Los Altos Robotics

www.LosAltosRobotics.org

VEX IQ
Parent Orientation Meeting
August 23, 2016

Please sign in

Quick Survey

Expectations and outcomes for this meeting

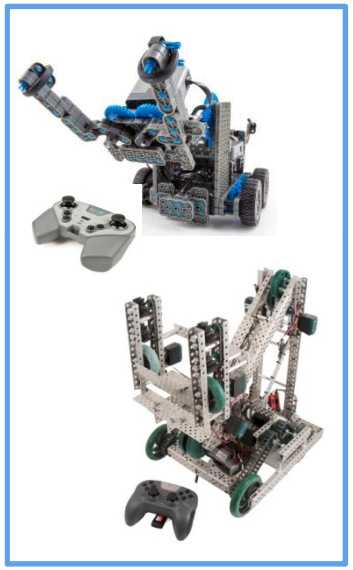
- How did you find out about tonight's meeting?
- Who is undecided about joining VEX IQ?
- Who is a rookie who has decided to join but needs more information?
- Who is looking for a team to join?
- Who is looking for team members?
- Is there anyone here from outside the Los Altos area?

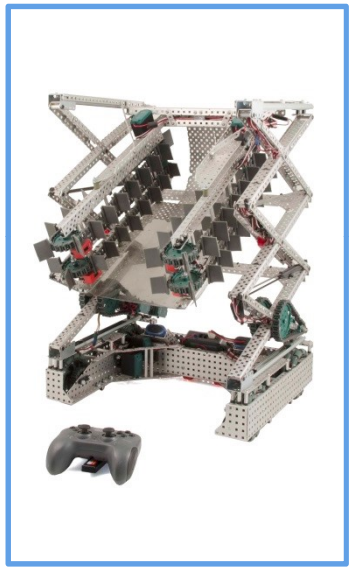
Agenda

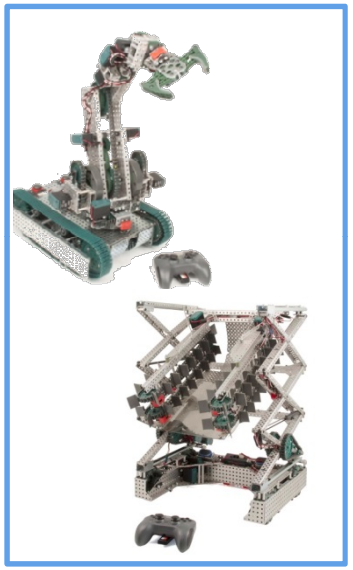
- Introduction to VEX, REC Foundation and VEX IQ
- Los Altos Robotics Organization
- How to Participate, Program Details
- Remote Control vs. Programmed Robots
- Robot Programming Software
- VEX IQ Challenge / Sample Robot
- Questions & Answers
- Post-meeting: Q&A for potential coaches, managers, and team organizers

REC Foundation's STEM Pipeline

A Comprehensive Learning Platform from K to College







NORTHROP GRUMMAN Foundation

Texas Instruments

EMC²

NASA

C++
Linux

Elementary | Middle School | High School | Post Secondary | Workforce

REC Foundation

Robotics Education & Competition Foundation seeks to increase student interest and involvement in STEM by engaging them in hands-on, sustainable and affordable curriculum-based robotics engineering programs worldwide.

Inspiring students, one robot at a time.

www.RoboticsEducation.org

Los Altos Robotics

VEX IQ CHALLENGE

VEX ROBOTICS COMPETITION

VEX U

Elementary & Middle School Students

- Teamwork Matches
- Individual Skills Challenges
- Snap-together assembly
- Free programming software
- Free curriculum
- STEM Research Project Challenge

Middle School & High School Students

- Local, state, regional, national and world competitions
- Driver controlled and autonomous Skills Challenges
- Free curriculum
- Scholarships
- Online Challenges

College & University Students

- VEX U teams build 1 competition robot
- Higher level and longer autonomous period of play
- Gain desired industry skills, like programming, CAD and technical writing

What is VEX IQ?

Teams of 4-8 students, ages 8-14

- Build, control, and program a **VEX IQ Robot** to solve challenges on a 4’ x 8’ field in time trial competition
- Participate in tournaments and work together in **Teamwork Matches** and show off their skills in **Skills Challenges**
- Complete an **Engineering Notebook** to document their design work and qualify for awards
- Optional: Complete and share a STEM Research Project related to robotics

How does the VEX IQ Program Work?

- Challenge details were announced in May
  - Most teams participate during September - February
- Teams design, construct, program, and test solutions using a VEX IQ robot kit
- Scrimmages and Tournaments are October – February
- Teams compete with peers in high-energy events with an emphasis on teamwork and good sportsmanship
  - Robot Challenges: Teamwork Alliance, Robot Skills, Programming Skills
  - Judging of Engineering Notebooks and team interviews
  - Presentation and Judging of STEM Research Projects

What is Los Altos Robotics?

