

# ***FIRST<sup>®</sup> LEGO<sup>®</sup> League***

# ***TUT******RIALS***

teach

share

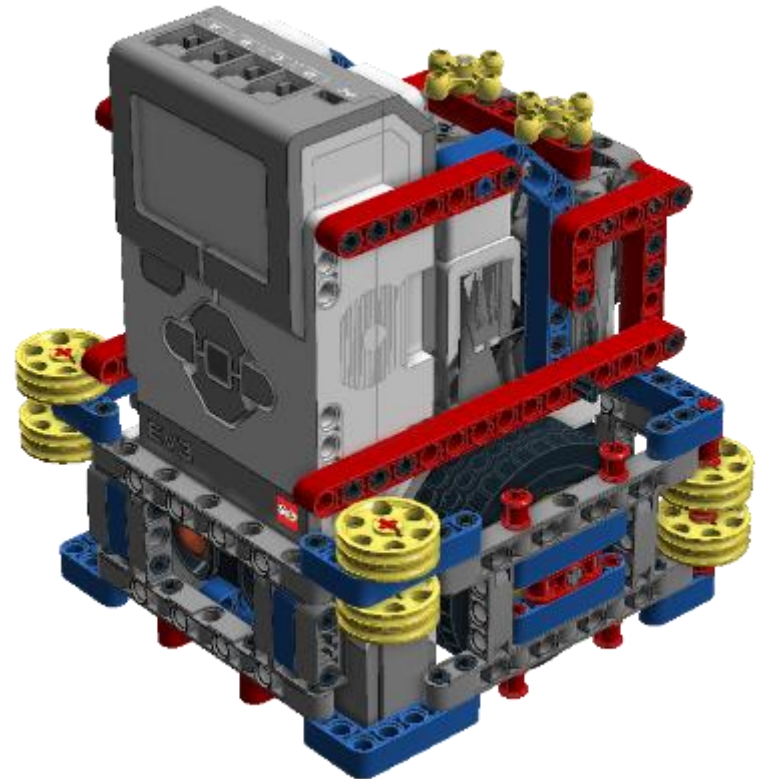
learn

## LEGO CAD SOFTWARE

SESHAN BROTHERS

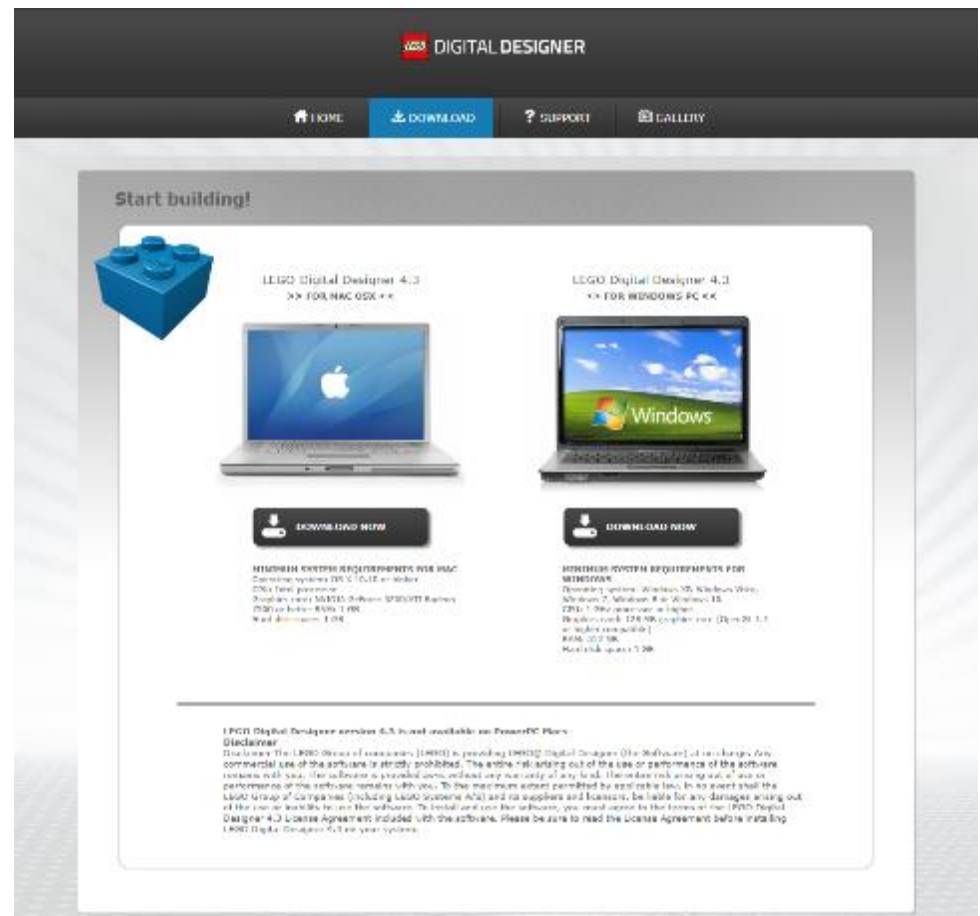
# WHY USE LEGO CAD SOFTWARE?

