PMD/X EDITOR >> BONE TUTORIAL <<

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[0] Introduction.....

This tutorial for making bones was requested, so I thought that it would be a good idea to do one. A tutorial for rigging was also requested at the same, and while you read this one I am probably working on it.

You can also find a tutorial on physics in my gallery as well, which may interest you once I finish and upload the Rigging tutorial.

If anything is missing in this tutorial then please feel free to say so, so that I can add it to this tutorial.

[1] Windows you'll need.....

You'll need the "B" from Sel on, along with the "C" from Me. You'll also have to make sure that the two little bone symbols are on at the bottom.



PMXeditor is exactly the same in layout. The only difference is that Its in Japanese

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[2] Understanding the Bone Commands

Go to the BON tab and right click in the list area.

PMD - Sweet Cut2-99938	3.pmd	
File(F) Edit View		
GE VR MA	BON IK FA GRP	ENGL Toon PH Joint
Bones	4	
0:センター	JPName センター	Type: 1
1:百 2:頭	Name :	1 : RoMov 🔻
3:頭先	Parent	-1 Name
	T GION	Nulle .
	Add 🕨	At Bottom Ctrl+P
	Delete Del	Current Loc Ctrl+A
	Up (U) Ctrl+Up	Duplicate Ctrl+F
	Down(D) Ctrl+Down	DuplicateDown Ctrl+R
	Save as .txt	Connect Ctrl+G
	Load from .txt	0
	Copy (C) Ctrl+C	
	Copy All (C) Ctrl+B	
	Paste (V) Ctrl+V	
		/ /

Delete -> Deletes selected bone.

Up (U) -> Moves bone Up in list

Down (Ctrl+Down) -> Moves Bone down in list

Save as .txt – Save bone data/information into text form.

Load from .txt - Loads bone data/information from text form.

Copy – Copies Bones (never works for me)

Copy All – Copies all Bones (never works for me)

Paste – Pastes the bones that were copied. (never works for me)

Add > Bottom

Adds a bone at the bottom of the List

Add> Current Loc(ation)

Adds a bone at the location you current are – in this case in between the Centre and Neck bone.

Add> Duplicate

Duplicates the bone below the current bone in the list; the bone you want to duplicate.

Add > Duplicate Down

Duplicates at the bottom of the list

Add > Connect

Makes a new bone which is connected to the selected bone.

In PMX editor it should be the same principle. You just have a few extra commands that don't really matter at this point.

ファイル(F) 編集(E)	表示(V) 情報(I)					
情報 頂点 面 神	材質 ボーン モーフ 表示枠 剛体	Joint Soft	Body			
3 0: ヤンター	4 ボーン名: 頭先		英 変形階層: 0	物理後		
1:音	位置: 0.0004642 17.53365	5 0.2498588 [•]	性能: 回転 移動 IK 表示	え 操作		
3:頭先	親ボーン: 2 頭 表示先(>)		IK Target :			
	追加(I)	•	最後尾(こ追加(P)	Ctrl+P		
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	上へ移動(U)	Ctrl+Up	複製を追加(X)	Ctrl+D		
	下へ移動(D) Ct	rl+Down	複製を最後尾に追加(N)	Ctrl+R		
	全て選択(A)	Ctrl+A	接続先を追加(C)	Ctrl+L		
	Index⊐ピー(X)	Ctrl+X	Z :			
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CSVファイルから追加/更新(O)						
	クリップボードへ複製(C)	Ctrl+C				
	クリップボードから追加/更新(V)	Ctrl+V				

[3] Making Bones.....

I was going to explain the entire Bones window first, but it might be too much to take in all at once before you make your bones. So, we'll cover that later on.

Just go to the BON tab, Right click and go to add and then choose select "At Bottom".

