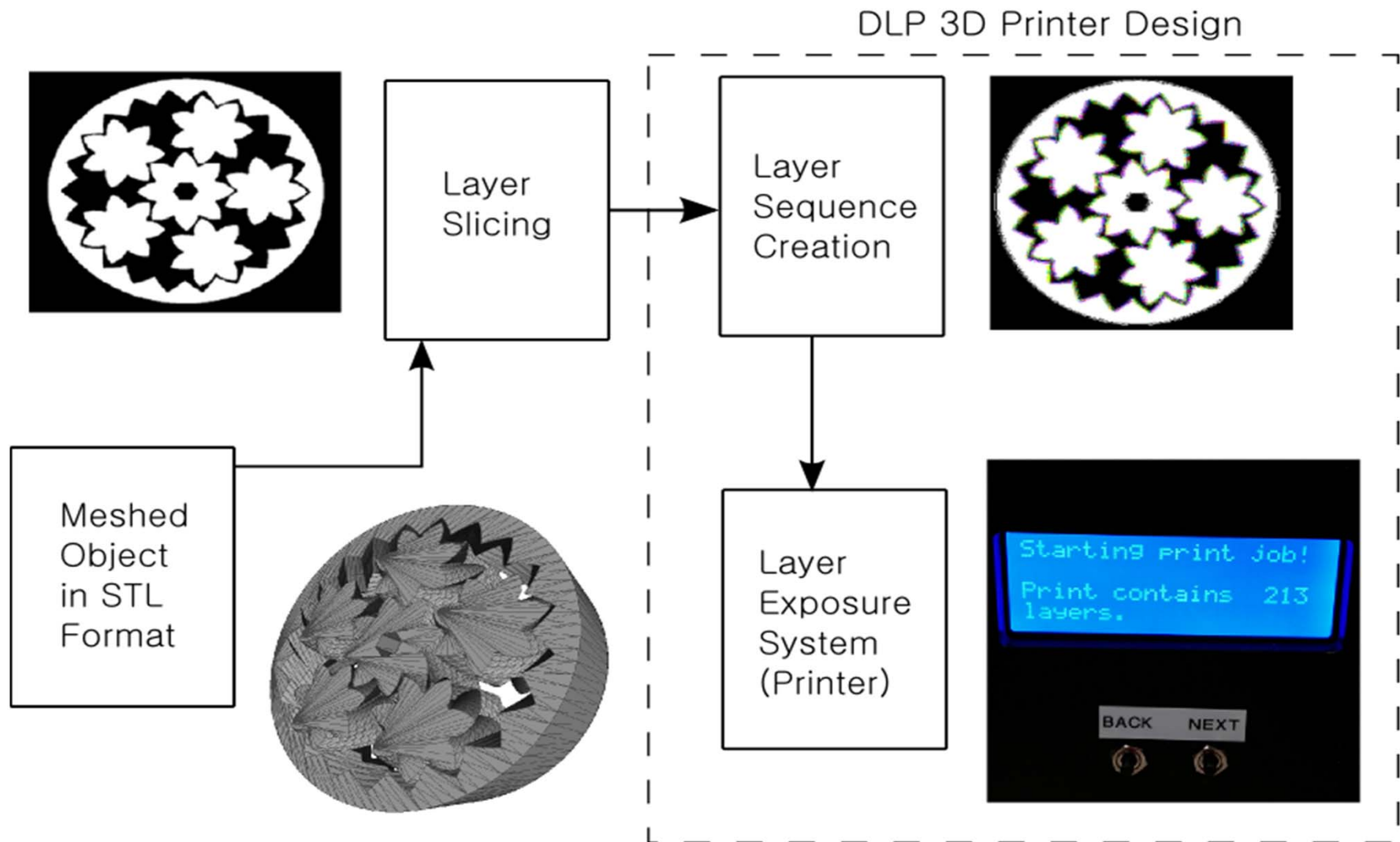




# TIDA-00293 DLP 3D Printer

# DLP-based 3D printing process flow



# Get a cool model to print

- Download a meshed model to print from [www.thingiverse.com](http://www.thingiverse.com)
  - Make sure the model is in .STL format
  - Record, or remember, the file path for the .STL file

# Download the required software



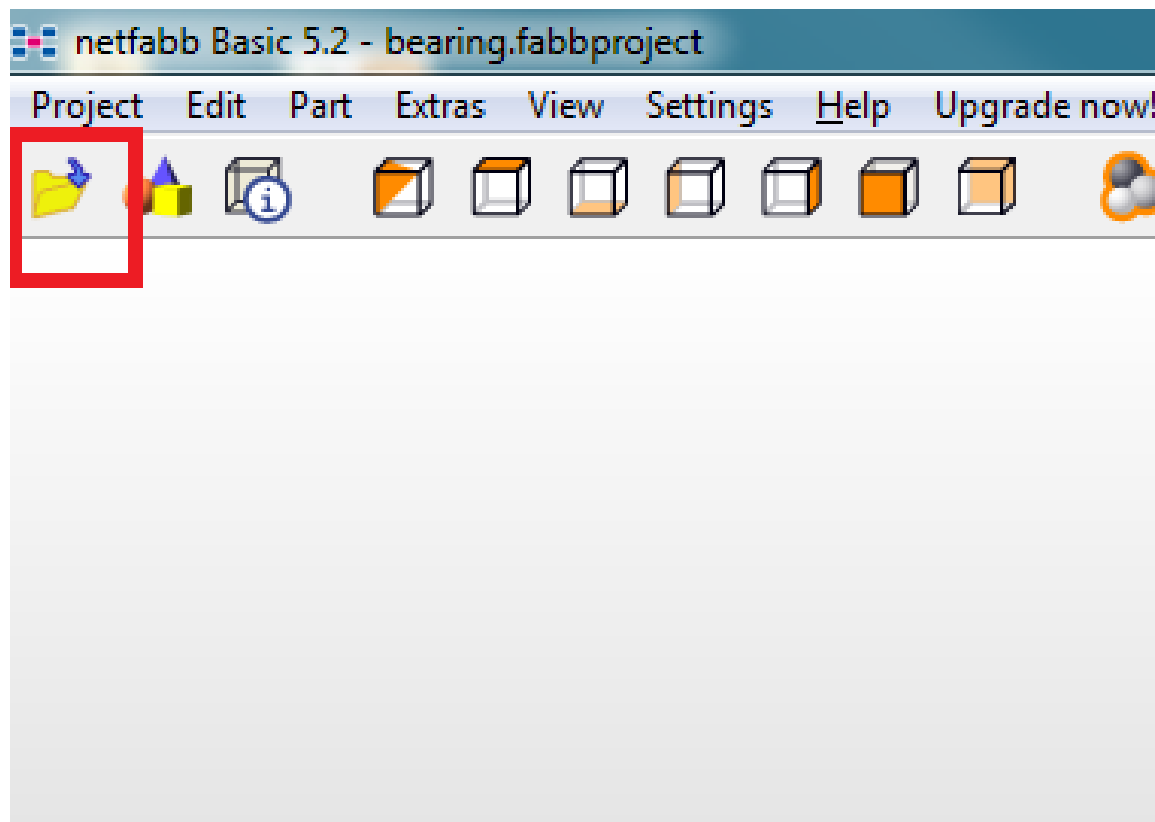
- Freesteel Z-level slicer
- ImageMagick Q8

