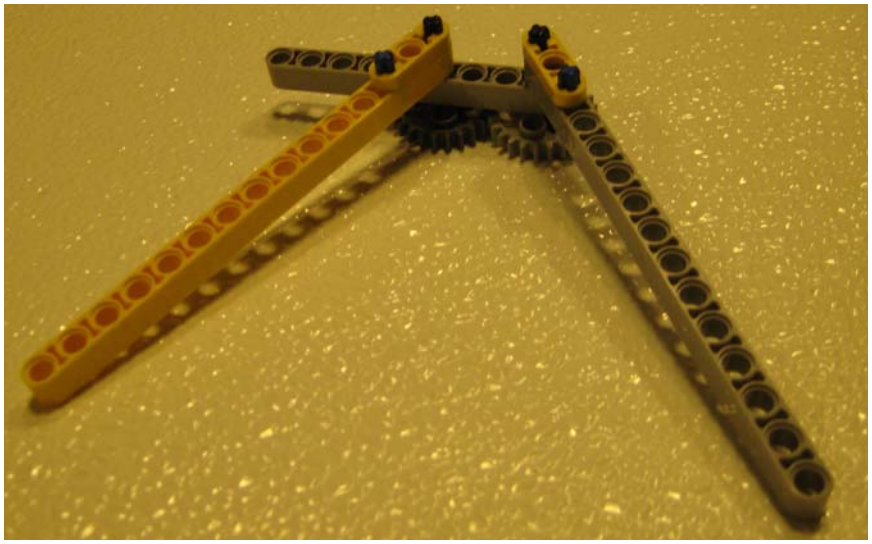
Create Robot in Red We decided to build a robot to collect the fuel, cups, and Botguy

Cbc Based Robot in blue We decided to build a robot that gets the windmills and water balls

