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DIVING IN: CREATING YOUR FIRST MODEL



Now that you have installed everything you need to get started with LDraw, let's start having some fun! We're going to skip ahead briefly and dive right into MLCad, the editor we will focus on throughout the book. This is a bit of a detour — the LDraw system of tools is pretty complex, and there are some important lessons we need to teach you before you can fully comprehend everything about it. For now though, let's dive in!

The sample model we will walk you through is synonymous with the original LDraw package, released in 1996. The infamous Pyramid model is one of two examples James Jessiman included with the DOS programs LDraw and LEdit. These two models were widely known among the early community of users. Since then, the number of LDraw users has grown exponentially. Third-party applications like MLCad have taken the spotlight, and today these two original LDraw models are not so widely known.

At first you may find it difficult to document, or “LDraw,” (yes, we like to use it as a verb, too) these models. It's OK though, we will take you every step of the way. You will master the techniques needed to build LEGO models on your computer sooner than you think. All it takes is a little bit of patience and the diligence to stick with it, and soon your friends will envy your new skill.

Launching MLCad for the First Time

When you installed the software from the CD-ROM in the last chapter, the installation program placed an icon to Virtual LEGO Launcher on your desktop. Virtual LEGO Launcher is a small application designed especially for use with this book, containing quick shortcuts to all of the software we will discuss. It also allows you to easily browse the other book materials installed by the CD-ROM, but we will get to that part later.

The MLCad Interface

To get started, go ahead and click on the Virtual LEGO Launcher icon on your desktop. Next, click the MLCad icon, to load MLCad.

The first window you will see is the LDraw Base Path window (Figure 3-1). MLCad is looking for the LDraw parts library on your computer. Remember that MLCad is an LDraw editor and it needs the LDraw parts to function properly. Note: Initially, it cannot find them. MLCad is only looking in its own directory, as indicated in the Base Path window. The error is shown in the Status window.

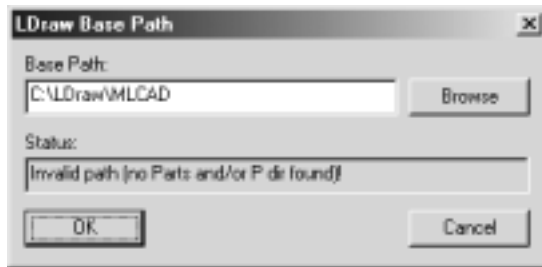


Figure 3-1: MLCad looks for the LDraw parts library upon first launch.

You will need to tell MLCad where to look for the LDraw parts manually. Follow these steps:

1. Click the **Browse** button.
2. A browse window displaying your computer's directory tree will appear. Select the **C:** drive and then the **LDraw** folder. Click **OK**.

Your LDraw Base Path window should now look like Figure 3-2.

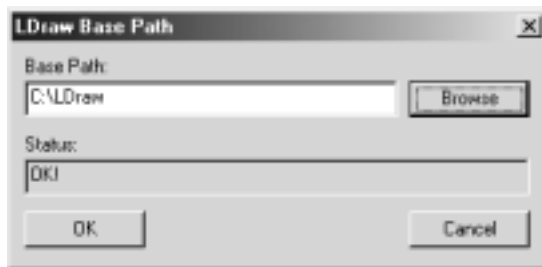


Figure 3-2: LDraw Base Path window checks out OK!

Once you click OK on the LDraw Base Path window, this dialog will appear, asking you if you want to register MLCad's file types (Figure 3-3). Click No; the installer has already properly registered the LDraw file types.

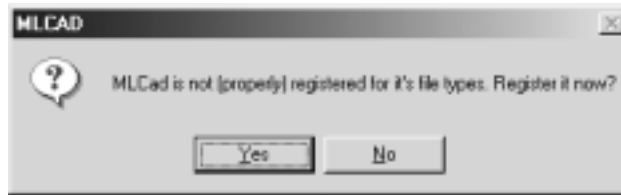


Figure 3-3: Register file types dialog.

Clicking No will bring you into the main MLCad window (Figure 3-4).

