

# PROGRAM ONE



## Mission Objectives:

- Collect 6 loops
- Collect 3 warning beacons
- Collect 1 sensor w all
- Activate test crash rom p

- Part 1
- Part 2
- Part 3

## PART 1.



The robot is sent out of base and collects the blue loop & warning beacons

## PART 2.



The NXT button is pushed and the robot goes out, lowers arm 2 again and drives forward into the columns knocking the grey loop and sensor wall into the collection container. It then returns to base.

## PART 3.



The robot is repositioned & arm 2 is removed. The NXT button is hit again and robot navigates to the NW corner loops where it picks all four up with its forked arm. It then backs up, releases the crash test vehicle and returns to base

# PROGRAM TWO



## Mission Objectives:

- Collect 4 loops
- Hand pick red loop
- Hand pick orange or other color loop

- Part 1
- Part 2

## PART 1.



The program is changed and the arm 3 is placed on motor 3. The robot drives forward along the wall and uses the light sensor to determine how far it has gone. It then lowers its arm & lifts the red loop off the post. It backs up until the black line and repeats the motion to get the grey loop. Then it returns to base with both loops.

## PART 2.



Arm 3 is switched for arm 4. The robot is repositioned against the wall and the NXT button is pushed. The robot uses the light sensor and black line to find its position before lowering arm 4 and collecting the brown loop. It then continues forward turns and collects the orange loop. The robot turns around and uses its wall runners to find its ways back to base with both loops.

# PROGRAM THREE



## Mission Objectives:

- Knock over 4 access markers
- leave standing 4 sensor walls
- Deliver 4 passengers to target area
- Deliver crash test dummy to target area

- Part 1

## PART 1.



The third motor & connector pins are removed and all wires and secured so that the robot can cleanly travel under the bridge. The robot travels to the north wall where it uses its wall runners to align itself before going under the bridge. It then uses its light sensor to find its position and bumps the first access marker. It then back away and moves to the NE access marker before returning to the target area and bumping the last two access markers. The robot finishes up in the target area with the passengers and dummy.





# NAVIGATION

## Wall Runners



A series of wheels attached to the sides of the robots that enables them to drive against the walls and strighten out without getting stuck. The wall runners allow the robot to get back to base in program 2 and go under the bridge in program 3.

## Light Sensors



bounce light off the table and read the amount which has been absorbed or reflected by the surface. They help the robot find its position on the table relative to the black markings. They also are used to supplement the rotation sensor that is built into the NXT motors.

## ATTACHMENTS



Arm 1 is used to collect the 4 loops by the crash ramp. It is designed with a stop which prevents the arm from over rotating.



Arm 2 is an open box used to collect the blue & elevated grey loop + sensor wall.



Arms 3&4 need to be attached to the robot. 3 collects the elevated grey and red loops. 4 collects the brown and orange loops. Both are designed with stops to prevent over rotating.

# 4 KISS PRINCIPLES

01. Simple Strategy
02. Simple Design
03. Simple Attachments
04. Simple Programs

## TOP 10 COOL THINGS ABOUT OUR ROBOTS

10. WE HAVE 2 ROBOTS
09. WIRE MANAGMENT
08. COMPACT DESIGN
07. MANEUVERS WELL
06. 62.4MM WHEELS
05. FRONT PLOUGH
04. WALL RUNNERS
03. PEOPLE HOLDER
02. WELL BUILT BASE
01. REMOVEABLE 3RD MOTOR

# NX-Txreme #3975

## Technical Design Program



## ROBOT DESIGN KEY

01. 2x LIGHT SENSORS
02. LG WALL RUNNERS
03. FRONT PLOUGH
04. REAR BUMPER
05. DIRECT DRIVE MOTORS
06. 62.4mm WHEELS
07. FIXED REAR WHEELS
08. REMOVEABLE MOTOR
09. CRASH TEST DUMMY SEAT
10. PASSENGER CONTAINER
11. WIRE MANAGEMENT
12. SM WALL RUNNER

