VEX CODE VR

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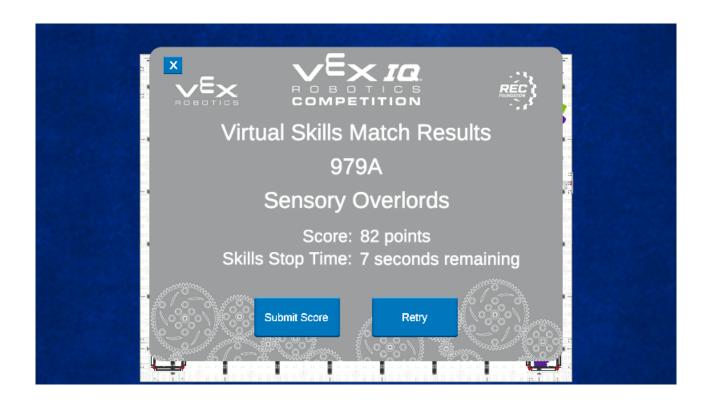
Assignment: Sensory Overlords

Notes: Ella Baker Elementary School

Playground: VIQC Virtual Skills - Full Volume

Project Name: 979A_SensoryOverlords_Sathyen

Project Type: Blocks

Date: Tue Jan 30 2024

when started

Byte can only pickup 1 block. We tried
green and we couldn't get height bonus.
With red it took long to align and
couldn't get uniform bonus. but with
purple we can get uniform and height
bonus by putting 2 or 3 blocks into
each tower.
We decided to start with 2 blocks in each
tower and park. Then we realized that
we had time to do one more purple by
changing the path and added that.
sometimes byte does full park if you
continue driving forward in the end

we are using different sensors in byte. we use
the optical sensor to find out if we picked green
or red to drop it because we want uniform bonus.
we are using distance sensor to find out how
close to go to the tower to drop
we are using gyro to find direction by using
heading to.

we also have variable for arm pick height,
 arm drop height, wait time and robot length to
allow easy changing.

setup

Tower 1

tower 2

Tower 3

Park

define setup

> This block does all of the initial setup for the robot

> It sets the pick height of the arm to only pick up purple blocks.
> It also sets the drop height to perfectly drop.
> Making them as variables is helpful in trying out different heights easily.

clear all rows

print (Running Setup Code) **and set cursor to next row**

set arm_pick_height ▼ **to** (60)

set arm_drop_height ▼ **to** (330)

set wait_time ▼ **to** (0.7)

set drop_robot_length ▼ **to** (160)

> Sets All Motor Velocities to a hundred precent

set drive velocity to (100) **%**

set turn velocity to (100) **%**

set ArmMotorGroup ▼ **velocity to** (100) **% ▼**

set IntakeMotorGroup ▼ **velocity to** (100) **% ▼**

> Sets the arm to Pick Height

spin ArmMotorGroup ▼ up ▼ **for** (arm_pick_height) degrees ▼ **and don't wait**

define drop

> This block handles all of the dropping mechanism. It spins arm Motor up to Arm Drop Height and spins outtake to drop the block. After Waiting for a second it stops the intake and lowers the arm to the arm pick height. skip it if no block is already picked by using the bumper sensor to see block is already picked

```
if < IntakeBumper ▼ pressed? > then
    spin ArmMotorGroup ▼ to position arm_drop_height degrees ▼
    spin IntakeMotorGroup ▼ outtake ▼
    wait ( wait_time ) seconds
    stop IntakeMotorGroup ▼
    spin ArmMotorGroup ▼ to position arm_pick_height degrees ▼ and don't wait
```

define pick

Spins intake forward to pick up 1 block.

skip it if block is already picked

if not (IntakeBumper ▼ pressed?) then

    spin IntakeMotorGroup ▼ intake ▼

```
define  final distance

set  drop_zone_distance  to  FrontDistance  object distance in  mm

drive  forward  for  drop_zone_distance  -  drop_robot_length  mm
```

define checkColor

this block checks if green or red are picked and drops them down since we want uniform bonus. this uses the optical sensor to check color and drop on field if it is not purple

if (FrontOptical detects red ?) or (FrontOptical detects green ?) then

print (picked red or green) and set cursor to next row

spin IntakeMotorGroup outtake

wait (wait_time) seconds

define print info

This block prints the drive heading and the drive rotation and a lot more information on robot to help you find out what is going wrong in the code and what happened

