Region: **Greater DC/Virginia**
Team Name: Curiosity Team
Team Number: 0546

PERIOD 1: PROJECT PLAN

Goals and Tasks for Botball 2019

Game Goals and Tasks

Goal 1: Review the game rules and documents. Deadline: 1/25/19

1. Have computer ready to show movie Deadline: 1/25/19
2. Review maximum possible score per side Deadline: 1/25/19

Goal 2: Discuss strategies in a brainstorming session. Deadline: 1/25/19

1. Read over the rules of the game, discuss strategies and record them on a dry erase board Deadline: 1/25/19
2. Team captains and the coach will discuss strategies and the team will vote on the options Deadline: 1/25/19

Goal 3: Build the practice game board with the help of parent volunteers.
Deadline: 2/2/19

1. Go to Lowe's to purchase all the supplies. Deadline: 2/2/19
2. Assemble game board at Avani's house. Deadline: 2/2/19

   If necessary, we will build an additional game board at Max's house so that both teams can practice.

Robot Building Goals and Tasks

Goal 1: Grabber bot: Create a design that can pick up poms and cubes.

1. Build a base that can drive around. Deadline: 1/25/19
    - Make sure that robot can rotate. Deadline: 1/25/19
    - Make sure that motors work. Deadline: 1/25/19

2. Create a claw mechanism that can pick up 1-3 poms at a time. Deadline: 2/2/19
    - Manually test servos to check for faultiness. Deadline: 2/2/19
    - Transfer circular movement into lateral movement to ensure maximum reliability. Deadline: 2/2/19

3. Create a claw mechanism that can pick up cubes. Deadline: 2/9/19
    - Make sure that the claw closes enough to pick up poms, but opens wide enough to pick up a cube. Deadline: 2/9/19

4. Add any cameras and sensors. Deadline: 2/16/19
    - Make sure the sensors are positioned correctly on the robot. Deadline: 2/16/19

Goal 2: Create a design to bulldoze the other side AND protect our items from other teams.

1. Build a sturdy base. Deadline: 1/25/19
2. Build a shovel to push things aside. Deadline: 2/22/19
3. Add sensors to detect locations around the board. Deadline: 3/1/19

Goal 3: Make designs sturdier and finalize all designs.

1. Strengthen the claw and claw mount. Deadline: 3/8/19
    - Make sure that the claw does not sag. Deadline: 3/8/19
    - Make sure that all screws and nuts can be tightened easily before the competition. Deadline: 3/8/19

2. Center the claw/dozer. Deadline 2/25/19
    - Determine positioning of robot so that it can find poms and cubes. Deadline: 2/25/19

3. Make sure that there are no extra pieces used. Deadline: 3/3/19
    - If there is a conflict, we will try and substitute with other pieces.

Programming Goals and Tasks

Goal 1: Calibrate servos and motors and program basic functions. Deadline: 3/1/19

1. Program precision movements using the grabber bot. Deadline: 3/1/19
    - Calibrate motors to turn 190 degrees evenly. Deadline: 3/1/19
    - Calibrate motors to drive 10 centimeters over a certain period of time. Deadline: 3/1/19

2. Program basic functions. Deadline: 3/1/19
    - Hard-code the "sort-poms" program. Deadline: 3/1/19
    - Hard-code the "yellow-cube" program. Deadline: 3/1/19

Goal 2: Complete programs for Grabber bot. Deadline: 3/3/19

1. Program pseudocode for pom-sorting and cube-grabbing. Deadline: 2/19/19
    - Create a flowchart with case logic. Deadline: 2/19/19

2. Program sensors, including a camera and possibly a light/infrared sensor. Deadline: 2/27/19
    - Make sure robot can detect walls and other obstacles. Deadline: 2/27/19
    - Make sure robot can sense the color of the boxes so that it can properly sort the cubes and poms. Deadline: 2/25/19

