

VEXcode VR Skills Challenge - Elementary School

Title: Autonomous Robohuskies: Navigating into the Future!

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Location: Irvine, CA

when started

Set drive velocity, turn velocity, intake motor and arm motor to 200%

set drive velocity to 200 %

set turn velocity to 200 %

set IntakeMotorGroup velocity to 200 %

set ArmMotorGroup velocity to 200 %

Set our variables for the top, middle and arm positions here

set Top_Arm_Position to 310

set Middle_Arm_Position to 130

set Bottom_Arm_Position to 30

Start code to pick up first purple block and knock down first red block, the arm is in the bottom position

turn to heading 48 degrees

drive forward for 600 mm

Intake_Block

We move the arm to the middle position in order to knock over the red block

Move_Arm_Middle

turn to heading 235 degrees

End of code to knock down first red block

Drive toward goal #2 with first purple block

drive forward for 520 mm

Lift_Arm_Output_Block

End code drop off first purple block in goal #2

We set drive velocity and turn velocity here to drive and turn faster.

We set IntakeMotorGroup and ArmMotorGroup here to intake blocks faster and move the arm faster.

We set our variables here.

The "turn to heading" block uses the gyro sensor to turn to exactly 48 degrees.

First time we call our function to lift the arm and output a block into a goal.

```
Start code pick up second purple block
turn to heading 326 degrees
Drop_Arm
drive forward for 325 mm
Pick up second purple block
Intake_Block
Drive toward goal #2 with second purple block
turn to heading 195 degrees
drive forward for 150 mm
Lift_Arm_Output_Block
End code drop off second purple block in goal #2
Start code pick up third purple block
turn to heading 90 degrees
drive forward for 535 mm
turn to heading 0 degrees
Drop_Arm
drive forward for 400 mm
Pick up third purple block
Intake_Block
Move arm to middle position to knock over second red block
Move_Arm_Middle
Knock over second red block here
drive forward for 250 mm
turn to heading 310 degrees
drive forward for 500 mm
```

These inline comments help us find where a problem is happening, so we know where to fix our code. So, if we see a problem when the robot is picking up the second purple block, the problem must be in between these two comment blocks.

```
Drop off third purple block in goal #3
Lift_Arm_Output_Block
End code drop off third purple block
Start code pick up fourth purple block
Drop_Arm
turn to heading 60 degrees
drive forward for 230 mm
Pick up fourth purple block here
Intake_Block
turn to heading 290 degrees
drive forward for 100 mm
Drop off fourth purple block in goal #3
Lift_Arm_Output_Block
End code drop off fourth purple block
Start code pick up fifth purple block
turn to heading 180 degrees
drive forward for 400 mm
turn to heading 90 degrees
Drop_Arm
drive forward for 680 mm
turn to heading 125 degrees
Pick up fifth purple block here
Intake_Block
Move_Arm_Middle
```

```
Knock over third red block here
turn to heading 30 degrees
Drive towards goal #1
turn to heading 130 degrees
drive forward for 1210 mm
Drop off fifth purple block in goal #1
Lift_Arm_Output_Block
End code drop off fifth purple block
Start code pick up sixth purple block
drive reverse for 310 mm
Drop_Arm
turn to heading 45 degrees
Pick up sixth purple block here
Intake_Block
turn to heading 132 degrees
drive forward for 300 mm
Drop off sixth purple block in goal #1 here
Lift_Arm_Output_Block
End code drop off sixth purple block
Start code pick up seventh purple block
in the supply zone
turn to heading 20 degrees
drive forward for 650 mm
```

```
Drop_Arm
wait 1 seconds
Intake_Block
turn to heading 180 degrees
drive forward for 400 mm
Lift_Arm_Output_Block
drive reverse for 400 mm
Extend the arm into the goal to partial park here
spin ArmMotorGroup to position 1450 degrees
```

The image shows a sequence of code blocks in a Scratch-style programming environment. The blocks are as follows:

- Drop_Arm** (red block)
- wait 1 seconds** (yellow block)
- Intake_Block** (red block)
- turn to heading 180 degrees** (blue block)
- drive forward for 400 mm** (blue block)
- Lift_Arm_Output_Block** (red block)
- drive reverse for 400 mm** (blue block)
- Extend the arm into the goal to partial park here** (grey comment block)
- spin ArmMotorGroup to position 1450 degrees** (blue block)

Functions:

```
define Intake_Block  
  This function spins the intake mechanism to take up one block  
  spin IntakeMotorGroup to position 100 degrees
```

```
define Lift_Arm_Output_Block  
  This function lifts the arm and spits out the block  
  spin ArmMotorGroup to position Top_Arm_Position degrees  
  drive forward for 20 mm  
  while FrontOptical found an object?  
    spin IntakeMotorGroup outtake  
  Wait for block to drop into the goal before moving  
  wait until not FrontOptical found an object?  
  drive reverse for 20 mm
```

Variable used here.

Conditional logic used here.

Sensors used here.

```
define Move_Arm_Middle  
  Move arm to the halfway position  
  spin ArmMotorGroup to position Middle_Arm_Position degrees and don't wait
```

Variable used here.

```
define Drop_Arm  
  Drop arm to the bottom  
  spin ArmMotorGroup to position Bottom_Arm_Position degrees and don't wait
```

Variable used here.