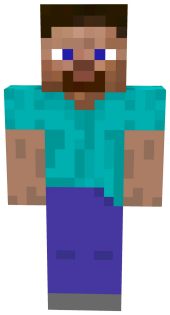
Recipe: Minecraft Character



Minecraft Character Body Part Dimensions

- **Head**: 8 × 8 × 8 units (pixels)
- **Torso (Body)**: 8 (width) × 4 (depth) × 12 (height) units
- **Arms**: 4 (width) × 4 (depth) × 12 (height) units each
- **Legs**: 4 (width) × 4 (depth) × 12 (height) units each
- **Total Height**: 32 units tall (or 16 to 18 blocks high in Minecraft scale, where 1 block usually equals 16x16 or scaled units in 3D software).

Step 0: Set up the Maya project

1. Open Autodesk Maya.
2. Select File → Project Window.
3. Click New.
4. Set the project location to your student folder:

```
O:\Students\<your name>
```

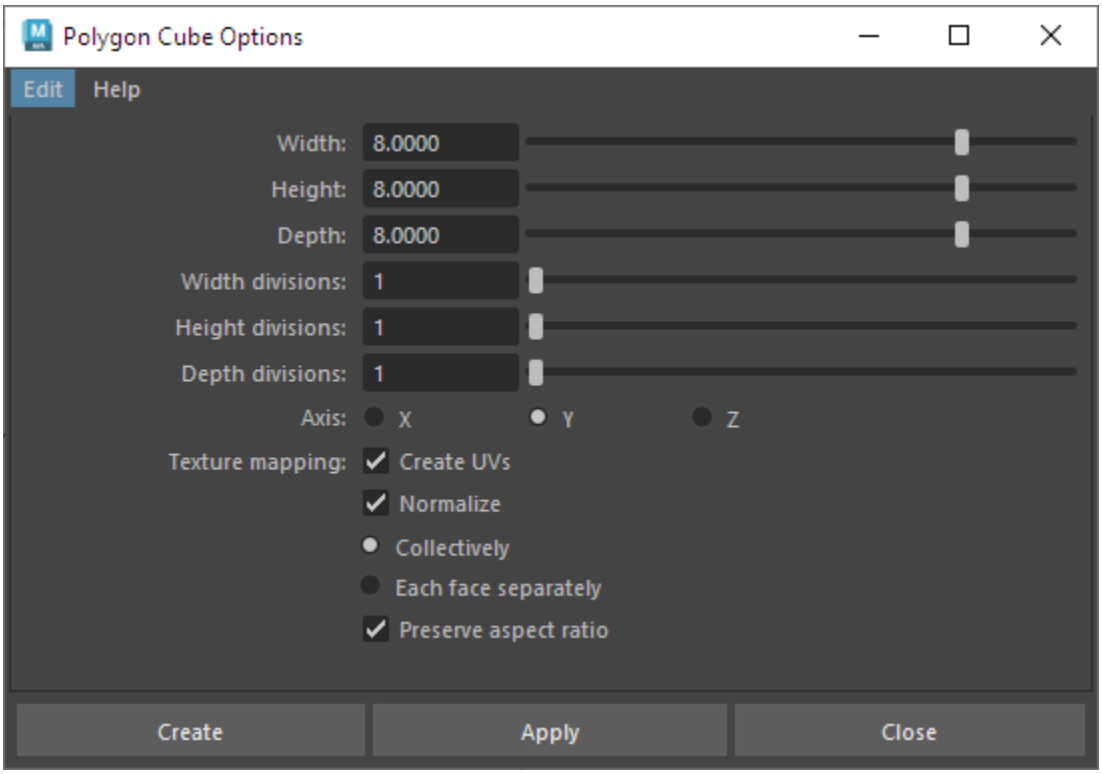
5. Set the project name to `MinecraftCharacter`.
6. Click Accept.
7. Select File → Save Scene As.
8. Save the scene as `MinecraftCharacter_Model.ma` in the project's `scenes` folder.