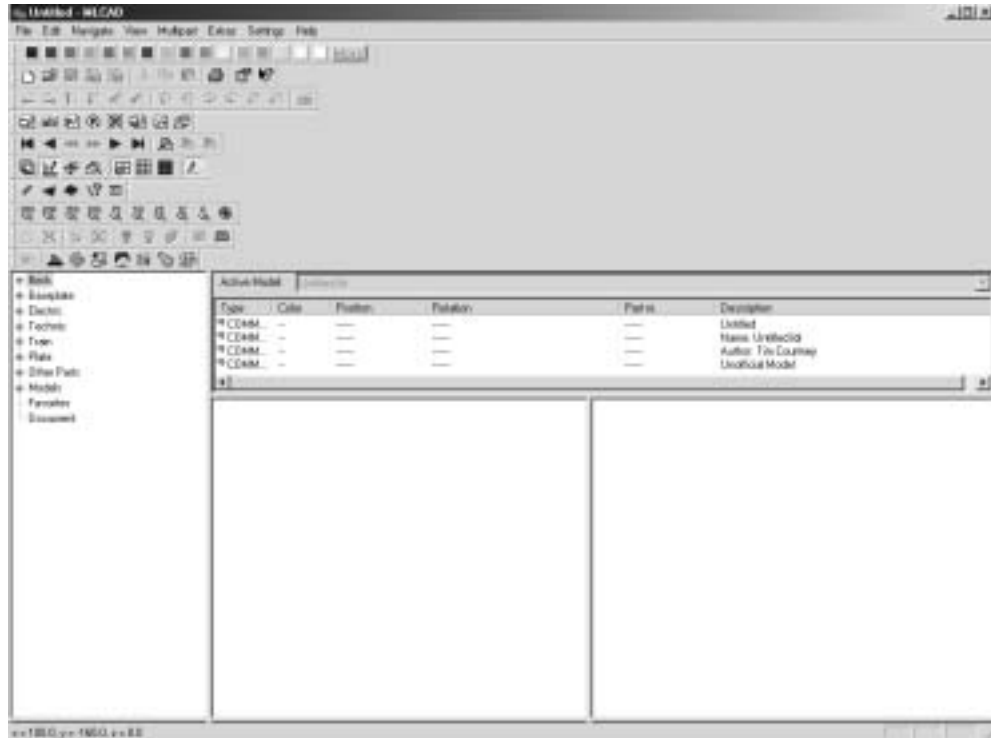


Figure 3-4: MLCad on first launch.

Right now it looks pretty messy. The default locations of the toolbars crowd the rest of the workspace. Click and drag each toolbar to rearrange the workspace so it resembles Figure 3-5.

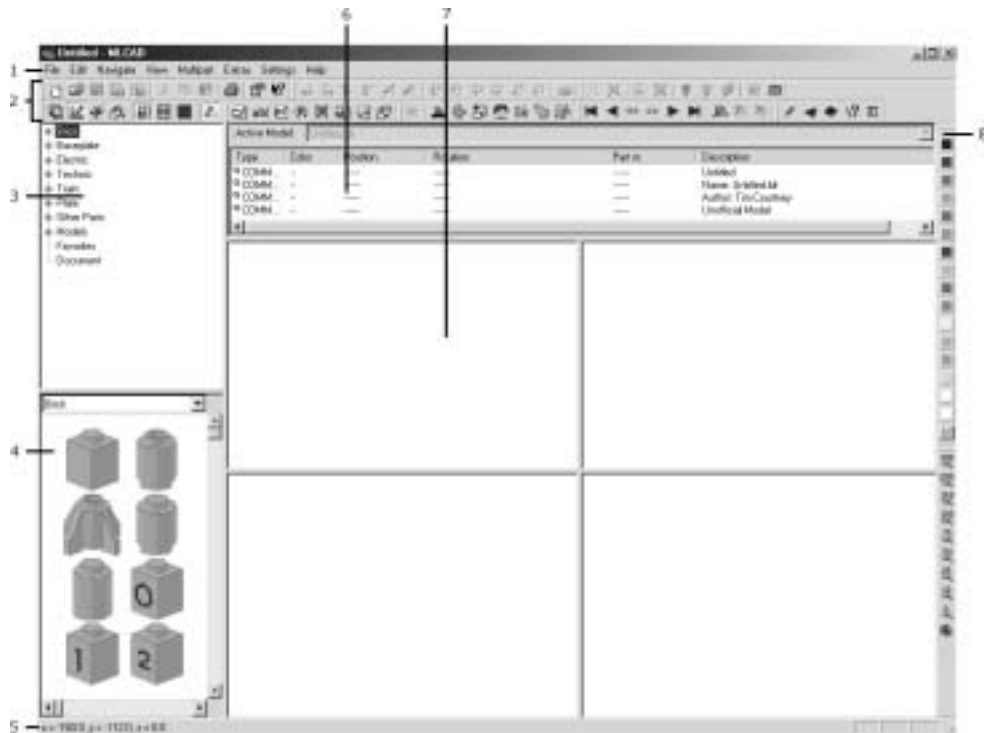


Figure 3-5: The MLCad interface.