3:頭先							
		Parent		-1	Name: -		
	Add				At Bottom	Ctrl+P	1
	Dele	te	Del		Current Loc	Ctrl+A	
	Up	(U) Ctrl+	Up		Duplicate	Ctrl+F	

Click on it and on your PMD view, you should see a bone at the bottom of the axis. If you do not then make sure you have the bone Icon on at the bottom.

		tiones c 0:センター 1:首 2:頭 3:頭先 4:NBone1	PMD
	/ · · · · · · · · · · · · · · · · · · ·	SoftBody	
4 0: センター 1: 首 2: 調 3: 調先 4: 新規ポーン1 頂↑↓底+×	ボーン名:新規ボーン1 位置: 0 親ボーン: - 表示先(>) - ● 相対: 0 0 付与: 回転+ 移動+ 付与率: 付与親: -1 - 軸制段: 0 0 0 ロー加+軸: X: 1 0 ン Z: 0 0	 ● 英 変形階層: 0 物理後 0 性能:回転 移動 IK 表示 操作 IK Target: - Loop: 単位角: - 山内: - 角度制限 →0 X: - 月度制限 →0 X: - 7: - 2: - 0 1 外部現 親Key: 0 	РМХ

It'll be called NBone 1. However, it does no go for me at the moment, because its all the way down there, and my hair is all the way up there somewhere. So how do I get it up there? Hmmmm...?

Easy, select the bone so that it's red – like in the picture above.

Then get your trust Control Window Open (Me: "C") and move the bone up with the first Y Command in the First column. Do the same that you do for your Materials when you drag them to the MA tab. Move it wherever you want/need it to be.



Always remember to go back to the BON tab window and click on the bone you just made, else it'll reset itself and be at the bottom of the axis again. D:

When Registered	When not Registered.
X: 1.354396	Coord X · 0
Y: 18.62796	Y: 0
Z: 0	Z: 0

From here, if you need to continue making bones, you can select the bone you just made (NBone1) and go to Add > Connect and it'll make a bone (+NBone 1) which is connected to the first bone.

[Left - PMD ----- Right - PMX]



Then move it to wherever you want it to be with the Control Window again.



Then go back to the BON tab and click the bone you just made to register its position – like you did with NBone 1.

After this you just continue this process, until you are happy with the bone positions. Please note that you can rename these bones at any point in time e.g. left 1, left 2 ect.

Don't be afraid to change the size (height) of the bones or how many there are. An example is shown below.



Just remember that when you are making bones, you'll have to rig them too. Also be aware of where your bones are actually positioned, as they may not be where you think they actually are. For example in these pictures they look straight. However, when viewed from the side, they look very different.



Just move the bones forwards with the Control Window (Z) and you'll be fine.

PMXeditor Version

However, with PMXeditor, you will have to specify that "N Bone 1" (新規ボーン 1) has a child bone which is "Nbone 2" (+新規ボーン 1) else it won't connect to it. [This will actually only happen if you accidently click on the bone DIRECTLY after making it.]

ファイル(F) 編集(E) 表示(V) 情報(I) 情報 頂点 面 材質 ボーン モーフ 表示枠 岡(本 Joint SoftBody	
情報 頂点 面 材質 ボーン モーフ 表示枠 剛体 Joint SoftBody	
in a live - c / second conceedy	
1 3 ボーン名:新規ボーン1 日英 変形階層: 0 0:センター 1:新規ボーン1 日英 変形階層: 0 1:新規ボーン1 位置: 5.366881 8.84 0 性能:回転 移動 IK 表) 物理後 示 操作
親ボーン: -1 - 表示先(>) ◎ ボーン: 2 +新規ボーン < Loop: 単位角: [Link: -	•
付与:回転+ 移動+ 付与率:1 角度制限 付与親: -1 -1 Y:	
軸制限: 0 0 > Z: □-九ル軸: X: 1 0 0 頂↑↓底+× > Z: 0 1	
 In order to get them to connect you'll have to choose the first option here; 	2 +新規ボーン 0 0 0
Pmx編集 *	
ファイル(F) 編集(E) 表示(V) 情報(I)	
1 3 ボーン名:新規ボーン1 日英 変形階層: 0 物理後 0:センター (位置: 5.366881 8.84 0 性能: 回転 移動 IK 表示: 操作 2: +新規ボーン1 親ボーン: -1 - IK Target: - - 0: ボーン: 2: +新規ボーン: -1 - IK Target: - - 0: ボーン: 2: +新規ボーン IK Target: - - Loop: 単位角: Link: -	•