Rejected Designs

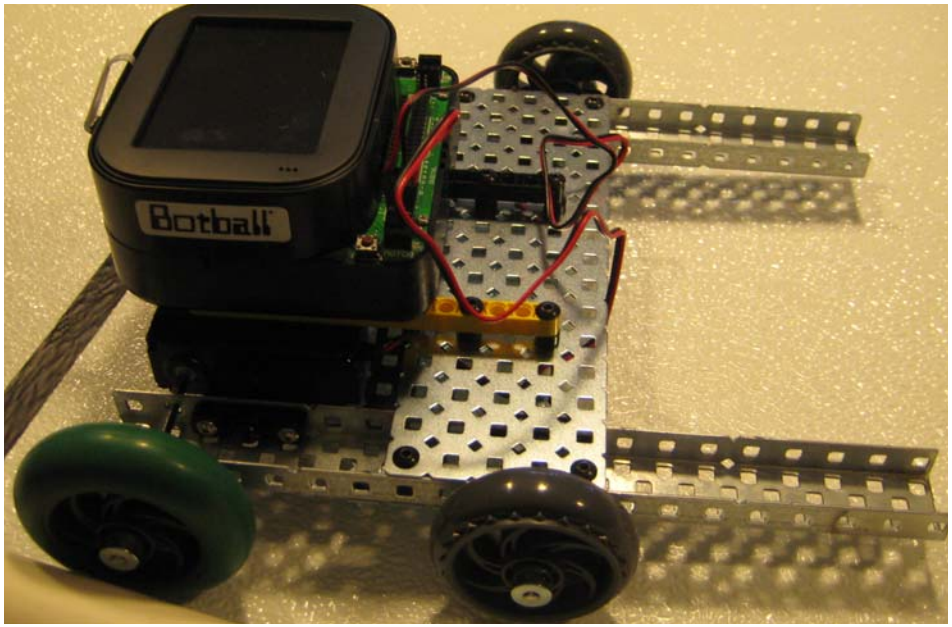
- Vex driving base geared up

- Original claw

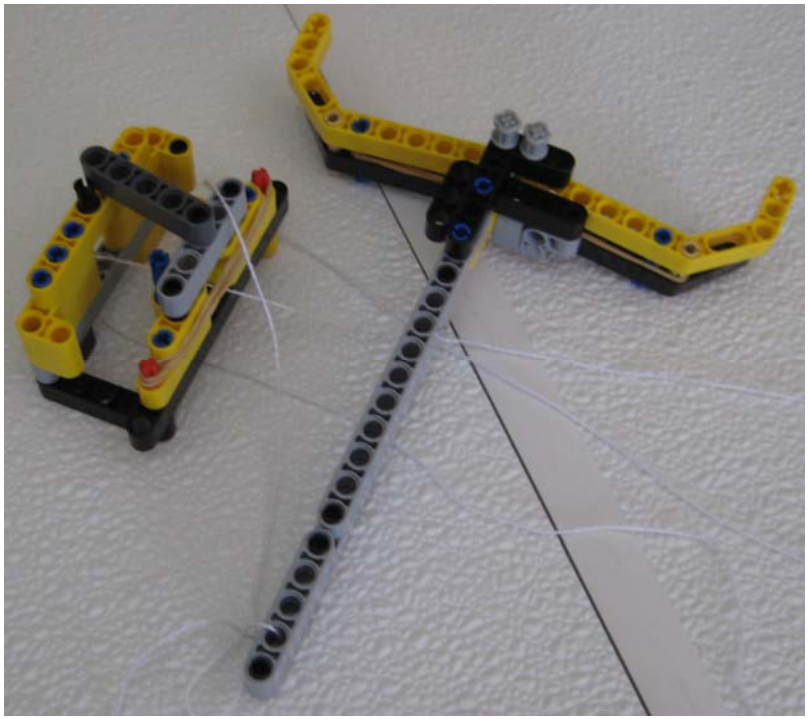


Rejected Designs

- Original cbc based robot



- Original leapfrog

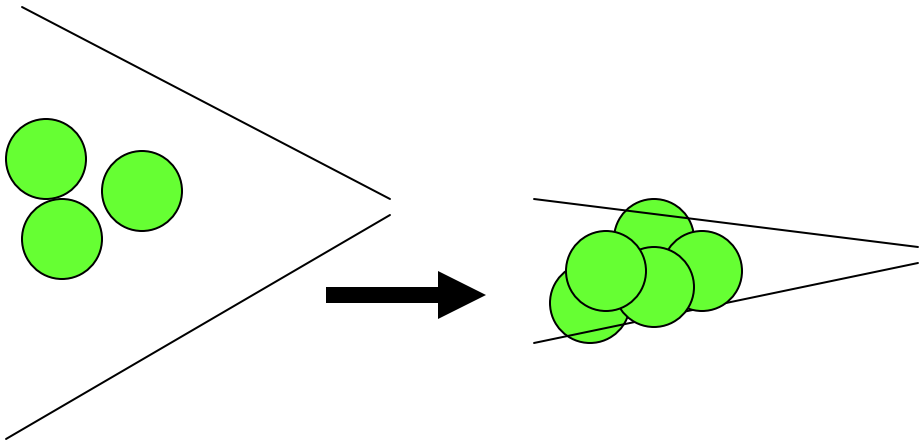


Create robot

- Main objective: picking up fuel, cups, and Botguy

The Create Robot
Picking up and Storing the Fuel

- The first step in building the Create robot was building some kind of mechanism for storing the fuel.
- We found that a claw would work the best. It grabs the fuel and tosses them back into our basket.