Here is a quick orientation of the main MLCad window:

Menus (1): These are standard on all Windows applications, and MLCad is no different.

Toolbars (2): These are the buttons you will learn to use when manipulating your model files.

Parts List (3): This is an expandable/collapsible menu for browsing the LDraw parts library. Parts are broken down into categories and sub-categories. This functions like the directory tree in Windows Explorer.

Parts Preview Window (4): This window shows you which part you are selecting. When you browse through the Parts List, the part that is currently selected displays as the first part in this window. The parts that follow fill the rest of the area.

Status Bar (5): This passes useful information to you, such as where your cursor is located in the 3D geometry plane.

Model File Window (6): This window shows you the raw LDraw file (cleaned up for user-friendliness). Here you will be able to see the actual part lines written as you place pieces on the screen.

Workspace (7): These four views simultaneously display different angles of the current model. You can interact with the parts files here by using your mouse.

Color Palette (8): Here you can select a color for your parts. See more colors by pressing the M button on the bottom of this bar.

Configuring MLCad

Before you begin to build your model, you will need to change a few of the configuration settings in MLCad.

1. Select the **Settings** menu, the **General** tab, then **Change . . . (Settings > General > Change . . .)**.

Figure 3-6 shows you the MLCad Options window. Note that the options have been divided up into groups called General, Rendering, Printing, Document, “Step, Grid, Snap,” and Viewing. These are set apart by the folder tabs near the top of the window. We will not be discussing every pane right now; we only need you to change a couple options for our quick start building session.

2. Change the **Author Name** field to your name.
3. Uncheck **Show Warnings**. This feature can get rather annoying when dealing with multiple versions of parts, or parts that change part numbers. Most of the error messages you will experience are alerts, and mean little to what is on the screen. It is generally best to leave this option off.
4. Uncheck **Register File Types**. We don’t want MLCad taking over the file associations the installer set up.

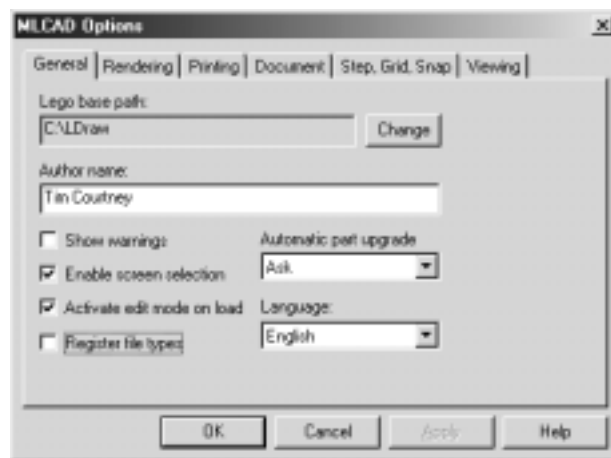


Figure 3-6: Configuring MLCad’s General Options.

5. Click the **Rendering** tab near the top of the window (Figure 3-7).
6. Change Optimisations [sic] to **Maximum**.
7. Change Stud-Mode to **Normal**.
8. Check the **Draw to selected part only** box. This option, when checked, only renders the active file on the screen up until the current selected part. If you have selected a part in the middle of the file sequentially, only a portion of your model will be drawn. This is useful when you are creating building instructions, but it can be inconvenient when you are simply documenting a model.

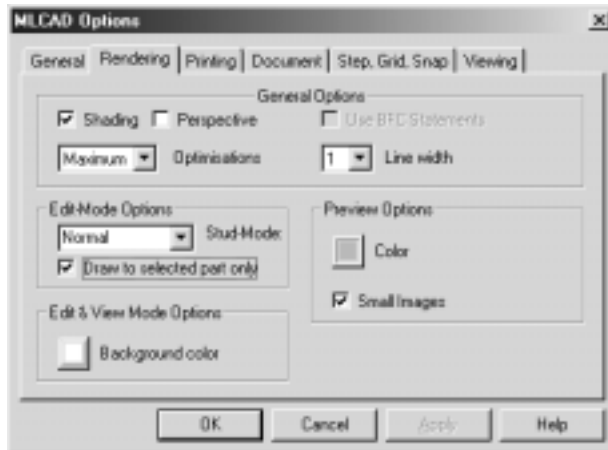


Figure 3-7: Configuring the Rendering Options.

