

Job No: 14**Duration:** 8H**Job Title:** Rendering Basics**Objective:**

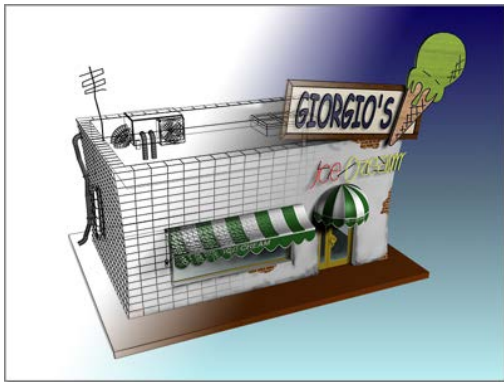
Able to create images that can be delivered to their specific needs. Also render high quality images in a cost-effective amount of time.

Students should be able to understand the usage of the following:

- Mental Ray Concepts
- Render Setup/Dialog
- Rendered File Types
- Render Still Images
- Render An Animation

Introduction:

Rendering shades the scene's geometry using the lighting you've set up, the materials you've applied, and environment settings, such as background and atmosphere. You use the [Render Setup dialog](#) to render images and animations and save them to files. The rendered output appears in the [Rendered Frame Window](#), where you can also render and do some setup.



Rendering "fills in" geometry with color, shadow, lighting effects, and so on.


Bitmap paging is always active and is managed automatically, enabling you to render scenes with large bitmaps, a large number of bitmaps, or very high resolution images (for example, 5,000 x 5,000 pixels or more).

Mental Ray Concepts:

Mental ray is the “behind the scenes” mathematical calculations engine that processes your 3D Max scenes into a 2D image that can be viewed by anyone with a computer, or printed for off-line viewing.


Mental ray is a product of Mental Images, a division of the graphics card manufacturer, NVIDIA. Mental ray has been included in 3D Max for a number of years and is constantly being developed and improved to make it easier for generating high-quality, efficient rendered images in a reasonable amount of time.

Render Setup Dialog:

 Command entry: Rendering menu > Render Setup

 Command entry: Main Toolbar >  (Render Setup)

 Command entry: Rendered Frame Window >  (Render Setup)

 Command entry: Keyboard > F10

Rendering creates a 2D image or animation based on your 3D scene. It shades the scene's geometry using the lighting you've set up, the materials you've applied, and environment settings such as background and atmosphere.

Rendered File Types:

Rendering and saving files, either still images or animations, are necessary for sharing progress files. There are a number of file types available within 3D Max for saving rendered images. Some of the more common file types for still images are as follows:

Jpg – jpg or jpeg stores still image with “lossy” compression techniques. The stored files are small in size, but have reduced quality.

tif and tga – Similar file types of moderate compression with high quality.


png – Portable Network Graphics file have high compression and high quality making them a good choice for 3D Max users.

exr – Special still image files containing accessible information for post processing.

A good choice of file type for still images (and animations) in 3D Max is the png file. It combines high quality with good compression for efficient storage. Exr files are very large, high-quality files that contain information about color, shadows, reflection.

Render Still Images:


To render a still image:

