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Walkthrough

This section is to demonstrate the use of jc.clothes by walking through the steps to make a blouse whose outlines have already been prepared in a sample scene. Both start and finished scenes after each step are included in the [download file](#). You can go through any step by opening the finished scene of the previous step.

Firstly, follow the [instruction](#) to install jc.clothes. Its menu should be shown in the Maya menu bar. Then turn off Undo in Undo Queue Settings which can be found in Window -> Settings/Preferences -> Preferences -> Categories:Undo.

1. Create Patterns

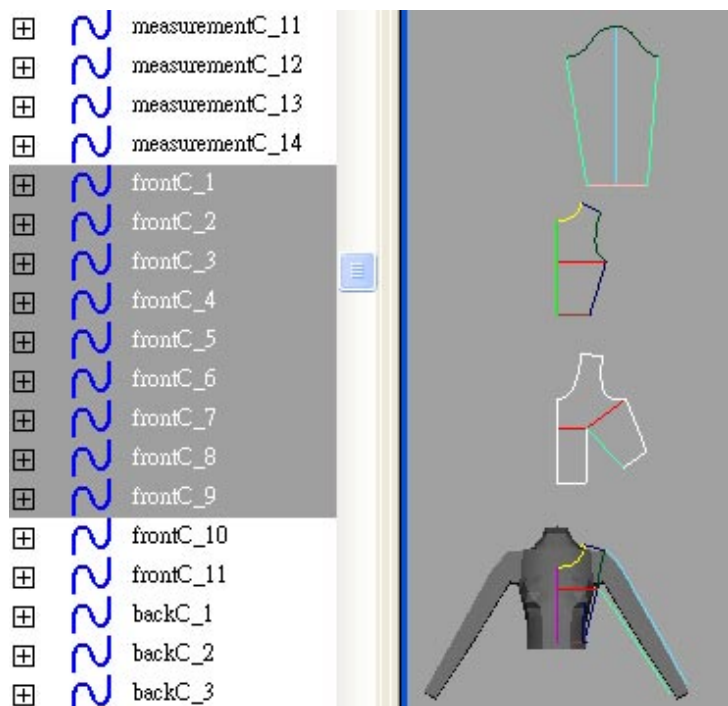
This step is to create patterns, combine them into one single object (garment) and create nCloth out from it, because we want to use only one single nCloth node to deform all the patterns.

Open scene file [blouse-sample.mb](#) which contains a body and the pattern outlines. Turn off display of Grid and Dimensions in the viewport and you'll see the scene as shown below:

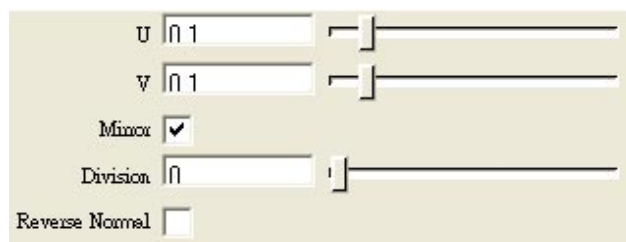


1.1 Front Pattern

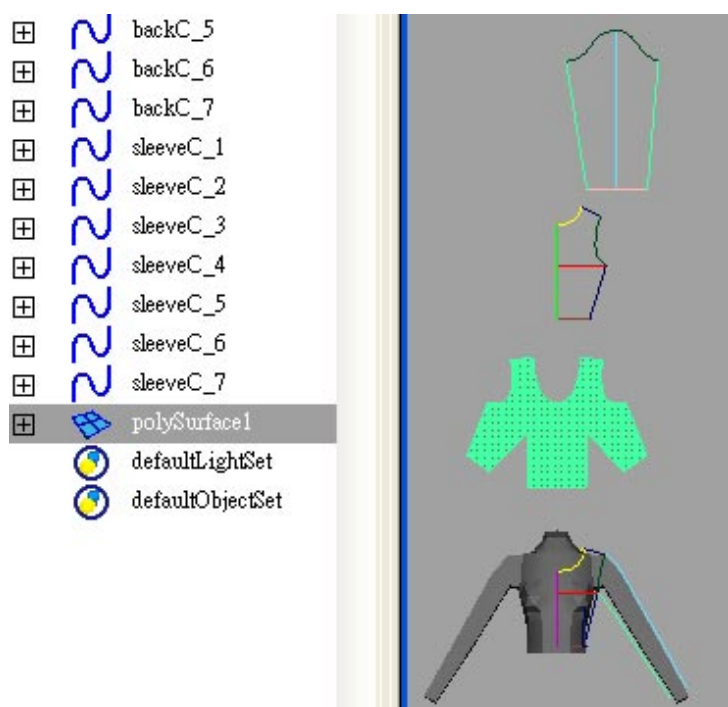
Select frontC_1 to frontC_9 as shown:



Invoke jc.clothes -> Create Pattern  with the following options:

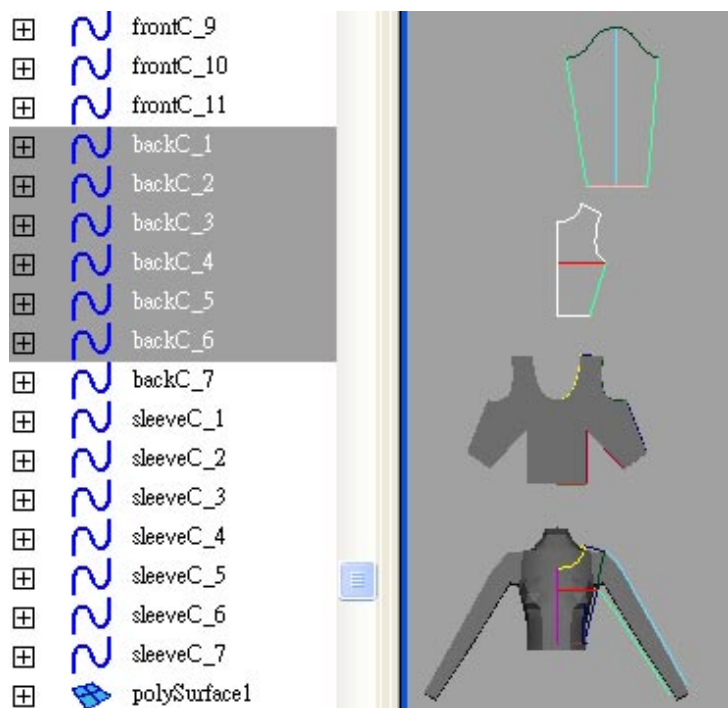


"polySurface1" will be created and the scene will become:

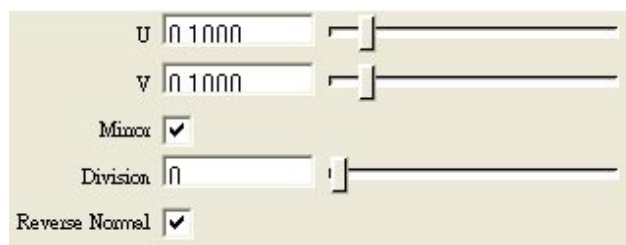


1.2 Back Pattern

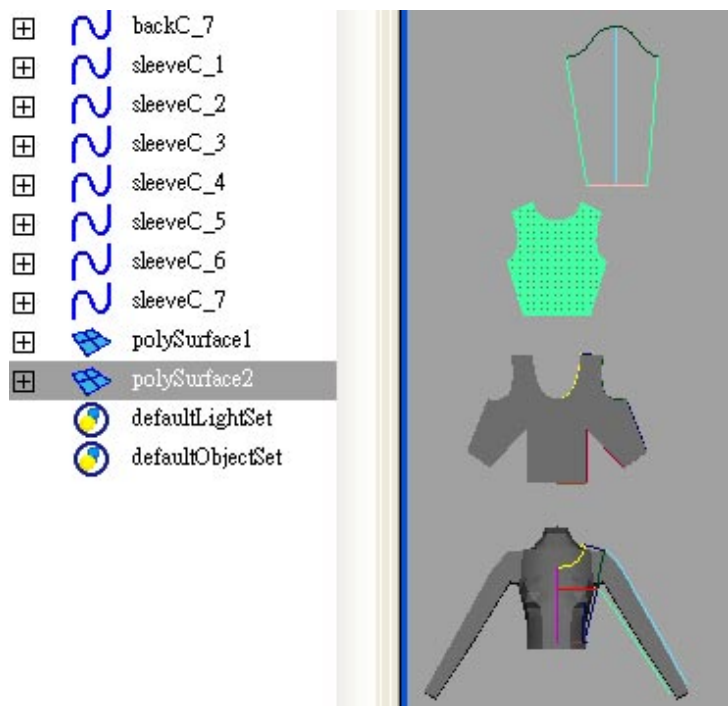
Select backC_1 to backC_6 as shown:



Invoke jc.clothes -> Create Pattern  with the following options:

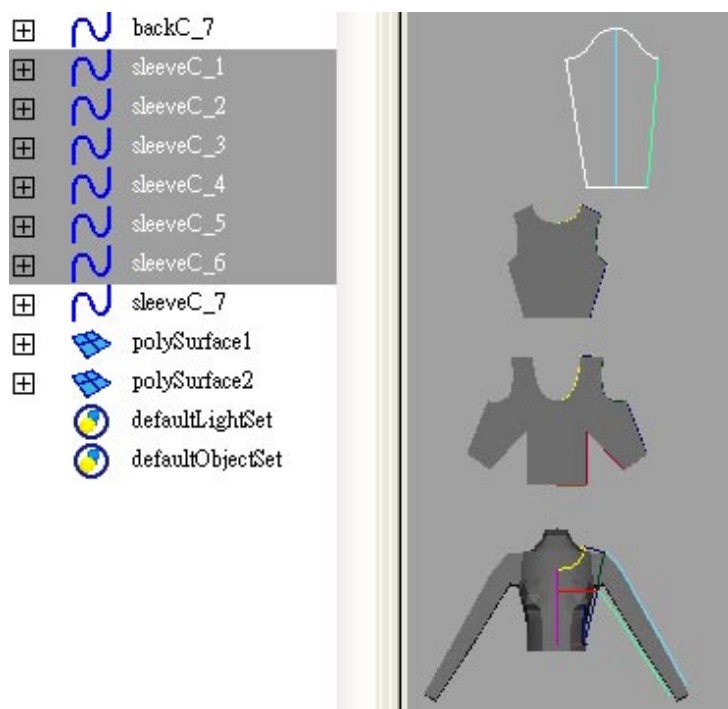


"polySurface2" will be created and the scene will become:

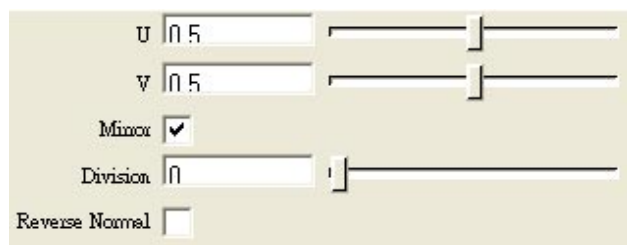


1.3 Sleeve Patterns

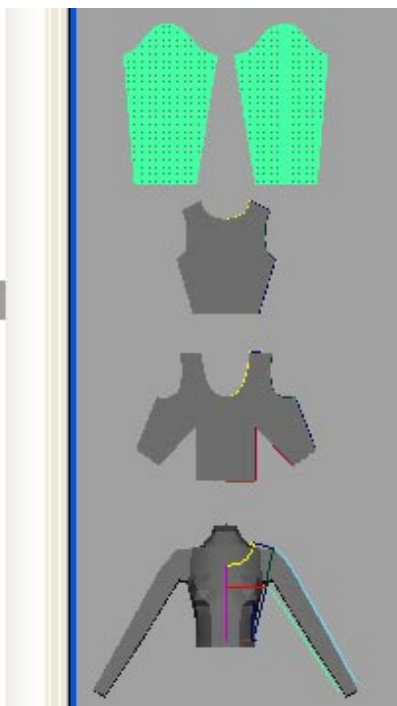
Select sleeveC_1 to sleeveC_6 as shown:



Invoke jc.clothes -> Create Pattern  with the following options:



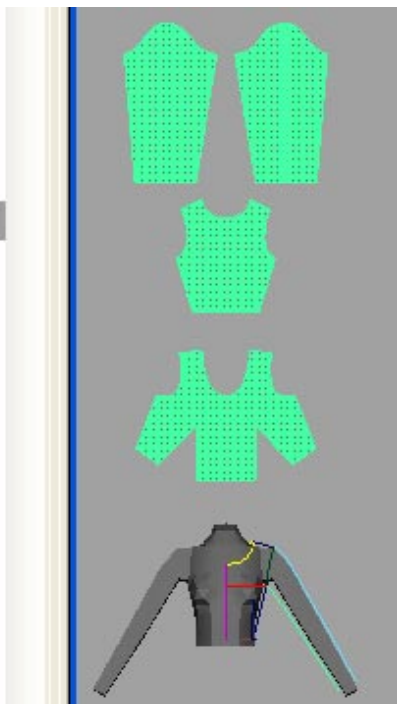
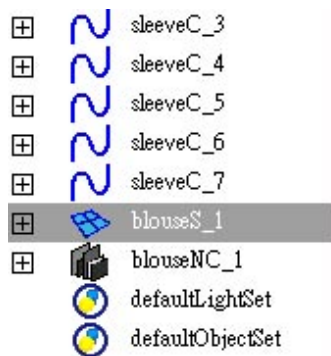
"polySurface3" will be created and the scene will become:



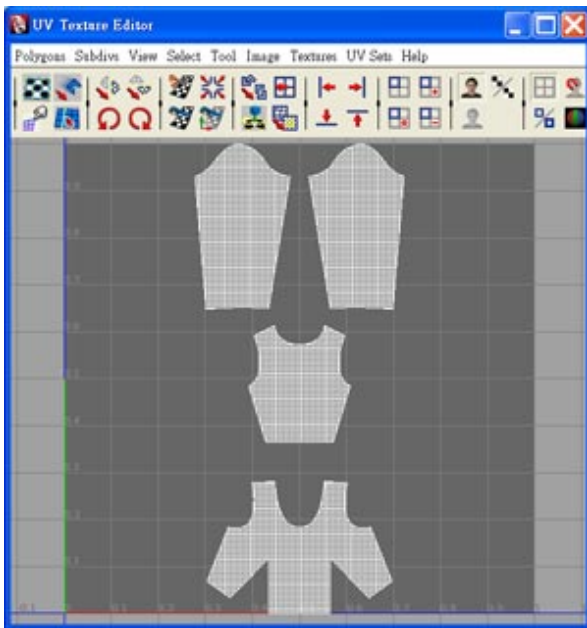
1.4 Create Garment

- Select polySurface1, polySurface2 and polySurface3.
- Invoke jc.clothes -> Create Garment.
- Rename "polySurface4" to "blouseS_1".
- Rename "nCloth1" to "blouseNC_1".

The scene will become:



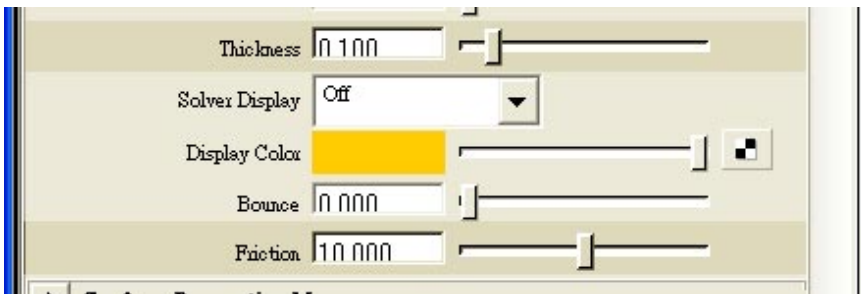
Open UV Texture Editor and you'll see:



1.5 Create Passive

- Select bodyS_1
- nCloth -> Create Passive
- Rename "nRigid1" to "bodyNR_1"

Select bodyNR_1, open Attribute Editor and update attributes with values as highlighted below:



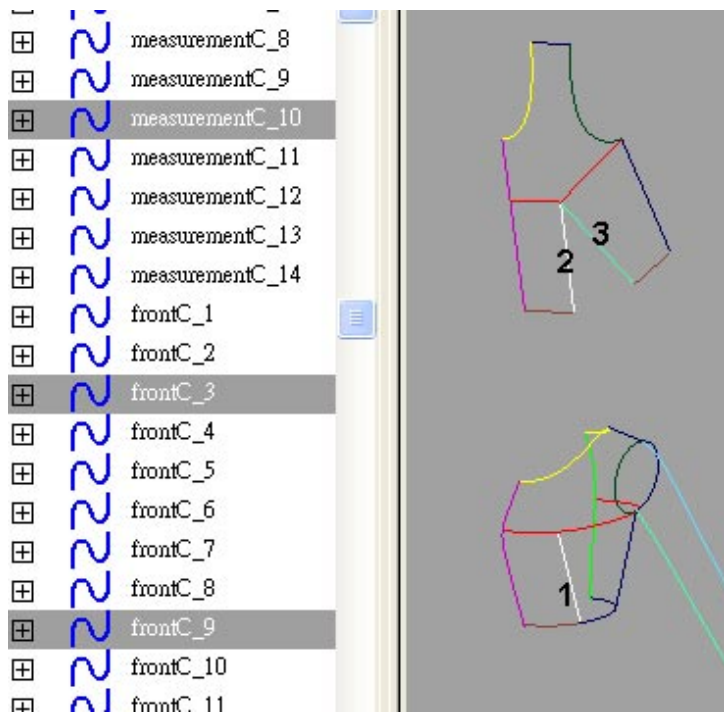
2. Create Stitches

This step is to create stitches (joint chains). A skin cluster node will be created automatically and deforms the patterns before the nCloth node. Weld constraints will be created between connecting borders automatically as well.

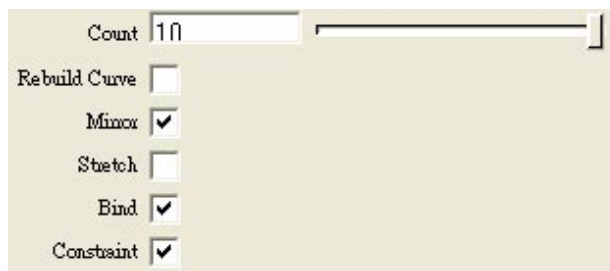
Open scene file [blouse-sample1.mb](#) or continue with the previous step. Turn off display of Polygons, nCloths and nRigids in the viewport.

2.1 Front Stitch

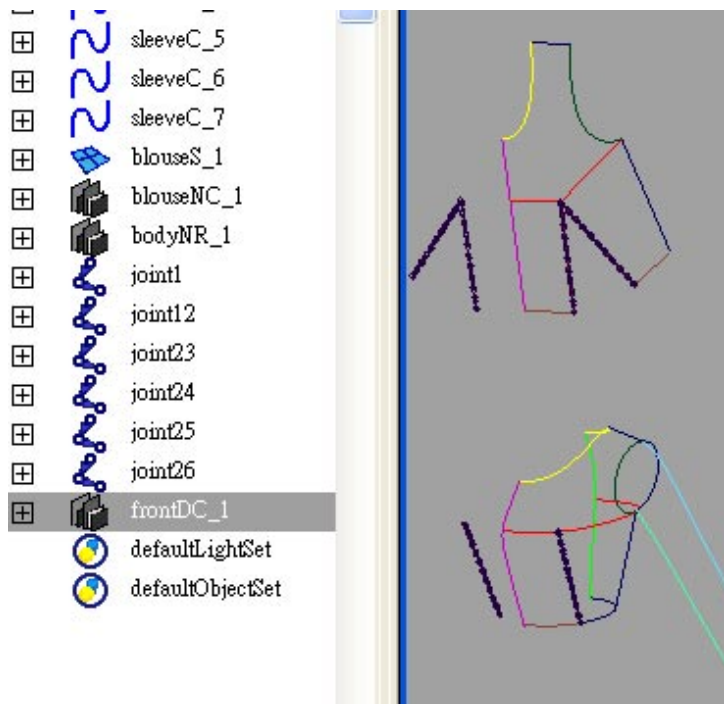
Select measurementC_10, then shift-select frontC_3 and frontC_9 (from either Outliner or viewport) as shown:



Invoke jc.clothes -> Create Stitch  with the following options:

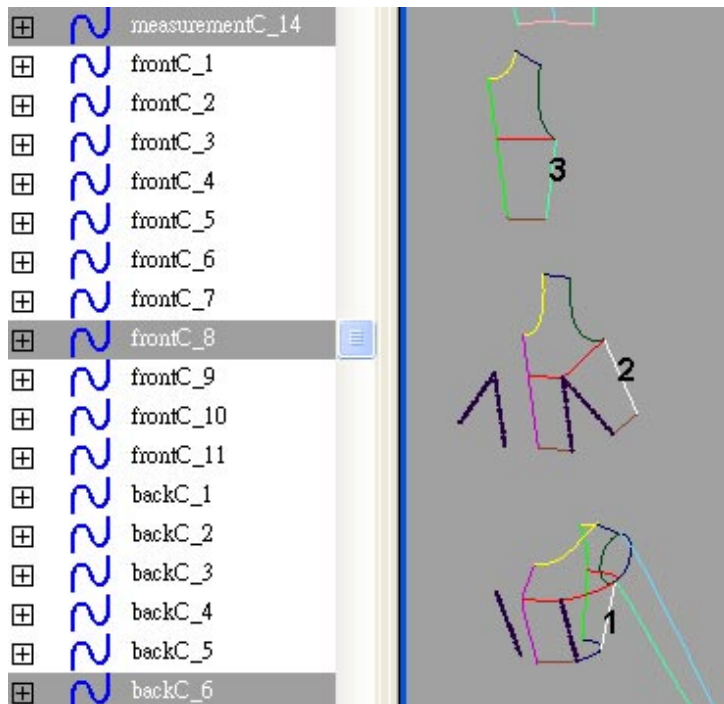


Rename "dynamicConstraint1" to "frontDC_1" and the scene will become:



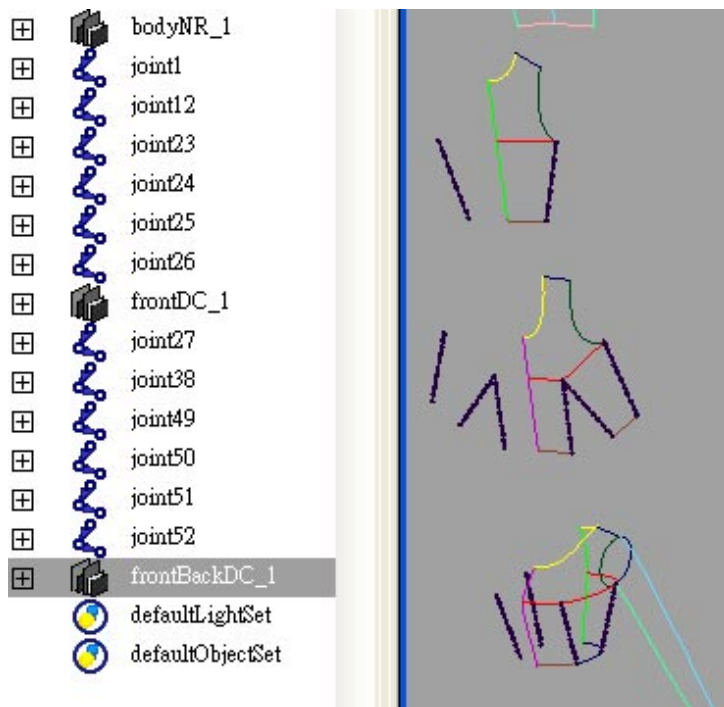
2.2 Body Side Stitch

Select measurementC_14, then shift-select frontC_8 and backC_6 (from either Outliner or viewport) as shown:



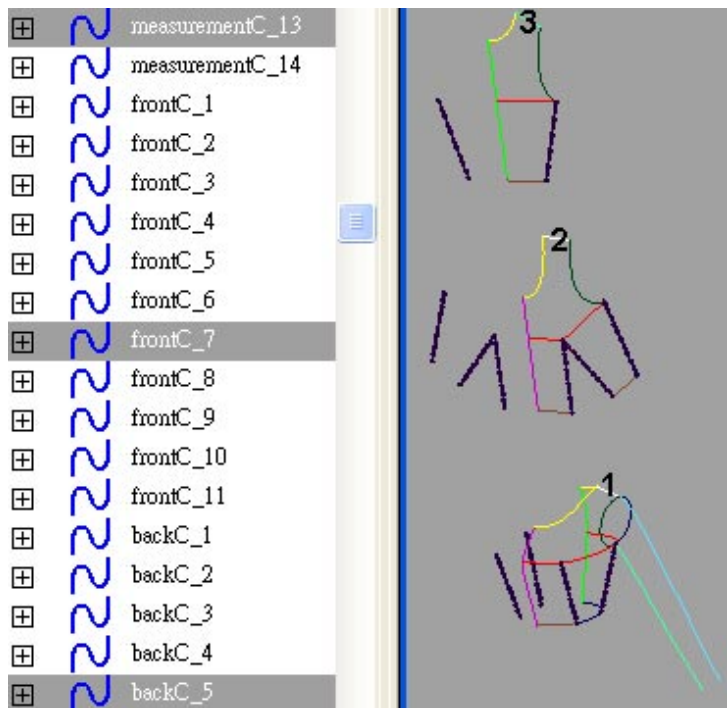
- Invoke jc.clothes -> Create Stitch.
- Rename "dynamicConstraint1" to "frontBackDC_1".