Sensors and Motors

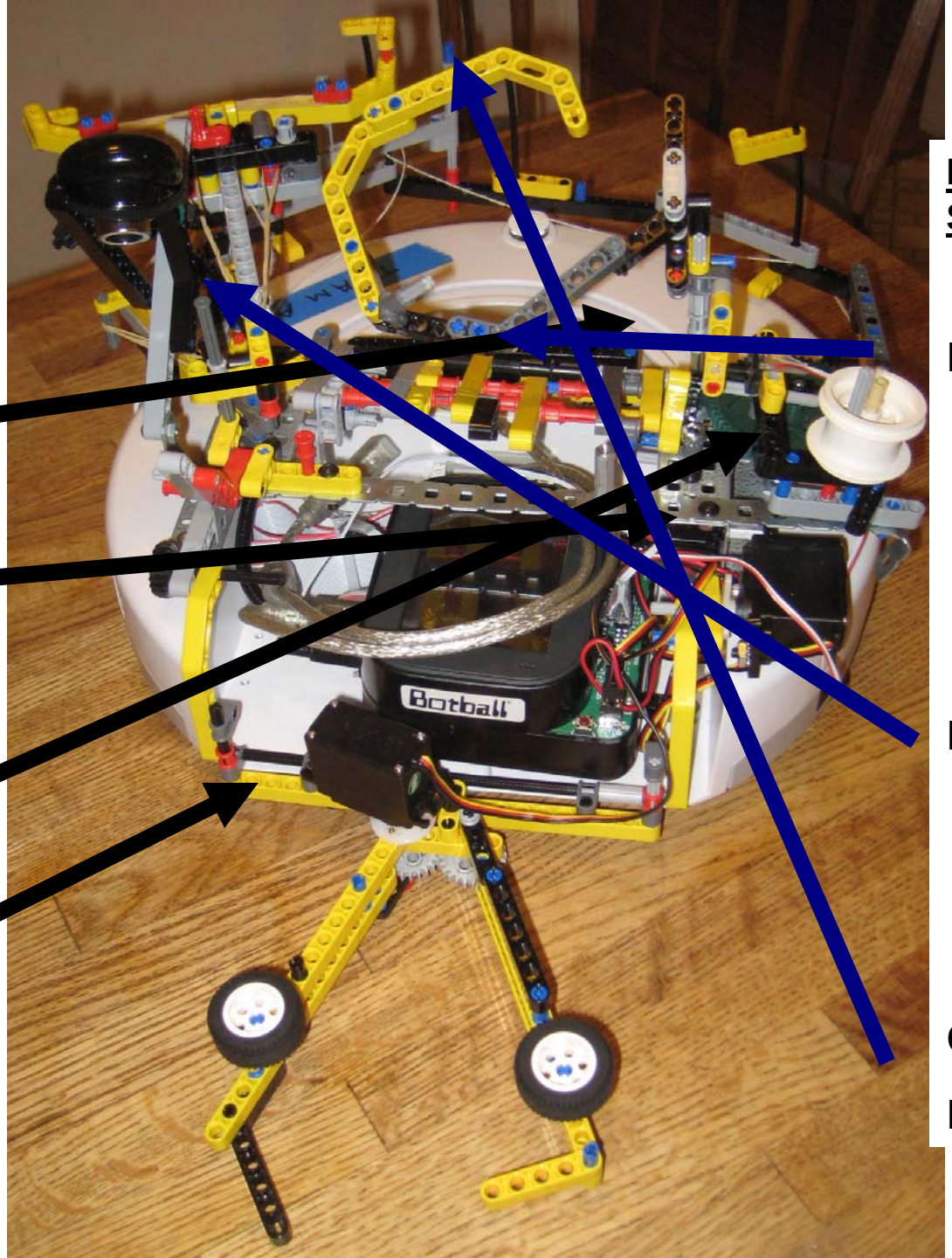
Camera

Cup touch sensors

Wrist Servo

Cup motor

Claw Servo



Mechanical Systems

Fuel

Ramp

Leapfrog

Cup Holder

Sensors & Motors

Camera

Turbine Sensor

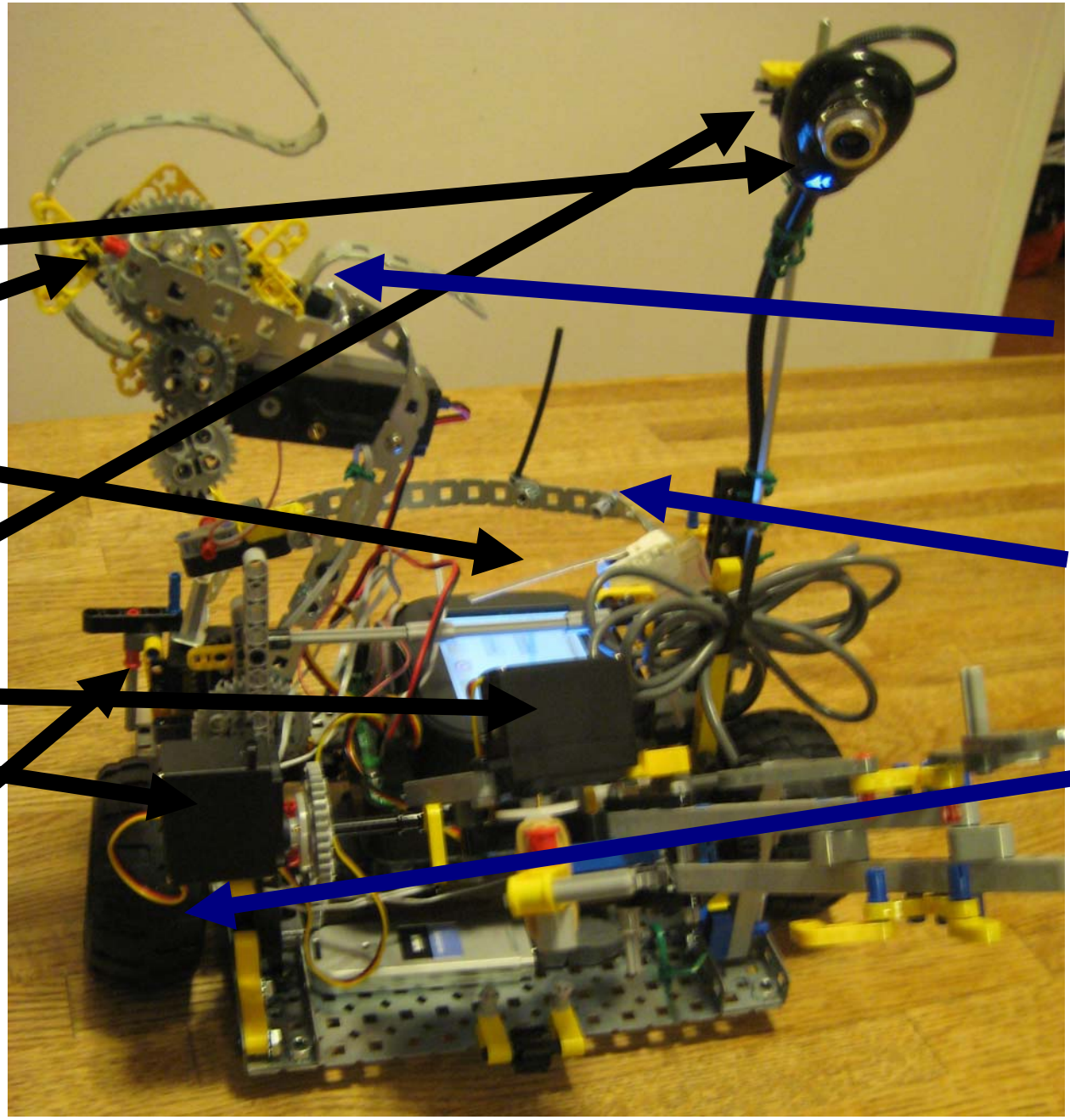
Lower Arm stop

Upper Arm stop

Claw Servo

Wrist Servo

Basket Release