Step 1: Model the Character

1. Create the head

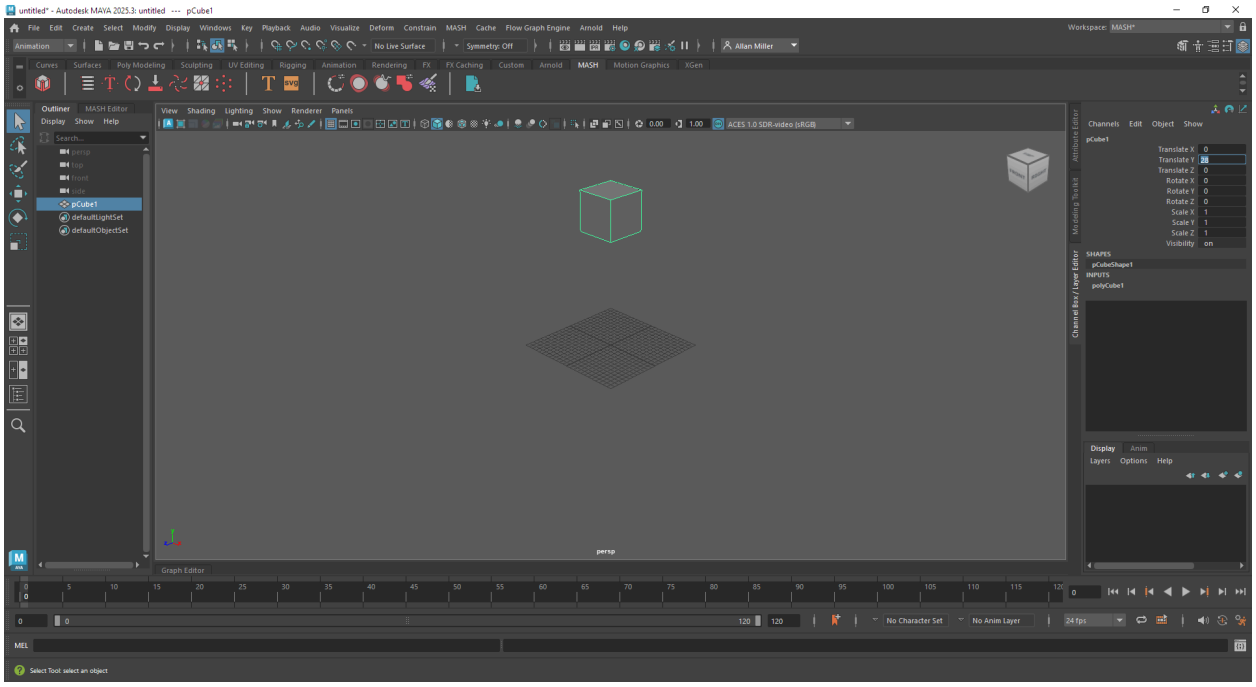
Recipe: Minecraft Character

---

1. Select Create → Polygon Primitives → Cube.
2. In the Channel Box or cube construction settings, set the cube dimensions to:
    - Width: `8`
    - Height: `8`
    - Depth: `8`
    - 

3. Open the Channel Box
    - Set Translate X to `0`.
    - Set Translate Y to `28`.
    - Set Translate Z to `0`.
4. In the Outliner, rename the object `Head`.

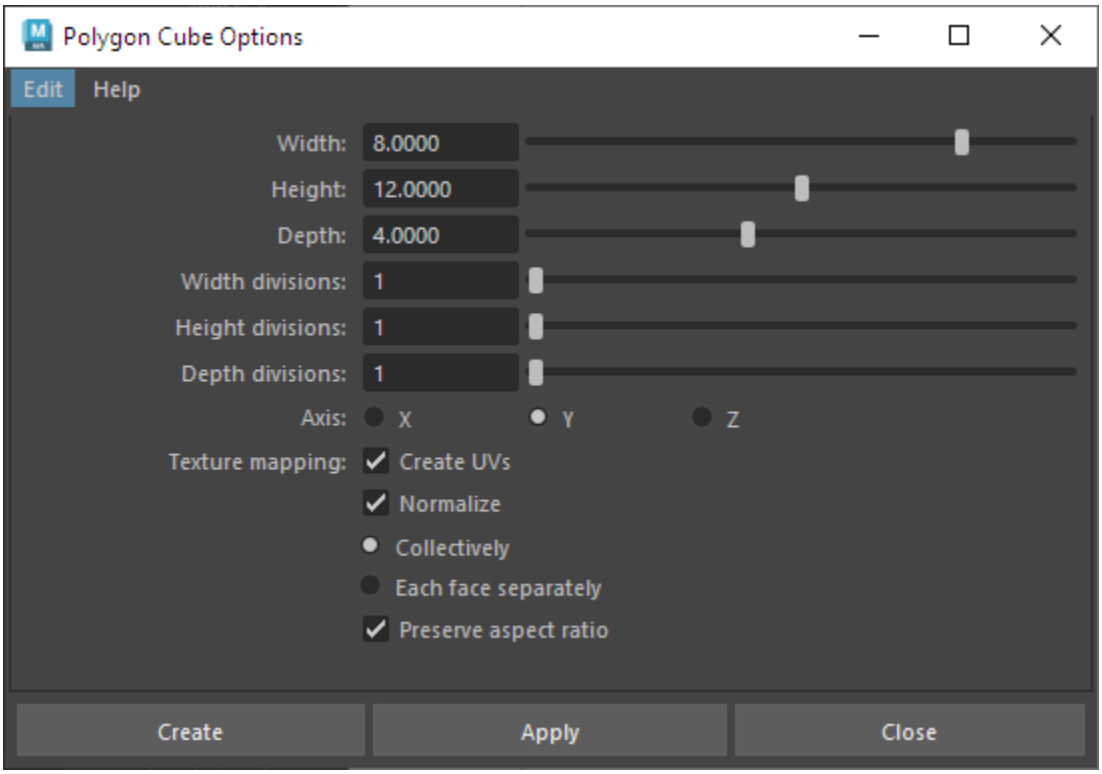
Recipe: Minecraft Character

5. 

2. Create the torso

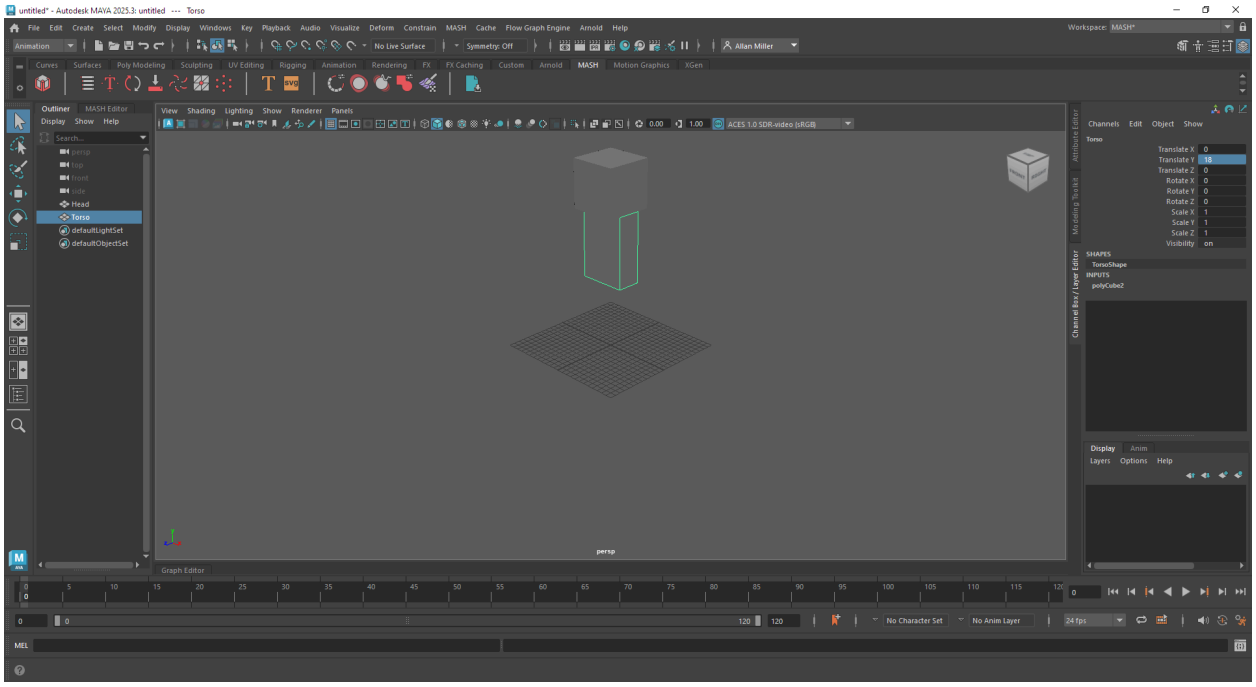
1. Create another polygon cube.
2. Set its dimensions:
    - Width: 8
    - Height: 12
    - Depth: 4

Recipe: Minecraft Character

- 

3. Open the Channel Box
    - Set Translate X to `0`.
    - Set Translate Y to `18`.
    - Set Translate Z to `0`.
4. Rename the object `Torso`.

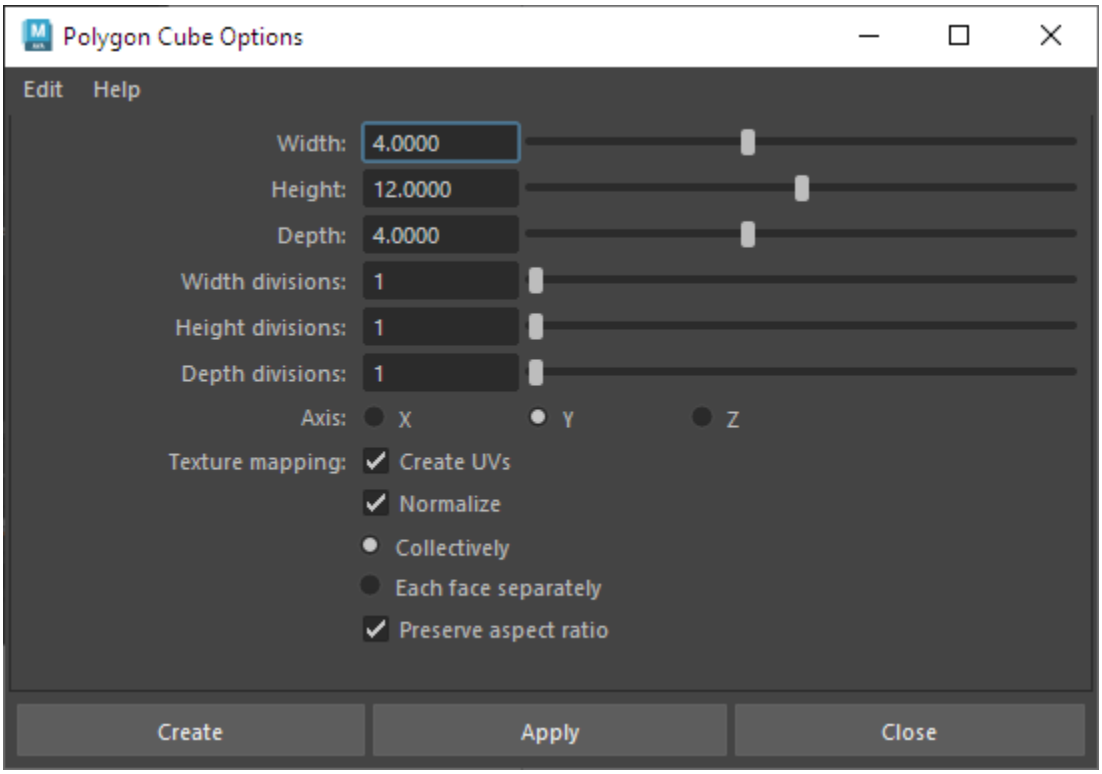
Recipe: Minecraft Character



3. Create the first arm

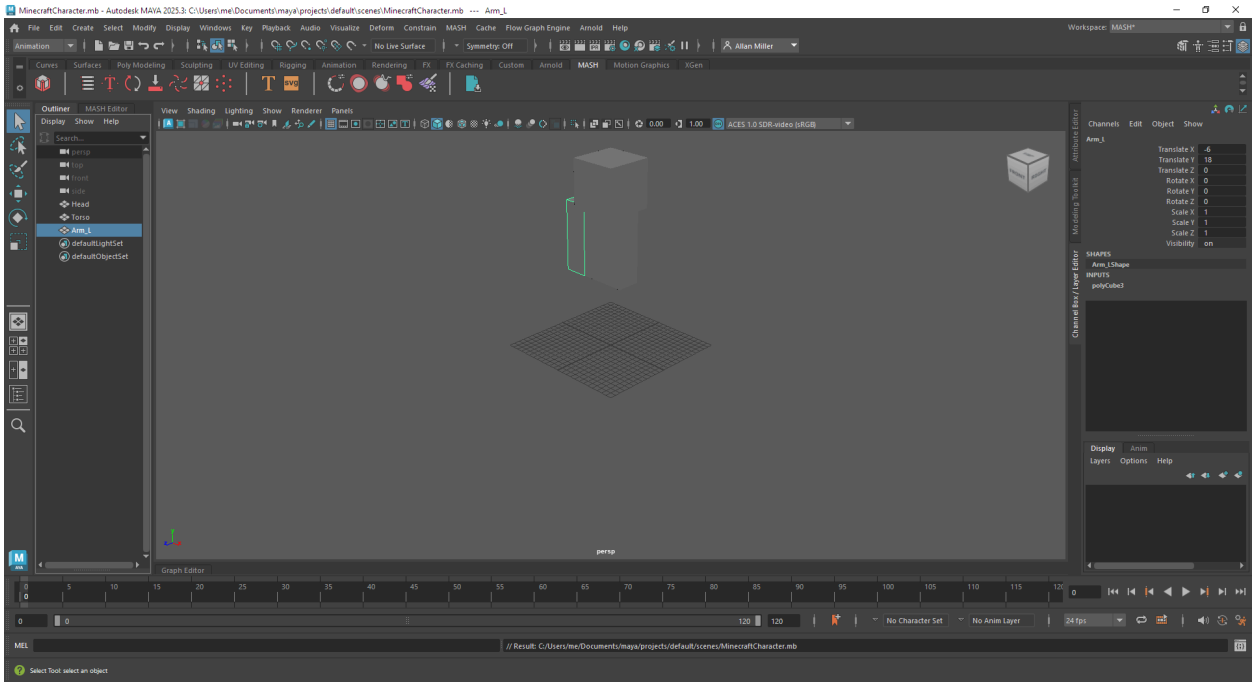
1. Create a polygon cube.
2. Set its dimensions:
    - Width: 4
    - Height: 12
    - Depth: 4

Recipe: Minecraft Character

- 

3. Open the Channel Box
    - Set Translate X to `-6`.
    - Set Translate Y to `18`.
    - Set Translate Z to `0`.
4. Rename the object `Arm_L`.

