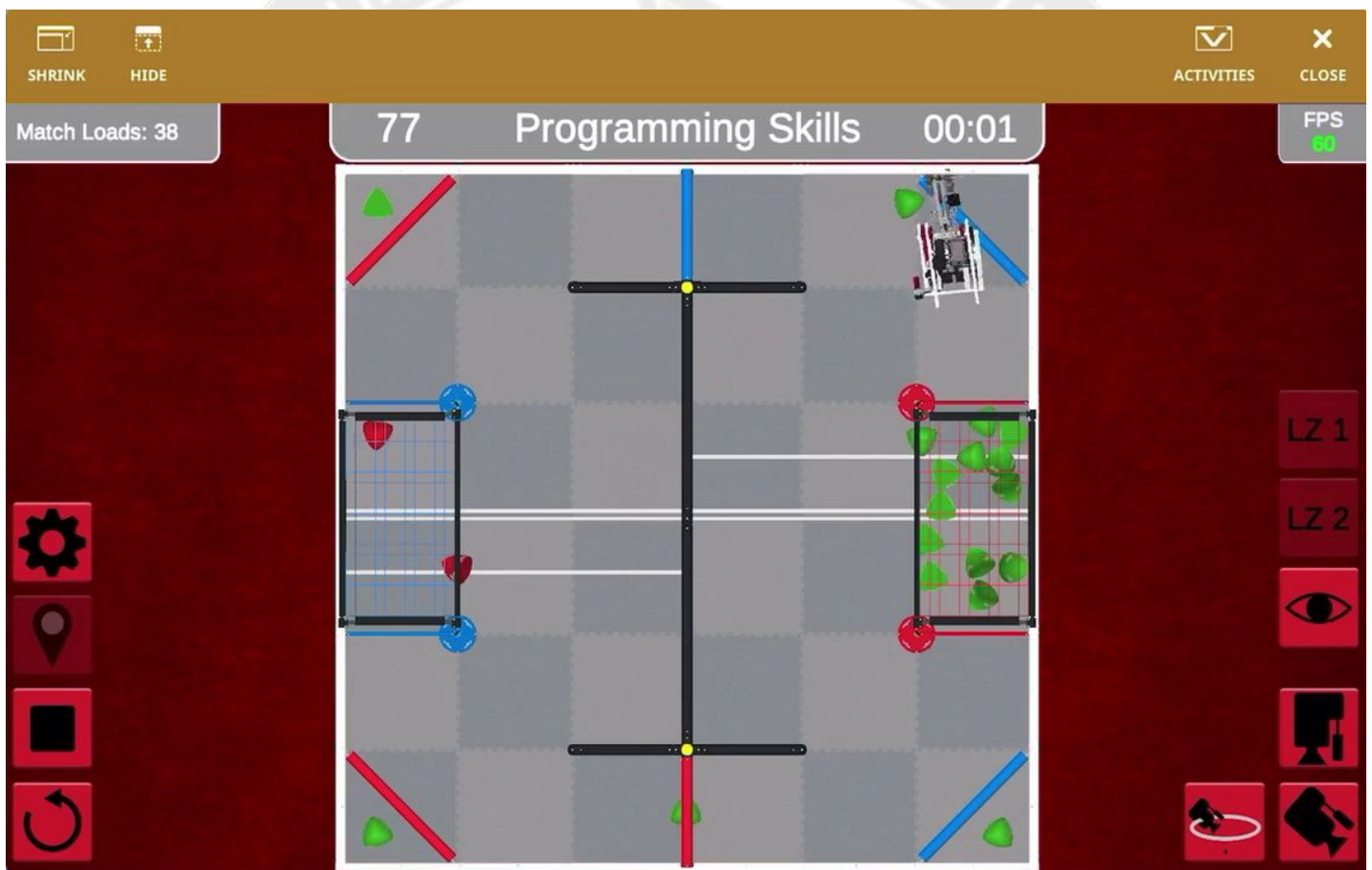


VEXcode VR Skills Challenge

High School



Team: 30078A

Location: Hsinchu, Taiwan

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```
when started
  Set Drivetrain and Motor velocities
  set drive velocity to 100 %
  set turn velocity to 100 %
  set ArmMotor velocity to 100 %
  set IntakeMotor velocity to 100 %
```

Initialize robot motors