Mechanisms

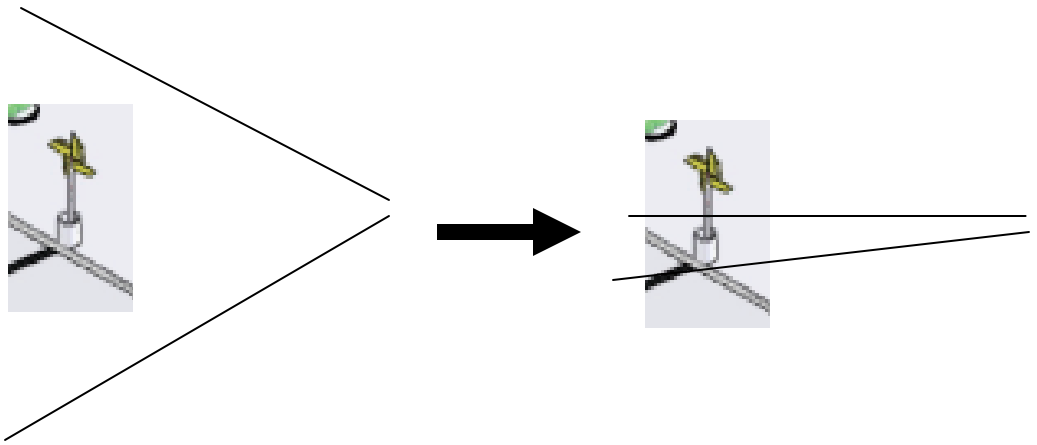
Turbine Holder

Basket

Driving Base

Cbc based robot

- Main objectives: collecting the water balls and wind turbines



Strategy changed

- We down scaled
  - Not collecting pipes
  - Collecting two of water balls
  - Collecting 10 of each fuel