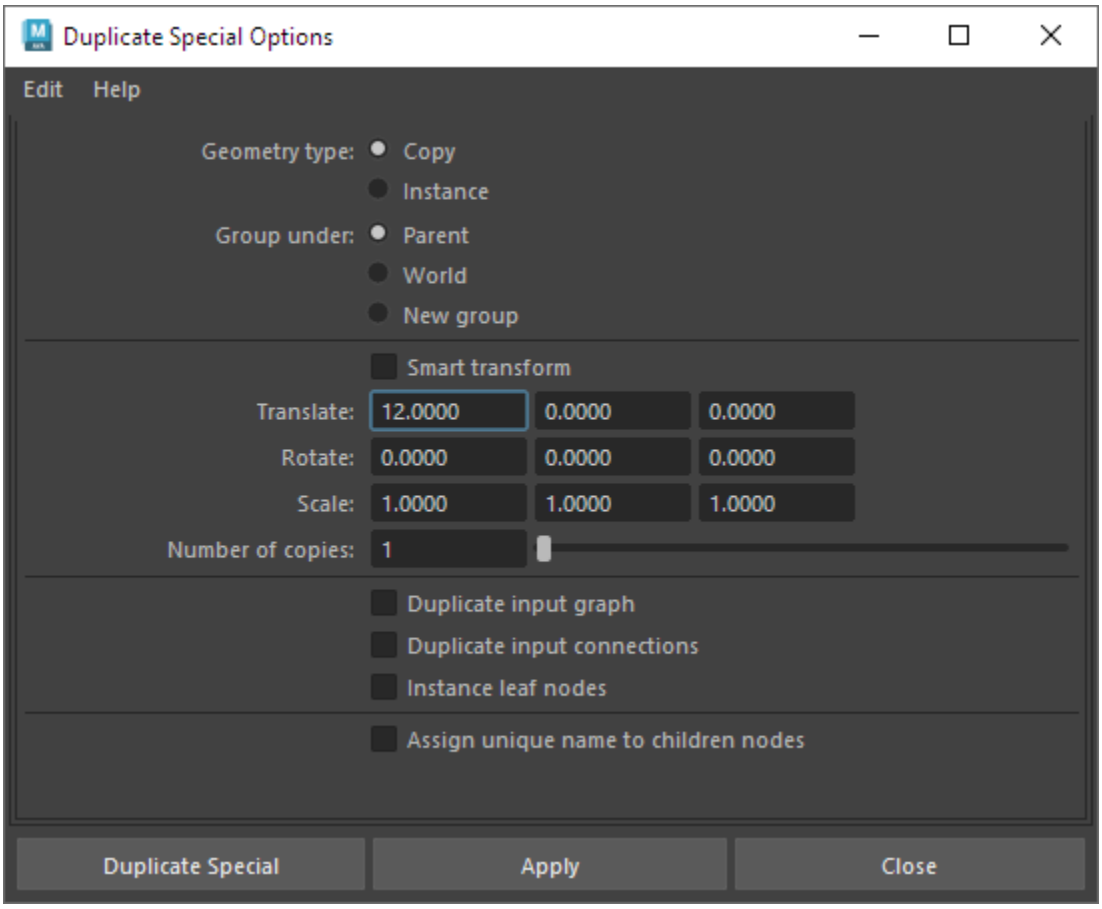
Recipe: Minecraft Character



4. Duplicate Special to create the second arm

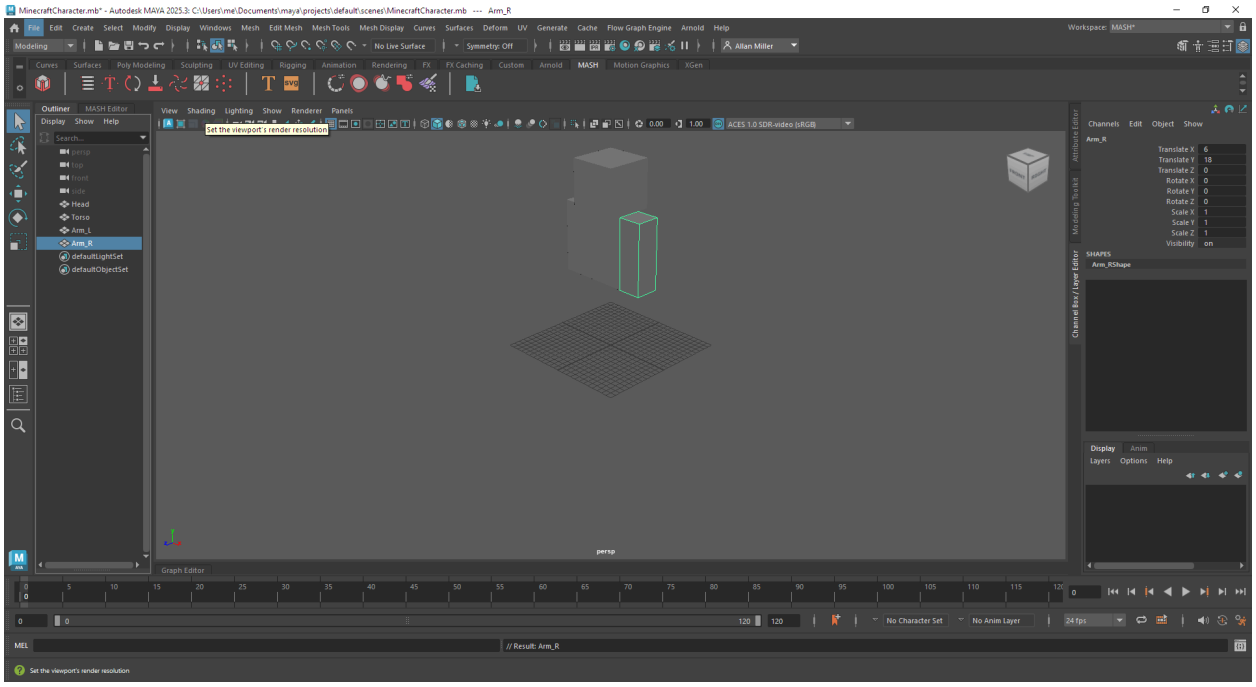
1. Select `Arm_L`.
2. Select **Edit** → **Duplicate Special** → ***Option Box***.
3. Set the translation values:
    - Translate X: `12`
    - Translate Y: `0`
    - Translate Z: `0`
4. Set Number of Copies to `1`.
5. Use a regular duplicate, not an instance.
6. Click Duplicate Special.

Recipe: Minecraft Character

- 

7. Rename the new object `Arm_R`.

Recipe: Minecraft Character



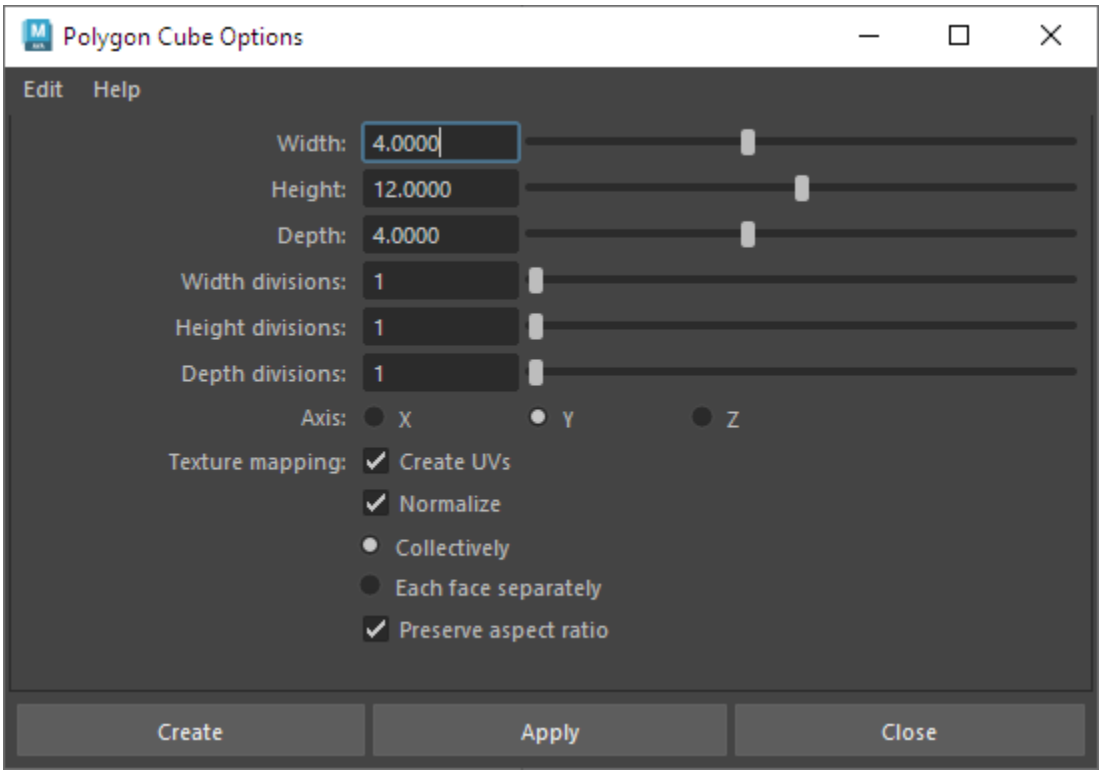
The right arm should now be centered at X = 6. Both arms remain independent polygon objects, so you can edit, texture, and animate them separately. DO NOT GROUP.