付与: 回転+ 移動+ 付与率: 1 х 付与親: -1 0 軸制限: 0 0 > 口ー加軸: Х 1 0 0 外部親 親Key 0 1 0 0 Ζ 頂↑↓底+× >

This will allow the bones to connect to each other. After this it should be smooth sailing;

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情報 頂点 面 材質 ボーン モーフ 表示枠 剛修 Joint SoftBody	🗐 т 🕀 🕂
3 4 ボーン名: ++新規ボーン1 日英 変形階層: 0	物理後
0:センター 1:新規ホーン1 ウ・研想ポーン1 位置: 5.366881 7.12 0 性能:回転 移動 K 表示	
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│	
□ 1 L 底 + × > Z: 0 0 1 外部親 親Key:	
MR 12345	
	·

(Note: I have to move the third bone)

Now I could be mean and tell you that you have to make the bones from scratch, but I will be kind. You *can* mirror bones.

First Select your bones and then go to Edit > Bone > Create Mirror. Click it say okay and....



You now have bone clones of the side you decided to mirror. It saves you a lot of time and effort trying to get them symmetrical.

This feature does not appear to be functional in PMXeditor, unless the command has been moved elsewhere.

I will keep searching for the option and will update this tutorial once/if I find it.



Anyway continue making your bones, until you're happy with them.



Make sure they are in a reasonable place for when you begin to rig them. Now, unfortunately – or fortunate for me, we will not be covering rigging in this tutorial. Instead Rigging will be a separate tutorial all together.

However, we aren't quite done yet. All the first bones (the ones at the top which you made first) need to be connected to the Head bone, else they'll stay in one place.

In order to do this, you change the Parent bones of the bones at the top to the Head Bone. Shown below the table.



Bones	47										
 0:センター 		JPName	NBone1		Type :	0					
2:頭		Name :			0 : Ro	•					
3:頭先 4:NBone1	-	Decent	4	Name	55		ボーン名:	新規ボーン1			
5 : +NBone1	=	Farerit	4	Name .	<u>武</u> 員		/			0	144
7 : +++NBone1		Child	5	Name :	+NBone1		包置:	0	0	0	「王貢
8 : ++++NBone1 9 : +++++NBone1							相ポート・	2 西			
10:++++++NBone1		IK Bone	0	IK Name:	-		新ルバーン ·	2 UR			
8 : ++++NBone1 9 : +++++NBone1 10 : ++++++NBone1 11 : ++++++NBone1		IK Bone	0	IK Name:			親ボーン:	2 頭			

Originally as you'll find out, the Parent bone will probably be something like -1. You do not need to touch the child Bones. They are already set up for you. If you haven't done so, so far, you can rename the bones to whatever you want. It may make it easier for you when you try to rig them.

[4] The Bones Window.....

Different Bone Types

0: Ro	Used for Normal Bones	It's always best to use the same
1:RoMov 2: IK	Used for Centre, Groove and Mother Bones. Used for hair, ankle, toe and mic. Bones that can be moved with other bones following it. E.g. Hip Bone -> Knee Bone -> Ankle Bone <- Ankle IK	sort of bones for the main body of the model, else the model may act funny with some motion
3: ? 4: IKInflRo	<i>I'm not sure sorry.</i> ⊗ Hip and Knee Bone Bones. Can also be found in models hair with by IK bones and things like Miku's Tie.	data's. Also, always make sure that the
5. InfRo 6: IKCon	Found in Eye bones – at least Animasa Miku's I'm not sure sorry.	bones are named the same in Japanese so the neck bone IS 首
7: Hid	Hidden Bones that can't be rotated or actually seen in anything but pmdeditor.	else the model may not work with motion data/poses.
8: Tw	Twist Bone	

性能: 回車	移動	IK	表示	操作
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In PMX editor I believe you play around with these to get the correct bone type that you want. But in confuses me so you'll have to figure it out on your own.

[5] Parent and Child Bones.....

Bones	4				
0:センター	JPName	頭		Type :	0
1:首 	Name :			0 : Ro	•
3:頭充	Parent	1	Name :	首	
	Child	3	Name :	頭先	
	IK Bone	0	IK Name:	-	
	Coord				
	X:	0.000460797			
	Y:	16.89398			
	Z :	0.7010709			

Parent

Bone that is connected to the Selected Bone. So for example, The Head Bone's parent Bone is the Neck Bone. This is because the Neck's Child bone is the Head Bone.

JPName	首		Type :
Name :			0 :
Parent	-1	Name :	-
Child	2	Name :	頭

Child

What **Bone** the **Selected Bone** connects to. So for example The **head bone's** child bone is "頭先". This is because 頭 先's Parent Bone is the head bone. It does not need a child bone, because nothing else attaches to it.



If this has confused you so far, think of it this way.

- Selected Bone (Which you are setting the Parent Child Bone up in)
- Parent Bone Key
- Child Bone Key

You are wearing a hat (Bone1) on your head (Bone2 = Parent of Bone 1).

Your Head (Bone 2) has a skull(Bone 3) inside of it.

Neck Bone Parent Bone = Head Bone Child Bone (Would be the Upper Body Bone)

Head Bone Parent Bone = Neck Bone Child Bone: 頭先

Think of it like it's a jigsaw being put together. You can't put one piece down before the other in this case. So it becomes 1 connects to 2, 2 is connected to 1, 2 Links to 3.

PMXeditor Version

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79 128	ボーン名: 右足 日 英 変形階層:	0 物理後
72:ポニテ先 ▲ 73:右目 74:右目先:	位置: -0.921555 10.44077 0.171909! 性能: 回転 移動	IK 表示 操作
75:左目先 76:左目先 77:回目上	親ポーン: 78 下半身 PARENT BONE K Target: -	
78: ト半身 79:右足 80:右びざ	 ●ボーン: 80 右びざ ● ボーン: 80 右びざ ● IK BOX 	道角: NE SECTION
81:石足首 82:左足 83:左びざ		角度制限 →0
84:左足首 85:センター先 86:左足形先	付与: 回転+ 移動+ 付与率: 1 ×	
87:右つま先於先 88:左足於先	付与親: <u>-1</u> -	:
89:左つま先IV先 90:上半身2先		
92:満指先 ▼ 頂↑↓ 底 + ×	□ <u>□ 加軸</u> : X: 1 0 0 ▶ Z: 0 0 1 外部親 親Key	y: 0

PMXeditor uses Child and Parent bones in the same way, the only difference is that there's more boxes on the page and it's in Japanese.

You do not set up IK bones in the same way as they are in PMDeditor. The section below will clear this up for you when you get to it.

IK Bone

IK Bones refer to things like Hair IK's, ToeIKs and Ankle IKs. Any bone that is connected to an IK bone will move with it. For example;

- > Bone 1: Hip Bone
- > Bone 2: Knee Bone
- > Bone 3: Ankle Bone
- > Bone 4: Toe Bone
- > Bone 5: Ankle (Leg) IK
- > Bone 6: Toe IK