- We are firing leapfrog from the create rather than from a tripod

State Programming

It is a way to organize the code. It allows you to easily change the order you do things, and lets you test code without having to go though everything before it.

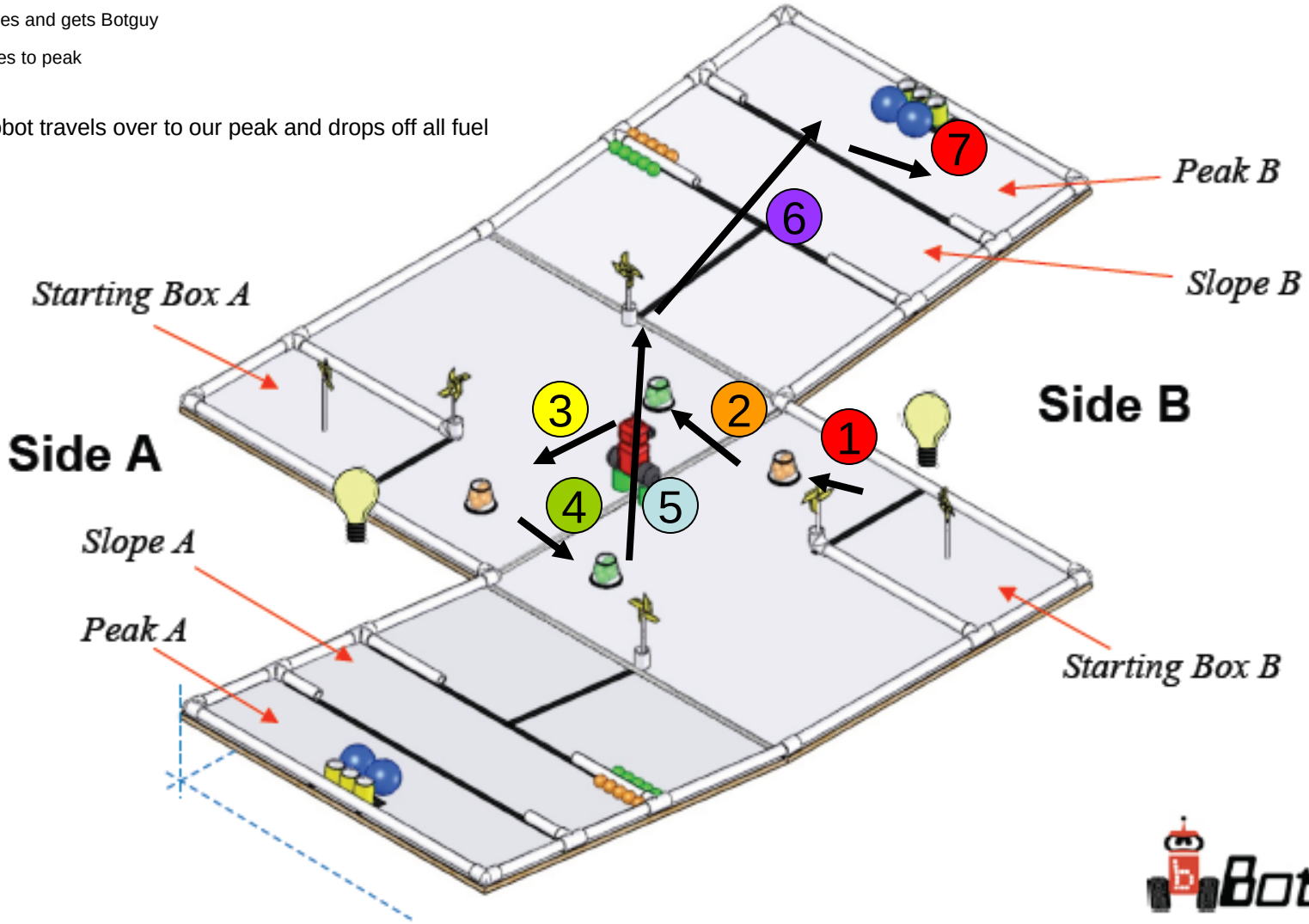
- Example:

```
if (state == STATE_INIT)
{
    // we put our code here
}
```

