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Autodesk Certified User Exam Objectives

3ds Max

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Target Audience

The Autodesk Certified User (ACU) 3ds Max exam demonstrates competency in 3D modeling and animation. The exam covers the basic use of the 3ds Max software as well as basic computer modeling and animation practices. An individual earning this certification has approximately 150 hours of instruction and hands-on experience with the product, has proven competency at an industry entry-level, and is ready to enter the job market.

Candidate Description

A successful candidate can create and set a project, navigate the user interface, and create polygon-based models. The successful candidate can also unwrap a model, rig the model with bones, and animate the model. The successful candidate can create materials and apply them, add cameras, and light and render their scenes. He/she has a good knowledge of proper topology and should be able to troubleshoot their models, rigs, and animations. Furthermore, the minimally qualified candidate can function at a junior level under the supervision of a more experienced person.

Prerequisites

It is expected that all candidates will have a general understanding of:

- Basic computer skills
- How to navigate the user interface and workspaces
- Understand and locate software preferences
- 3D perspectives
- The Help system within 3ds Max

Certified User

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Objective Domain

Some of the topics and features of the software that may be covered in the exam are listed below each objective.

Note: Within the context of this exam series, all references to "create, select, manage, etc." indicate "know how to create, select, manage, etc."

1. Scene Management

1.1 Set up a project

1.1.a Use the Project Window

i.Define a project and setting paths and folders

1.1.b Create a new project

i. Empty and default projects

ii. Create from current

1.1.c Set the active project

1.2 Setup the scene preferences

1.2. Change the grid spacing

a Set the scene units

1.2. b

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1.2.c Set the display units

1.2.d Set the scene frame rate

1.3 Manage scene objects

1.3.a Organize objects

i. Use the Scene Explorer, selection sets, and the Display panel

ii. Select, group, and parent

iii. Use the Layer Explorer to Show/Hide Layers, Freeze/Thaw Layers, and Add/ Delete objects from layers

1.3.b Navigate and rearrange hierarchies in the Scene Explorer

1.4 Modify the properties of one or more objects

1.4.a Change multiple objects' properties

i.Differentiate between Instance, Copy, and Reference

1.4.b Modify object parameters

i. Command panel, Creation panel

ii. Size, segment, etc.

1.5 Manipulate objects' transformations and pivot point

1.5.a Use the Transform tools for precision transformation

i. Specify a Reference Coordinate System

1.5.b Transform multiple objects using the Align tool

1.5.c Create multiple objects using the Array tool

1.5.d Duplicate objects using the Mirror tool

1.6 Change viewport display

1.6.a Change viewport shading

1.6.b Change viewport lighting

1.6.c Determine poly count

2. Modeling

2.1 Create a polygon primitive

2.1.a Create primitives

2.1.b Manipulate the parametric properties

2.1.c Apply modifiers

2.2 Edit polygon surfaces

2.2.a Convert to editable poly

2.2.b Identify polygon sub-objects

2.2.c Add polygon sub-objects

i. Insert Loop, Offset Edge, Chamfer, Cap, and Attach/Detach

2.2.d Manipulate polygon sub-objects to modify geometry

i. Move, rotate, and scale

ii. Switch between various object and sub-object modes

iii.Extrude, bevel, bridge, and add divisions

iv. Utilize see-through mode

v. Check the polygon normal and flip it if necessary

vi.Cut, Target Weld, and Connect.

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2.2.e Modify smoothing groups
i.Assign

polygons to smoothing group

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2.3 Use the modeling and selection tools

2.3. Utilize the Symmetry modifier

a Illustrate uses of Soft Selection

2.3. *i.May include changing Soft Selection parameters.*

b 2.3.c Perform object operations

i.May include Attach/Detach, MSmooth, and Boolean.

3. UVW Coordinates

3.1 Configure Basic UVW Projections using the UVW Map Modifier

3.1.a Apply different mapping types

i.May include Box, Planar, Cylindrical, and Spherical.

3.1.b Change properties of UVW projections

3.2 Use the Unwrap UVW modifier

3.2.a Describe UVW sub-objects

i.May include identifying a UV Element and using the Select by Element toggle.

3.2.b Transform a UVW Element

i.May include Cut, Stitch, Unfold, Relax, Layout, and Weld.

3.2.c Utilize UVW manipulation aids

i.May include assigning CheckerPattern and showing distortion.

4. Materials / Shading

4.1 Work with a material

4.1.a Use the material appropriate for the selected rendering engine

i. Differentiate material types

ii. Differentiate shader types among the different renders

4.1.b Create a material

4.1.c Assign material to an object

i.May include assigning materials to selected polygons by Material ID.

4.2 Modify material properties

4.2.a Use the material editors

i. Modify material nodes in the view

ii. Compact vs. Slate editor

4.2.b Apply maps to materials

i.May include classifying map types (2D and 3D procedurals, Bitmaps), using color and normal maps, and identifying map types (when using procedural or 3D map types).

4.2.c Change shader specific properties for a material

5. Rigging

5.1 Utilize the Bone tools

5.1. Create bones

a Edit bones

5.1. *i. Bone parameters*

b 5.1.c Implement Forward Kinematics (FK)

i. Check bone hierarchy in Scene Explorer

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5.1.d Implement Inverse Kinematics (IK) on bones
i. IK Solvers

5.2 Use the Skin modifier

5.2.a Edit envelopes

5.3 Apply constraints

5.3.a Identify the constraints
i. Link, position, path, and orientation

5.3.b Apply a constraint
i. Selection order for creation, weights, etc.

5.3.c View hierarchy in the Schematic View
i. Identifying object connections

5.4 Utilize Character Studio

5.4.a Apply biped

5.4.b Apply physique

6. Cameras

6.1 Work with cameras

6.1.a Differentiate camera types
i. Free Camera, Target Camera, and Physical Camera
ii. Identify when to use each camera type and know the difference between perspective versus orthographic cameras

6.1.b Create a camera
i.May include activating a camera view.

6.1.c Use the Camera Viewport controls to adjust the camera view
i. May include Dolly, Truck, Roll, and Orbit/Pan.

6.1.d Use the Walkthrough Assistant

6.2 Modify camera property names or values

6.2.a Define the functions of near and far clip planes

6.2.b Adjust lens/focal length/field of view

6.3 Show Safe Frames

6.3.a Demonstrate the use of title safe, action safe, and user safe areas

7. Animation

7.1 Use the Time Slider and set the Time Configuration settings

7.1.a Set keyframes using Auto Key and Set Key
i. Set a keyframe, move/manipulate a keyframe, remove a keyframe, and locate the value of a keyframe in the Time Slider

7.1.b Change the Time Slider range

7.1.c Locate the value of an animated parameter

7.1.d Create a Preview Animation

7.1.e Adjust Time Configuration Settings
i.Frame Rate, Playback, Time Display, and Re-scale Time

7.2 Demonstrate how to animate an object along a path

7.2.a Create a spline/curve to animate an object on the path

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7.2.b Demonstrate how to control object axis and banking on the path

7.2.c Manipulate an object along the path

i. Change the spline/curve

ii. Modify the percentage along a path

7.3 Edit animation using the Track View (Curve Editor / Dope Sheet)

7.3.a Differentiate different tangent types

i.Auto Tangents, Spline, Fast, Slow, Linear, Flat, Step, and Smooth

7.3.b Break and unify tangents

7.3.c Lock and show tangents

7.3.d Switch between spline and stepped tangents

7.3.e Manipulate multiple keyframes using the Dope Sheet

8. Lighting

8.1 Work with lights

8.1.a Create a light

i.Standard light types: Target spot, Free Spot, Target Direct, Free Direct, Omni, and Skylight

8.1.b Change common light parameters

i. Change common light parameters using Light Lister

ii. Color, multiplier, etc.

8.1.c Prevent an object from receiving light

i.Use the Light Include/Exclude tool

8.2 Work with shadow types

8.2.a Differentiate shadow types

i. Shadow Map, Ray-Traced, Area, and Advanced Ray-Traced

8.2.b Adjust type-specific shadow parameters

i. Color and density

9. Rendering

9.1 9.1 Differentiate the built-in renderers

i. QuickSilver Hardware Renderer, ART Renderer, Scanline Renderer, VUE File Renderer, and Arnold

9.2 9.2 Configure Scanline render parameters

9.2.a Change common parameters

i.View to Render, Output Size settings, Frame Range, and Render Region

9.2.b Change renderer specific parameters

i.Adjust basic settings (Sampling and Ray Depth)

9.2.c Render still image and animation sequence

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