

# VEX CODE VR

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Assignment: VEXcode VR Skills Challenge

Notes: Grafton High School, Yorktown, Virginia: Team:23692A

Playground: VRC Virtual Skills - Over Under

Project Name: VEXcode Project (14)

Project Type: Python

Date: Fri Jan 26 2024



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1 #region VEXcode Generated Robot Configuration
2 import math
3 import random
4 from vexcode_vrc import *
5 from vexcode_vrc.events import get_Task_func
6
7 # Brain should be defined by default
8 brain=Brain()
9
10 drivetrain = Drivetrain("drivetrain", 0)
11 arm_motor = Motor("ArmMotor", 3)
12 rotation = Rotation("Rotation", 7)
13 intake_motor = Motor("IntakeMotor", 8)
14 optical = Optical("Optical", 11)
15 gps = GPS("GPS", 20)
16
17 #endregion VEXcode Generated Robot Configuration
18 # -----
19 #
20 # Project: VEXcode VR Skills Challenge
21 # Authors: Paul Sammet, Karen Hu, Raymond Gao, Malukah Traore
22 # Team: 23692A
23 # Location: Grafton High School, Yorktown, Virginia
24 #
25 # -----
26 import math
27
28 # Define a function to turn the robot to a desired heading
29 def turn_to_desired_heading(desired_heading):
30     # Get the current heading from the GPS sensor
31     current_heading = gps.heading()
32
33     # Calculate the angle difference between current and desired headings
34     angle_difference = desired_heading - current_heading
35
36     # Check if the angle difference is within 180 degrees
37     if abs(angle_difference) <= 180:
38         # Choose the shortest way to turn (left or right)
39         if angle_difference < 0:
40             drivetrain.turn(LEFT)
41         else:
42             drivetrain.turn(RIGHT)
43     else:
44         if angle_difference < 0:
45             drivetrain.turn(RIGHT)
46         else:
47             drivetrain.turn(LEFT)
48
49     # Wait until the robot's heading is close to the desired heading within a tolerance of 5 degrees
50     while not math.isclose(gps.heading(), desired_heading, abs_tol=5):
51         wait(10, MSEC) # Wait for a short time and continue checking
52         pass

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53
54     # Stop the drivetrain when the desired heading is reached
55     drivetrain.stop()
56
57     def when_started1():
58         drivetrain.set_drive_velocity(100, PERCENT)
59         arm_motor.spin(FORWARD)
60         wait(4.5, SECONDS)
61         drivetrain.drive_for(FORWARD, 1500, MM)
62         turn_to_desired_heading(46)
63         drivetrain.drive_for(FORWARD, 1000, MM)
64         gps.heading()
65         intake_motor.spin(REVERSE)
66         wait(1, SECONDS)
67         drivetrain.drive_for(REVERSE, 350, MM)
68         turn_to_desired_heading(140)
69         drivetrain.drive_for(FORWARD, 450, MM)
70         intake_motor.spin(FORWARD)
71         turn_to_desired_heading(15)
72         drivetrain.drive_for(FORWARD, 450, MM)
73         intake_motor.spin(REVERSE)
74         drivetrain.drive_for(FORWARD, 150, MM)
75         drivetrain.drive_for(REVERSE, 280, MM)
76         turn_to_desired_heading(269)
77         drivetrain.drive_for(FORWARD, 1250, MM)
78         intake_motor.spin(FORWARD)
79         wait(1, SECONDS)
80         turn_to_desired_heading(60)
81         drivetrain.drive_for(FORWARD, 850, MM)
82         intake_motor.spin(REVERSE)
83         wait(1, SECONDS)
84         drivetrain.drive_for(REVERSE, 250, MM)
85         turn_to_desired_heading(180)
86         drivetrain.drive_for(REVERSE, 150, MM)
87         turn_to_desired_heading(270)
88         intake_motor.spin(FORWARD)
89         drivetrain.drive_for(FORWARD, 630, MM)
90         turn_to_desired_heading(180)
91         drivetrain.drive_for(REVERSE, 100, MM)
92         turn_to_desired_heading(90)
93         drivetrain.drive_for(FORWARD, 800, MM)
94         intake_motor.spin(REVERSE)
95         wait(1, SECONDS)
96         for repeat_count in range(4):
97             drivetrain.drive_for(REVERSE, 180, MM)
98             turn_to_desired_heading(180)
99             drivetrain.drive_for(REVERSE, 250+35, MM)
100            turn_to_desired_heading(270)
101            intake_motor.spin(FORWARD)
102            drivetrain.drive_for(FORWARD, 630, MM)
103            turn_to_desired_heading(180)
104            drivetrain.drive_for(FORWARD, 25, MM)
105            turn_to_desired_heading(90)

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106     drivetrain.drive_for(FORWARD, 800, MM)
107     intake_motor.spin(REVERSE)
108     wait(1, SECONDS)
109     vr_thread(when_started1)
```