



Technical Component - Lego

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Disclaimer

It is your responsibility to read and understand this document on a regular basis because we may update it from time to time.

The Technical Component

The Technical Component will allow you and your team to show us your skills in terms of: mechanical design (building), programming or software design concepts and documenting your team's progress.

For the technical component, your team will prepare a: presentation, report, and display. The part with the best mark will be worth 15%, the part with the second-best mark will be worth 10%, and the third best part will be worth 5%. These percentages make up the 30% for the Technical Component.

Your team can submit/present the Technical Component in either English or French.

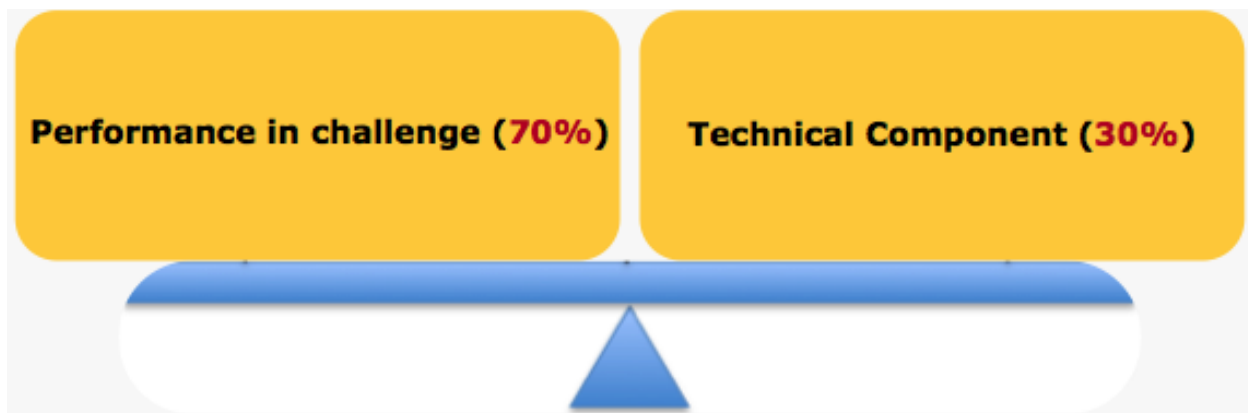


Figure 1: ORC Grading Scheme for Lego Challenges.

For all Lego challenges, the Technical Component will have a weight of 30% and your challenge performance will have a weight of 70%. Out of the 70%, round robin performance will make up 20% of your final mark and elimination will make up 50% of your final mark. It is important that you and your team must do well in **both** components because **final rankings do change based on your performance on both components.**

Accommodations

If you require accommodations on the Technical Component, please let us know at orcinfo@ieeeottawa.ca.

Overview

In the Technical Component, you and your team will show the following concepts and/or skills:

- Mechanical design (building)
- Programming or Software design
- General design process
- Documentation / Journalizing
- Public speaking

You must submit the report in DOC, DOCX, ODT, PDF, or Google Docs format. If you send a report in a different format, we may not accept it. You must submit the report by **May 15th, 2017 at 10 pm** by sending an email to **orcrrpts@gmail.com**. You and your team will present with your display on competition day. Your display can be a tri-fold display or electronic (PowerPoint, Prezi, etc.). There will be no setup time, so electronic displays must be presented using a laptop, tablet, or phone. Your team will have 7 minutes to present, followed by questions from a panel of judges. The presentation, display, and report can be done in English or French.

Required Parts

For the presentation, your team can present in one of many formats: traditional presentation, skit, play, etc. **Be creative, have fun**, but do make sure your team includes all the required components on the next couple of pages. **If your team is registered in two challenges, you must prepare two reports.** Please ensure the title page indicates which challenge your report is about.

You do not have to present all the required components in the same order listed on the next couple pages, but they must all be presented.

You are free to include more than what we ask, but remember that **quality will matter more than quantity**. Your team will get higher marks for presenting well for 3 minutes than being uncoordinated for 5 minutes! Similarly, your team will get higher marks if they write an excellent report that is 5 pages than if your team wrote a terrible 10-page report.

Your team will receive higher marks if the explanations are clear and of good quality. Your team should present clearly, write a report with proper spelling and grammar and allow all team members to talk during the presentation.

Required Parts of the Presentation

1. Introduce us to your team and robot
 - a. Team name, school/community group name, grade level
 - b. Registered challenges
2. Mechanical Design
 - a. Talk about **at least** one major decision your team made to improve your robot for a specific challenge. Talking about how the change makes your robot stronger, faster, etc., would be great, but saying that the change made your robot cooler (not mechanically important) or better (too vague) does not count for marks.
 - b. Present the major components (brick and sensors) used for your robot
3. Show off your robot!
 - a. Brief description of your robot's final design
 - b. Showcase your robot and its unique features (a photo counts)

Clarity and sharing talking time will count towards your marks!

Required Parts of the Display

1. Introduce us to your team
 - a. Team name, school/community group name, grade level
 - b. Photos & short biographies of team members
2. Photos of your robot
 - a. Multiple views (front, back, side, etc.)
 - b. Showcase the unique features and major sensors of your robot(s) (for example: light, ultrasound, etc.).

Your team must have your display for the presentation!