Seeding Strategy for *icreate* robot

1. Picks up the closest cup containing fossil fuel and puts the cup in the cup area in the back of robot. It also puts fuels in fuel area in back of robot
2. Moves over to green fuel cup and repeats the process as 1
3. Move to last fossil fuel cup & repeats process
4. Moves over to last green fuel cup and repeats the process
5. Moves and gets Botguy
6. Goes to peak
7. Robot travels over to our peak and drops off all fuel

Game Board



Botball

Notes

1. Picks up the closest cup containing fossil fuel and puts the cup in the cup area in the back of robot. It also puts fuels in fuel area in back of robot.
2. Moves over to green fuel cup and repeats the process as 1.
3. Moves over to last fossil fuel cup and repeats process.
4. Moves over to last green fuel cup and repeats the process.

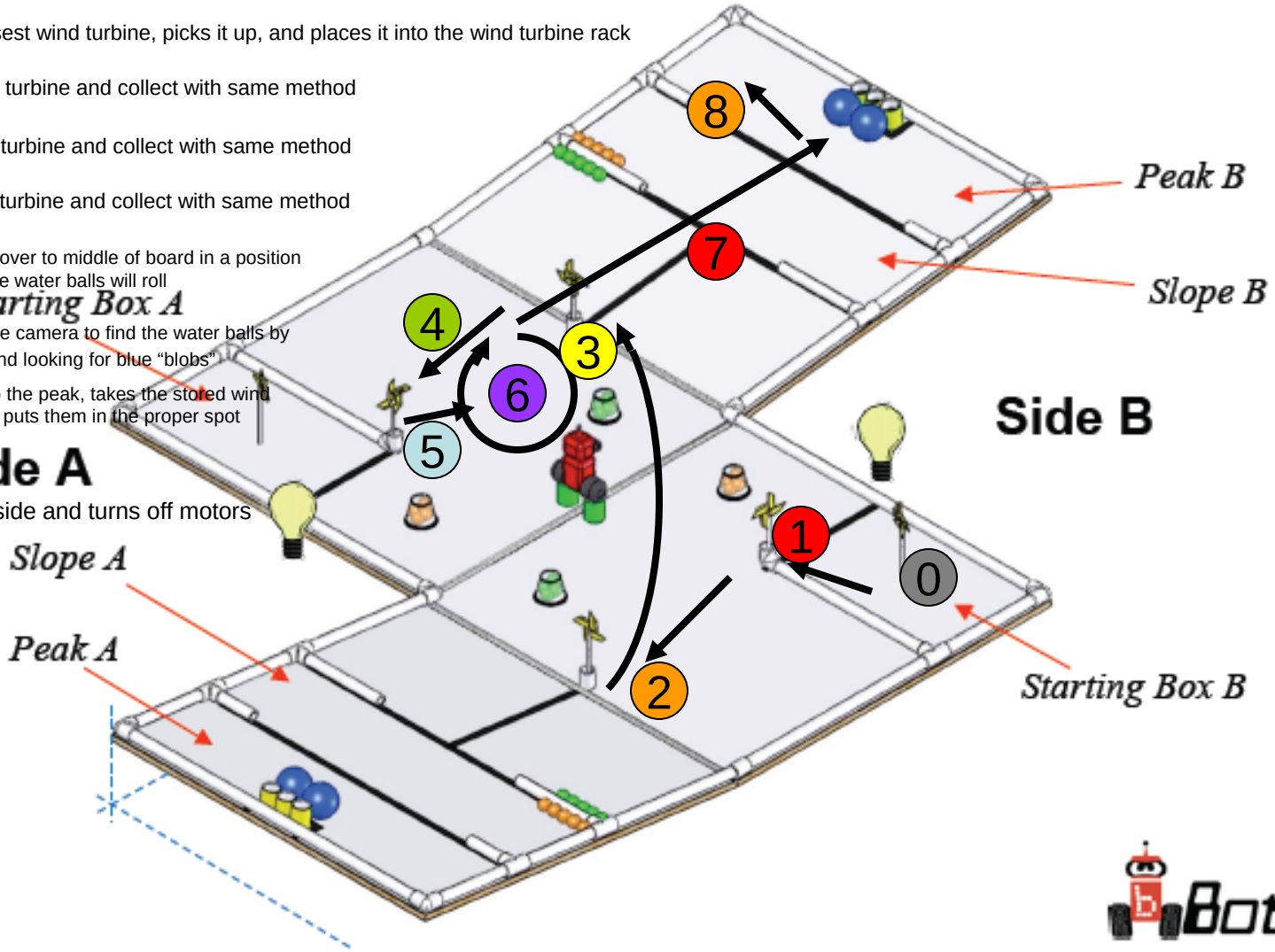
Notes

5. Goes over and gets Botguy.
6. Goes to peak.
7. Robot travels over to our peak and drops off all fuel and Botguy.

Seeding Strategy for *CBC based* robot

The Game Board

0. *note: put starting turbine in turbine rack by hand*
1. Move to closest wind turbine, picks it up, and places it into the wind turbine rack
2. Move to 2nd turbine and collect with same method
3. Move to 3rd turbine and collect with same method
4. Move to 4th turbine and collect with same method
5. Robot moves over to middle of board in a position near where the water balls will roll
6. Robot uses the camera to find the water balls by spinning around looking for blue "blobs"
7. Robot goes to the peak, takes the stored wind turbines, and puts them in the proper spot
8. Robot drives to the side and turns off motors



Botball

Notes

0. *Note: Put starting turbine in turbine rack by hand.*
1. Move to closest wind turbine, pick it up, and place it into the wind turbine rack.
2. Move to 2nd turbine and collect with same method.
3. Move to 3rd turbine and collect with same method.
4. Move to 4th turbine and collect with same method.

Notes

5. Robot moves over to middle of board in a position near where the water balls will roll.
6. Robot uses the camera to find the water balls by spinning around looking for blue “blobs”.
    - Once found, the robot comes up to the ball and tosses them into back of the robot (basket).
7. Robot goes to the peak, takes the stored wind turbines, and puts them in the proper spot.
8. Robot drives to the side, turns off motors & drops off balls.

Los Altos Community Botball Team A