



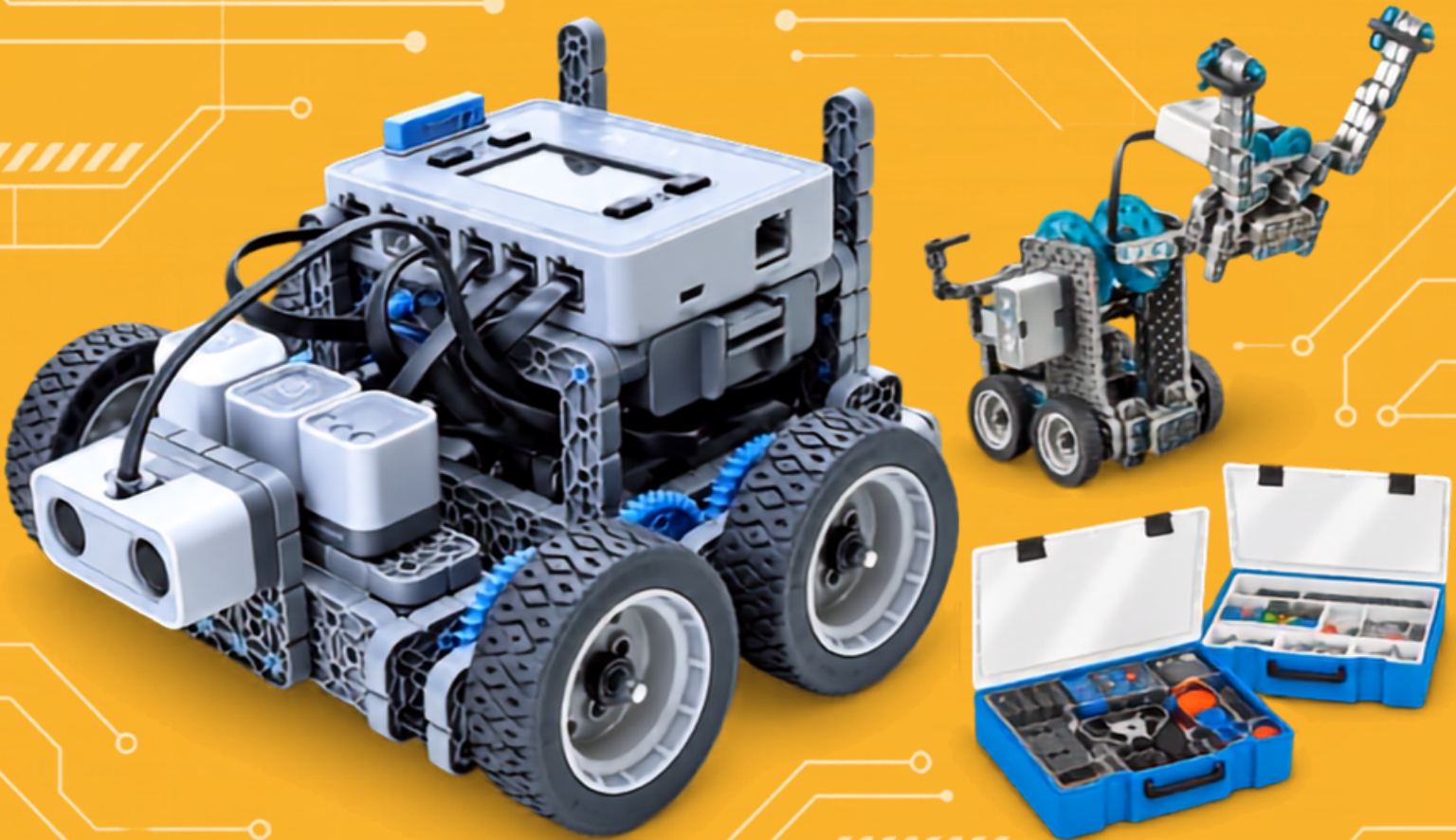
19th Annual

OXFORD INVITATIONAL YOUTH

ROBOTICS
CHALLENGE

INSPIRING
INNOVATION
BUILDING
BRIGHTER
TOMORROWS

2026 CHALLENGE MANUAL



November 19, 2026



Goff Hall Community Complex
381 Finkle Street, Woodstock, Ontario



oxfordroboticschallenge.com



2026 OIYRC Challenge Package

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Scenario

A manufacturing facility produces small parts, but some are defective. The robot acts as an automated quality control system, ensuring only acceptable products reach the packaging.