- Los Altos Robotics is a 501(c)(3) Non Profit Corporation
  - A group of volunteers dedicated to inspiring kids exploring technology
- We organize and host **VEX IQ Events** at **Blach Middle School**
  - **VEX IQ Practice Scrimmage** on Sunday, November 6, 2016
  - **VEX IQ Qualifier Tournament** on Saturday, December 3, 2016
- We previously hosted annual FIRST LEGO League (FLL) events (1999 to 2015)
  - Practice Scrimmages, Project Share-a-thons, Qualifying Tournaments
- We promote and organize **Botball** teams, a robotics activity for grades 7-12
- We support High School **FIRST Robotics** (FRC) teams in Los Altos area high schools
- Contacts: Michael Schuh (michael@boardsailor.com)

Los Altos Robotics 2016-2017 Calendar

- Apr 22 VEX IQ Challenge Crossover Unveiled
- May – Sep Teams register and order materials
- May 17 Los Altos VEX IQ Parent Orientation
- Aug 16 LAR Board Meeting
- Aug 23 Los Altos VEX IQ Parent Orientation
- **Sep 13 Registration opens for Los Altos VEX IQ Events**
- **Sun, Nov 6 Los Altos VEX IQ Scrimmage**
- **Sat, Dec 3 Los Altos VEX IQ Qualifying Tournament**
- End of Feb Northern California Championship Tournaments
- Mid May VEX IQ World Championship Tournaments (in Kentucky)

How to Participate in VEX IQ

How are Teams Organized?

- Parents or schools organize teams
  - Online at www.robotevents.com
- Teams may be formed from: friends, schools, churches, youth organizations
- Los Altos Robotics hosts VEX IQ events, but does not register teams or individual players

What Parents can do to Organize a Team

- **Volunteer to be a coach or team manager**
- Check with your child's friends to gauge interest level
- Teams generally work best with children at the same grade level
- Talk to teachers
- See www.LosAltosRobotics.com for possible "*I need a team*" list
- **Send email to TigerBots mailing list**

VEX IQ Team Requirements and Steps

- Students in elementary and middle school (recommended for ages 8-14)
  - Teams typically have 4-10 members, but there is no limit
- At least one adult coach
- Team meeting site that can accommodate a 4’ x 8’ field
- Register team online (www.robotevents.com/robot-competitions/vex-iq-challenge)
  - Cost is $100 for the first team from an organization ($50 for each additional team)
- Register for events at www.robotevents.com
  - Teams may participate in one or more events during the season
  - Events are added and updated online throughout the season
  - Tournament Fees range from $20-$100 per team (typical $50)
  - Teams can also Join or form a League
- Get Equipment (www.vexrobotics.com/vexiq/products)
  - VEX IQ robot kit ($300 - $400)
  - Game Field ($100 - $200)
  - Game Elements ($30 - $100)
- Join TigerBots email list (TigerBots-subscribe@yahoogroups.com)

Questions to Ask When Forming a Team

- **Whose idea was this?**
  - Parent or child?
- **What kind of experience do you want for your child?**
  - Great vacation or the job you love?
- **How many other activities do the kids have? How important is VEX IQ?**
  - If doing well is important to the kids, they will need to spend more time
- **What previous construction or robotics experience do the kids have?**
  - Follow directions vs. building own creations?
- **Who will be our team volunteer?**
  - We need volunteers to help put on the events (e.g. venue setup, scorekeepers, and timekeepers) **Each team must provide a volunteer!**

Frequently Asked Questions

- **What are typical meeting times?**
  - The coach sets meeting times with input from the team. Often there is a shorter meeting on a weekday and a longer meeting on the weekend.
- **What is the time commitment for the children and parents?**
  - Players: 4-6 hours per week (about the level of a recreational soccer team)
  - Coaches: Player meetings plus prep time
- **I don't know anything about robotics or programming. How can I help?**
  - A good coach mostly provides organization and direction, not technical help.
  - You can also be a team manager, assistant coach, or tournament volunteer.
- **The recommended age range is 8-14, can my younger child participate?**
  - Some younger children are excited initially, but may end up mostly playing with the kit parts.
    - Do they like math, chess, or puzzles; or want to build or program games?
    - Can they stay reasonably focused in a team setting?

How Much does it Cost?