The scene will become:



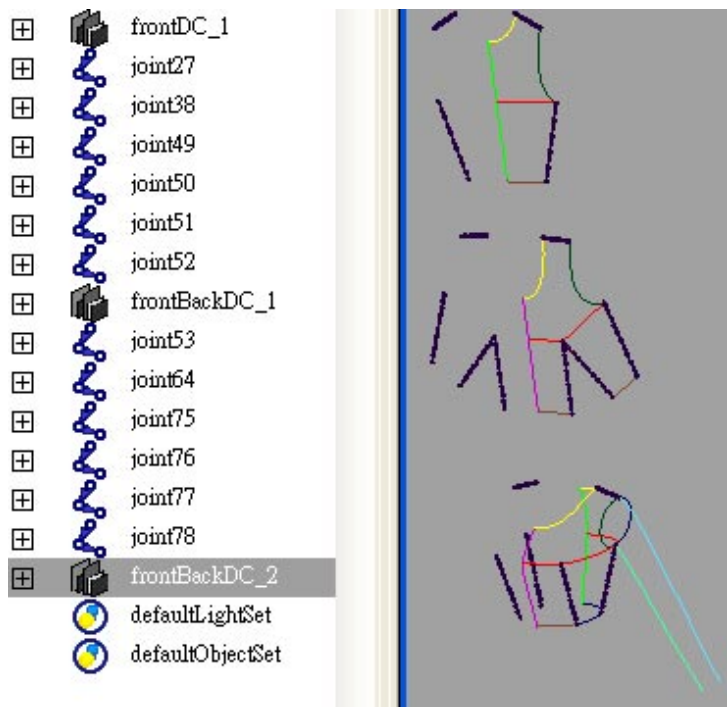
2.3 Shoulder Stitch

Select measurementC_13, then shift-select frontC_7 and backC_5 (from either Outliner or viewport) as shown:



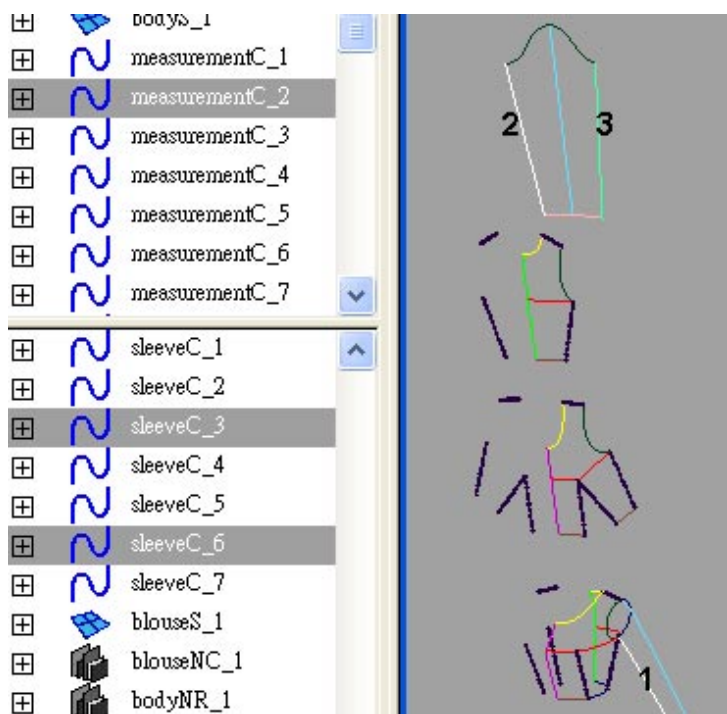
- Invoke jc.clothes -> Create Stitch.
- Rename "dynamicConstraint1" to "frontBackDC_2".

The scene will become:



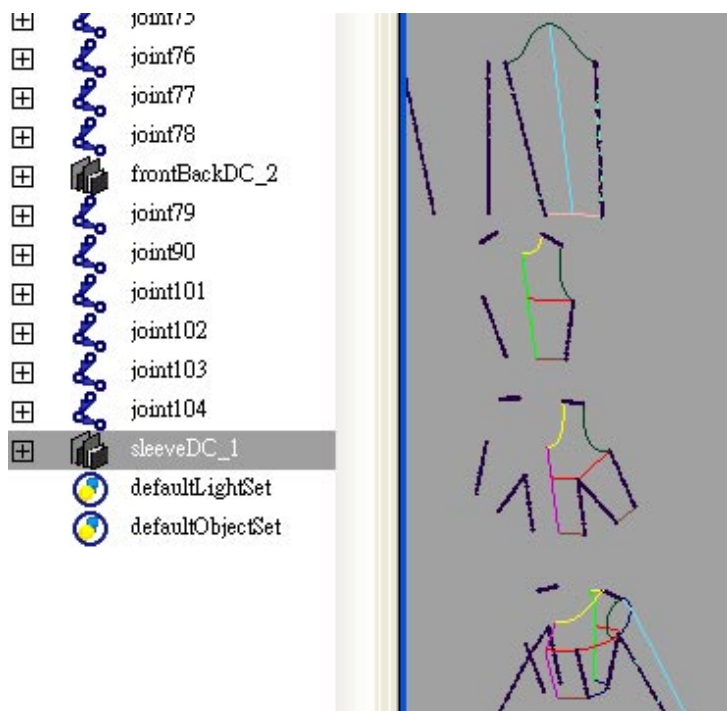
2.4 Inside Arm Stitch

Select measurementC_2, then shift-select sleeveC_3 and sleeveC_6 (from either Outliner or viewport) as shown:



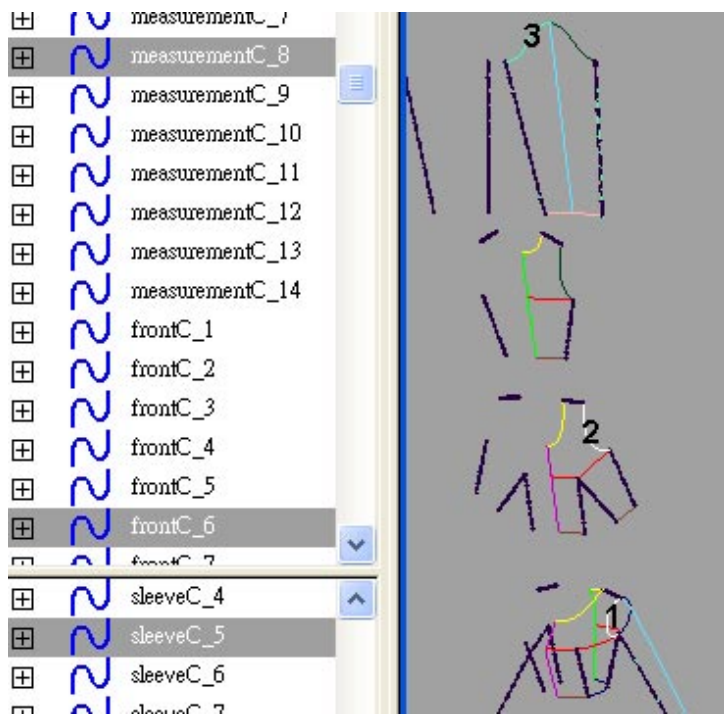
- Invoke jc.clothes -> Create Stitch.
- Rename "dynamicConstraint1" to "sleeveDC_1".

The scene will become:



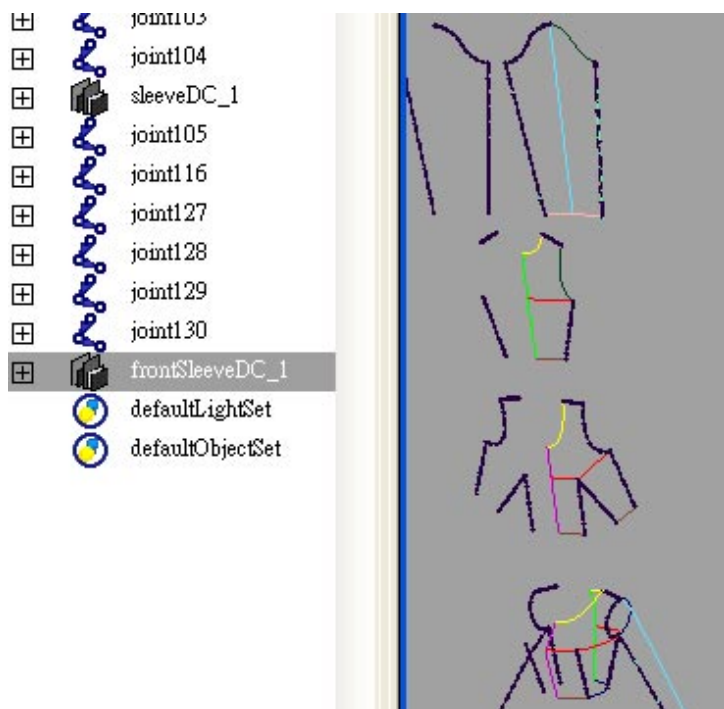
2.5 Front Armhole Stitch

Select measurementC_8, then shift-select frontC_6 and sleeveC_5 (from either Outliner or viewport) as shown:



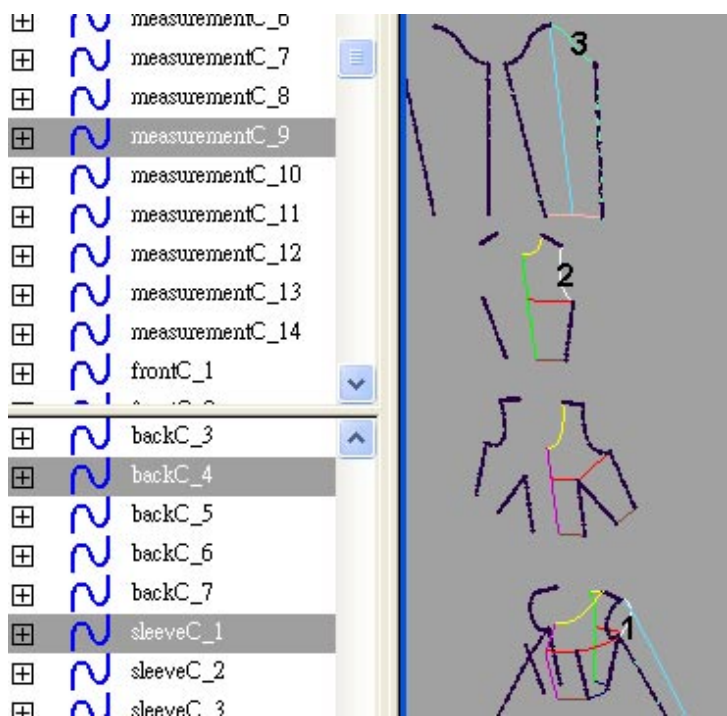
- Invoke jc.clothes -> Create Stitch.
- Rename "dynamicConstraint1" to "frontSleeveDC_1".