9. In the Preview Options area, click the **Color** box (Figure 3-8). Change the color to **Light Gray**, the color in the top right of the palette. Click **OK** to exit the color palette window.

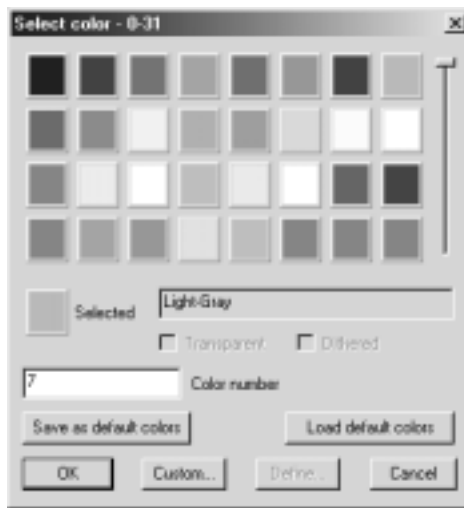


Figure 3-8: Selecting a preview color in the Color Palette window.

10. Finally, click **OK** to exit out of the Options dialog. You are finished there for now.

Whew! Now MLCad is configured and you are ready to dive in and build the sample model. Let the fun begin!

The Pyramid

The pyramid is one of the most basic possible creations. This makes it an ideal first model for new users. To assemble this model, all you have to do is move parts on the three axes, X, Y, and Z, and learn how to rotate a part 90 degrees.

Placing the First Part

Let's start building the pyramid. Here's how to place the first part on the screen.

NOTE *MLCad's Modes*

Before you place the first part, note that MLCad has several "Modes" of operation. You need to make sure you are in Place Mode before you can actually place the first part on the screen. Check to be sure you are in Place Mode by selecting the Settings menu and clicking Place Mode from the list. Now you are free to place the first part. We will talk more about MLCad's modes in Chapter 6.

1. In the Parts List window, click the **plus sign** next to **Brick**. This will expand the Brick category, displaying for you every part that LDraw refers to as a Brick.
We will explain more about parts and the reasons behind their names in a later chapter. For now, just follow along and don't worry about all that stuff; remember this is the quick start chapter!
2. In the Parts List window, scroll down until you find **Brick 2x4** on the list. This is the most basic LEGO part, one of the original parts molded when plastic LEGO bricks hit Europe in the late 1940s.
Notice that the 2x4 brick also appears as the first brick in the Parts Preview pane, directly below the Parts List.
3. Select the **Brick 2x4** entry in the parts window. Now drag and drop it over onto the top-left **Workspace** pane. You can accomplish the same task by dragging the 2x4 brick from the **Parts Preview** pane onto the **Workspace**, if you prefer.

NOTE *A good habit to develop is dragging the first part of each model into the bottom right pane of the Workspace. This is the 3D view window. Dragging the first part into this window places it at the origin (0, 0, 0) by default.*

4. On the Color Palette (far right hand side), click the **Blue** box, second from the top. This changes the brick's color to blue.

Now you have one part placed on the screen. Good job! Let's pause our pyramid-building project for a moment so you can get used to moving a part around on the screen. Be grateful you don't have to mix your own straw to make these bricks!

Moving Parts in the Workspace

There are three main techniques to move parts around in the Workspace area:

- Using the mouse.
- Keyboard shortcuts.
- Element Bar buttons.

Most likely, you will find it easiest to manipulate parts with the mouse. Some find it even more convenient to use a combination of mouse and keyboard when assembling more advanced constructions.

Using the Mouse

This is the most straightforward method of moving parts in MLCad. It literally is as easy as it sounds. Click on a part, drag it to the desired location and release. Go ahead and give it a try—click and drag the 2x4 brick in any pane but the 3D view, and move it around a bit.

NOTE *3D View*

You are probably wondering why you can't drag the part in the 3D view. Or, you may have tried it (even though we told you not to, shame on you!) and noticed it actually rotated your part. By doing this you only changed the VIEW — the angle you are looking at the part from. You did NOT change the actual ANGLE of the part in the file. This is a very useful feature MLCad offers; it allows you to look around the model quickly while building.

*If you want to go back to the original 3D view, **right-click** in the 3D pane, and select **View Angle > 3D** from the menu that pops up.*

Wasn't that fun? You should have noticed the parts didn't glide smoothly; instead they moved across the screen incrementally. This is due to MLCad's built-in Grid system. We will talk about the details of the Grid system a little later. All you need to know right now is that each increment is one-half of a stud, the most basic LEGO unit (a "stud" is LEGO jargon for the round peg on top of a brick or plate; an "antistud" is LEGO jargon for the socket underneath a brick or a plate).