Item	Team Cost	Player Cost (team of 6)
Team Registration	$100	$17
VEX IQ Robot Kit*	$300 - $400	$50 - $67
Extra robot parts+	$0 - $100	$0 - $17
Field Perimeter Kit*	$100 - $200	$17 - $33
Challenge Game Elements	$100	$17
Scrimmage Fee	$20	$3
Qualifier Tournament Fee	$50	$8
2nd Qualifier Tournament Fee+	$0 or $50	$8
Championship Tournament Fee+	$0 or $100	$17
TOTAL	**$670 - $1120**	**$136 - $186**

*non-recurring costs (schools can apply for a robot kit grant)
+optional

Purchase items from www.vexrobotics.com or elsewhere

Resources for Coaches

Helpful resources and links are available online

- www.roboticseducation.org/vex-iq-challenge/viq-teams
  - How to Start and Organize a Team document
  - Registration Instructions for New Teams
  - VEX IQ Challenge League Play document
  - free VEX IQ Curriculum
  - Online Challenges
  - Design Award Rubric
  - Robot Programming Software
  - Team Design Notebook Example
  - VEX IQ Product and General Discussion Forums

VEX IQ Challenge Current Game

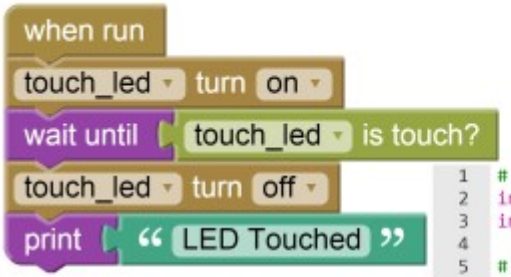
- www.roboticseducation.org/vex-iq-challenge/viq-current-game
- STEM Research Project

Local Resources

- Los Altos Robotics
  - www.LosAltosRobotics.org
  - www.facebook.com/losaltosrobotic
- TigerBots email list
  - Used for communication from Los Altos Robotics
  - Used as a forum for local teams to ask and answer questions
  - To join, send a brief description of your interest to TigerBots-subscribe@yahoogroups.com
  - Details and archives online at LosAltosRobotics.org/TigerBots
- REC Foundation Office
  - Includes a small store with VEX IQ materials
    - 2390 Almaden Road, Ste. 40, San Jose
    - (408) 841-9389

Remote Control vs. Programmed Robots

- VEX IQ includes both Remote Control Challenges and Autonomous Programming Challenges



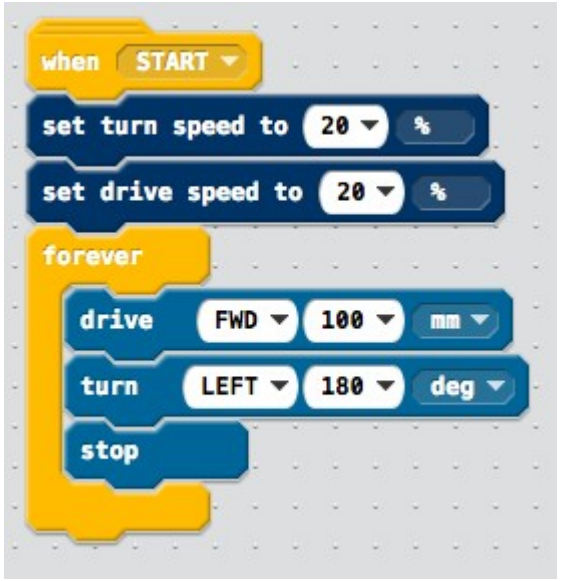

```
# VEX IQ Python-Project
import sys
import vexiq

# Connect a Touch LED into Port 1
touch_led = vexiq.TouchLed(1)

# Turn the LED on and wait for it to be touched
touch_led.on()
sys.wait_for(touch_led.is_touch)
touch_led.off()
print "LED touched"
```

Robot Control and Programming Software

- Built-in Remote Control Program
- Modkit
  - www.modkit.com/vex
- Robot C
  - www.robotc.net
- Python / Blockly
  - www.robotmesh.com/python