A manufacturing facility produces small parts that are used in automotive production. Some of these parts are defective and need to be removed. The remaining parts need to be sorted before they are shipped to the automotive production facility. Your robot acts as an automated sorting and quality control system, ensuring only acceptable parts are accurately sorted and delivered on time to the next facility.



Challenge Overview

For the 2026 OIYRC challenge, each team must design and fabricate an autonomous collection and sorting robot.

The operator will press a start button to begin the operation. The robot will collect the manufactured blocks from the factory floor. The collected parts must be sorted by colour and defect status, then delivered into the matching bins located at the end of the factory floor. The robot must operate safely and autonomously. Thoughtful design and programming will let the robot complete the task efficiently and without help from team members.



Inspiration Sources:

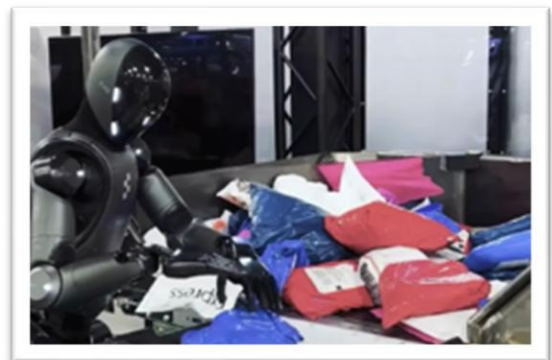
<https://www.parcelandpostaltechnologyinternational.com/news/automation/geekplus-debuts-sorting-robot-fleet-in-south-africa.html>

<https://www.daifuku.com/solution/intralogistics/products/vehicle/sotr-l/>

<https://www.humanoidsdaily.com/news/in-depth-with-figure-ai-ceo-brett-adcock-dissects-60-minute-logistics-demo-touts-endurance-over-spectacle>

Teams will be evaluated on the following:

1. Written Report
2. Video Report
3. Robot Presentation
4. Robot Operation





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Teams

- Teams may represent a school, a club or youth group.
- Teams will have at least four (4) high school aged youth members.
- Team members will receive points from all aspects of the challenge (event day presentation, robot operation, report, video).
- Teachers and adult mentors may only act in an advisory role.
- Mentors are based on availability. Teams must contact their volunteer mentor promptly to introduce themselves. Mentors may also offer teams a tour to view their industrial facility.

Deadlines

- **October 29, Team Registration**
Team name, photo, media form, Participant names and Photo release forms
- **November 12, Team Submissions** - Written report and Video
- **November 19, Challenge Day!** Up to five students must attend with their robot.

Supplies

Provided

- VEX IQ Kit (4 cases)
- 10 Magenta blocks (1 extra)
- 10 Green blocks (1 extra)
- 10 Blue blocks (1 extra)
- 10 Yellow blocks (1 extra)*
- 1 Red & 1 Green marker
- 1 Black electrical tape

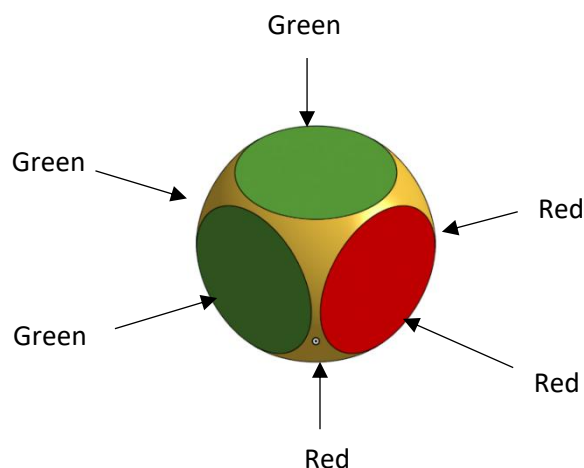
Not Provided

- White Bristol Board (28"x22")
- Foam Board

NOTE: The kits also include a remote control, but this item cannot be used for the challenge.