Using the Keyboard

The keyboard can be used to accomplish the same task. The four arrow keys are used to move along the X and Z axes. Home and End (the middle two keys in the group of six keys located above your arrow keys) move the parts up and down respectively along the Y-axis. Left and Right arrows move along the X-axis, Up and Down arrows move along the Z-axis. Go ahead, give this a try; move the part on each axis using the keyboard.

While this method may seem clunky to you at first, it can be useful in certain cases. The mouse is probably easier for you right now though, so file this away and we will revisit it later.

Using the Element Bar Buttons

MLCad's Element Bar accomplishes the same task the mouse and keyboard do. As you can see in Figure 3-9, the arrows on the left-most portion of the bar are for moving parts along the 3 axes. The two horizontal arrows represent the X-axis, the verticals represent the Y-axis, and the angled arrows represent the Z-axis. Give these a try as well.



Figure 3-9: The Element Bar.



It is likely you won't be using the move arrows on the Element Bar. Mouse and Keyboard are so much easier.

We don't have to worry about the rest of the bar yet. To satisfy your curiosity though, the right-most button is for manually entering position and orientation. This is complex, and unless you have an advanced understanding of 3D coordinate planes and 3D matrix math, you won't be likely to use this feature. The group of circular arrows with axes represented is used for part rotation. Please leave these alone for now; we will discuss them later when we have time to go more in-depth.

Placing Additional Parts

Now you understand how to place a part on the screen and manipulate it within the Workspace. It is time to continue building the pyramid.

1. To add another 2x4 to the screen, select **Edit > Duplicate**. Note that the keyboard shortcut for this function is **CTRL+D**. Remember this, as it will come in handy editing models in the future.
2. Move the part so the 2-stud end butts up next to the 2-stud end on the previous part.

3. Duplicate the current 2x4 by pressing **CTRL+D**. For this part, you will want to rotate it on the Y-axis so it turns 90 degrees. Press the **A** key on your keyboard once. The **A** key is MLCad's keyboard shortcut for rotating a part along the Y-axis. You can also use the   buttons on the Element Bar to achieve the same result.
4. Finish assembling the base level of the pyramid by dragging and dropping 2x4 bricks appropriately. Your model should now look like the model in Figure 3-10.

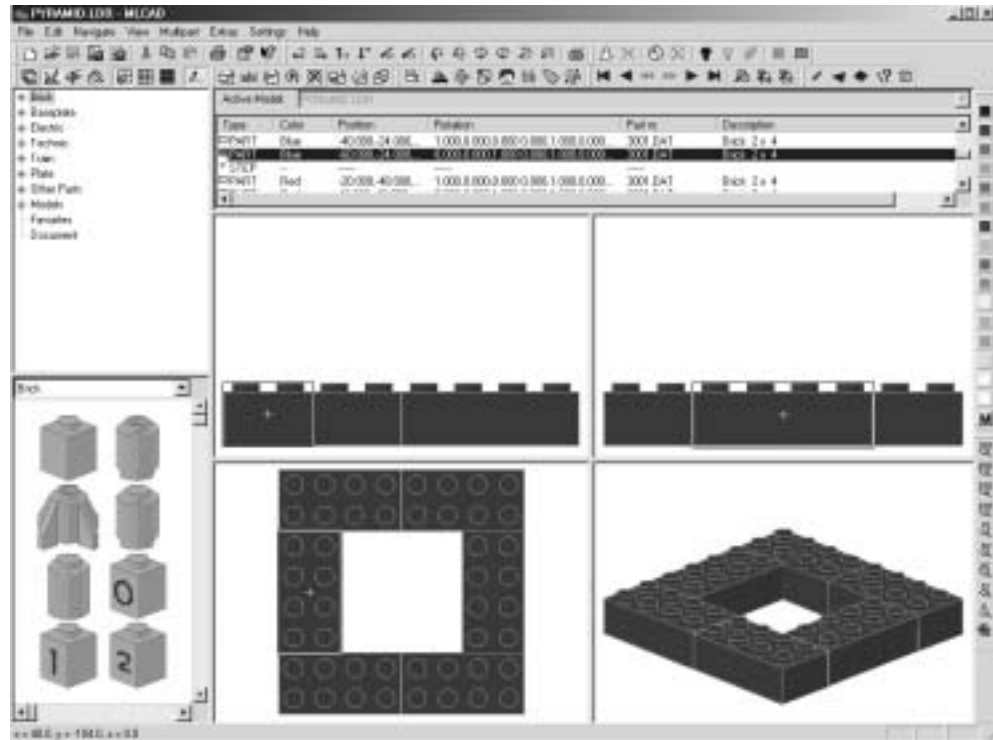


Figure 3-10: The pyramid's first level completed.