Hip Bone	
Parent	Upper Body
Child	2. Knee Bone
IK Bone	5. Ankle (Leg) IK

Ankle Bone	
Parent	Knee Bone
Child	Toe Bone
IK Bone	Ankle (Leg) IK

Ankle (Leg)	К
Parent	-1
Child	Invisible Ankle Bone
IK Bone	None

Knee Bone	
Parent	Hip Bone
Child	Ankle Bone
IK Bone	Ankle (Leg) IK

Toe Bone	
Parent	Ankle Bone
Child	Invisible Toe Bone
IK Bone	Ankle (Leg) IK

Toe IK	
Parent	Ankle IK Bone
Child	Invisible Toe Bone
IK Bone	None

PMXeditor Version

🏫 Pmx編集 - ï¥ë¦âèâôâAâyâôâ	h.pmx	
ファイル(F) 編集(E) 表示	辰(V) 情報(I)	
情報 頂点 面 材質	ボーン モーフ 表示枠 剛体 Joint SoftBody	
3 128	ボーン名:右足区 国英 変形階層	: 1 物理後
0:全ての親 1:センター 2:左足W	位置: -1.041381 0.56758 0.249105: 性能: 回転 移動	」 IK 表示 操作
3: 若足 <mark> 1</mark> 4: 左つま先 5: 右つま たい 6: 上半身。	親ボーン: 0 全ての親 表示先(>) Motherbone Loop: 40	OOT/TOE BONE 右足首 単位角: 114.5916
 7:上半身2 8:右肩 9:右腕 10:右ひじ 11:右ひじ連動 	 ● ホーン: 86 石足以光 ● 相対: Invisble Leg Bone Link: - 0:80 右ひざ 1:79 右足 	KNEE BONE 角度制限 →0
12:石手首 13:右手首連動 14:右手先	付与: 回転+ 移動+ 付与率: 1 LEG BONE	X:
15:右親指O 16:右親指1 17:右親指2 18:右親指先		Y:
19:右小指1 20:右小指2 丁] ↑ ↓ 底 + ×	□-カル軸: X: 1 0 0 > Z: 0 0 1 外部親 第	Key: 0

PMXeditor basically works in the same way. Except this time you have to specify that the IK bone has a 'target'. In this case the Ankles IK bone's target is its own Foot/Toe bone. I believe that this is the only real difference when working with IK bones in PMXeditor.

You should also specify that the model's IK bone also links to the actual Leg and Knee bone's respectively.

I currently do not understand what "Loop" does, because upon checking the model's bones, it comes up as the model's wrist bone which seems odd. But if the model works then it doesn't really matter.

Oh and just to be REALLY confusing for all you PMXeditor users, you no longer have to specify that a bone has an IK bone in its respected section. The IK Bone itself holds all that information for you. You just have to make sure that these bones connect properly with its parent and child bones.

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81 128	ボーン名:右足首 ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ ・ 変形階層:	0 物理後
72:ポニテ先 ▲ 73:右目 74.左目失	位置: -1.041381 0.567579; 0.2491054 性能: 回転 移動	K 表示 操作
■ 75:左目 ■ 76: <u>左</u> 目先	親ボーン: 80 右ひざ IK	
277:両目 78:下半身 79:左足	表示先(>) の ボーン・ 94 左つき先 Loop : ¹	単位角 :
80:右びざ 81:右足首	◎ 相対: 0 0 0 <u>Link: -</u>	
82:左足 83:左ひざ		角度制限 →0
04:222日 85:センター先 86:右足 N先	付与: 回転+ [移動+] 付与率: 1)	(:
87:右つま先承先 88:左足承先		
89:左つま先於先 90:上半身2先 91:頭先		
92:简值先 ▼	→ Z: 0 0 1 外部親 親K	ey : 0

94 is an invisible pink bone at the end of the toes. Its parent is bone 81, and its child is -1.

[6] Afterword

I think that that's all there is to bones. The rest comes from rigging them to an item/part/model and then adding physics to them. So I hope that this helps you in some way.

Sorry if it's a bit confusing in places, but it actually isn't THAT bad. Just look at how other model's bones connect. For example, the leg bones used in the example above are actually from Animasa Miku.

Sorry if the PMXeditor sections are...a little bit lacking.

I also give up with this documents spacing. D: So I'm sorry if there are big gaps in between sections.

Anyway I hope that tutorial is helpful to you!

- Butterfly

19-09-12