Required Parts of the Report

1. Title page
 - a. Team name, school/community group name, grade level, challenge(s)

2. Software Design
 - a. Explain how your program works in a step-by-step action. Make sure that you include a picture (screenshot) of the program or a flowchart to help explain how your program works.
 - b. Compare your current program to another program your team could have programmed, and explain why your current one is better, worse, or a bit of both.

3. Testing
 - a. Explain **at least** one milestone and one challenge your team encountered in preparing for the competition. These milestones and challenges can be related to the robot, your team, the programming, etc.
 - b. Talk about a few of the experiments you did to test your robot and the results of those tests.

4. Journal
 - a. Write a summary of each meeting with a journal entry. In the journal entries, document what happened, any decisions made, accomplishments, setbacks, etc. Make sure to include a date for each meeting in your report.

Grammar and spelling do count, so please remember to be careful!

Rubrics

Presentation Rubric

Team Name		Comments
School or Community Group Name		
Challenge(s)		

Criterion	Points
<u>Introduction</u> <ul style="list-style-type: none">• Team name, school/community group name, challenge(s), grade level (0.25 pts each, 1 pt total)	/1
<u>Mechanical Design</u> <ul style="list-style-type: none">• At least one major decision made by the team per challenge (1 pt)• Quality of explanation of how the decision makes their robot better (4 pts)• Presents major components of robot (1 pt)	/6
<u>Summary</u> <ul style="list-style-type: none">• Brief description of final robot's design (2 pts)• Pictures of robot, at least one (1 pt) <p style="text-align: center;">OR</p> <ul style="list-style-type: none">• Unique feature of the robot, at least one (1 pt)	/3
<u>Other Presentation Criteria</u> <ul style="list-style-type: none">• Clarity of presenters (2 pts)• Dispersion of presenters during presentation (2 pts)• Ability to answer questions from judges (2 pts)• Use of display during presentation (1 pt)	/7
<u>Bonus</u> <ul style="list-style-type: none">• Team cheer (1 pt)	
TOTAL	/17

Display Rubric

Team Name		Comments
School or Community Group Name		
Challenge(s)		

Criterion	Points
<u>Team & Robot</u> <ul style="list-style-type: none"> • Biographies of team members (1 pt, if missing any names deduct 0.5 pts) • Showcasing of robot, multiple angles (2 pts) • Showcasing unique features & sensors (2 pts) 	/5
<u>Other Display Criteria</u> <ul style="list-style-type: none"> • Visual appeal (4 pts) • Spelling & Grammar (2 pts) • Present during presentation (1 pt) 	/7
TOTAL	/12

Report Rubric

Team Name		Comments
School or Community Group Name		
Challenge(s)		

Criterion	Points
<u>Title Page</u> <ul style="list-style-type: none"> Team name, school/community group name, challenge(s), grade level (0.25 pts each, 1 pt total) 	/1
<u>Software Design</u> <ul style="list-style-type: none"> Step-by-step explanation of program (4 pts) At least one comparison of their program to other possibilities (1 pt) Explanation during comparison of their program to other possibilities (2 pts) Screenshot of program or flowchart (1 pt) 	/8
<u>Testing</u> <ul style="list-style-type: none"> At least one milestone and one challenge (2 pts) Quality of explanations for the milestone(s) and challenge(s) (2 pts) Summary of tests and results (1 pts) 	/5
<u>Journal</u> <ul style="list-style-type: none"> Documentation of meetings, accomplishments, set-backs, etc. (2 pts) 	/2
<u>Other Report Criteria</u> <ul style="list-style-type: none"> Spelling and grammar (2 pts) Submitted using DOC, DOCX, ODT, PDF, or Google Doc format (1 pt) 	/3
<u>Late Submission Penalty</u> <ul style="list-style-type: none"> May 15th 10:01 PM to May 16th 11:59 PM (-1 pt) May 17th 12:00 AM to May 19th 11:59 PM (-5 pts) May 20th 12:00 AM to May 22nd 5:00 PM (-15 pts) Any day after May 22nd at 5:00 PM (- 20 pts) 	
<u>Bonus</u> <ul style="list-style-type: none"> Team logo on report (1 pt) 	
TOTAL – Minimum of 0 pts	/19

Frequently Asked Questions

1. Does the team present twice if we are in two challenges?
 - No, the team presents once for 7 minutes.
2. What if I am in both a Lego and Arduino challenge?
 - Your team must make sure to present all criteria for both challenges.
3. When are the displays marked?
 - They are marked during your presentation, so they must be with you.
4. If we have an electronic display, can we present it using a projector?
 - No, electronic displays must be presented using a laptop, tablet, or similar electronic device.
5. How much setup time do we get?
 - Everything should be ready right before you enter the room. Once your team enters the room, you should simply place your display on a table or counter, then start presenting.
6. May I resubmit our team's report for marking?
 - No, we will mark the first copy we receive from your team.
7. If I made a typo in sending the report to the Reports Marking Committee, will I get the late submission penalty if I forward the email to you after the deadline?
 - Yes, so please ensure you send your report to orcrcpts@gmail.com.
8. If we are in two challenges, do we submit one or two reports?
 - Two separate reports please. Please ensure the title page also indicates which challenge your report is about so we can sort them more easily.
9. I cannot save in any of the formats you listed for the report, what do I do?
 - You can do your report on Google Drive and save it as a DOCX. There is also other free software you can download to save in the formats we have listed, like OpenOffice.

Please note, these are suggestions and not product endorsements. We are not responsible for any malware that you encounter while trying to find a solution for this problem.