CAUTION *Parts Don't Click*

Unlike physical LEGO parts, the LDraw file format does not allow for parts to “snap” together. When you are placing parts, be careful to make sure they are aligned exactly where you want them. You can do this by checking the different view windows against each other. Take notice that even if a part appears to be in place in one view, it may not be where you think it is. Make sure you check all of the views to ensure your selected part is shown in the proper location from all angles. The default views in MLCad are Top, Right, and Front.

NOTE *View Panes and Axes*

Each 2-dimensional view pane in MLCad allows you to view two axes at a time. Top view allows you to view and manipulate along the X and Z-axes, Front view allows for X and Y-axes, and Right view allows manipulation in the Y and Z-axes.

Completing the Pyramid

Now that you know how to place the parts where they need to go for the first level, additional levels should be easy. Go ahead and complete the pyramid. Figure 3-11 shows you the final pyramid model.

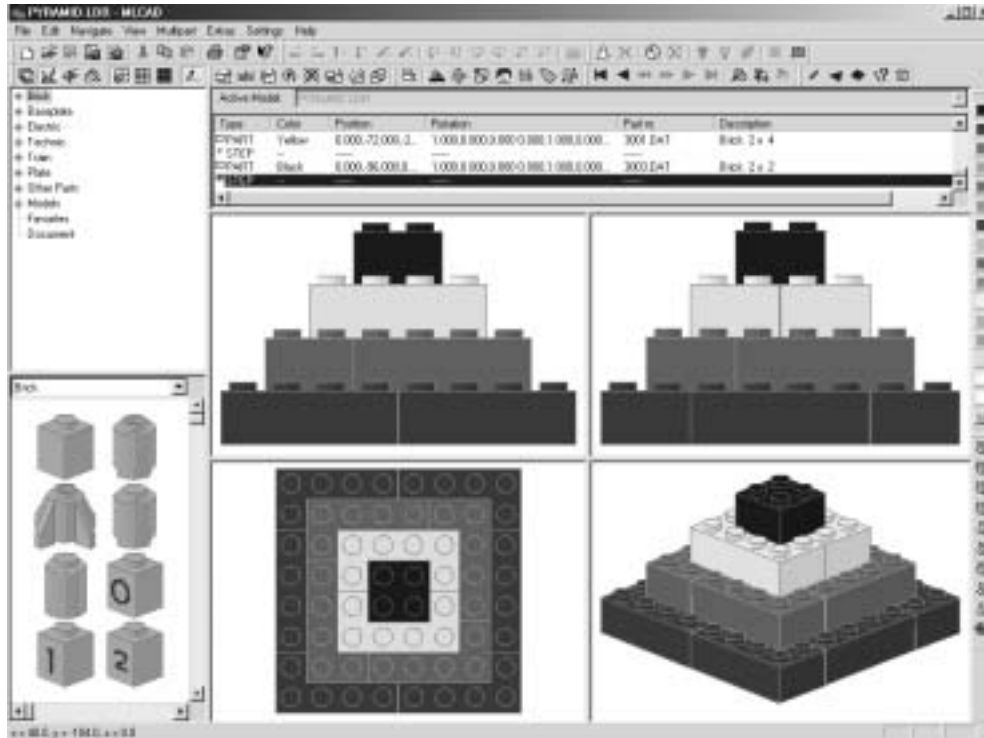


Figure 3-11: The completed pyramid.

Congratulations! You just completed your first LDraw model with MLCad. If you wish, you can save your work by choosing **File > Save**. Save your file in the **C:\LDraw\Models** directory. You will want to keep all of your model files stored here, because several programs use this directory when searching for LDraw model files. It is a smart idea to develop several subdirectories to organize your models in — we’ll discuss that topic more in-depth later in Chapter 11, “Managing Your LDraw Files.”

Summary

In this chapter you have learned the most basic movement techniques for placing parts in MLCad. The model you just completed is just a small taste of what you will be able to accomplish using this book. Remember the amazing Technic models we showed you in the first chapter? Believe it or not, we will teach you all of the skills required to build models with the same intricate level of detail!