- An easy way to share your designs with team members
- Can help you document your designs for your Robot Game judging
- Can help you create a duplicate of your robot or make repairs if your robot is damaged
- Can be used to upload your design into some virtual robotics environments that are available for third-party providers



# LEGO DIGITAL DESIGNER

- There are many tools available for creating LEGO designs
- LEGO Digital Designer (LDD) is frequently used by teams and is free to download
  - Link: <http://ldd.lego.com/en-us/download>
- You can download and view .lxf files shared on FLLTutorials.com and EV3Lessons.com and open them using this software



# GENERATING HTML BUILDING GUIDE FROM .LXF FILES

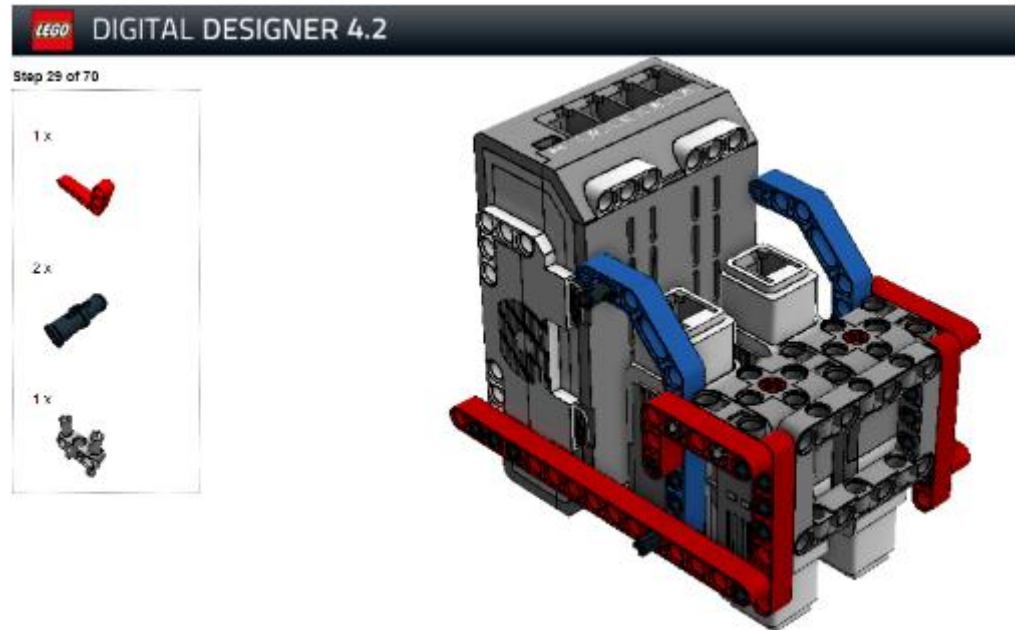


- Select Building Guide Mode Icon on the far right



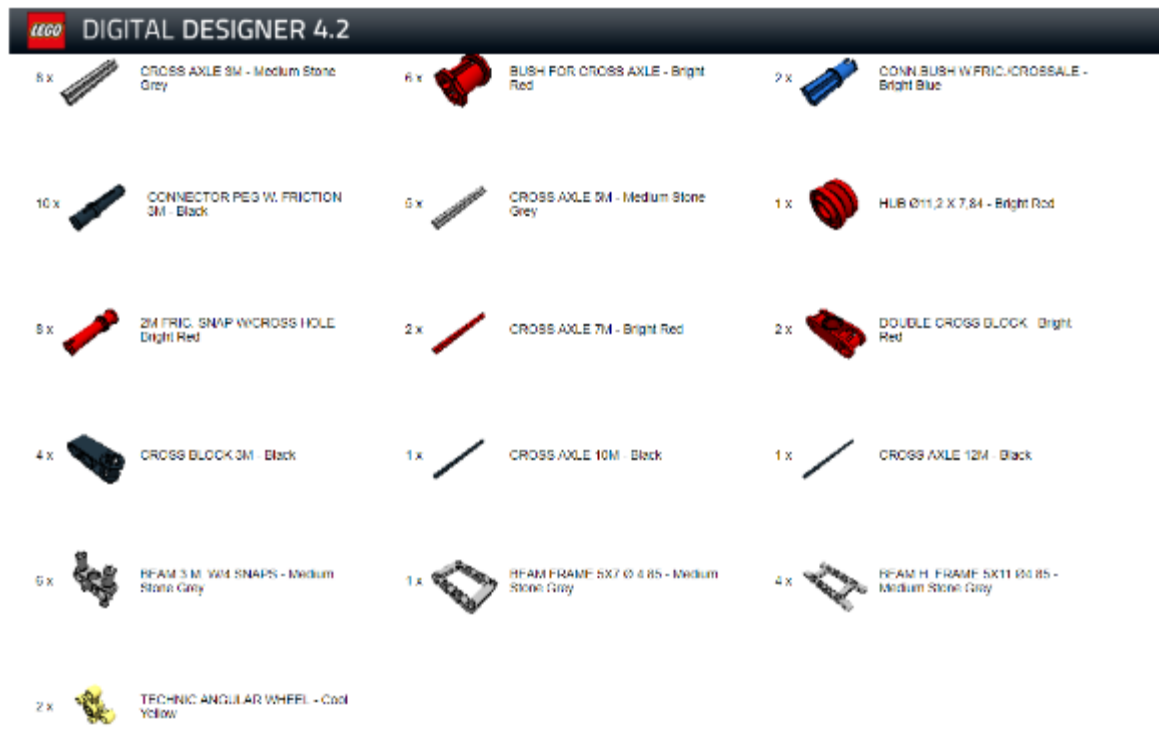
- Select the HTML Icon Guide on the far left
- Follow the rest of the onscreen instructions

*Note: Building Instructions created by LEGO Digital Designer often don't make sense and cannot be customized*

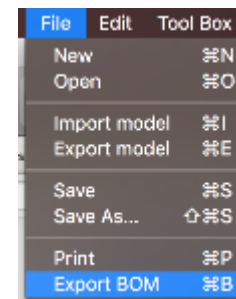


# GENERATING A PARTS LIST

- The last page of the build instructions (HTML Building Guide mode) has a parts list