3. Code navigation.
    - Make sure that the Grabber bot doesn't collide with Dozer bot. Deadline: 3/12/19
    - Make sure that the Grabber bot is able to collect all of the necessary poms. Deadline: 3/27/19

Goal 3: Complete programs for Dozer bot. Deadline: 3/16/19

1. Write movement code for Dozer bot. Deadline: 3/12/19
2. Write sensor code for board calibration. Deadline: 3/16/19
3. Combine code and test all variables for competition. Deadline: 3/28/19

Documentation Goals and Tasks

1. First period documentation complete. Deadline: 1/30/19
   a. Introduce first phase document. Deadline: 1/25/19
   b. Assign roles and establish goals for the season. Deadline: 1/25/19

2. Second period documentation complete. Deadline: 2/27/19
   a. Collect data from the building and programming team. Deadline: 2/27/19

3. Third period documentation complete. Deadline: 4/3/19
   a. Make a list of successful and failed strategies. Deadline: 4/1/19
   b. Take a survey of all the team members. Deadline: 3/31/19

Schedule Conflicts

1. Spring Break - March 22nd-April 2nd
2. Student testing schedules - Schedule additional meetings to make-up for missed meetings
3. Bad Weather - Shift to online meeting

Team Organization

Schedule of Meeting Times:

Meeting times: 7-9pm of that day.

Dates	Description	Doc Schedule
Jan 19	DC Botball Workshop Day 1 - Evan: attend DC botball on Jan 27 to build a working robot, analyze scoring opportunities.	
Jan 20	DC Botball Workshop Day 2 - Max/Layla: attend DC botball, work out kinks in robot and start to plan.	
Jan 25	First team Botball meeting: continue building robot to make robot perform our allotted tasks.	Introduce Period 1 Doc
January 28	Max/Evan start documentation process.	Period 1 Draft Due

January 30		Edit and submit Period 1 Doc
Feb 1	Max/Evan/Julien to meet to build Grabber bot.	
Feb 2	Start building parts of the base of Dozer bot by attaching motors together and continue working on Grabber bot.	
Feb 6	Max/Evan/Julien to meet to build/program robot: Redefine goals of robot, reengineer parts of robot and coding.	Assign Period 2 Doc
Feb 23	Meeting at Avani's: start attaching sensors to Dozer bot and begin constructing code (maybe start testing?).	Period 2 Draft Due
Feb 27		Submit Period 2Doc
Mar 2	Meeting at Julien's: start/continue testing Dozer bot to push items. Develop strategy according to scoring sheet (testing includes building/rebuilding robot or creating/revising code).	
Mar 12	Meeting at Avani's : Continue testing Dozer bot, coordinate with Grabber bot to make them work together, come up with a valid strategy for gaining points.	
Mar 16	Meeting at Avani's: Test on the board to accomplish plan.	
Mar 19	Test on the board to accomplish plan.	

Mar 22-30	Spring Break.	
Mar 31 - Apr 2	Test on the board to accomplish plan.	Assign Period 3 Doc
Apr 3		Submit Period 3 Doc
Apr 4-5	Final Practice.	
Apr 6	Competition Day @ Annandale High School, VA.	

Division of Labor:
Adult Team Leader: Chuchun Tsai & Parents
Building Team for Grabber bot: Max, Julien and Evan
Building Team for Dozer bot: Layla and Avani
Programmer for Grabber bot: Julien
Programmer of Dozer bot: Avani
Documentation Team: All students

Student Team Leader for Grabber bot: Julien
Student Team Leader for Dozer bot: Avani

Conflict Resolutions:

We are a group of middle and high school students from two different DC independent schools who are part of an after-school robotics team. We will usually meet on Mondays and Fridays of each week. If there are any team schedule conflicts or disagreements, students will come to a consensus through a majority vote. Regarding schedule conflicts, students will meet on another day that week, or if necessary our adult instructor will work with our parents to provide schedule options. However, this is only a last resort; members try to stay as independent as possible in order to plan and work without parental influence.