# Optional software

- MeshLab
  - Download it from this website:  
<https://sourceforge.net/projects/meshlab/files/meshlab/MeshLab%20v1.3.3/>
  - MeshLab lets users manipulate and change meshes
  - Use it to combine two meshes together into a single mesh
- Netfabb
  - Download Netfabb basic here:  
<http://www.netfabb.com/downloadcenter.php?basic=1>
  - Check the overall height of objects by opening them in Netfabb

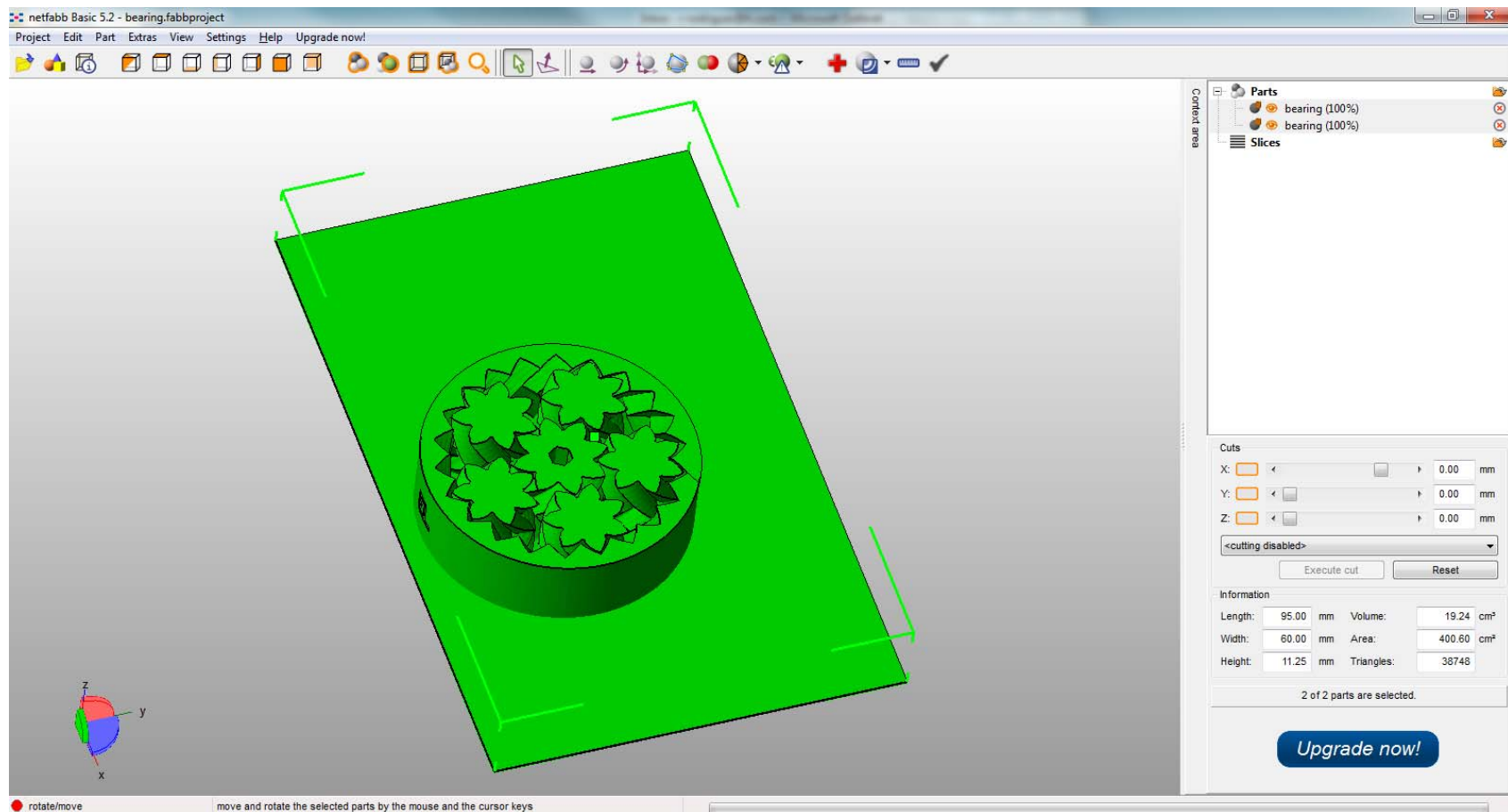
# Opening meshes in Netfabb

- After installing Netfabb, run the program
- Click the Open button



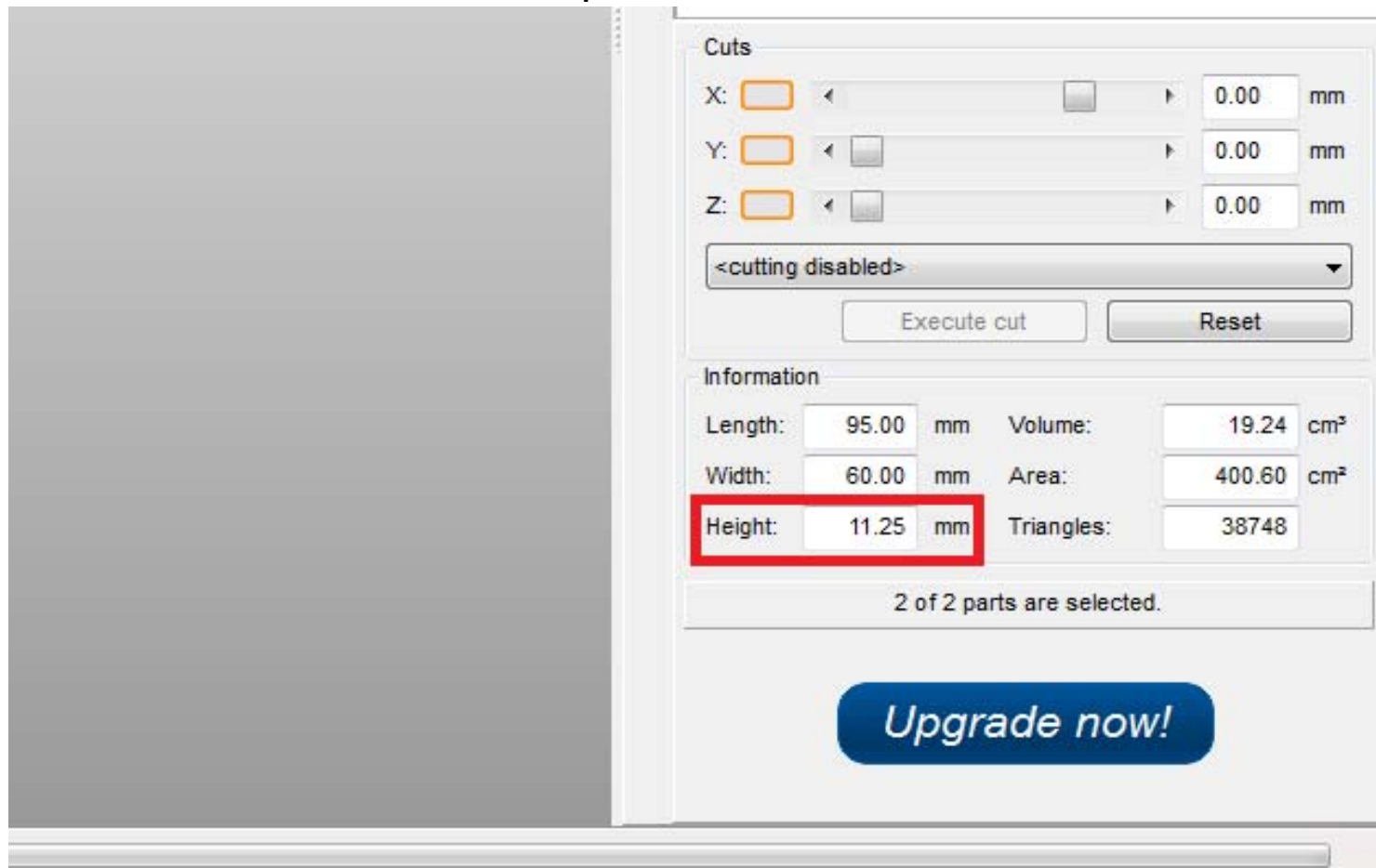
# Opening meshes in Netfabb (con't)

- Browse to the downloaded model and open it



# A piece of information needed from Netfabb

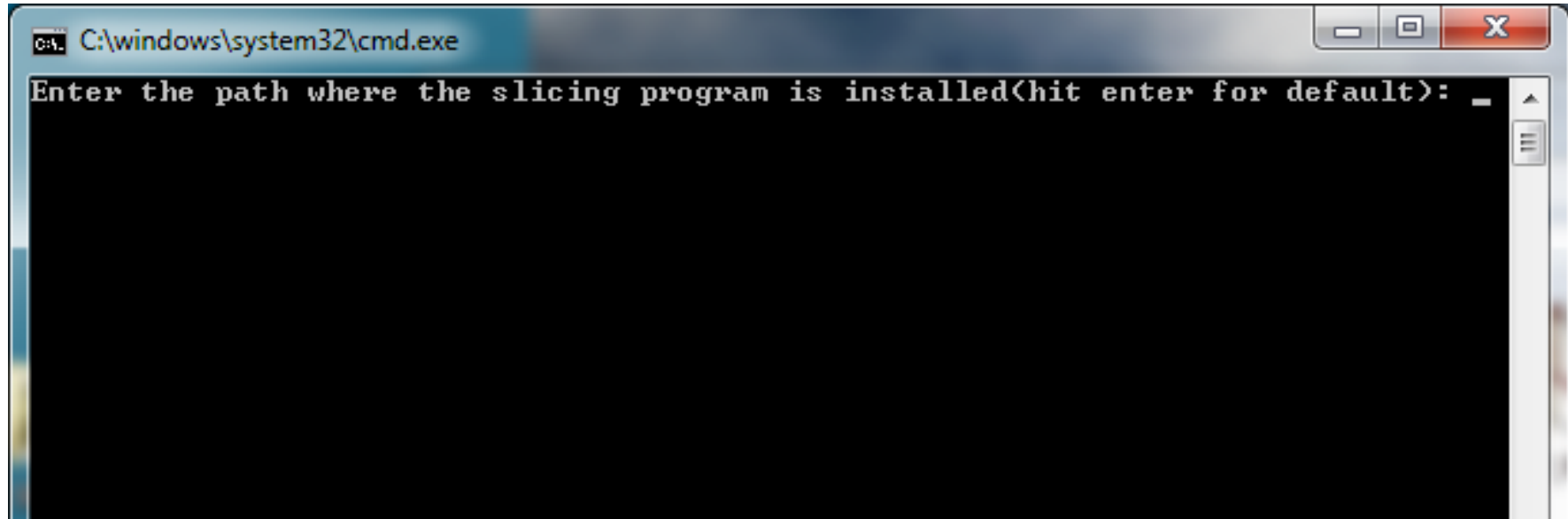
- With the mesh selected, record the height in the lower right hand corner
  - The units don't matter at this point





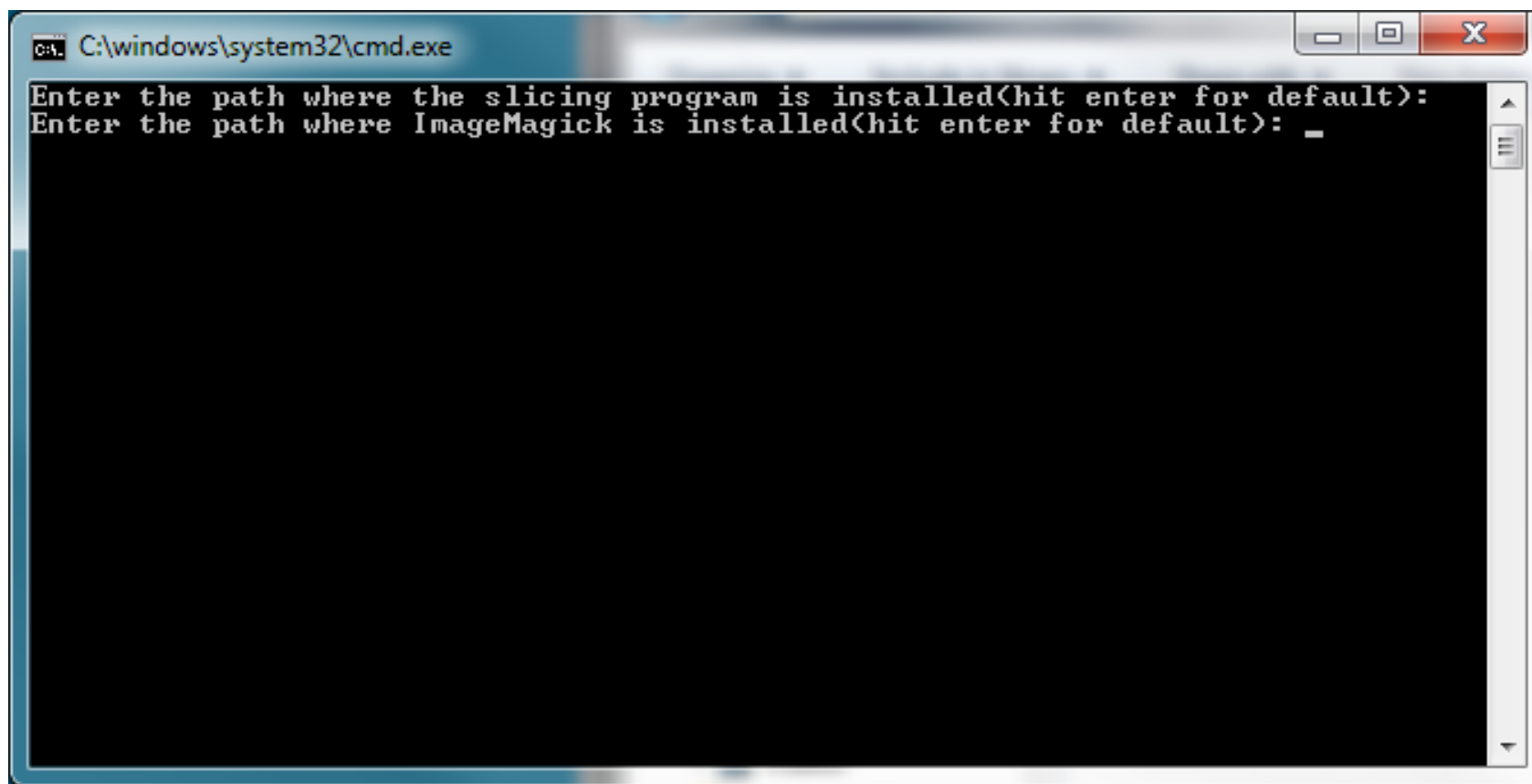
# Ready to slice!

- With Freesteel Z-level slicer and ImageMagick installed
- The first prompt asks for the path to Freesteel.
  - If Freesteel is installed in the default location, just hit the enter key.
  - Otherwise, enter the path where slice.exe exists.



# Path to ImageMagick

- Enter the path to the ImageMagick utility
  - If ImageMagick version 6.8.9 was installed in the default location, hit enter to accept the default path

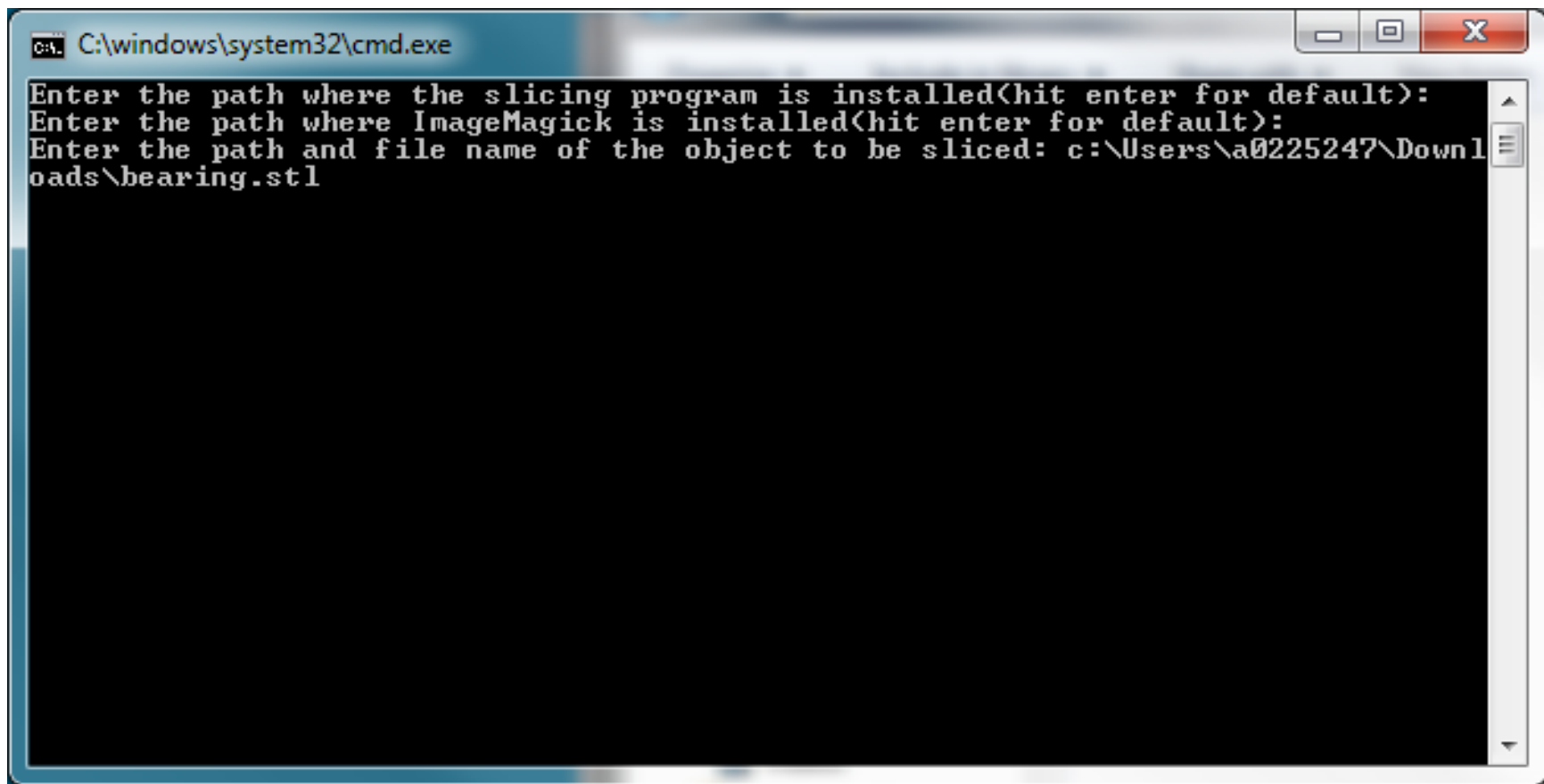


```
C:\windows\system32\cmd.exe
Enter the path where the slicing program is installed(hit enter for default):
Enter the path where ImageMagick is installed(hit enter for default): _
```

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# Path to the downloaded model

- Now enter the path and file name for the downloaded model
  - Use the tab button to autocomplete directory and file names

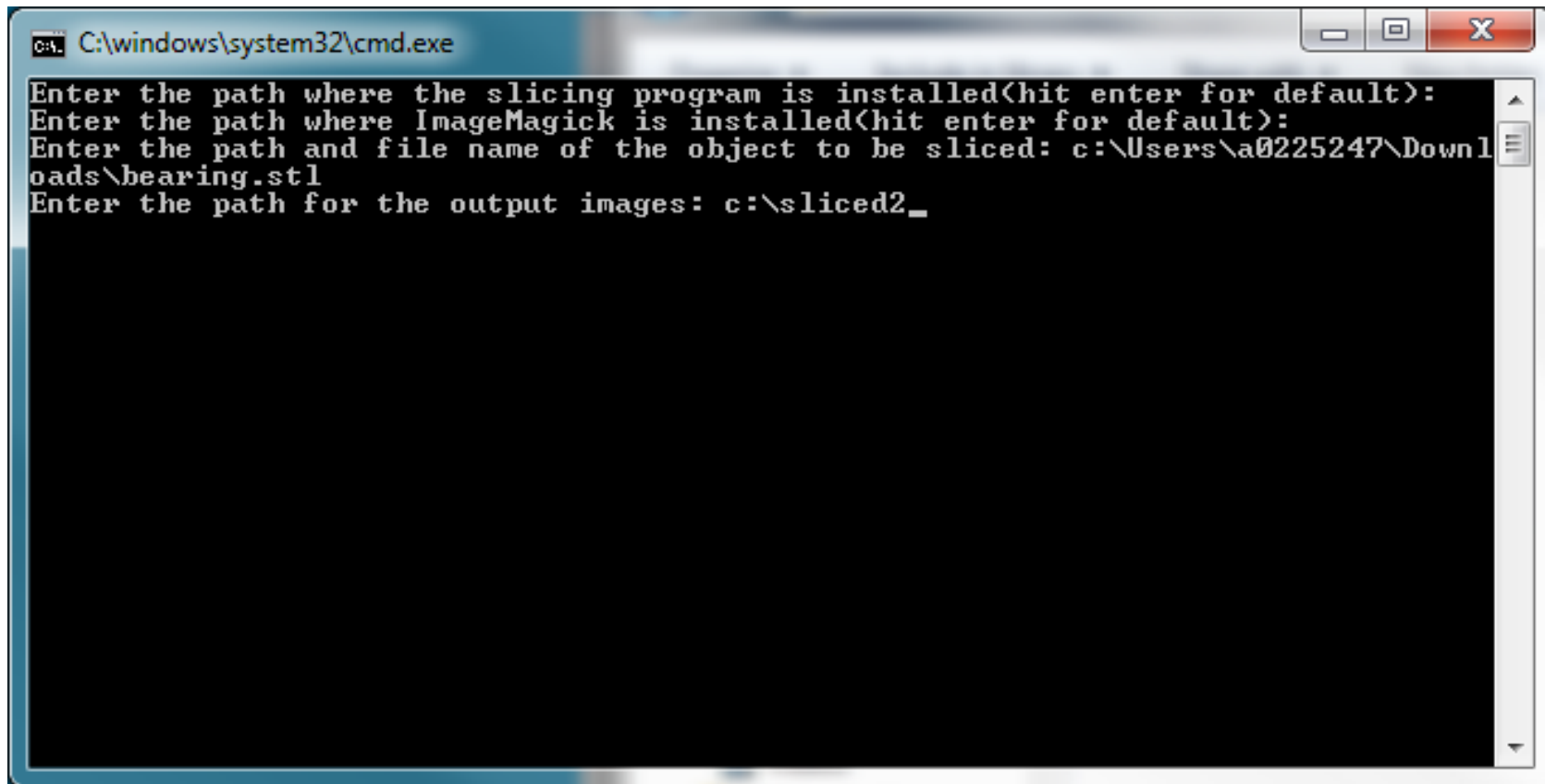
A screenshot of a Windows command prompt window titled "C:\windows\system32\cmd.exe". The window has a black background with white text. The text inside the window reads: "Enter the path where the slicing program is installed(hit enter for default):", "Enter the path where ImageMagick is installed(hit enter for default):", and "Enter the path and file name of the object to be sliced: c:\Users\A0225247\Downloads\bearing.stl". The text is displayed in a monospaced font. The window has standard Windows window controls (minimize, maximize, close) in the top right corner.

```
C:\windows\system32\cmd.exe
Enter the path where the slicing program is installed(hit enter for default):
Enter the path where ImageMagick is installed(hit enter for default):
Enter the path and file name of the object to be sliced: c:\Users\A0225247\Downloads\bearing.stl
```

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# Output path definition

- Enter the directory where the sliced images will be placed
  - The directory should be empty or non-existent
  - Windows will create directories as necessary

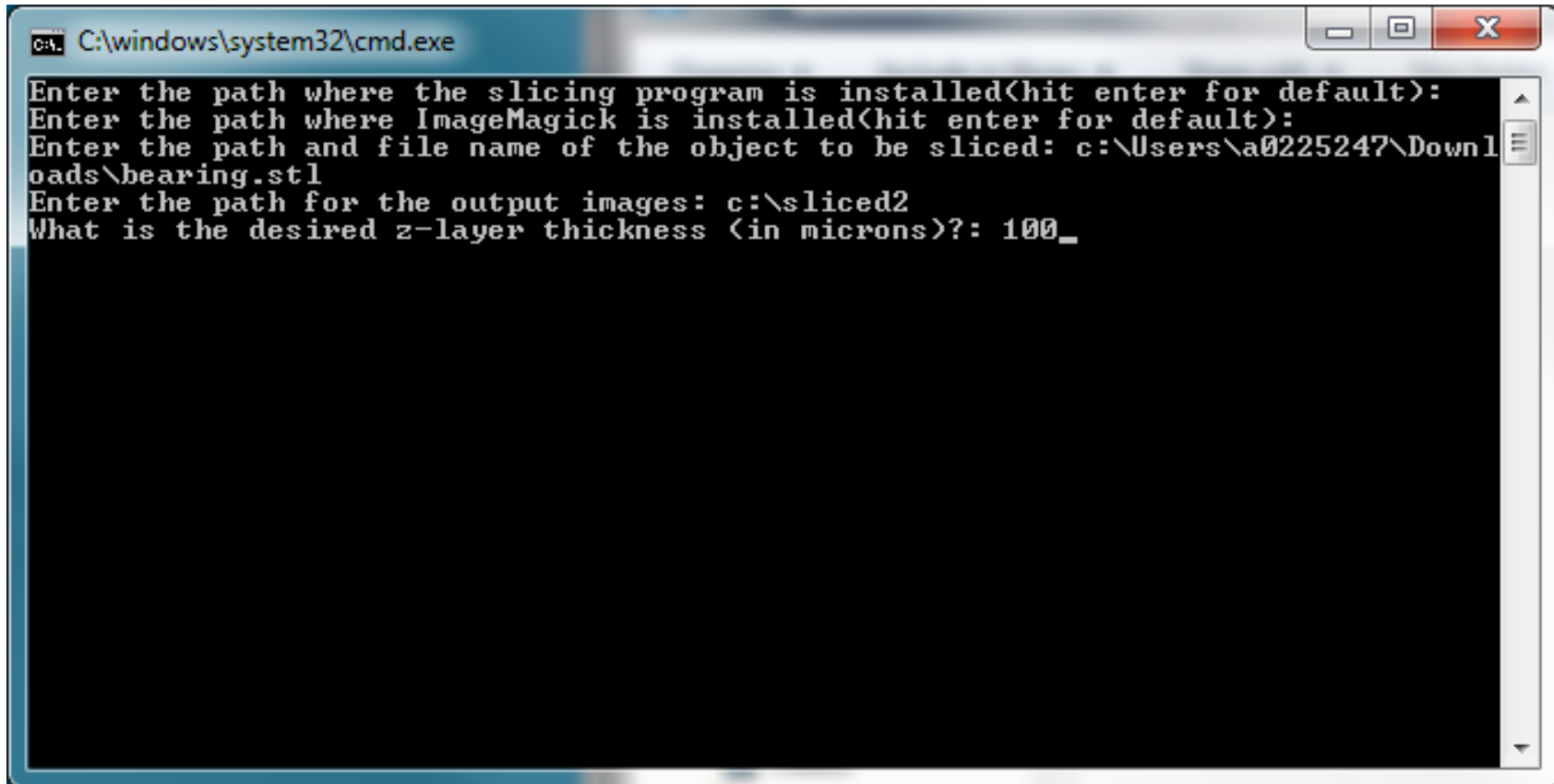
A screenshot of a Windows command prompt window titled "C:\windows\system32\cmd.exe". The window has a black background with white text. The text shows the following prompts and inputs:  
Enter the path where the slicing program is installed<hit enter for default>:  
Enter the path where ImageMagick is installed<hit enter for default>:  
Enter the path and file name of the object to be sliced: c:\Users\ao225247\Downloads\bearing.stl  
Enter the path for the output images: c:\sliced2\_  
The cursor is at the end of the last line.

```
C:\windows\system32\cmd.exe
Enter the path where the slicing program is installed<hit enter for default>:
Enter the path where ImageMagick is installed<hit enter for default>:
Enter the path and file name of the object to be sliced: c:\Users\ao225247\Downloads\bearing.stl
Enter the path for the output images: c:\sliced2_
```

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# Z-layer thickness

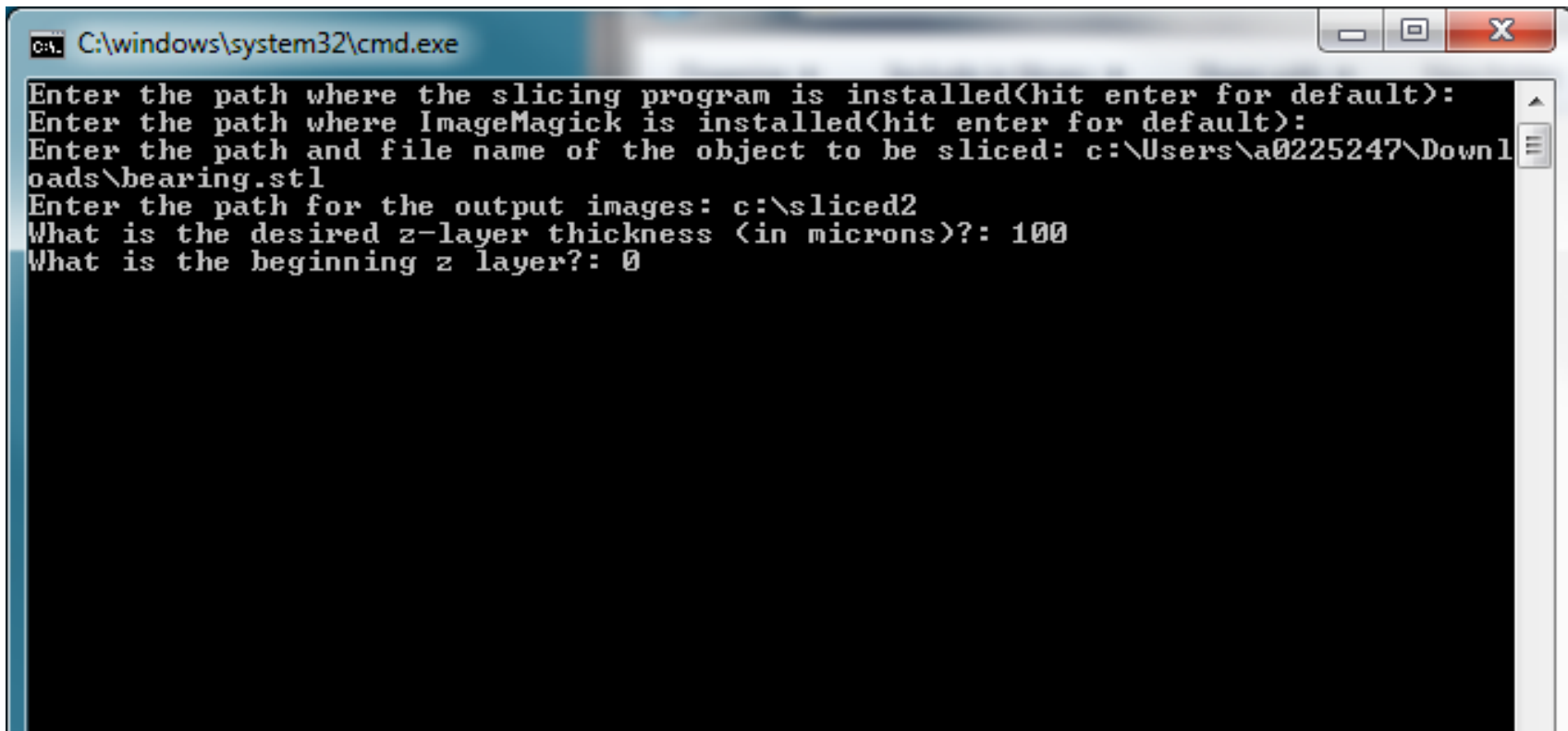
- Enter the desired thickness of the cross-sectional layers
  - Acceptable values are 1 to 999



```
C:\windows\system32\cmd.exe
Enter the path where the slicing program is installed(hit enter for default):
Enter the path where ImageMagick is installed(hit enter for default):
Enter the path and file name of the object to be sliced: c:\Users\ao225247\Downloads\bearing.stl
Enter the path for the output images: c:\sliced2
What is the desired z-layer thickness (in microns)?: 100_
```

# Beginning Z-layer

- Entire the first layer to be sliced
  - Typically this value is 0.
  - There may be times where you desire to start slicing and object from another point.

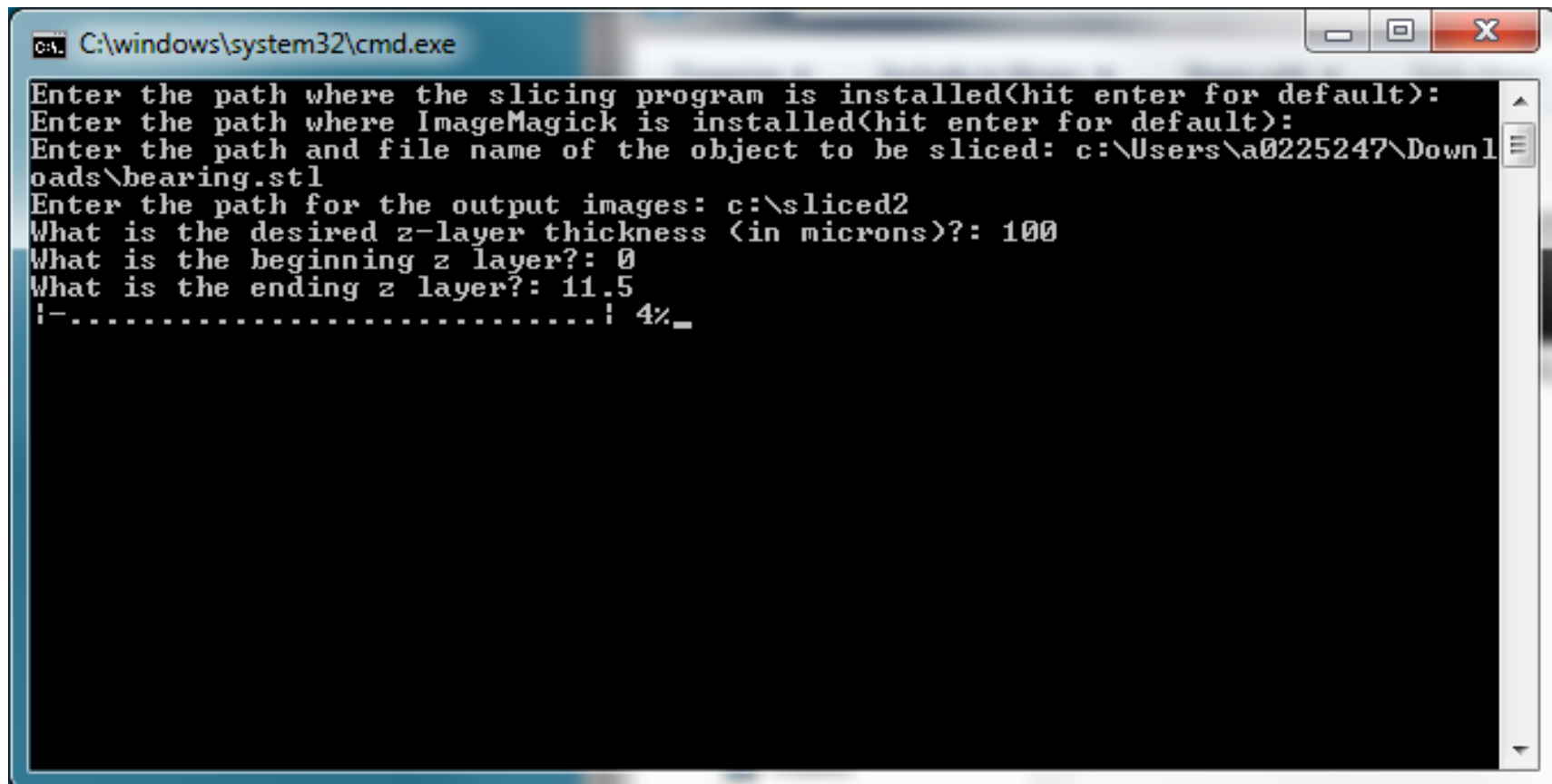
A screenshot of a Windows command prompt window titled "C:\windows\system32\cmd.exe". The window contains the following text:

```
Enter the path where the slicing program is installed(hit enter for default):  
Enter the path where ImageMagick is installed(hit enter for default):  
Enter the path and file name of the object to be sliced: c:\Users\ao225247\Downloads\bearing.stl  
Enter the path for the output images: c:\sliced2  
What is the desired z-layer thickness (in microns)? : 100  
What is the beginning z layer? : 0
```

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# Last Z-layer

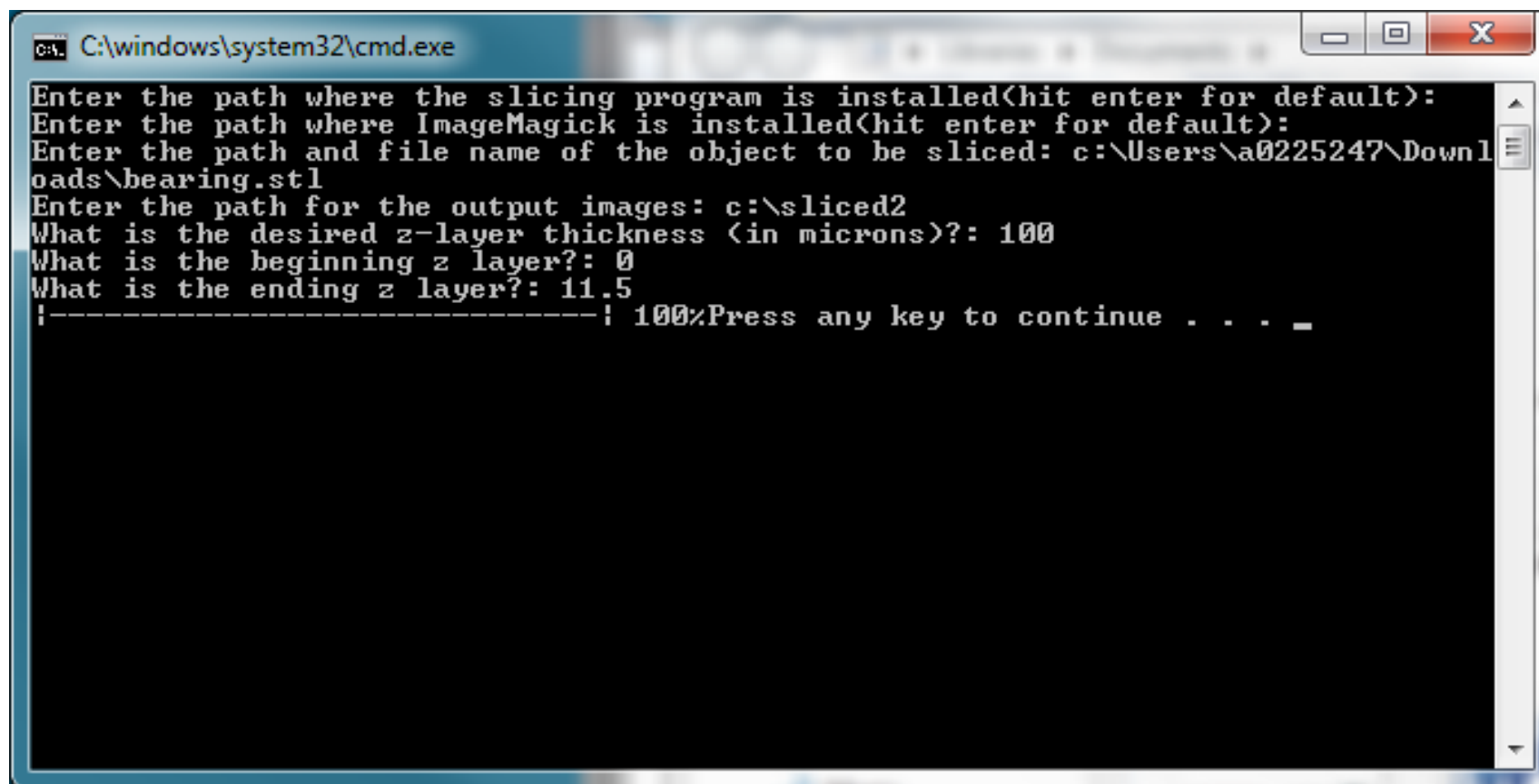
- This is the upper limit for the slicer
  - Enter the number recorded earlier, from Netfabb, in order to slice the entire object



```
C:\windows\system32\cmd.exe
Enter the path where the slicing program is installed<hit enter for default>:
Enter the path where ImageMagick is installed<hit enter for default>:
Enter the path and file name of the object to be sliced: c:\Users\ao225247\Downloads\bearing.stl
Enter the path for the output images: c:\sliced2
What is the desired z-layer thickness (in microns)? : 100
What is the beginning z layer? : 0
What is the ending z layer? : 11.5
|-.....| 4%_
```

# Wait patiently....

- Wait until the prompt “Press any key to continue . . .” appears
  - Press any key to close the batch script window



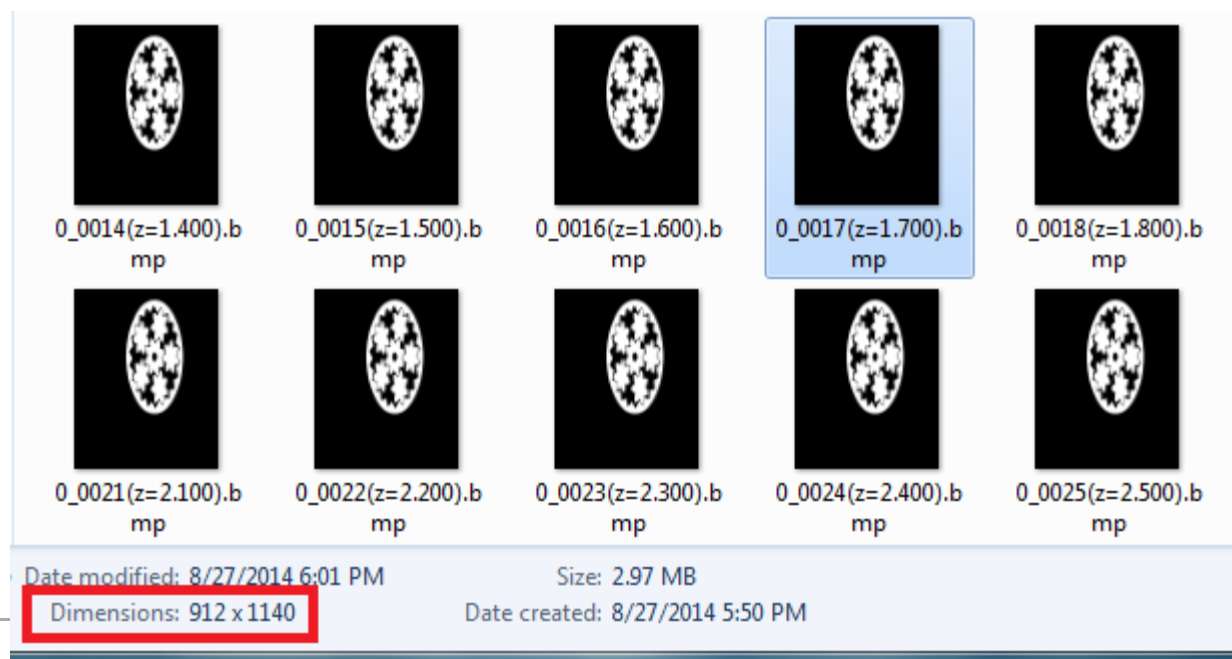
```
C:\windows\system32\cmd.exe

Enter the path where the slicing program is installed(hit enter for default):
Enter the path where ImageMagick is installed(hit enter for default):
Enter the path and file name of the object to be sliced: c:\Users\ao225247\Downloads\bearing.stl
Enter the path for the output images: c:\sliced2
What is the desired z-layer thickness (in microns)? : 100
What is the beginning z layer?: 0
What is the ending z layer?: 11.5
!-----! 100%Press any key to continue . . . _
```



# Check the output files

- Using file explorer, navigate to the output directory specified in the batch script
- Verify that the images were created and are resized to 912x1140
  - 912x1140 is the native resolution of the DLP4500 DMD
  - The images must be 912x1140 or the GUI will not upload them to the printer



# You are now ready to print!

- The output directory is now the input to the DLP 3D Printer GUI!