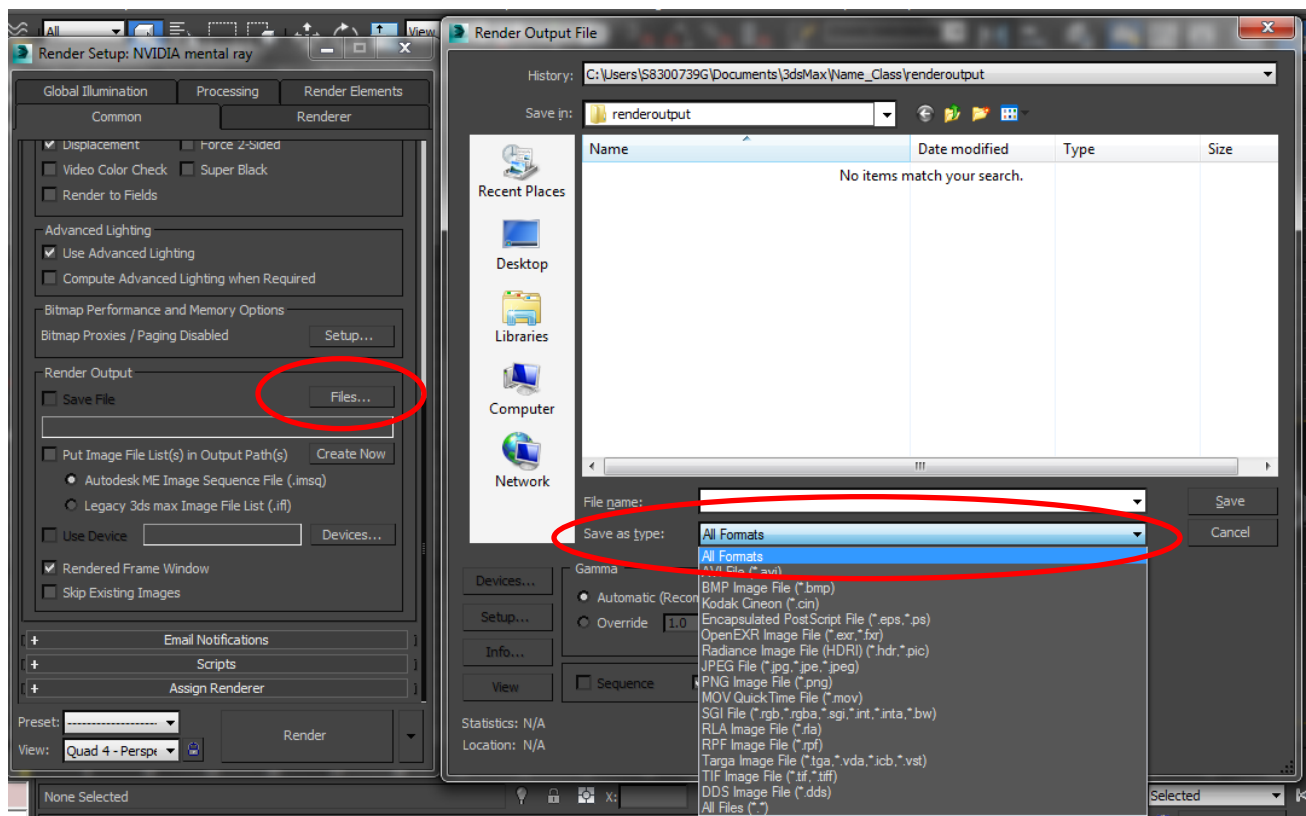
1. Activate the viewport to render.
2. Click  (Render Setup).

The Render Setup dialog opens, with the Common panel active.

3. On the Common Parameters rollout, check the Time Output group to make sure the Single option is chosen.
4. In the Output Size group, set other rendering parameters or use the defaults.
5. Click the Render button at the bottom of the dialog.


By default, rendered output appears in the [Rendered Frame Window](#).

Tip To render a view without using the dialog, click  ([Render Production](#)).



Render An Animation:

To render an animation:

1. Activate the viewport to render.
2. Click  (Render Setup).

The Render Setup dialog opens, with the Common panel active.

3. On the [Common Parameters rollout](#), go to the Time Output group and choose a time range.
4. In the Output Size group, set other rendering parameters or use the defaults.
5. In the Render Output group, click Files.
6. On the [Render Output File dialog](#), specify a location, name, and a type for the animation file, and then click Save.

Typically, a dialog appears that lets you configure options for the chosen file format. Change settings or accept the defaults, and then click OK to continue.

The Save File checkbox turns on.

7. Click the Render button at the bottom of the dialog.

If you set a time range and do not specify a file to save to, the animation is rendered only to the window. This can be a time-consuming mistake, so an alert warns you about it.

More information on Animation rendering:

Rendering multiple frames for a complete animation can be time consuming, even on a fast machine, because each frame is individually processed. Realistic materials, shadow casting, and other factors can slow the process as well.


Set up the scene:

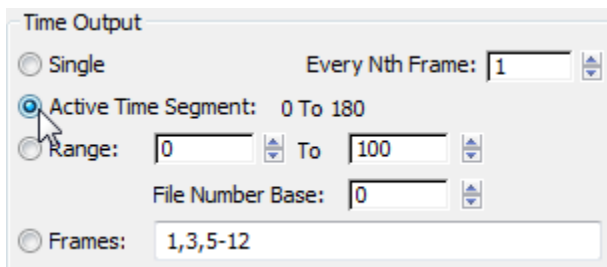
- On the Quick Access toolbar, click  (Open File) and open your saved animation, if located in the `\scenes\startup` folder.

If you saved your completed files to a folder other than `\scenes\startup`, when you open one of your files you might encounter messages about missing files. If you run into this problem, click the Browse button on the Missing External Files dialog. This opens the Configure External File Paths dialog. Click the Add button. Use the Choose New External Files Path dialog to navigate to the folder where you loaded the original file, and then click Use Path. Click OK, and then click Continue.

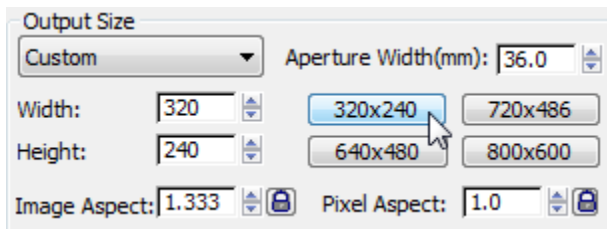
Render your animation:

To render a simple animation. The rendering time is probably under 15 minutes or more, depending on the speed of your machine.

1. On the main toolbar, click  (Render Setup).
3ds Max opens the Render Setup dialog.
2. In the Time Output group, choose Active Time Segment. (If you left the setting at Single, just the currently displayed frame would render.)

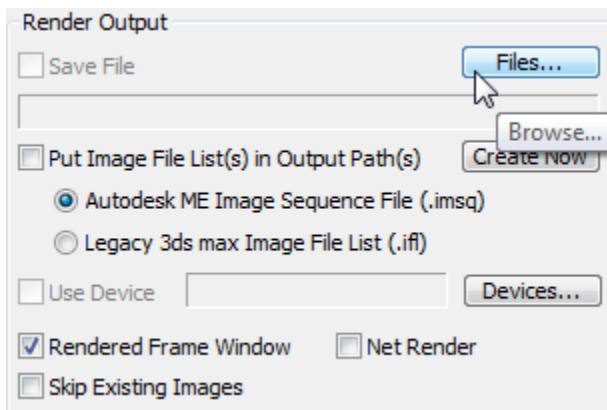


3. In the Output Size group, change the default (640 x 480) to 320 x 240.



This smaller size has only one-quarter the area of the default, making it much faster to render.

4. In the Render Output group, click the Files button. (You might have to scroll down in order to see this control.)



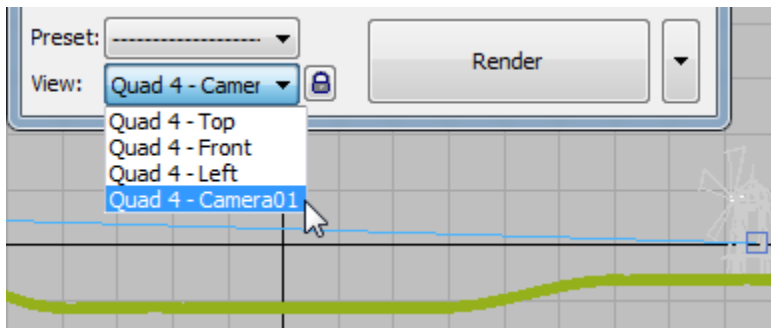
5. On the Render Output File dialog, name your animation **itewest.avi**. Click Save to save the animation to the default folder (usually *renderoutput*).

Warning You must either add the extension *.avi* in the file name, or else select AVI as the file type. If you don't tell the program what type of animation format to save in, the rendering won't work.

6. On the AVI File Compression Setup dialog, do the following:
 - Choose a codec (video compressor). There are different codecs you can choose. The available choices on your system depend on which version of Windows you are using, and how your system has been set up.
 - If the Quality slider is active, set it to a high value: between **90** and **100**.
For some codecs, the slider is not active: In this case, the code has only one quality level, which you cannot change.
 - When you have chosen the codec and set its options, click OK.

On the Render Setup dialog, Save File is now on and the output field shows the location of *itewest.avi*.

7. At the bottom of the Render Setup dialog ➤ View list, choose Camera01.



Always check to be sure you're rendering the right viewport.
In most cases, you will render the camera viewport.

8. Click Render to begin the rendering process.
Watch a few frames to make sure that the rendering gets off to a good start. The Time Remaining estimate gives you an idea of how long the rendering will take.

Play the rendered animation:

1. When your animation is finished rendering, choose Rendering menu ► View Image File.
Navigate to the `\sceneassets\animations` subfolder.
2. Highlight `itewest.avi` and click Open to display the Media Player.
3. In the Media Player, play your animation.

Summary:

You have learned how to find your way around the 3ds Max user interface while creating an animated scene. You now know how to navigate the viewports, create simple objects using primitives, and assign materials to them. You've also learned how to move objects as well as animate and render your animation.