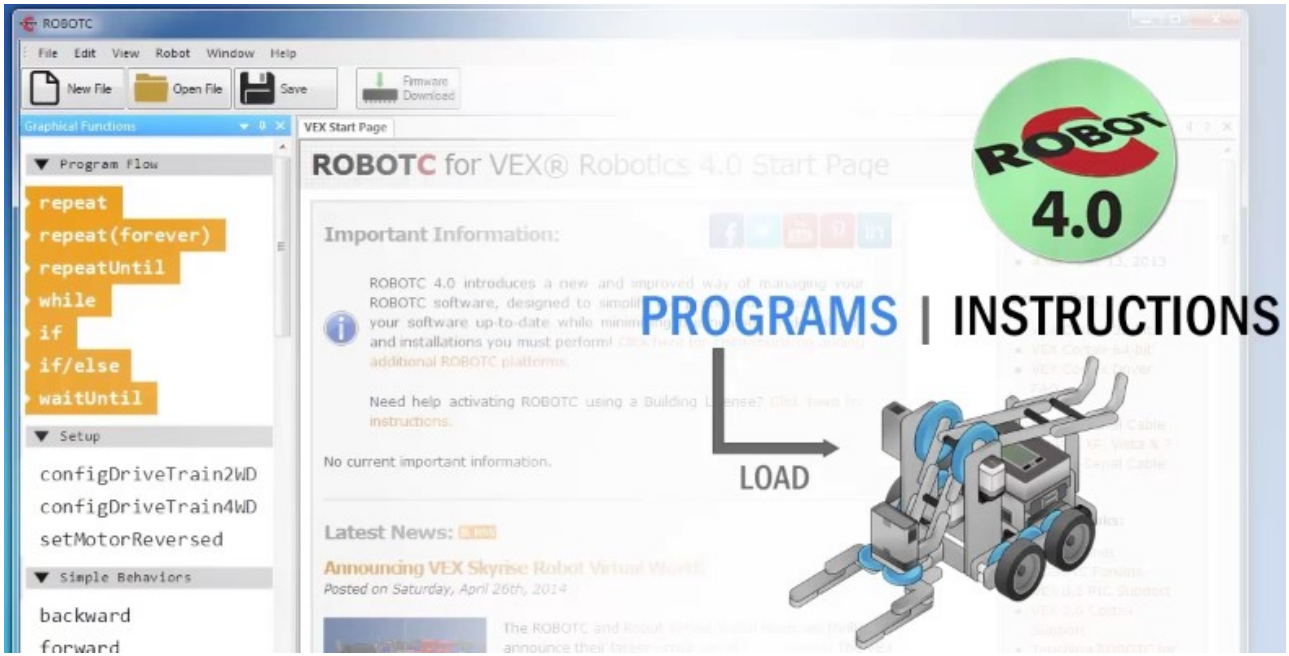
Modkit for VEX IQ

- Graphical Block Style Programming



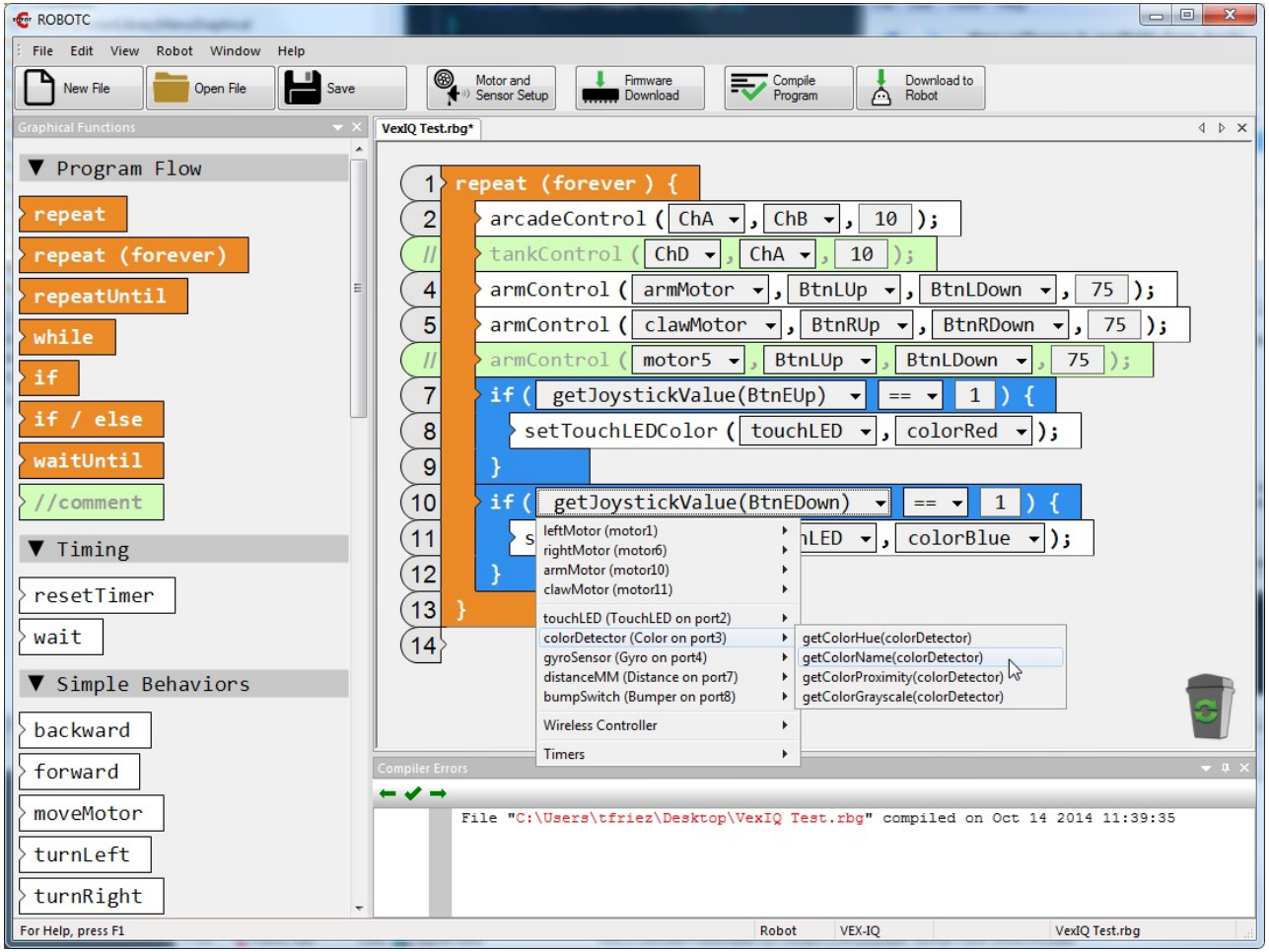
Robot C for VEX IQ

- Graphical Programming
- C Programming
- Virtual World

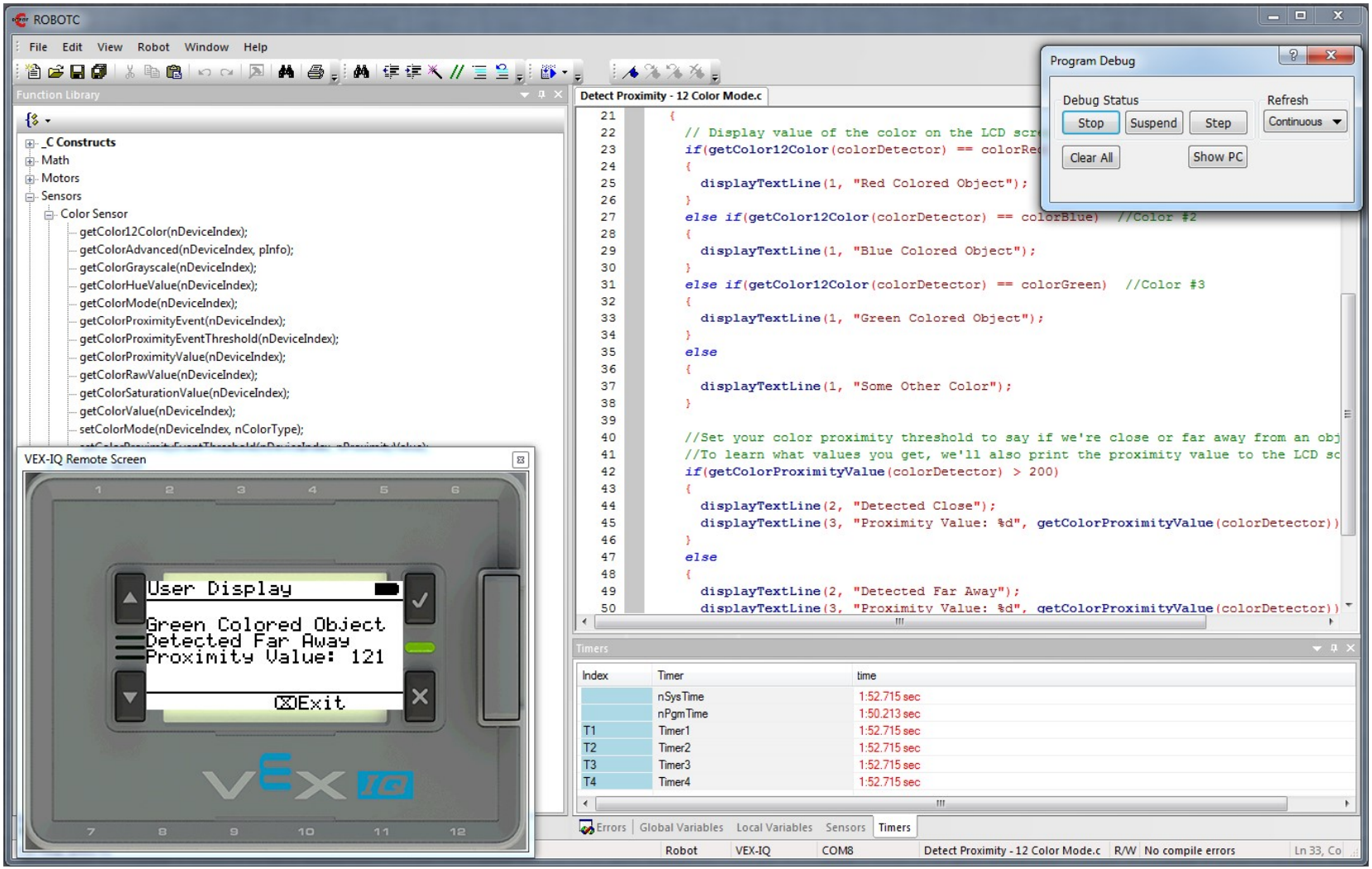


Robot C Graphical Programming

- A Block Style Graphical Programming Language
- Transition to C Language Programming

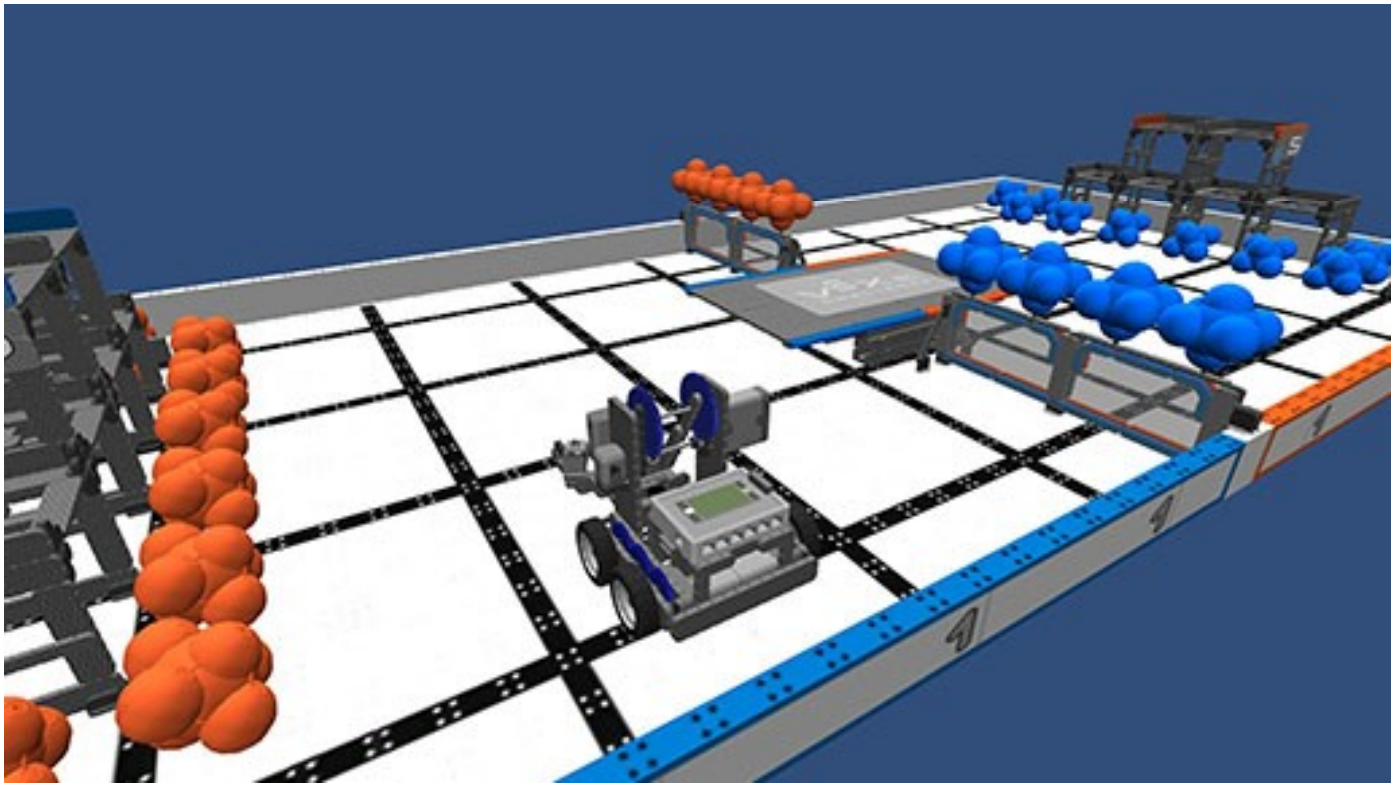


Robot C Language Programming



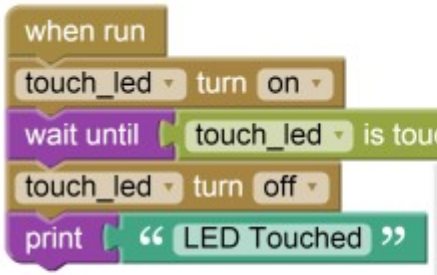
Robot C Virtual World

- Allows programming and testing simulated robots



Python / Blockly for VEX IQ

- Graphical Block Style Programming
- Python Programming
- Remote Control Customization Wizard
- Transition from Blockly or Wizard to Python

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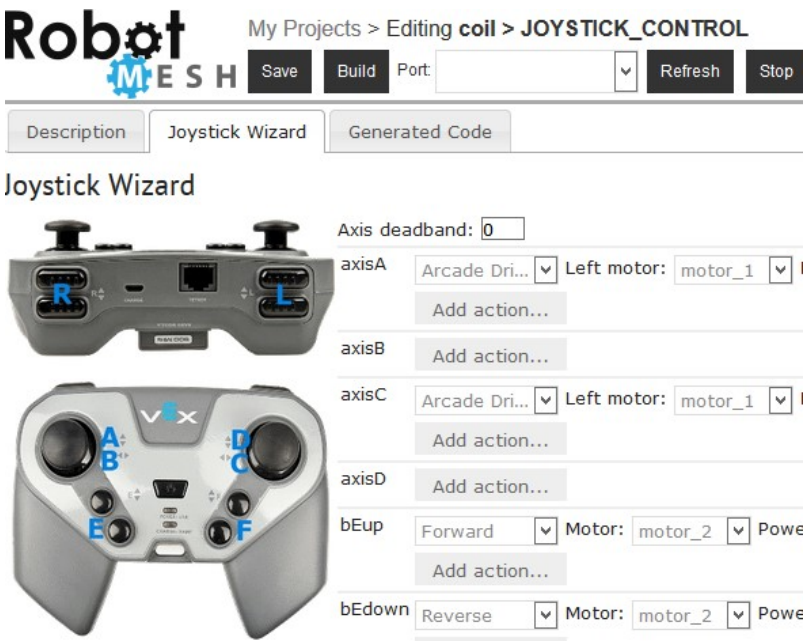
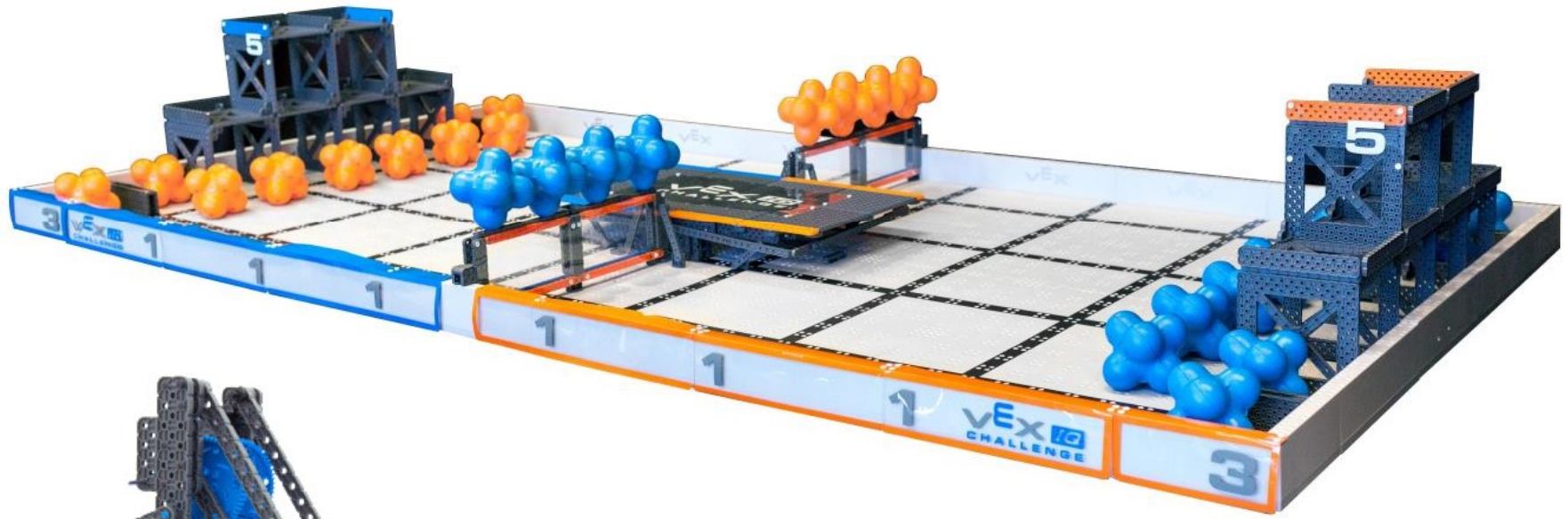
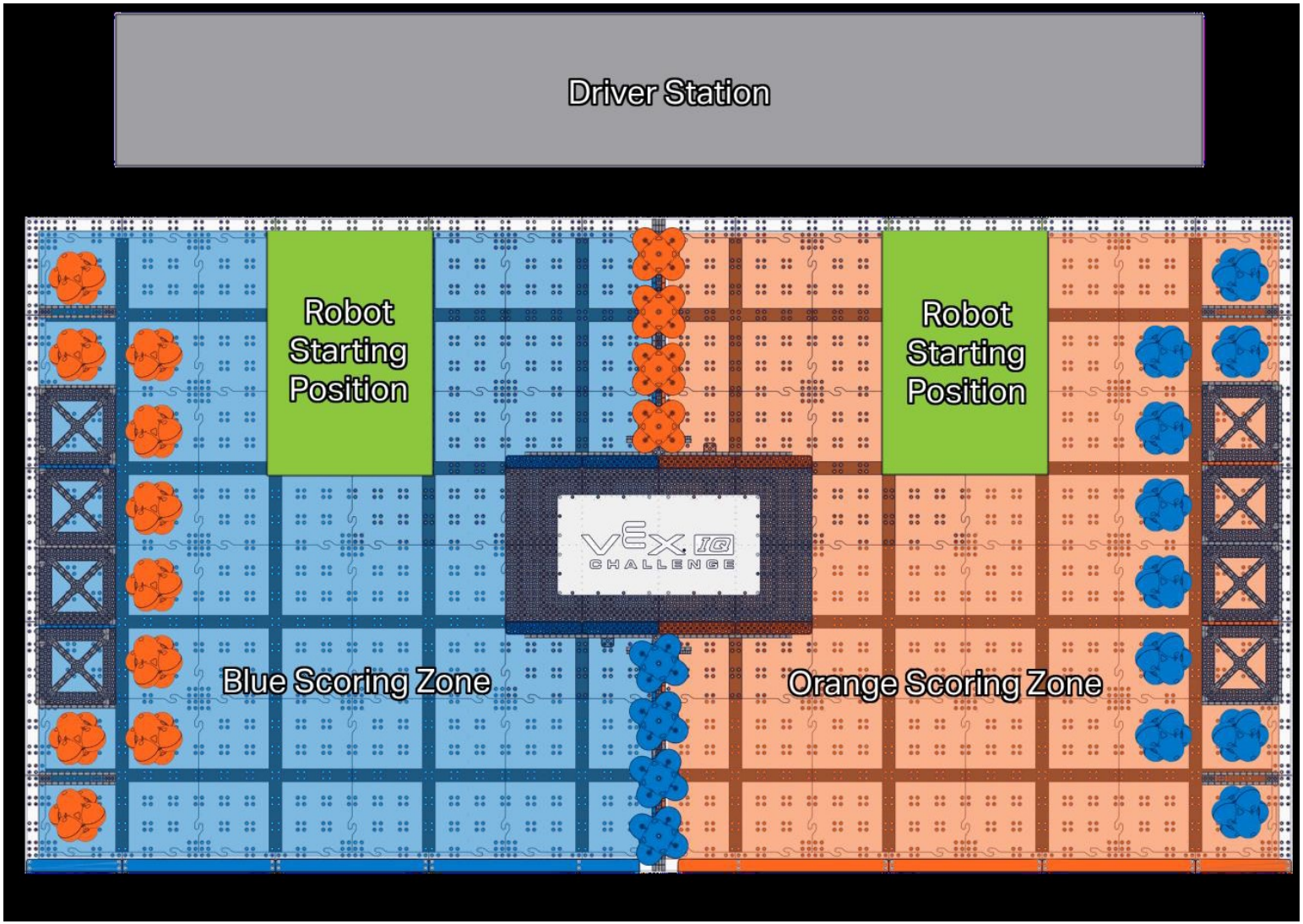


VEX IQ Challenge Crossover Game and Sample Robot

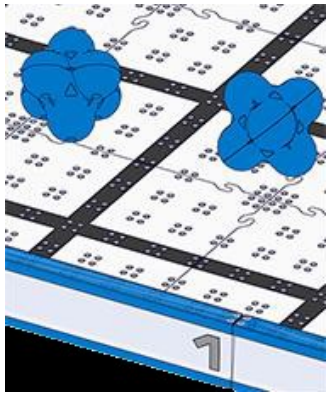


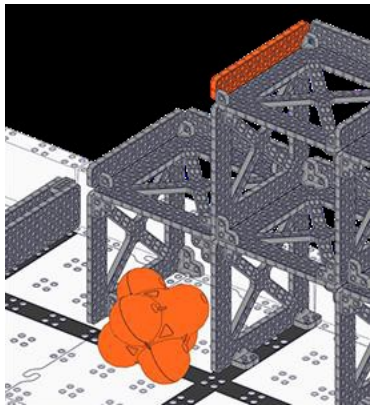
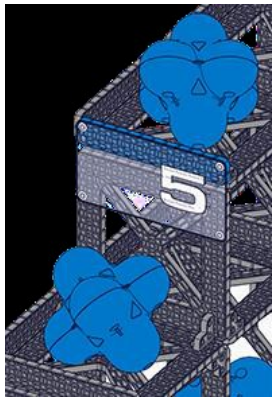
Crossover Field Set-Up

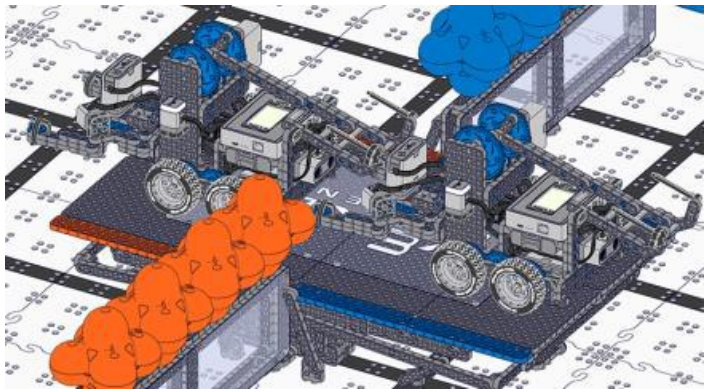


Crossover Challenge Scoring

- Hexball in Scoring Zone = 1 point
- Hexball in Low Goal = 3 points
- Hexball in Elevated Goal = 5 points
- 1 Robot Parked on Bridge= 5 points
- 2 Robots Parked on Bridge = 15 points
- All Robots Balanced on Bridge = 25 points





Questions & Answers

Los Altos Robotics thanks

FRC Team 971

Spartan Robotics

For providing our meeting venue tonight!