

Lego My Robot!

Introduction: Since 1949 The Lego Group has produced construction toys intended to bridge the gap between play and creation. Generations of children used Legos as a fun way to develop visual narratives, architecture, 3-Dimensional artwork, science experiments, and anything else that could be conjured up. This project is intended to give you the ability to flashback to that childhood excitement while also exploring the way in which you play with others. You will be placed in a small group and will start to research the capabilities of Lego Mindstorms.

Project Breakdown:

This project will consist of three parts: Sensor Research, Sensor Demonstration/Presentation, and The Team Work Reflection Paper

Sensor Research (Project Paper)

Lego Mindstorms have the capability to turn simple robot brains into fully programmed and functional entities. By integrating specific design choices, and inventive programming strategies, young engineers have used Mindstorm technology to build robots that can transport items, solve rubicks cubes, and play games with other robots.

For this portion of the project you and your teammates will be researching the capabilities of the different sensory connectors. Your team will be assigned two different sensory connectors. Within your team, determine who would care to research what sensory connector (half of the team should research one, half should research the other). Each team member must conduct research about the capabilities and functionality of one sensor connector.

For the Sensor Research section of the project you must complete the following:

- Find at least one website that explains how your sensor connector functions and what it is capable of
- Find at least one website that demonstrates an inventive way that someone has used the sensor connector for a Lego Mindstorm project
- Write a $\frac{3}{4}$ page double-spaced paper in 12 point Times New Roman Font that elaborates on your findings and documents your 2 resources (finding more resources is strongly encouraged)
- Share your findings with your team

Sensor Demonstration/Presentation (Project Piece and Project Presentation)

Now that you know what your group's sensors are capable of it is time to put them to the test. Your group's mission is to put together a professional demonstration that showcases the capabilities of each sensor. This demonstration can consist of designing your robot to accomplish a unique task, building a specific environment that will cater to the sensor, or a combination of the two. Your Sensor Demonstration/Presentation should incorporate the following elements:

- Overviews of the functionality of each sensor
- Explanations of a few of your team's research findings
- Inventive and fun ways to demonstrate how your robots work (Hint: Audience participation is never a bad thing)
- Every member of the team must be active for the entire project and must have a speaking role during the presentation
- Each presentation must have a visual aid of some kind (Prezi or Powerpoint)
- Your team must prepare 3 open-ended questions for the audience

This portion of the project will be broken up into two separate grades. The first is the Project Piece grade in which you will be evaluated on the way in which you demonstrated the capabilities of your sensor. The second is the Presentation in which you will be evaluated on your presentation and the way in which all group members are integrated into it.

Team Work Reflection Paper (Project Paper)

Now that you have worked in a group it is time to reflect on your experience. Write a 1.5 page double-spaced paper using Times New Roman font that answers the following questions:

- How was your overall experience working in a group?
- What was your strength as a member of the team?
- What was your weakness as a member of the team?
- If you were to do this type of group work again, what would you do differently?
- Out of the six hats, which one do you believe best fit you and why?

The goal of this portion of the assignment is for you to think critically about how you function when working with other individuals. If you feel that there are other important aspects of your experience that you are unable to address through these questions do not hesitate to add them to your paper.