- *Note: If you used CTRL+C instead of CTRL+D then you are creating groups*

5. Create the first leg

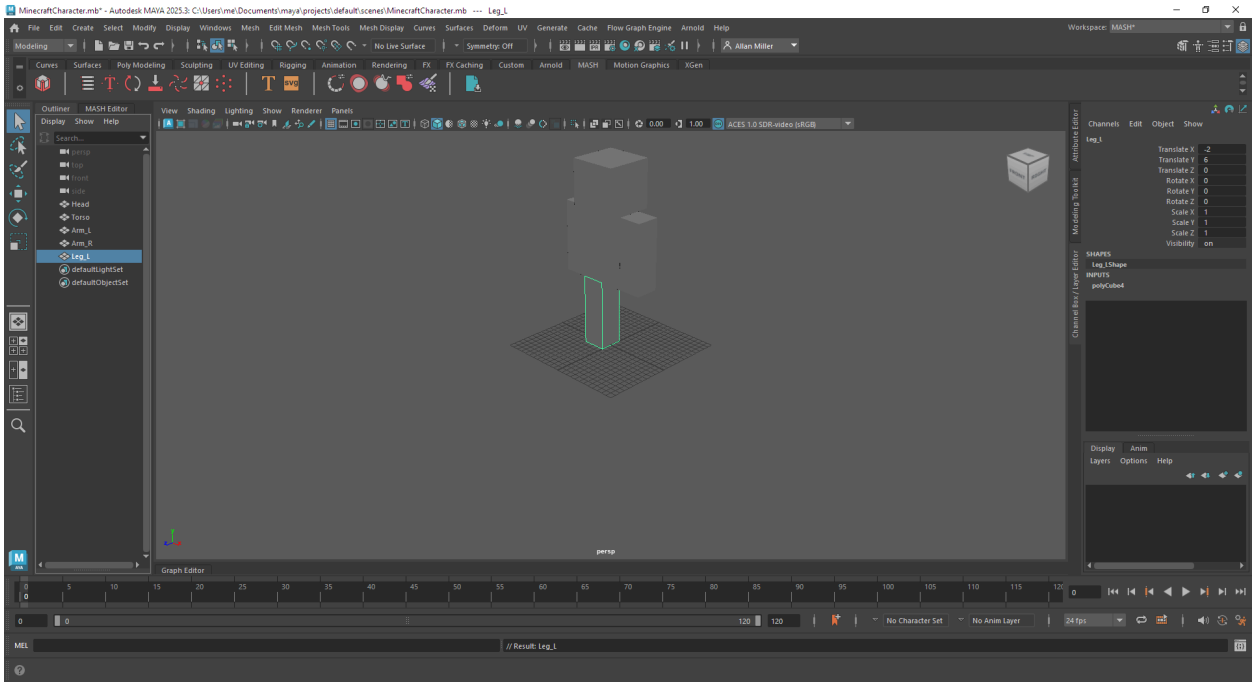
1. Create a polygon cube.
2. Set its dimensions:
    - Width: 4
    - Height: 12
    - Depth: 4

Recipe: Minecraft Character



3. Open the Channel Box
    - Set Translate X to `-2`.
    - Set Translate Y to `6`.
    - Set Translate Z to `0`.
4. Rename the object `Leg_L`.