print **Drive Heading:**

print (drive heading in degrees) and set cursor to next row

print **Drive Rotation:**

print (drive rotation in degrees) and set cursor to next row

print **intake motor**

print (IntakeMotorGroup ▼ position in degrees ▼) and set cursor to next row

print **object distance**

print (FrontDistance ▼ object distance in mm ▼) and set cursor to next row

print **found purple**

print (FrontOptical ▼ detects purple ▼ ?) and set cursor to next row

print **object distance**

print (FrontDistance ▼ object distance in mm ▼) and set cursor to next row

print **intake spinning**

print (IntakeMotorGroup ▼ is spinning?) and set cursor to next row

print **bumper pressed**

print (IntakeBumper ▼ pressed?) and set cursor to next row

```
define Park

    Prepares for Park

    turn  left ▼  for  90  degrees

    print  Prepares and finishes parking   and set cursor to next row

    set  drop_zone_distance ▼  to  FrontDistance ▼  object distance in  mm ▼

    drive  forward ▼  for  drop_zone_distance  mm ▼

    spin  ArmMotorGroup ▼  up ▼  for  600  degrees ▼   and don't wait

    drive  forward ▼  for  500  mm ▼

    Parked
```

define Tower 1

collects and drops 2 purple blocks in tower 1 and knocks 1 red

pick

drive forward ▼ for 910 mm ▼

checkColor

print (picking purple 1 for tower 1) and set cursor to next row

drive reverse ▼ for 20 mm ▼

print (knocking red 1) and set cursor to next row

turn left ▼ for 45 degrees

final distance

print (dropping purple 1 in tower 1) and set cursor to next row

drop

drive reverse ▼ for 100 mm ▼

turn right ▼ for 87 degrees

print (picking purple 2 for tower 1) and set cursor to next row

pick

drive forward ▼ for 210 mm ▼

checkColor

drive reverse ▼ for 210 mm ▼

turn left ▼ for 87 degrees

final distance

print (dropping purple 2 in tower 1) and set cursor to next row

drop

```
define  tower 2

collects and drops 2 purple blocks in tower 2 and knocks 1 red

print ( picking purple 3 for tower 2 )  and set cursor to next row

drive  reverse ▼  for  500   mm ▼

turn  right ▼  for  90  degrees

drive  forward ▼  for  500   mm ▼

pick

print ( knocking red 2 )  and set cursor to next row

turn  right ▼  for  170  degrees

checkColor

drive  forward ▼  for  1280   mm ▼

print ( drop purple 3 for tower 2 )  and set cursor to next row

drop

turn  right ▼  for  110  degrees

print ( pick purple 4 for tower 2 )  and set cursor to next row

pick

drive  forward ▼  for  260   mm ▼

checkColor

drive  reverse ▼  for  260   mm ▼

print ( drop purple 4 for tower 2 )  and set cursor to next row

turn  left ▼  for  110  degrees

drop

turn to heading  90  degrees

drive  forward ▼  for  450   mm ▼

turn to heading  30  degrees

print ( knocking red 3 )  and set cursor to next row
```

```
define Tower 3
```

collects and drops 3 purple blocks in tower 3 and knocks 1 red

drive forward ▾ for 20 mm ▾

print (picking purple 5 for tower 3) and set cursor to next row

pick

drive forward ▾ for 250 mm ▾

checkColor

drive reverse ▾ for 400 mm ▾

turn to heading 90 degrees

drive forward ▾ for 1000 mm ▾

turn to heading 110 degrees

final distance

print (drop purple 4 for tower 3) and set cursor to next row

drop

print (pick purple 6 for tower 3) and set cursor to next row

pick

drive reverse ▾ for 200 mm ▾

turn left ▾ for 90 degrees

drive forward ▾ for 335 mm ▾

checkColor

drive reverse ▾ for 335 mm ▾

turn right ▾ for 90 degrees

drive forward ▾ for 200 mm ▾

print (drop purple 6 for tower 3) and set cursor to next row

drop

print (pick purple 7 for tower 3) and set cursor to next row

pick

drive reverse ▾ for 450 mm ▾

turn left ▾ for 125 degrees

drive forward ▾ for 500 mm ▾

checkColor

drive reverse ▾ for 500 mm ▾

turn right ▾ for 125 degrees

final distance

spin ArmMotorGroup ▾ up ▾ for 160 degrees ▾ and don't wait

print (drop purple 7 for tower 3) and set cursor to next row

drop