Alternatively, you can select Export BOM (Bill of Materials) from the menu

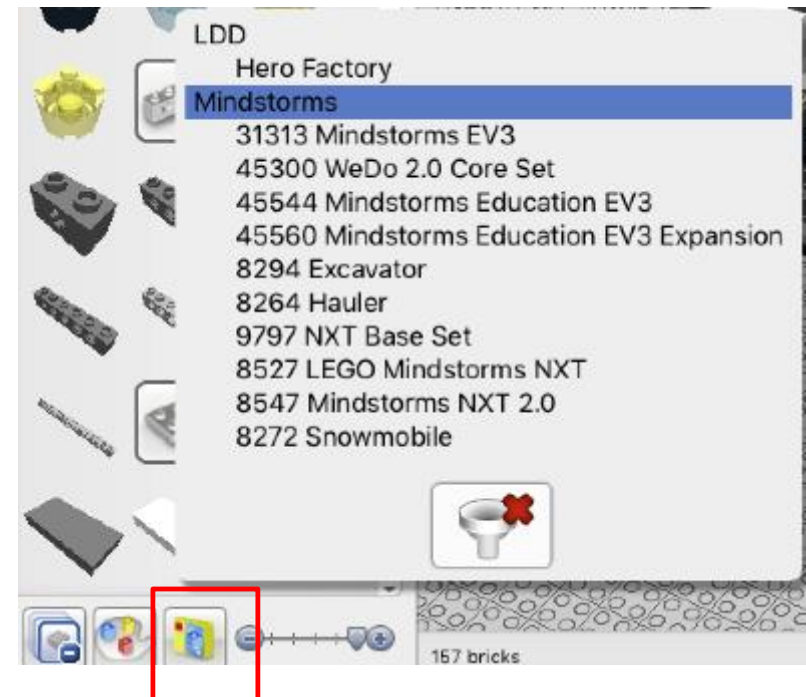
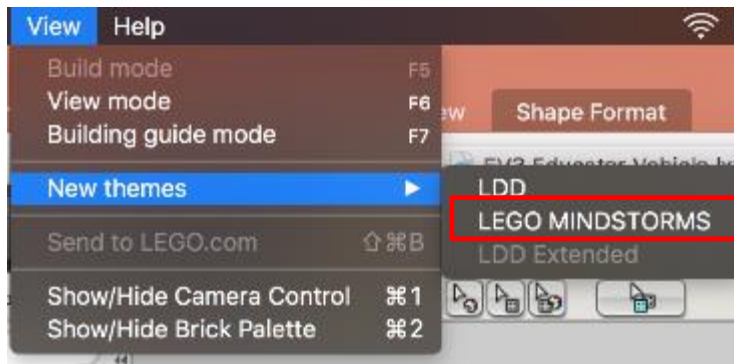


# USING LDD TO CREATE MINDSTORMS DESIGNS

TIP #1: Filtering will help you find MINDSTORMS-related parts quickly

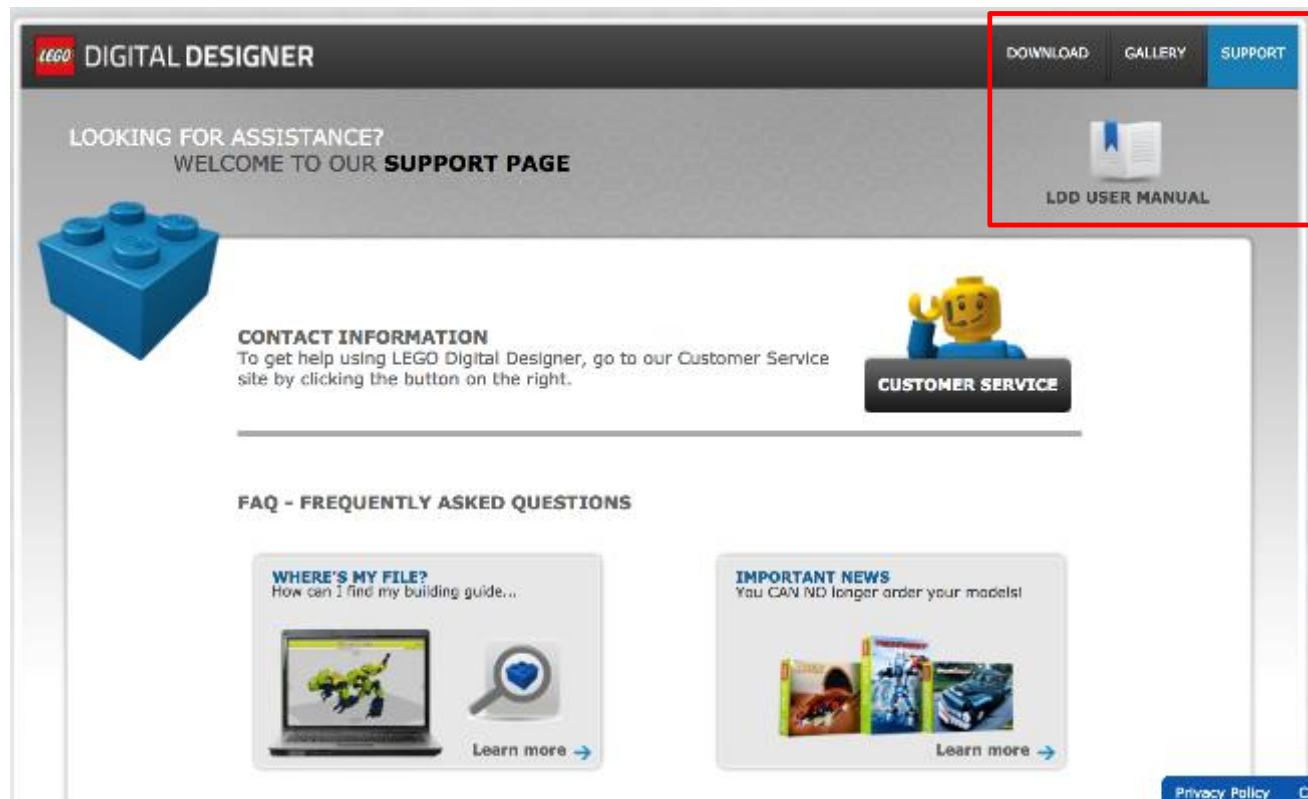
- Step 1: File —> View —> New Themes Select MINDSTORMS

Step 2: Bottom Left corner: Select “Filter Bricks by Boxes” and then select which MINDSTORMS kit you want to use.



# USING LDD TO CREATE MINDSTORMS DESIGNS

TIP #2: Read the Support Manual which can be downloaded at <http://ldd.lego.com/en-us/support>



# LOTS MORE TIPS & TRICKS

- Virtual Robotics Toolkit Introduction to LDD Videos:
  - [https://youtu.be/F0bunR-iBHU?list=PLH3wHnw9bI70XP7HkZ6wc-FNI\\_7kxZOyo](https://youtu.be/F0bunR-iBHU?list=PLH3wHnw9bI70XP7HkZ6wc-FNI_7kxZOyo)
  - [https://youtu.be/-laTwfQXmY0?list=PLH3wHnw9bI70XP7HkZ6wc-FNI\\_7kxZOyo](https://youtu.be/-laTwfQXmY0?list=PLH3wHnw9bI70XP7HkZ6wc-FNI_7kxZOyo)
- Isaac Lloyd Tips & Tricks Videos:
  - <https://youtu.be/X4c7Q0W4cDI>
  - <https://youtu.be/p-UBj76eEGA>



# LIMITATIONS WITH LDD

- Build instructions generated by the software often seem out-of-order and do not make sense
- Build instructions cannot be customized
- Sometimes builds you may have created in the real world are not permitted in the LDD environment as they are technically stressing the LEGO elements
- Pneumatic hoses, rubber bands, and some other elements often cannot be connected and placed correctly

## OTHER LEGO CAD SOFTWARE

- LDCad: <http://www.melkert.net/LDCad>
  - MLCAD: <http://mlcad.lm-software.com/>
  - LeoCAD: <http://www.leocad.org/trac>
- All these above use the LDRAW building system

# CREDITS

- This tutorial was created by Sanjay Seshan and Arvind Seshan
- More lessons at [www.ev3lessons.com](http://www.ev3lessons.com) and [www.flltutorials.com](http://www.flltutorials.com)



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