(the remote can be used in the future as a resource)

*NOTE: **3 yellow blocks have been coloured in with 3 red, and 3 green sides** (see picture below) red and green markers have been included if the colours fade and you need to recolour the sides again.





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Challenge Operation Area

On the challenge day the factory floor will be placed on a table so the robot can operate on the table; however, there may be no human intervention to prevent the robot from falling from the table.

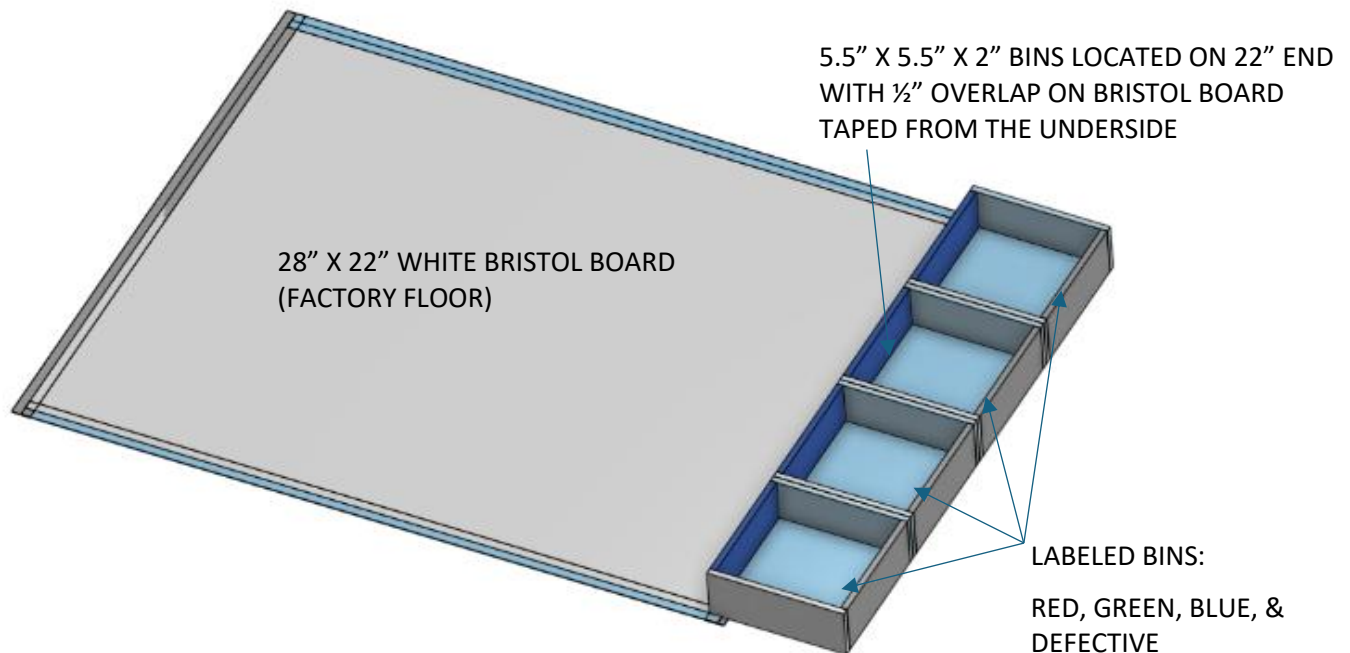
The active operating space includes: the table, factory floor (white Bristol board), collection bins (made using foam board).

The *factory floor* will be represented by a full sheet of white Bristol board measuring 28"x22". An optional $\frac{3}{4}$ " wide black border may be created around the perimeter of the Bristol board (on 3-sides) using black electrical tape.