The scene will become:



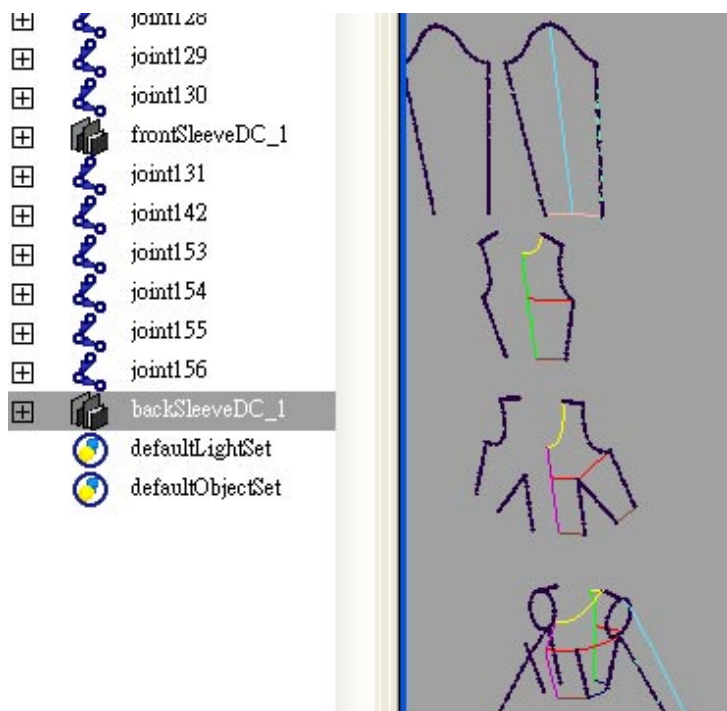
2.6 Back Armhole Stitch

Select measurementC_9, then shift-select backC_4 and sleeveC_1 (from either Outliner or viewport) as shown:



- Invoke jc.clothes -> Create Stitch.
- Rename "dynamicConstraint1" to "backSleeveDC_1".

The scene will become:



3. Set Keyframes

This step is to set keyframes on all objects involved in the simulation. They include stitch groups, stitches (joints), nCloth and nConstraints.

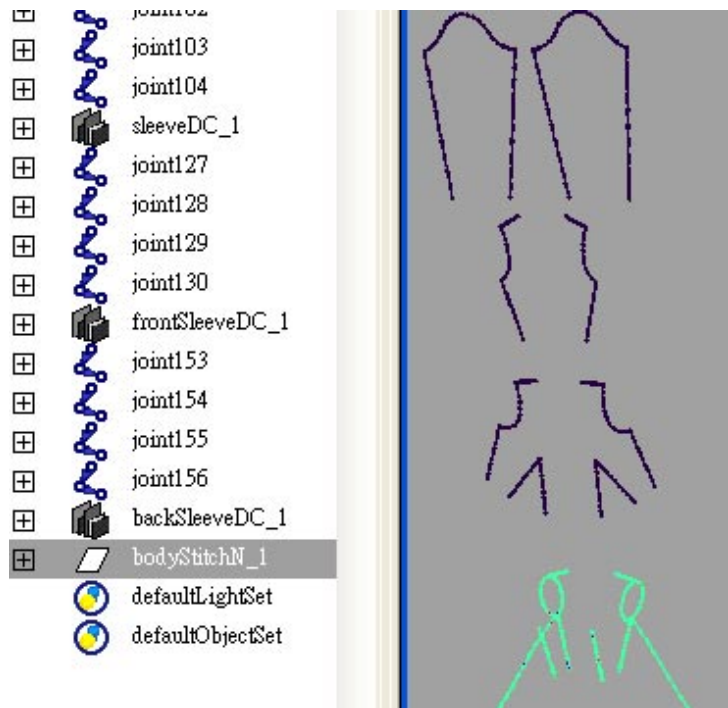
Open scene file [blouse-sample2.mb](#) or continue with the previous step. Turn off display of Polygons and nCloths in the viewport.

3.1 Create Stitch Groups

Turn off display of NURBS Curves in viewport.

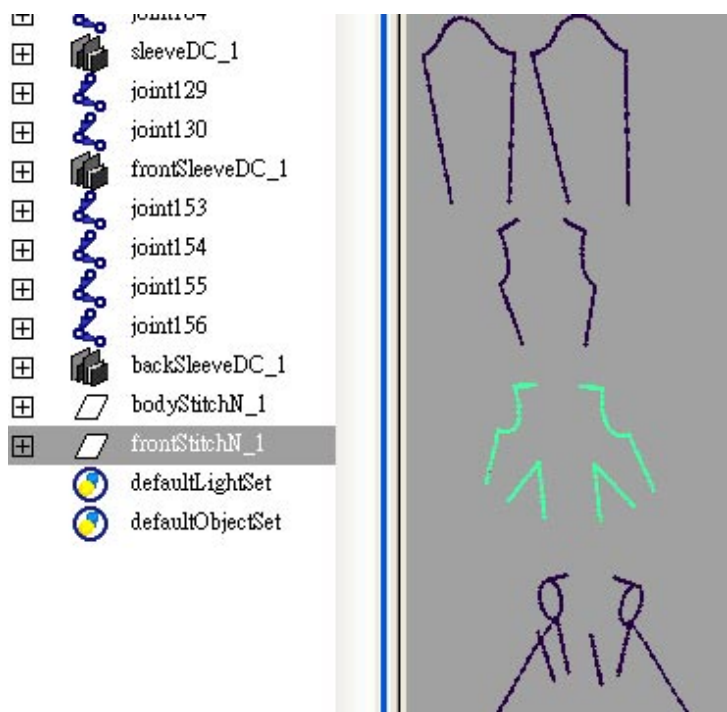
- Select stitches around the body in viewport
- Edit -> Group or press Ctrl-g
- Rename "group1" to "bodyStitchN_1"

The scene will become:



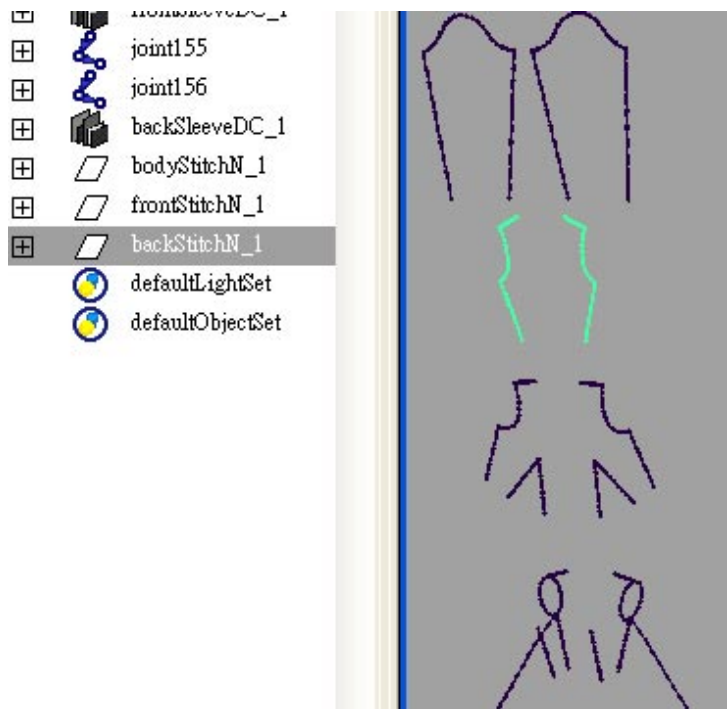
- Select front pattern stitches in viewport
- Edit -> Group or press Ctrl-g
- Rename "group1" to "frontStitchN_1"

The scene will become:



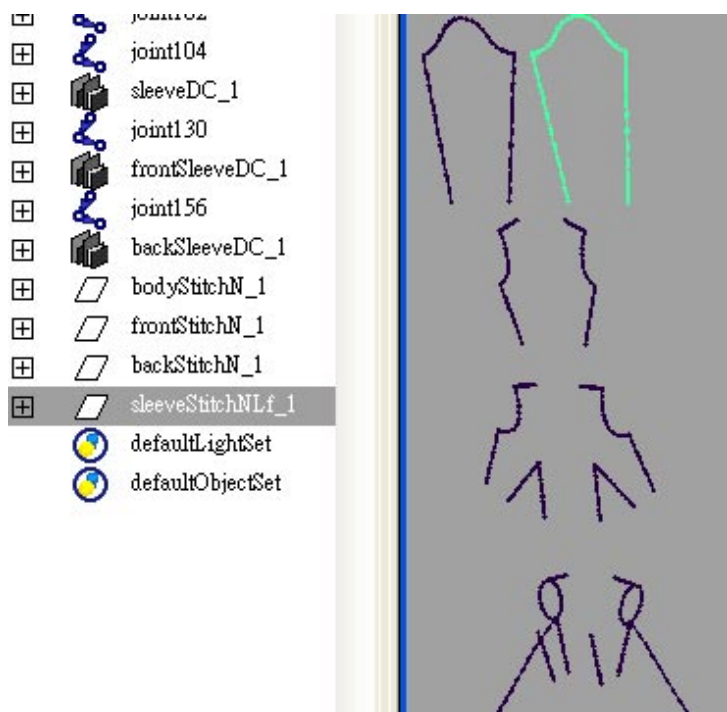
- Select front pattern stitches in viewport
- Edit -> Group or press Ctrl-g
- Rename "group1" to "backStitchN_1"

The scene will become:



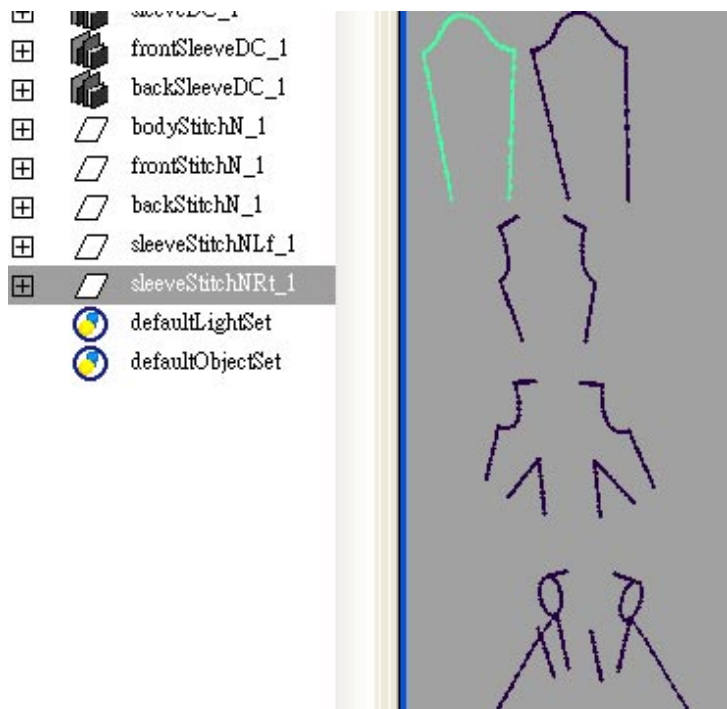
- Select front pattern stitches in viewport
- Edit -> Group or press Ctrl-g
- Rename "group1" to "sleeveStitchNLf_1"

The scene will become:



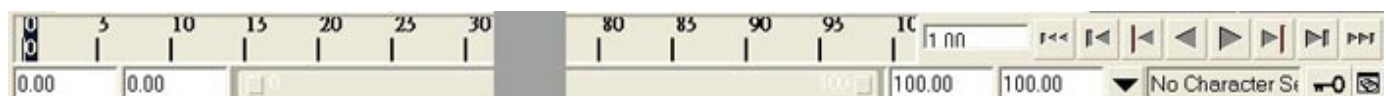
- Select front pattern stitches in viewport
- Edit -> Group or press Ctrl-g
- Rename "group1" to "sleeveStitchNRt_1"

The scene will become:

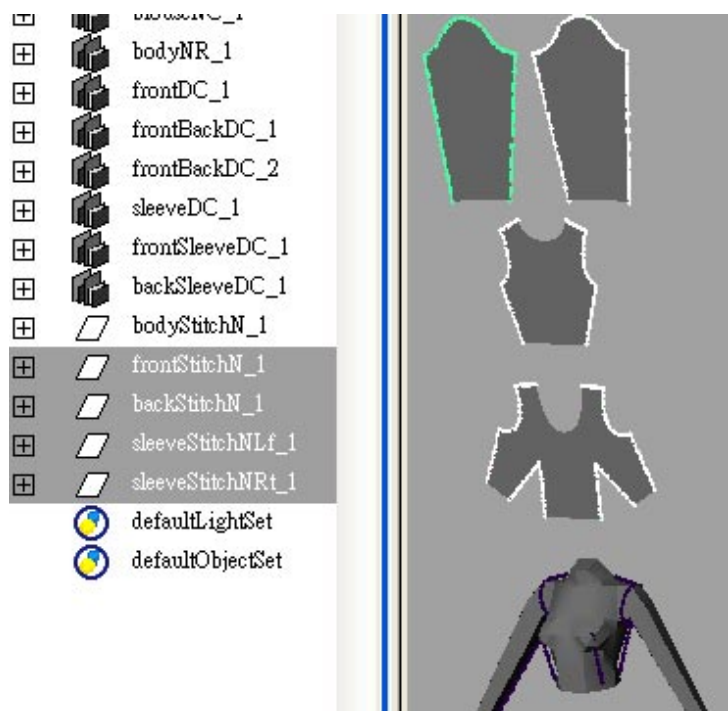


3.2 Move Patterns to Start Positions

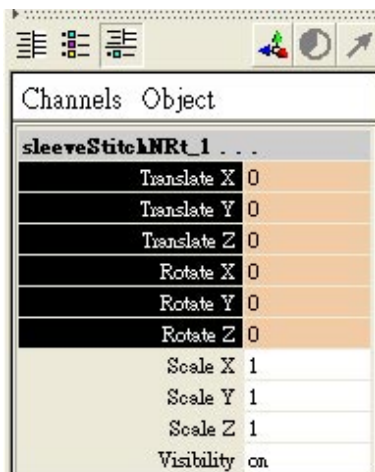
Set the time slider to start from 0 and end at 100 and move time to 0 as shown:



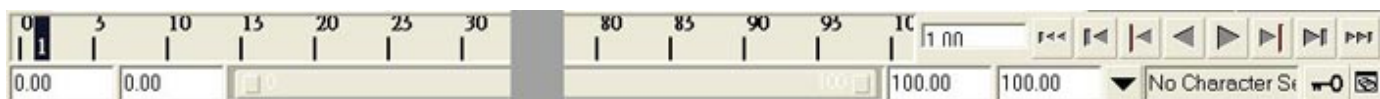
Turn on display of Polygons in the viewport. Select frontStitchN_1, backStitchN_1, sleeveStitchNLf_1, sleeveStitchNRt_1 in Outliner as shown:



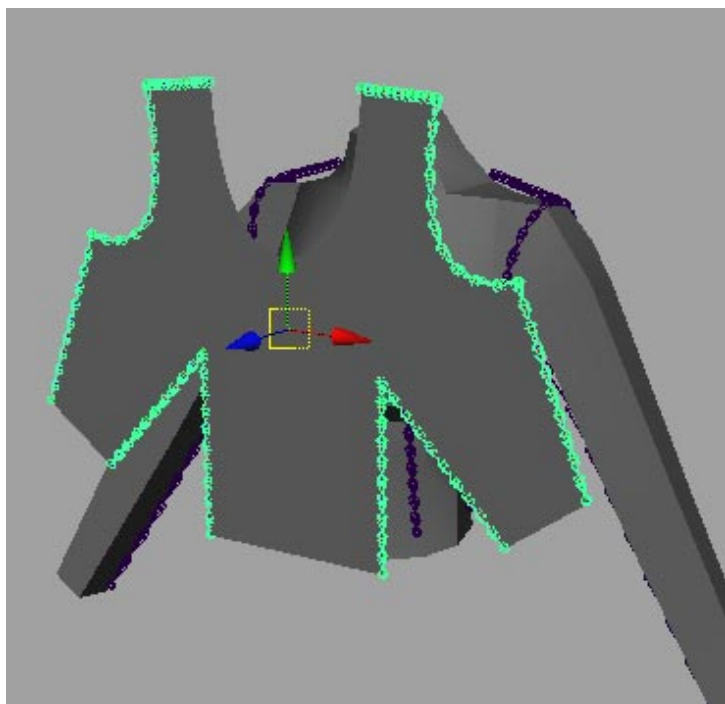
Select translation and rotation channels in channel box, right-click on channel names and choose Key Selected. It'll become:



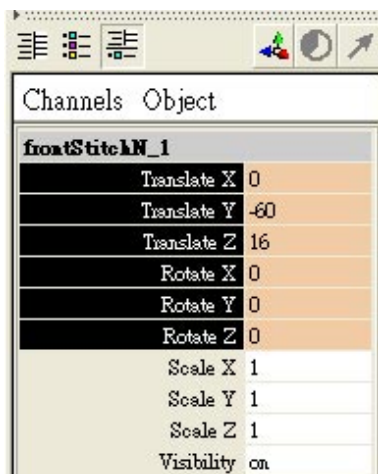
Set current time to 1:



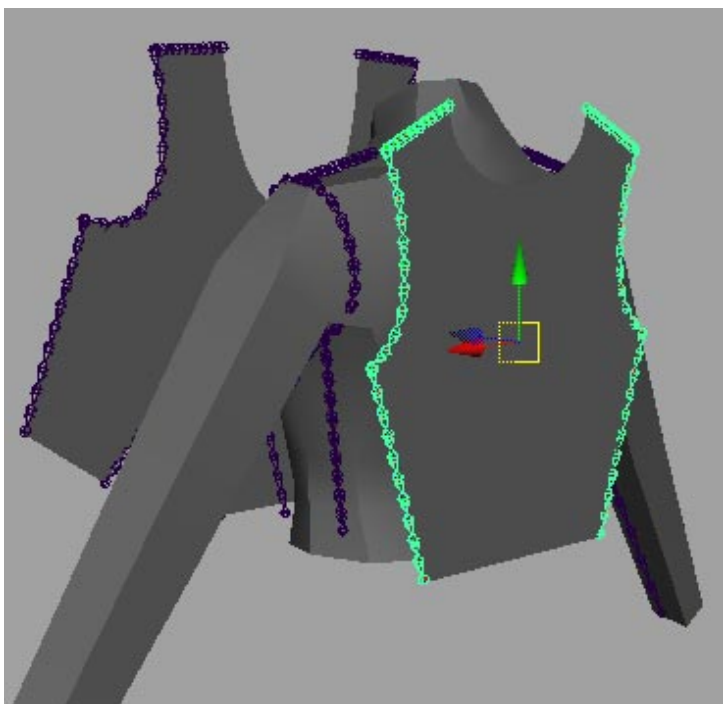
Select frontStitchN_1 from Outliner. Invoke Modify -> Center Pivot. Press w. Move frontStitchN_1 to front of bodyS_1 as shown:



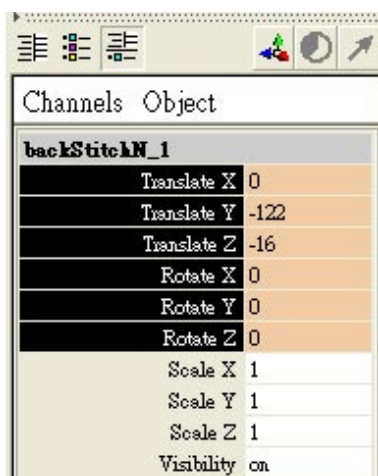
Select translation and rotation channels in channel box, right-click on channel names and choose Key Selected.



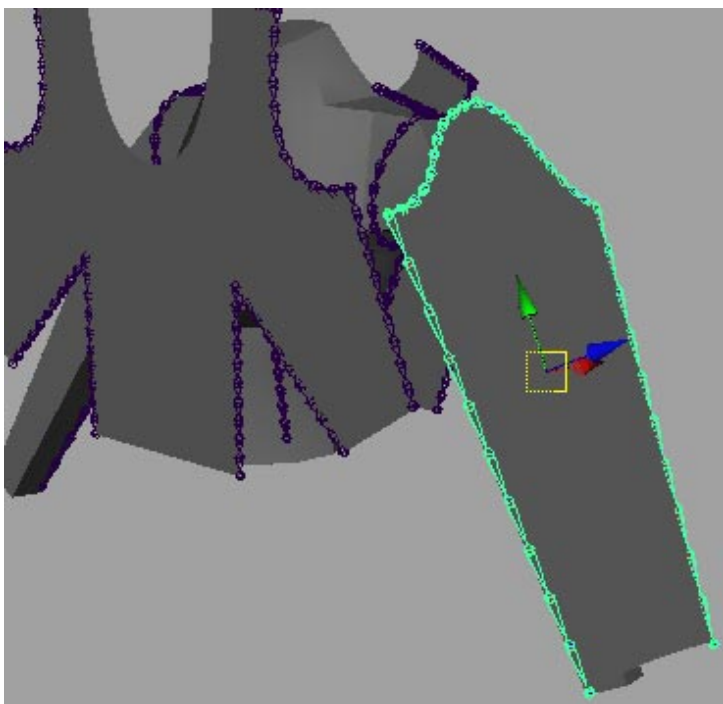
Select backStitchN_1 from Outliner. Invoke Modify -> Center Pivot. Press w. Move backStitchN_1 to back of bodyS_1 as shown:



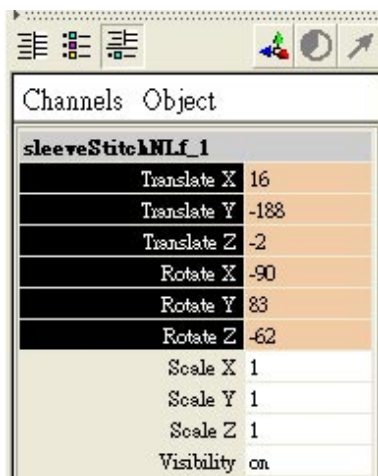
Select translation and rotation channels in channel box, right-click on channel names and choose Key Selected:



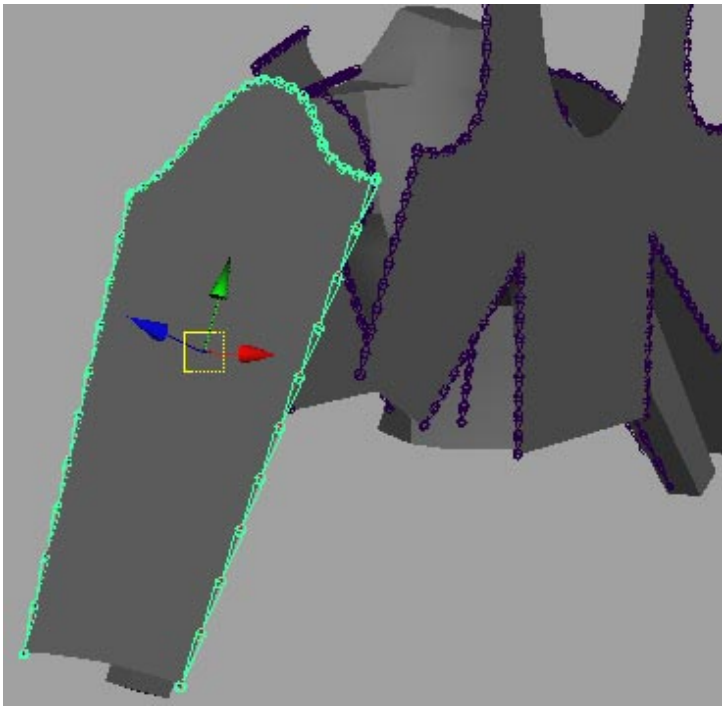
Select sleeveStitchNLf_1 from Outliner. Invoke Modify -> Select Pivot. Press w. Move and rotate sleeveStitchNLf_1 above the left arm as shown:



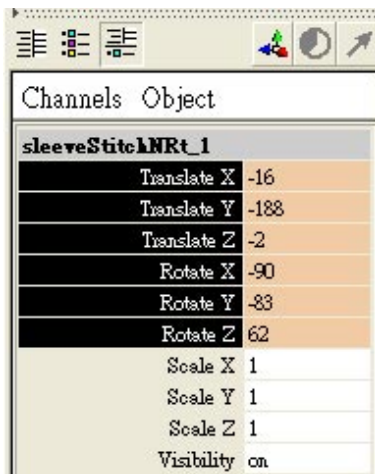
Select translation and rotation channels in channel box, right-click on channel names and choose Key Selected:



Select sleeveStitchNRLt_1 from Outliner. Invoke Modify -> Select Pivot. Press w. Move and rotate sleeveStitchNRLt_1 above the right arm as shown:

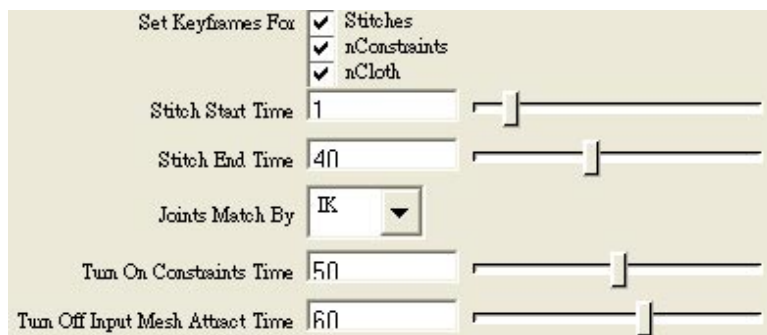


Select translation and rotation channels in channel box, right-click on channel names and choose Key Selected:

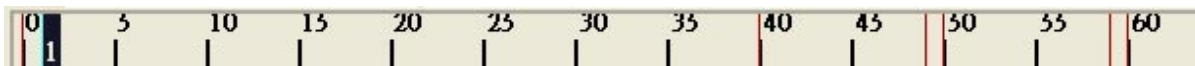


3.3 Set Keyframes

Select blouseS_1 and invoke jc.clothes -> Set Keyframes  with the following options:



Edit -> Select All and then Edit -> Select Hierarchy. You'll see keyframes are set in the specified times in the Time Slider:



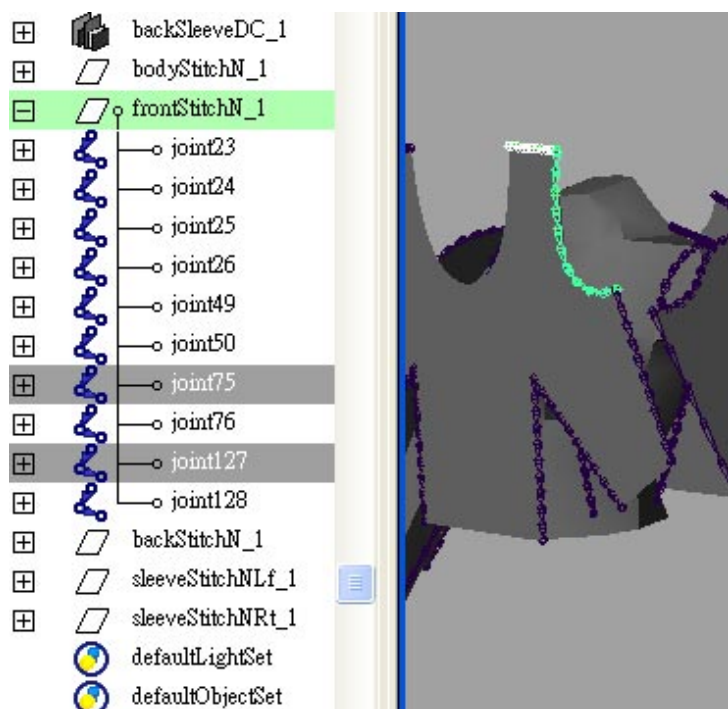
4. Attach Stitches

This step is to create point constraints between ending and starting joints of adjacent stitches in the same pattern. Keyframes will be set in the resulting pairBlend node via the blendPoint1 attribute in the affected joint.

Open scene file [blouse-sample3.mb](#) or continue with the previous step.

4.1 Attach Front Stitches

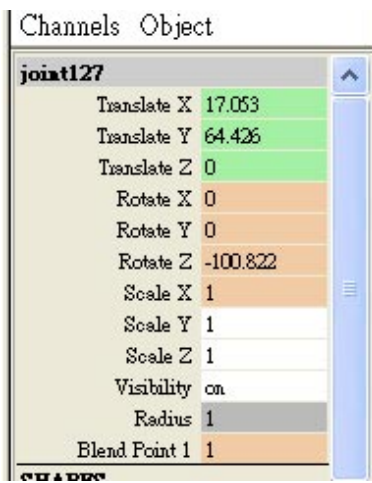
Select left shoulder stitch (joint75) on front pattern, then shift-select armhole stitch (joint127) as shown:



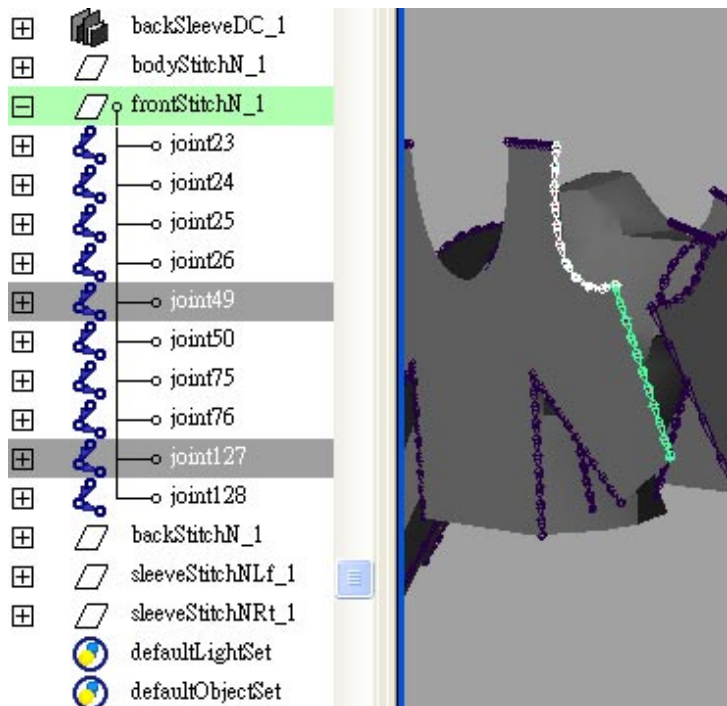
Invoke jc.clothes -> Attach Adjacent Stitches  with the following options:



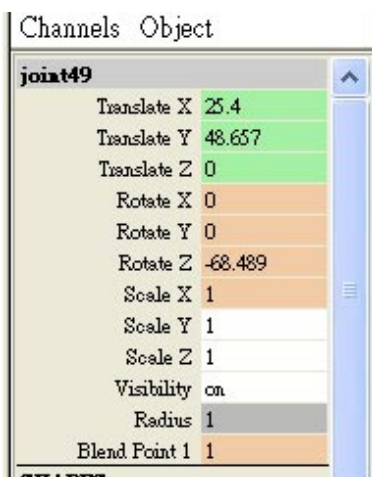
You'll see channels of armhole stitch (joint127) are constrained and keyed as shown in the channel box:



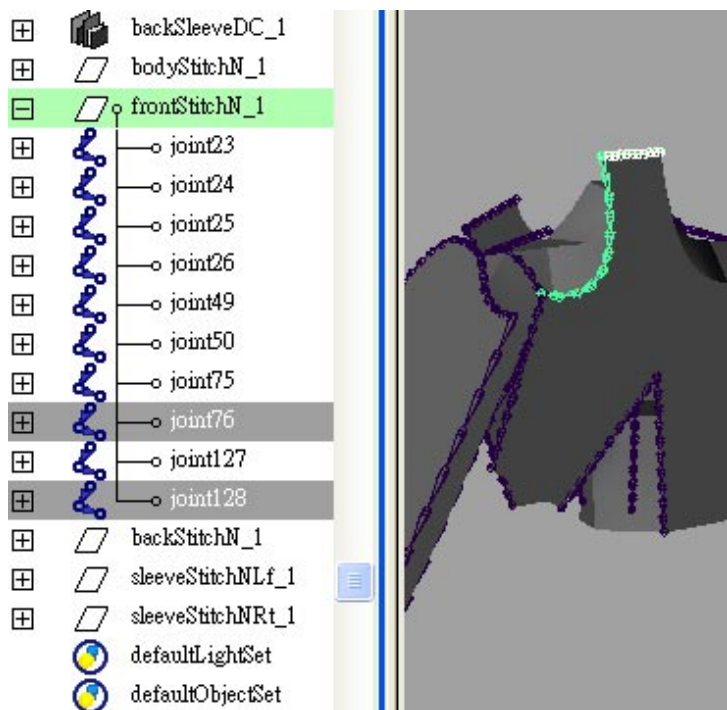
Select left armhole stitch (joint127) on front pattern, then shift-select body side stitch (joint49) as shown:



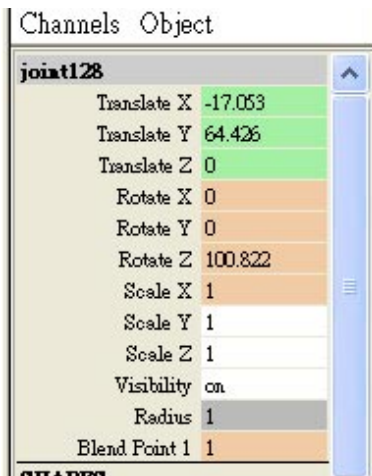
Invoke jc.clothes -> Attach Adjacent Stitches and you'll see channels of body side stitch (joint49) are constrained and keyed as shown in the channel box:



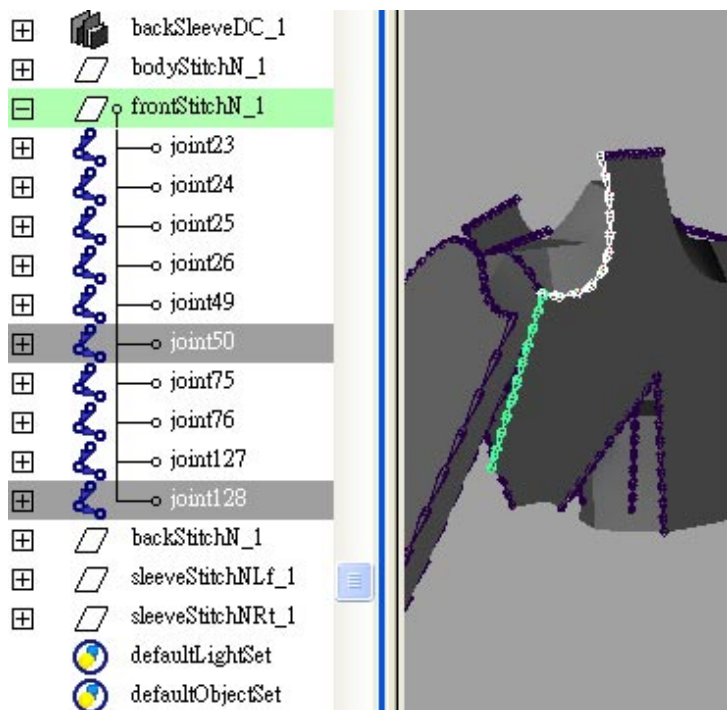
Select right shoulder stitch (joint76) on front pattern, then shift-select armhole stitch (joint128) as shown:



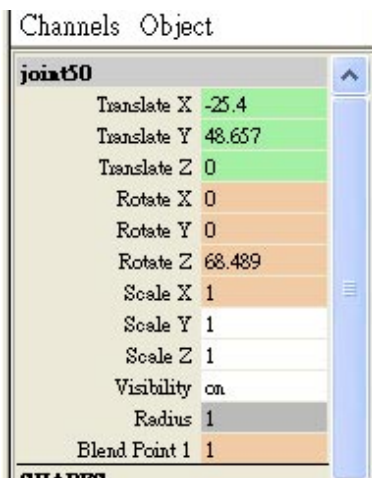
Invoke jc.clothes -> Attach Adjacent Stitches and you'll see channels of armhole stitch (joint128) are constrained and keyed as shown in the channel box:



Select right armhole stitch (joint128) on front pattern, then shift-select body side stitch (joint50) as shown:

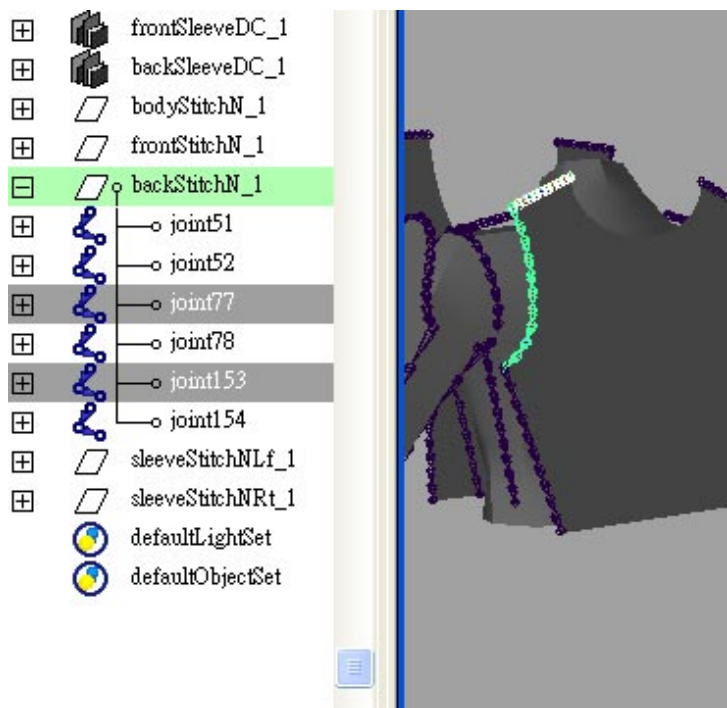


Invoke jc.clothes -> Attach Adjacent Stitches and you'll see channels of body side stitch (joint50) are constrained and keyed as shown in the channel box:

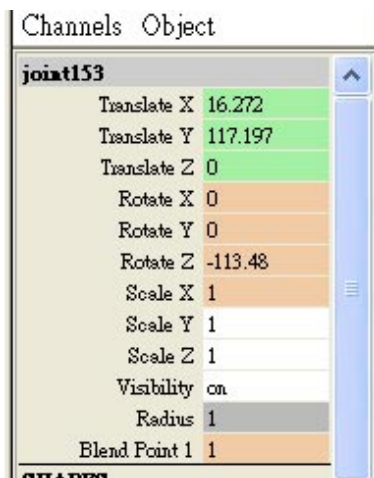


4.2 Attach Back Stitches

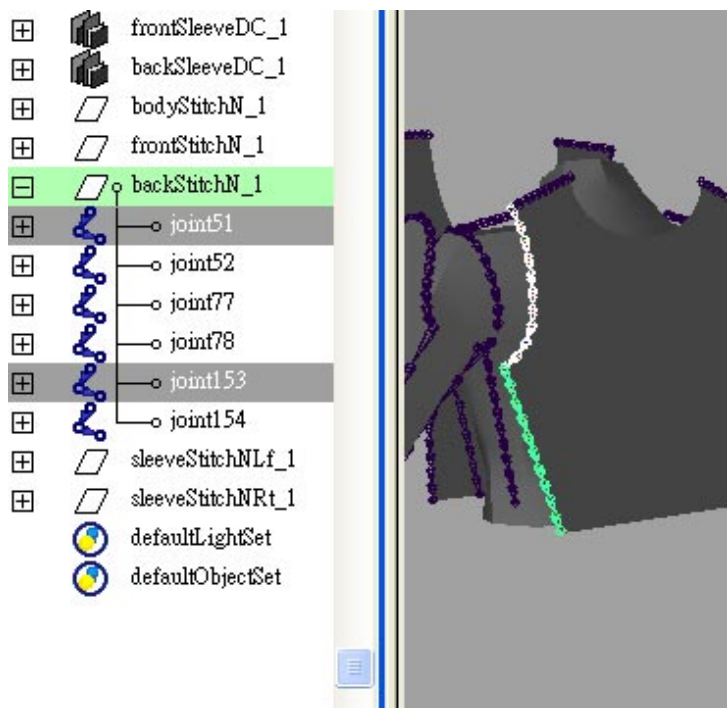
Select left shoulder stitch (joint77) on back pattern, then shift-select armhole stitch (joint153) as shown:



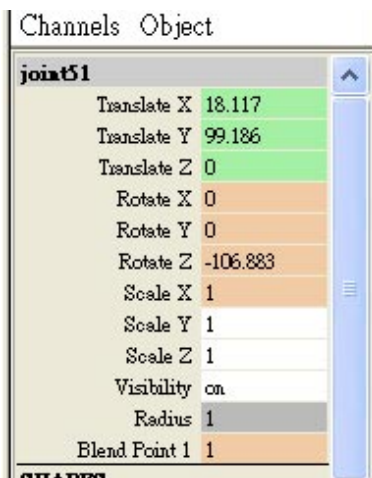
Invoke jc.clothes -> Attach Adjacent Stitches and you'll see channels of armhole stitch (joint153) are constrained and keyed as shown in the channel box:



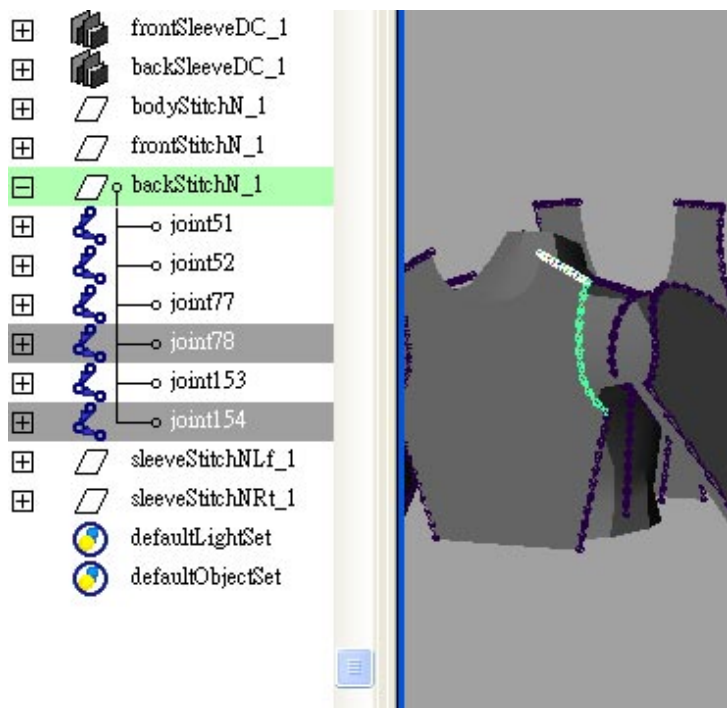
Select left armhole stitch (joint153) on front pattern, then shift-select body side stitch (joint51) as shown:



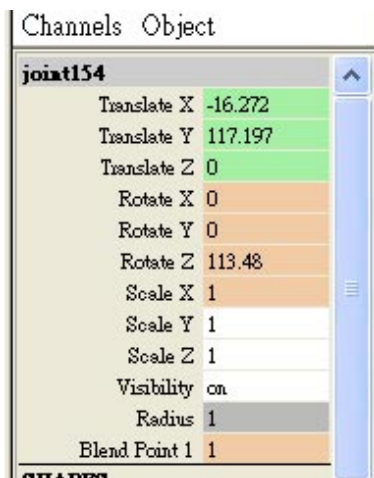
Invoke `jc.clothes -> Attach Adjacent Stitches` and you'll see channels of body side stitch (joint51) are constrained and keyed as shown in the channel box:



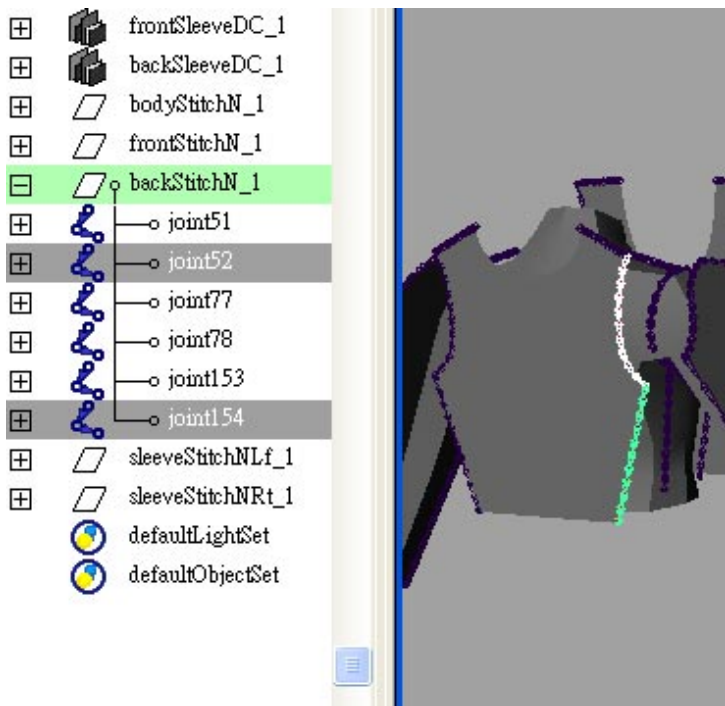
Select right shoulder stitch (joint78) on back pattern, then shift-select armhole stitch (joint154) as shown:



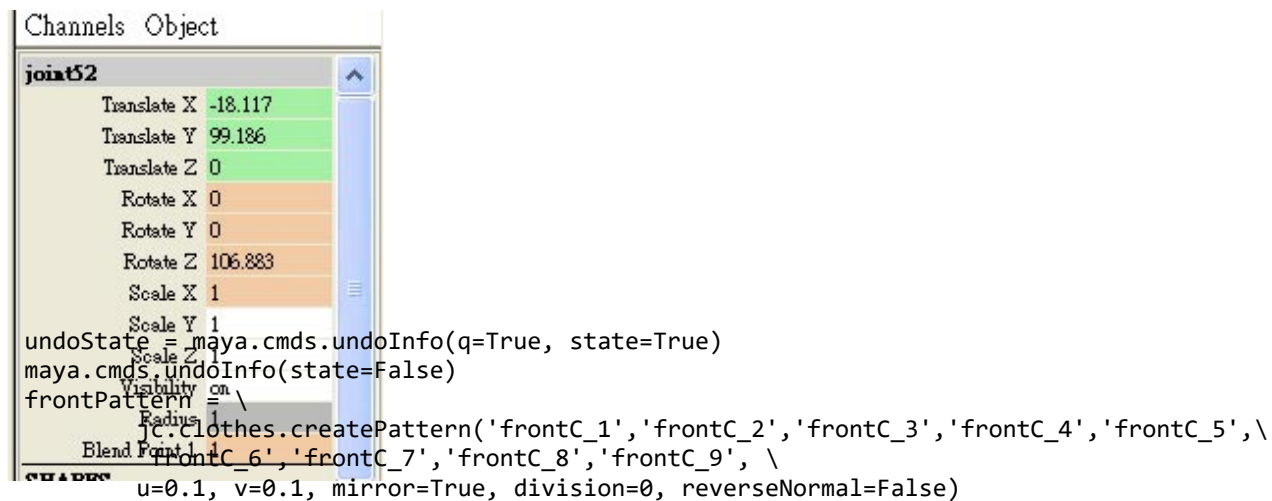
Invoke jc.clothes -> Attach Adjacent Stitches and you'll see channels of armhole stitch (joint154) are constrained and keyed as shown in the channel box:



Select right armhole stitch (joint154) on front pattern, then shift-select body side stitch (joint52) as shown:



Invoke jc.clothes -> Attach Adjacent Stitches and you'll see channels of body side stitch (joint52) are constrained and keyed as shown in the channel box:



4.3 Attach Left Sleeve Stitches

Select front armhole stitch (joint129) on left sleeve pattern, then shift-select front inside arm stitch (joint101) as shown:

```

jc.clothes.createPattern('sleeveC_1','sleeveC_2','sleeveC_3','sleeveC_4','sleeveC_5', \
    'sleeveC_6', u=0.5, v=0.5, mirror=True, division=0, reverseNormal=False)

```

```

garment = \
    jc.clothes.createGarment(frontPattern, backPattern, sleevePattern, solver="nucleus1")

```

```

frontStitch = \
    jc.clothes.createStitch('measurementC_10','frontC_3','frontC_9', \
        count=10, rebuildCurve=False, mirror=True, stretch=False, bind=True, constraint=True)

```

```

bodySideStitch = \
    jc.clothes.createStitch('measurementC_14','frontC_8','backC_6', \
        count=10, rebuildCurve=False, mirror=True, stretch=False, bind=True, constraint=True)

```

```

shoulderStitch = \
    jc.clothes.createStitch('measurementC_13','frontC_7','backC_5', \
        count=10, rebuildCurve=False, mirror=True, stretch=False, bind=True, constraint=True)

```

```

insideArmStitch = \
    jc.clothes.createStitch('measurementC_2','sleeveC_3','sleeveC_6', \
        count=10, rebuildCurve=False, mirror=True, stretch=False, bind=True, constraint=True)

```



```

frontArmholeStitch1 = \
jc.clothes.createStitch('measurementC_8','frontC_6','sleeveC_5', \
count=10, rebuildCurve=False, mirror=True, stretch=False, bind=True, constraint=True)
backArmholeStitch1 = \
jc.clothes.createStitch('measurementC_9','backC_4','sleeveC_1', \
count=10, rebuildCurve=False, mirror=True, stretch=False, bind=True, constraint=True)
maya.cmds.currentTime(0)
maya.cmds.parent(frontStitch[0], bodySideStitch[0], shoulderStitch[0], insideArmStitch[0], \
frontArmholeStitch[0], backArmholeStitch[0], "bodyStitchN_1")
maya.cmds.parent(frontStitch[1], frontStitch[2], bodySideStitch[1], shoulderStitch[1], \
frontArmholeStitch[1], "frontStitchN_1")
maya.cmds.parent(bodySideStitch[2], shoulderStitch[2], backArmholeStitch[1], "backStitchN_1")
maya.cmds.parent(insideArmStitch[1][0], insideArmStitch[2][0], frontArmholeStitch[2][0], \
backArmholeStitch[2][0], "sleeveStitchN1f_1")
maya.cmds.parent(insideArmStitch[1][1], insideArmStitch[2][1], frontArmholeStitch[2][1], \
backArmholeStitch[2][1], "sleeveStitchN1r_1")

maya.cmds.currentTime(1)
jc.clothes.setKeyframes(garment, setKeyframesFor="Stitches nConstraints nCloth", \
stitchStartTime=1, stitchEndTime=40, jointsMatchBy="IK", \
turnOnConstraintsTime=50, turnOffInputMeshAttractTime=60)

```

left stitches
 Invoke **jc.clothes.attachAdjacentStitches** and you'll see channels of front inside arm stitch (joint101) are constrained and keyed as shown in the channel box.