```
Extend Arm and start spinning Intake to pick up Triball
  spin ArmMotor to position 1200 degrees and don't wait
  spin IntakeMotor intake
```

Spin IntakeMotor to prevent preload from slipping out

```
Go to Blue
  drive forward for 1200 mm
  Score Triball in Blue Offensive Goal 5
  turn left for 90 degrees
  drive reverse for 100 mm
  spin IntakeMotor outtake
  wait 0.4 seconds
  drive reverse for 100 mm
```

Drive towards center and score preload in blue offensive goal. The purpose of the pause during the reverse is to give time for the arm to lower. We get 5 points after this.

```
Pick up One Green Triball
  drive reverse for 450 mm
  spin IntakeMotor intake
  turn right for 180 degrees
  stop IntakeMotor
  drive forward for 400 mm
  Score 2nd Triball in Red 10
  spin IntakeMotor outtake
  drive forward for 600 mm
  wait 0.1 seconds
```

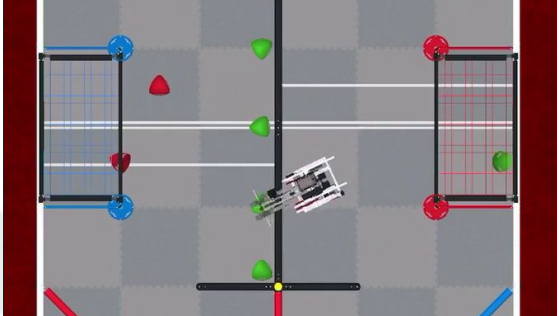
This triball is picked up while the robot is rotating towards the red offensive goal. It is then moved across the barrier and scored in the red goal, giving us a total of 10 points.


```

Pick up One Green Triball
spin IntakeMotor intake
turn to heading 245 degrees
drive forward for 600 mm
turn to heading 80 degrees
Score 3rd Triball in Red 15
spin IntakeMotor outtake
drive forward for 650 mm
wait 0.1 seconds

```

The second green triball is picked up and scored (15 points total).

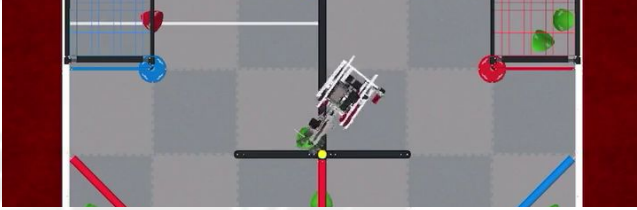


```

Pick up One Green Triball
spin IntakeMotor intake
turn to heading 240 degrees
drive forward for 850 mm
turn to heading 65 degrees
Score 4th Triball in Red 20
spin IntakeMotor outtake
drive forward for 700 mm

```

The third green triball is picked up and scored (20 points total). This triball was in an awkward angle to get, so we rotated the robot while the intake roller was spinning to increase the chance of picking up the triball.



```

Pick up One Green Triball
spin IntakeMotor intake
turn to heading 0 degrees
drive forward for 1000 mm

```

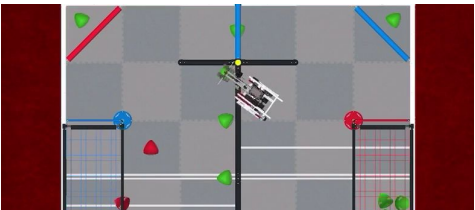
The robot moved to the upper part of the map.

```

turn to heading -55 degrees
drive forward for 800 mm
turn to heading 120 degrees
Score 5th Triball in Red 25
spin IntakeMotor outtake
drive forward for 800 mm

```

The fourth green triball is picked up and scored (25 points total).



```

Pick up One Green Triball
spin IntakeMotor intake
turn to heading 270 degrees
drive forward for 600 mm
turn to heading 100 degrees
Score 6th Triball in Red 30
spin IntakeMotor outtake
drive forward for 600 mm
wait 0.2 seconds

```

The fifth triball is picked up and scored (30 points total).

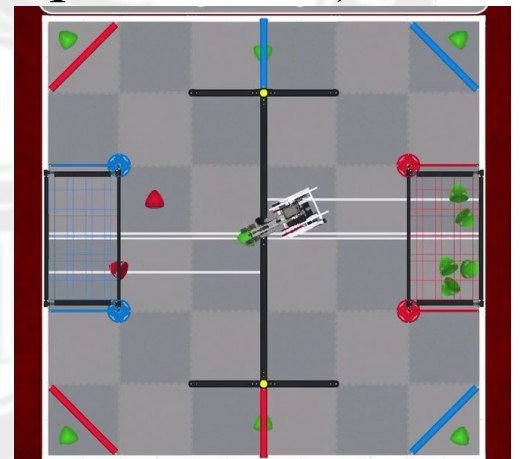


```

Pick up One Green Triball
spin IntakeMotor intake
turn to heading 245 degrees
drive forward for 700 mm
turn to heading 80 degrees
Score 7th Triball in Red 35
spin IntakeMotor outtake
drive forward for 500 mm
wait 0.2 seconds

```

The sixth green triball is picked up and scored (35 points total).



```

Go to Push the second Red Triball in Blue 45
spin IntakeMotor outtake
turn to heading 275 degrees
drive forward for 1600 mm

```

The robot crosses the barrier to the blue offensive zone and pushes the other red triball into the goal (40 points total).


```

Start Preparing for Triball Match Load
spin IntakeMotor intake
turn to heading 0 degrees
drive forward for 600 mm
turn to heading 315 degrees
drive forward for 650 mm

Start Match Load
set TriballHeading to 0
set TriballDriveDistance to 0

repeat 5
  spin ArmMotor up for 1050 degrees and don't wait
  turn to heading 315 + TriballHeading degrees
  drive reverse for 1500 + TriballDriveDistance mm
  spin IntakeMotor outtake
  turn to heading 267 + TriballHeading * 2 degrees
  drive reverse for 110 + TriballDriveDistance mm
  wait 0.3 seconds
  spin ArmMotor down for 200 degrees
  spin ArmMotor down for 850 degrees and don't wait
  spin IntakeMotor intake
  drive forward for 110 + TriballDriveDistance mm
  turn to heading 315 + TriballHeading degrees
  drive forward for 1500 + TriballDriveDistance mm
  change TriballHeading by 2
  change TriballDriveDistance by 20

```

The robot travels to loading zone 1 to prepare for match loading. The robot reaches here with 34 seconds left.

TriballHeading: the additional bearing that the robot will be traveling per preload
 TriballDriveDistance: the additional distance that the robot will travel per preload

After picking up the preload, the robot turns to the correct bearing and travels a certain distance, which are both slightly different for every match load. The robot travels to roughly the center of the map to throw the ball into the goal. In the meantime, the arm positions itself in the correct angle for launch (1050 was the ideal condition for us).

The robot travels the same path back to the load zone, and the variables are incremented. We shoot a total of 5 triballs into the goal (totaling up to 65 points).

```

Push triball under elevation bar to other side
turn to heading 45 degrees
drive forward for 200 mm
turn to heading 90 degrees
drive forward for 2000 mm

Score 5th match load- 70 points
turn to heading 138 degrees
spin IntakeMotor outtake
drive forward for 850 mm

Pickup triball from upper right
turn to heading 10 degrees
spin IntakeMotor intake
drive forward for 450 mm

Score triball- 75 points
turn to heading 170 degrees
spin IntakeMotor outtake
drive forward for 500 mm
drive reverse for 200 mm

Pickup triball that was pushed over
turn to heading -5 degrees
spin IntakeMotor intake
drive forward for 500 mm
turn to heading -90 degrees
turn to heading 165 degrees

Score Triball- 80 points
spin IntakeMotor outtake
drive forward for 550 mm
drive reverse for 200 mm

```

After picking up the last triball from the load zone, the robot travels under the blue elevation bar, pushing the green triball underneath it to the other side.

The green tribal originally on the robot is scored (70 points total).

The triball from the upper right corner is grabbed and scored (75 points total).



The robot picks up the triball that was pushed over and scores it (80 points total).



The robot ends with moving away from the goal to prevent it from touching any triball and causing point deductions.