Four (4) part *collection bins* measuring 5.5" X 5.5" X 2" will be constructed by the team from white foam board and hot glue. Assume the foam board has $\frac{1}{4}$ " thickness. These bins will be located at one of the 22" ends of the factory floor and overlapping the Bristol board by $\frac{1}{2}$ ". The bins will be fastened (glued) to each other and taped to the Bristol board from the underside to hold their position. The floor of each collection bin will be labelled: red, green, blue and defective.

The factory floor and collection bins must be constructed within $\pm 1/8$ " (± 3 mm) accuracy or else it will not be permitted in the challenge.

Teams are responsible for purchasing the Bristol board & foam board to construct the operating area.





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Robot Design

The robot must be built with the components of the VEX IQ Competition Kit provided. The kits are provided at no cost to participating schools due to the generosity of our local sponsors. Each team will be provided with the name of their sponsoring company or organization and are expected to learn about their sponsor and proudly acknowledge their sponsor in the written report, and on the challenge day display and presentation.

Additional materials, including glue, tape, wire, etc., are prohibited in the construction. The provided parts **cannot** be modified including cut or drilled. **The VEX IQ remote control included in your package cannot be used to help navigate the robot.** This item was included with the kits and can be used in the future as a resource tool.

The final robot should include:

1. *Cycle Start Button* (e.g., Force Sensor or LED start button on hub)
2. *Collection system* for the manufactured blocks
3. *Delivery system* for the manufactured blocks
4. *Obstacle safety interlock* (Distance Sensor)
 - *Braking and sound warning* of obstacle presence
5. Additional robot features (e.g., count the number of successful deliveries) awarded for points and complexity



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Robot Operation

Before the start of the operation, 36 coloured (9 red, 9 green, 9 blue, 6 yellow, and 3 yellow/green/red) manufactured blocks will be randomly scattered over a factory floor.

The operation time will begin once the cycle-start button is activated. The start button will be manually pressed and will engage an automated programmed drive pattern, the VEX IQ remote control cannot be used to help navigate the robot. **The robot has a total of 4 minutes to complete the challenge.**

While in operation, the robot will collect manufactured blocks. A block is considered successfully collected if it has been removed from the factory floor (e.g., on board the robot or delivered into bins). Blocks pushed outside the factory floor perimeter are not considered successfully collected.

The collected manufactured blocks must be sorted by colour (red, green, and blue). Some coloured blocks will be defective. Defective blocks will be yellow (6) or yellow with 3 red and 3 green surfaces (3). The defective blocks must also be identified and sorted. The manufactured blocks must then be delivered into their respective collection bins. Points will also be awarded for successfully dispensed blocks. A block is considered “successfully dispensed” if the block stays within the bin matching its respective colour.

Points will be awarded for a functioning obstacle safety interlock safety system. If an obstacle (e.g., judge’s hand) located anywhere on the white Bristol board factory floor is detected by the robot, the robot will safely brake before it collides with the obstacle, sound a warning noise, and proceed when the obstacle has been removed.

Robots may drive beyond the factory floor's boundaries to turn or reposition for the next programmed path, provided no human intervention is involved.

Robots must successfully sort the blocks within a 4-minute time duration. If the robot successfully delivered all the blocks in less than 4 minutes, the timer will be stopped, and the time will be recorded.

If the robot has not completed its drive pattern in the 4 minutes, the robot will be stopped and the scoring will commence. The time for the robot to complete the drive pattern and categorize the blocks correctly will be used in case of a tie for the Platinum award.

If the robot requires human intervention (e.g., the robot travels off course and a team member adjusts its direction or catches it from falling off the table), the cycle will be stopped and the timer paused. All manufactured blocks will be re-scattered over the factory floor, the robot will be repositioned to its starting location, and a new cycle will be started. **The timer is not reset. The robot will only be able to use the remaining time from its 4-minute time allocation.**

Teams may wish to add “additional robot features” (e.g., count the number of successful deliveries), which may earn up to four (4) extra points at the discretion of the judges.



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Challenge Scoring

The Challenge will be scored on four elements.

Overall Scoring Calculation: The final overall score will be as follows:

Challenge Component	Possible Score
Written Report	15
Video	15
Presentation	20
Operation	50
Final Score	100

The Written Report and Video must be submitted by **November 12th**. The Presentation and Operation of the Robot will be judged in-person at the Challenge Day in Goff Hall Woodstock on **November 19th**.

Teams will be designated with Bronze, Silver, Gold, or Platinum based on their scores across all challenge components.

Final scores and team ranking will be announced at the Challenge Day on **November 19th**.

The team with the highest overall score will be the Platinum winners of the Challenge. In the event of a tied score, the most efficient robot (i.e., successfully completes the task in the least amount of time) will be awarded the Champion Platinum Level.



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Submitted Items

The team must document their project from start to finish and will share the experience in a written report and video. These submissions are due on **November 12, 2026**. They can be uploaded using this OIYRC [OIYRC Team Registration 2026](#). A link to the form is also available on the OIYRC Website.

NOTE: Teams will lose one mark per day for any late submissions.

Written Report

A written report will document the teams design and building process.

The report should include:

- Team Information
- Sponsoring company name, logo and description of what they do
- Mentor profile (if applicable) outlining their qualifications and how they supported the team
- Robot concept diagram
- Concepts and ideas that were attempted
- Challenges faced, achievements, successes, and learnings from the experience
- Program script

Additional points are awarded for reports that are well formatted, organized, and visually appealing.

Written Report			
Report Content	Elements: 1. Team information, 2. Sponsor recognition and information, 3. Mentor profile (upon availability), 4. Design concepts, 5. Process reflections, 6. Program script		
	Basic report only, missing key elements 1 2 3 4	Report including most elements 5 6 7 8 9 10 11	Detailed report including all elements. 12
Report Design	Unorganized Unformatted Visually unappealing /3	Organized Some formatting No visual aspects 1 2	Well organized Well formatted Visually appealing 3
/15			



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Video

A video report documents the robot's components working prior to the Challenge Day. The video is limited to **10 minutes**.

The video should include:

- Team information
- Sponsor recognition
- Team members
- Robot components operating as per the design details
- The workspace

The video should not include AI-generated content.

Video			
Video Content	Elements: 1. Team Information, 2. Complete Team, 3. Sponsor Recognition, 4. Robot components operating (start, dispensing, safety system, light matrix, additional features), 5.The workspace		
	Missing most key elements	Includes most elements Individual components of robot shown operating	Includes all elements Robot assembled and components shown working in one continuous take.
/12	1 2 3	4 5 6 7 8 9 10 11	12
Video Composition	No structure or flow Over 10 minutes Information shared is irrelevant or not explained Gimmicks, generated content is included	Organized content with good flow Some unnecessary information	Organized and simple to follow Includes only relevant information No gimmicks or generated content.
	1 2	3	4
/3			
/15			



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The Challenge Day

The Challenge Day is **November 19th** at Goff Hall in the Reeves Community Complex at 381 Finkle Street in Woodstock. Teams that are not present on the Challenge Day will be disqualified and are required to return the VEX kit in its entirety.

The order of participation is based on arrival times. Teams are allocated spots on a first-come basis. The judging will commence, and the Presentation and Visual Display will be scored before the Operation Scoring.

The factory floor and collection bins must be constructed within $\pm 1/8"$ ($\pm 3\text{mm}$) accuracy or else it will not be permitted. An alternate court that meets the requirements may be supplied by OIYRC.

Presentation

The presentation is limited to **5 minutes**. The presentation should include:

- Team introduction
- Sponsors and mentor acknowledgement (if applicable).
- Highlights and lessons of the process
- Robot components explained
- Visual Display
 - Team Information
 - Sponsoring company/organization named and logo
 - Visual elements and highlights of the robot design

Additional considerations are made for displays that are well formatted, organized and visually appealing.

NOTE: The robot operation is not included in the presentation time or scoring part

Presentation			
Oral Presentation	Elements: 1. Team Information, 2. Sponsor Recognition, 3 Mentor Recognition, 4. Process explained, 5. Robot elements described, 6. Team Member Participation,		
	Lacks preparation and structure Elements are missing Time runs over 5-minute limit. 1 2 3	Well prepared and structured presentation Includes most elements. 4 5 6 7 8 9	Presentation is polished and smooth. All members participate in the presentation 10
Visual Display	Elements: 1. Sponsor and Mentor Recognition, 2. Robot assembled, 3. All kit components accounted for, 4. Table and display organization, 5. Visual elements		
	Robot kit is present in its entirety. Sponsor name and logo identified Table and display unorganized 1 2 3	Most Elements included Table and display is well designed and organized 4 5 6 7 8 9	All elements included Visuals and photos used effectively. 10
/20			



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Operation

The Robot Operation is limited to **4 minutes**, see the Robot Operation section for full details.

Robot Operation			
Collection Blocks collected from the factory floor ____ ÷ 4	Some of the blocks collected	Many of the blocks collected	Most of the blocks collected
	1 2 3 4	5 6 7	8 9
Dispensing Blocks dispensed into a sorting bin ____ ÷ 4	Some of the blocks dispensed into a bin	Many of the blocks dispensed into a bin	Most of the blocks dispensed into a bin
	1 2 3 4	5 6 7	8 9
Sorting Blocks sorted in correct bin <i>(see below)</i>	Some of the blocks sorted properly	Many of the blocks sorted properly	Most of the blocks sorted properly
	1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22
Safety system Brakes, Sound, Restart	1 component of the safety system operates	2 components of the safety system operate	All components of the safety system operate
	1 2	3 4	5 6
Robot functionality Movement Efficiency Autonomy	Stilted movement Robot misses large areas Some unnecessary stops Limited human intervention	Continuous movement Robt misses some small areas Some unnecessary stops No human intervention	Smooth continuous movement Robot covers the whole area No unnecessary stops No human intervention
	1	2 3	4
Additional features	None	Details:	Details:
		1 2 3	4
/50	Tie Breaker - Time: _____(Seconds)		

Sorting Calculation		
Red/Green/Blue	Yellow	Multi Coloured
Coloured manufactured block in correct bin	Yellow defective block in correct bin	Multi-coloured defective block in the correct bin
1 point/block <i>(Max 27)</i>	5 point/block <i>(Max 30)</i>	10 points/block <i>(Max 30)</i>
Total Points: _____ ÷ 4 <i>(Max 87 Points)</i>		Score = _____ <i>(Max score 40)</i>



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Important Information

1. Each team must be present at Goff Hall for the Challenge on **November 19, 2026**. Any team that misses the event will be disqualified and are required to return the VEX kit in its entirety.
2. The robot should be conceived, designed, and built by the students with teachers and mentors acting in an advisory capacity only.
3. Team Information including team name, participant names, media releases, permission forms, and team photos are due **October 29, 2026**. Upload the information here: **OIYRC Team Registration 2026**
4. A written report and video are due **November 12, 2026**. Upload the files here: **Team Submission Form**
5. All questions regarding the video, and/or written report should be emailed to Jane Kempe at jane@workforcedevelopment.ca
6. All questions regarding technical support (i.e., the robot and/or challenge) should be emailed to Glenn Raake at graake@ldcsb.ca

Most importantly, enjoy the process and good luck!

Resources

1. Please refer to the website as needed. <https://oxfordroboticschallenge.com/>
2. VEX IQ Competition Kit Resources:
https://www.vexrobotics.com/iq-competition-kits.html?srsId=AfmBOoqGOBryailWA1Ok6mj4aGIHHJYHIF0iFZsOI99KXyQXB4jGLVyR#a-tr-vex_resources
3. VEXcode IQ Online:
<https://codeiq.vex.com>
4. VEXcode IQ Download:
https://www.vexrobotics.com/vexcode/install/iq?srsId=AfmBOOpDlovhUTqbbPoYPnMbCFLHnYyB58ucHbihmvVYqM6cl_wJrt9Q