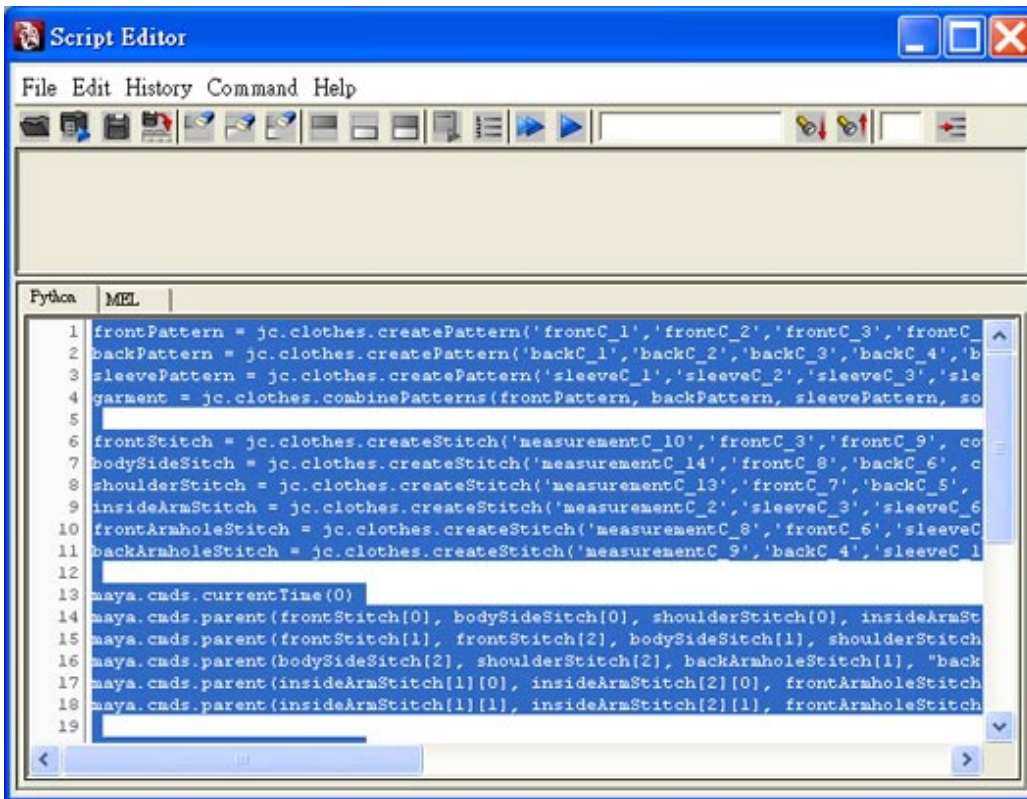
```

jc.clothes.attachAdjacentStitches(shoulderStitch[1][0], frontArmholeStitch[1][0], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(shoulderStitch[2][0], backArmholeStitch[1][0], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(backArmholeStitch[1][0], bodySideStitch[2][0], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(frontArmholeStitch[2][0], insideArmStitch[1][0], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(backArmholeStitch[2][0], insideArmStitch[2][0], \
stitchStartTime=1, stitchEndTime=40)
# right stitches
jc.clothes.attachAdjacentStitches(shoulderStitch[1][1], frontArmholeStitch[1][1], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(frontArmholeStitch[1][1], bodySideStitch[1][1], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(shoulderStitch[2][1], backArmholeStitch[1][1], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(backArmholeStitch[1][1], bodySideStitch[2][1], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(frontArmholeStitch[2][1], insideArmStitch[1][1], \
stitchStartTime=1, stitchEndTime=40)
jc.clothes.attachAdjacentStitches(backArmholeStitch[2][1], insideArmStitch[2][1], \
stitchStartTime=1, stitchEndTime=40)

```

```
maya.cmds.undoInfo(state=undoState)
```

Click anywhere in the bottom pane. In Script Editor, invoke Edit -> Select All.



back inside arm stitch (joint103)

Invoke File -> Save Script to Shelf. Enter "blouse" in the dialog box.



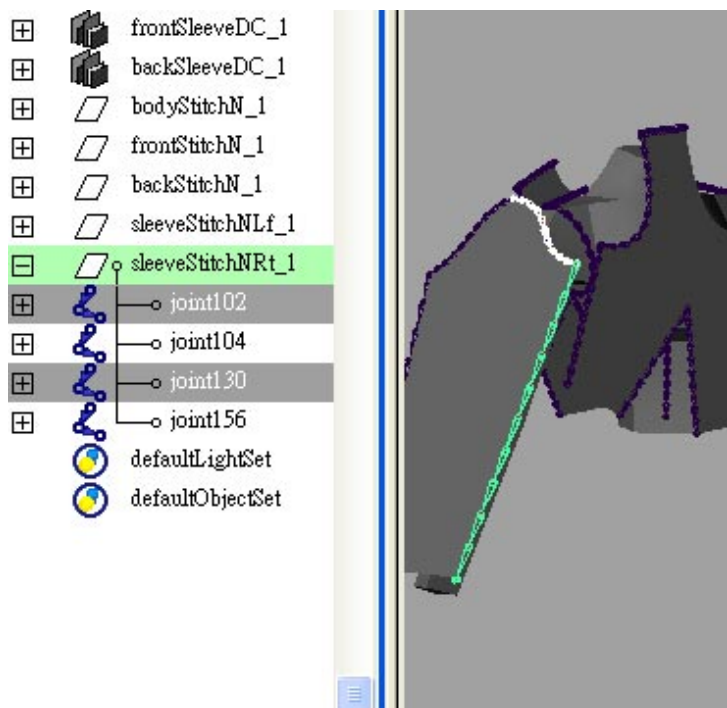
Press OK. There'll be a new item called "blouse" in the shelf.

Close Script Editor and press "blouse" in the shelf. Wait a few minutes and you'll see the blouse is rebuilt up to the extend just before simulation.

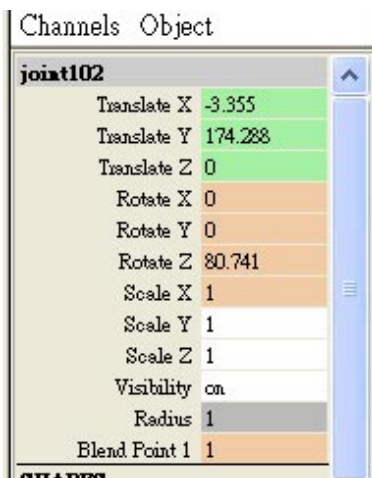
4.4 Attach Right Sleeve Stitches

Select front armhole stitch (joint130) on right sleeve pattern, then shift-select front inside arm stitch (joint102) as shown:

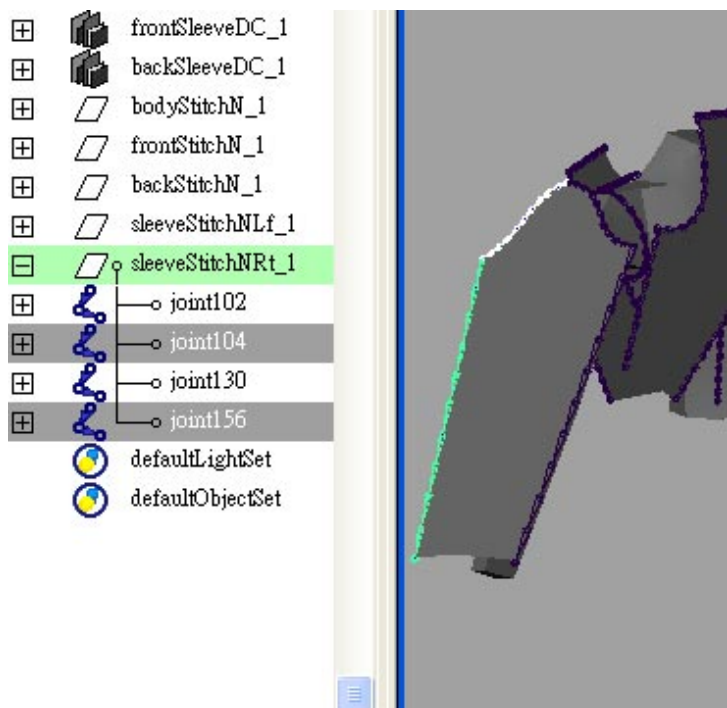
[Overview](#)
[Walkthrough](#)
[Create Patterns](#)
[Stitching](#)
[Posing](#)
[Simulation](#)
[Conclusion](#)
[Samples](#)



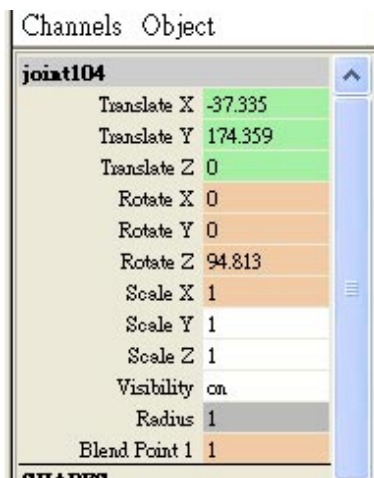
Invoke jc.clothes -> Attach Adjacent Stitches and you'll see channels of front inside arm stitch (joint102) are constrained and keyed as shown in the channel box:



Select back armhole stitch (joint56) on right sleeve pattern, then shift-select back inside arm stitch (joint104) as shown:



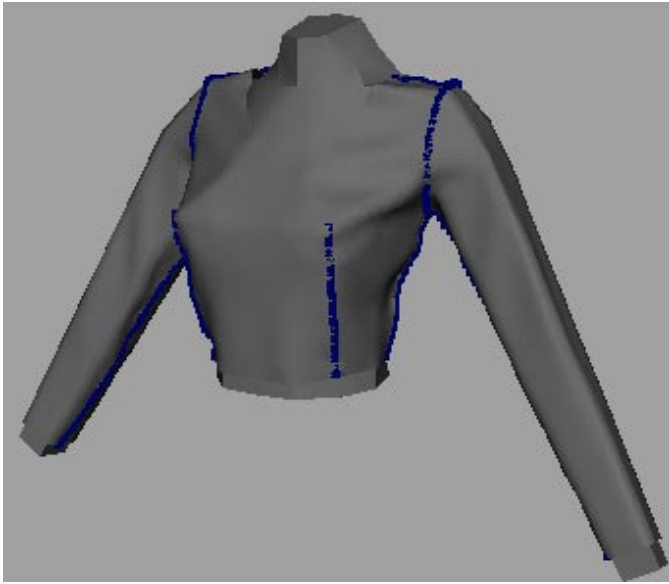
Invoke `jc.clothes -> Attach Adjacent Stitches` and you'll see channels of back inside arm stitch (joint104) are constrained and keyed as shown in the channel box:



5. Play Simulation

Open scene file [blouse-sample4.mb](#) or continue with the previous step.

Press the play button in the Time Slider and wait until 100 frames gone. Turn off display of joints in the viewport. The blouse will be finished as shown below:



6. Rebuild Garment

Open scene file [blouse-sample4.mb](#) or continue with the previous step.

Select blouseS_1 and invoke jc.clothes -> Delete Garment. Open Script Editor. Click on the Python tab. Copy-and-paste the following script into the bottom pane: