«DisplayName»

Using Blender 2.7 for Animation - Part 1.1 - Location Keyframes: Understanding Animation Settings

GOAL: how to move objects and use the timeline editor in Blender to create an animation, and make a video file that someone without Blender can play!

Make Bookmarks to your drive

* Open Blender
* File, Save As
	+ Then for location (first box) type or paste: [\\fcafiles\resources](file:///%5C%5Cfcafiles%5Cresources)
	+ Wait for it to load, press enter
	+ Click “+” under Bookmarks
	+ Then for location (first box) type or paste: [\\fcafiles\student](file:///%5C%5Cfcafiles%5Cstudent)
	+ Press enter
	+ Click once on your username
	+ Click “+” under Bookmarks
	+ Pressing Enter twice is shortcut for save.

You can animate an object in 3D by setting the **start** and **end** and the program will create the rest of the frames for you. For example, if you place a car on a road, **Insert Keyframe**, go to a time that is one second later (frame **24** by default), then move it a mile down the road, **Insert Keyframe again**, it will move at 1 mile per second (very fast)! You can also create more than just a start and end, to create a more intricate animation. You can go 2 seconds into the video (if frame rate is 24 fps, 2x24 to get 48, so go to frame 48 for 2 seconds from beginning) and move it somewhere else.

 To find the **Frames Per Second**, clicking on the **Render  button** on the right, then look for **Frame Rate**

By default you can see the **Timeline** editor at the bottom of the blender window:

The top part with darker gray lines is the timeline. The buttons & other controls below it help you create animations.



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| StartDetermines frame when **animation starts** | EndDetermines frame when **animation ends** | Current Frame**To go to a certain frame**, **click the number, type, then press enter** | Playback buttons Jump to **first frame** Jump to **previous keyframe** **Play animation backwards** **Play animation** Jump to **next keyframe** Jump to **last frame** sync mode: if you have sound, this can help the video and sound match even if the video preview is generated slower than 24 fps. | Automatic Keyframe Insertion (on when dark like this): **when you move, rotate or anything else**, you don’t have to click **Insert Keyframe** since it does that **automatically** when this is ON (dark). Be careful you turn **this off if you want to move an object but not animate it**! | Keyframe Mode:**Scroll with scroll wheel to see more**, or start typing the name of the mode you want | Insert Keyframe(see paragraph at top of this page) | Delete Keyframe: Deletes keyframe for whatever you chose, on the frame you’re on  |

(continue to 1.2 on next page)

Using Blender 2.7 for Animation - Part 1.2 - Location Keyframes: Creating an Animation and a Video File

Make your first animation:

* Choose LocRot from the Keyframe Mode list:

Now the Insert Keyframe button is able to save both Location & rotation: 

* Below the timeline, make sure the frame is set to **frame 1** (setting the ending will cause no animation unless it starts somewhere different!): 
* **Move the object** where you want it to start (right-click to select object, then **g** to grab it [*press* ***x,y, or z*** *if you want to move in one direction*], move mouse then left click to drop it).
* **Find the Insert Keyframe button.** If you don’t see it , make the 3D view bigger by dragging the black line that separates the 3D View and the Properties editor—when you are over the black line, the cursor will become double-arrows, and you can click and drag to change the size of the editors:
* 

--drag it to the right to make the 3D View and Timeline editor bigger, **then you can see all of the buttons**:



* Now make sure you choose or type LocRot, then you can click **Insert keyframe**: 
* Now if you set the end frame also, you will have an animation: go to another time, such as 24, 1 second into the video (click the number, type 24, then press enter): 
* **Move the object** where you want it to be one second into the animation
* Click **Insert Keyframe again**: 

Save the project so you can edit the 3D scene later:

* File, Save As, 3da1.blend

Make a video file that someone else can see without Blender:

You may be accustomed to seeing the Blender scene move whenever you use the Middle Button + Drag for rotation (or Shift + Middle Button + Drag to pan) to adjust your view, move objects or push play in your blend file. This is immediate preview is called **real-time rendering**. However, when you render an animation, it takes a long time—it may only be able to render 1 frame per second, or even 1 frame every few seconds or more to make an actual video file. This is called rendering or more specifically **pre-rendering**. Afterward, any device that plays the same video format as yours can play the pre-rendered video file (this is not a blend file) in real time using Media Player or another movie player.

Most computers and mobile devices can play 720p HD resolution videos with standard **H.264** HD format, so that is what we will usually choose:

* Click the Render Button tab
* (standard HD size)
* Under Output choose H.264 format (standard HD file format):



The Aspect ratio is X:1.000 Y:1.000 since these are just for pixel aspect ratio (pixels that are not square are only for DVD)

Pixel Aspect Ratios:

**Video for HD & normal computer viewing are 1:1 (square pixels, no stretching)**

NTSC Widescreen DVD is 720x480 @ 40:33 aspect ratio (wider pixels make result wider) (“Pixel”)

NTSC 4:3 Fullscreen DVD is 720x480 @ 10:11 aspect ratio (narrow pixels make result narrower). (“Pixel”)

*NOTE: Europe is PAL standard: PAL 16:9 DVD is 720x576 @ 118:81; 4:3 DVD is 720x576 @ 59:54 (mir.com)*

**Create an animation with a Point of Reference**

* File, Save As, click your home drive (H:) 3da1reference
* There must be at least an animated camera, an animated object, and a point of reference (stationary object)
* Render the animation at 320x180 (set this in the rendering button tab, & set scale “100%”)
* Change the end frame to the last frame of your animation so that you don’t have frames you don’t want:

 (250 frames is the default length—about 8 seconds at 30 frames per second)

* Before you Render, choose your home drive for where to save the image (in the Output section of the Render button tab).
	+ For **Output**, choose H.264 for the type of file:



* + For **Encoding**, you must choose a preset for encoding (Bitrate is the space used per second in Kilobits):



Works Cited

"History." Blender.org. Blender Foundation, n.d. Web. 1 Feb. 2013. <www.blender.org/blenderorg/blender-foundation/history/>.

“Pixel Aspect Ratio.” <http://en.wikipedia.org/wiki/Pixel\_aspect\_ratio> accessed 2011-01-17

<http://www.mir.com/DMG/aspect.html> accessed 2011-01-18