Recipe: Minecraft Character

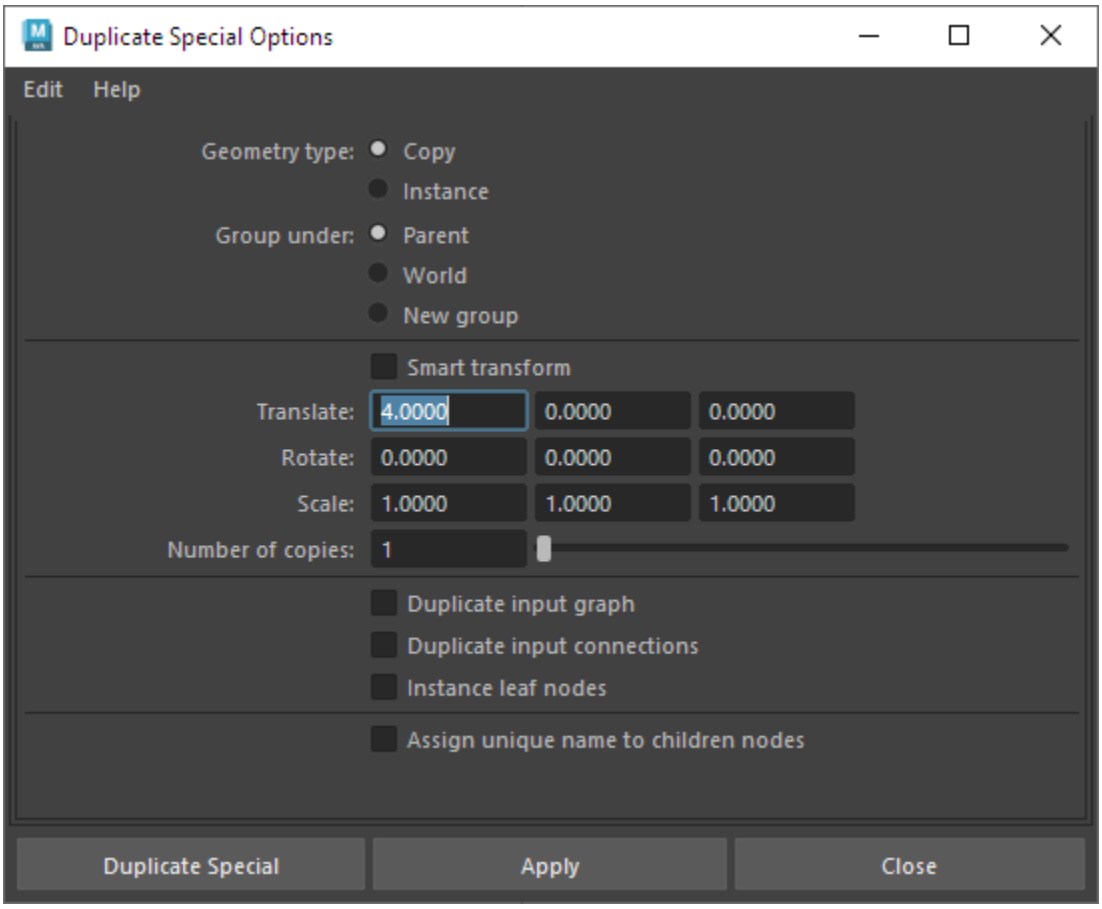


6. Duplicate Special to create the second leg

1. Select `Leg_L`.
2. Select Edit → Duplicate Special → Option Box.
3. Set Translate X to `2`.
4. Set Translate Y and Z to `0`.
5. Set Number of Copies to `1`.
6. Use a regular duplicate, not an instance.
7. Click Duplicate Special.
8. Rename the new object `Leg_R`.

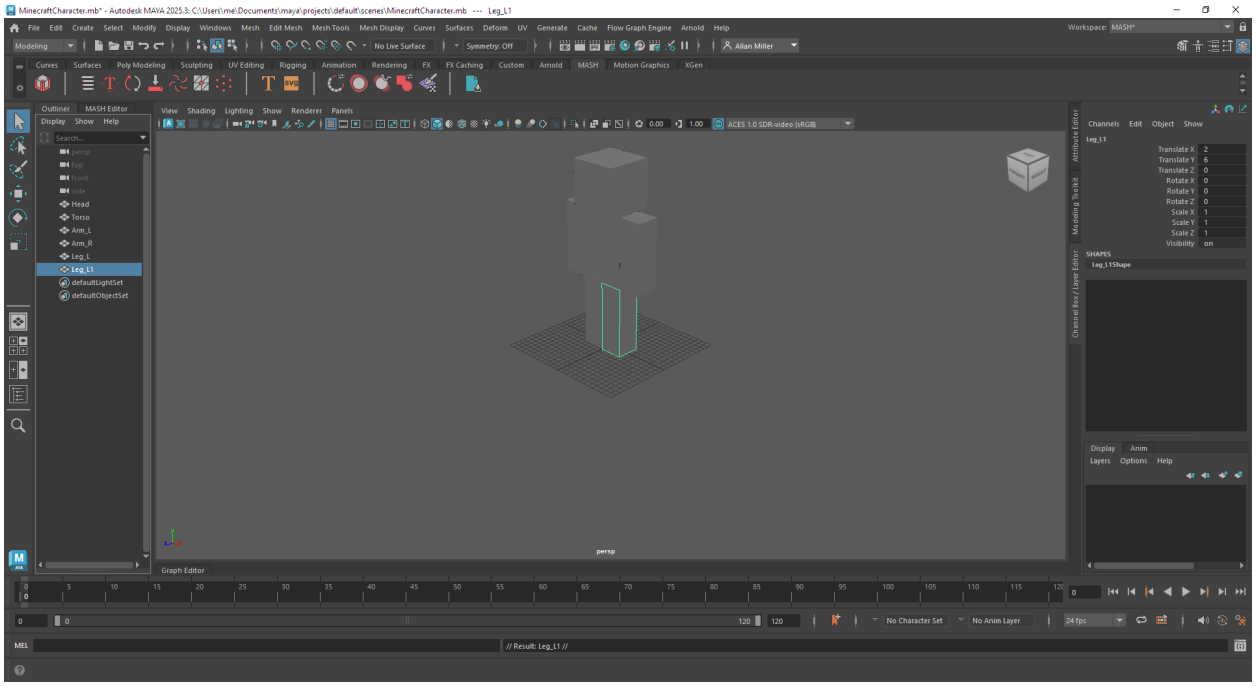
Recipe: Minecraft Character

---

a. 

The right leg should be centered at X = +2.

Recipe: Minecraft Character



Modeling checkpoint: You should now have six independent objects named `Head`, `Torso`, `Arm_L`, `Arm_R`, `Leg_L`, and `Leg_R`.

Step 2: Skinning your Character

UV mapping defines how a flat 2D texture is placed on the surfaces of a 3D model. Each cube needs UV coordinates so that a Minecraft skin can display the correct face, clothing, and colors.

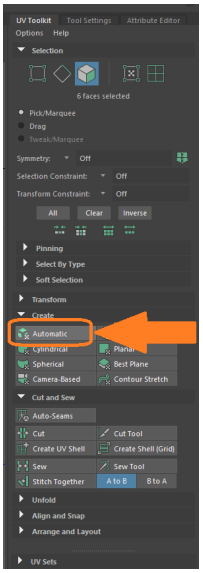
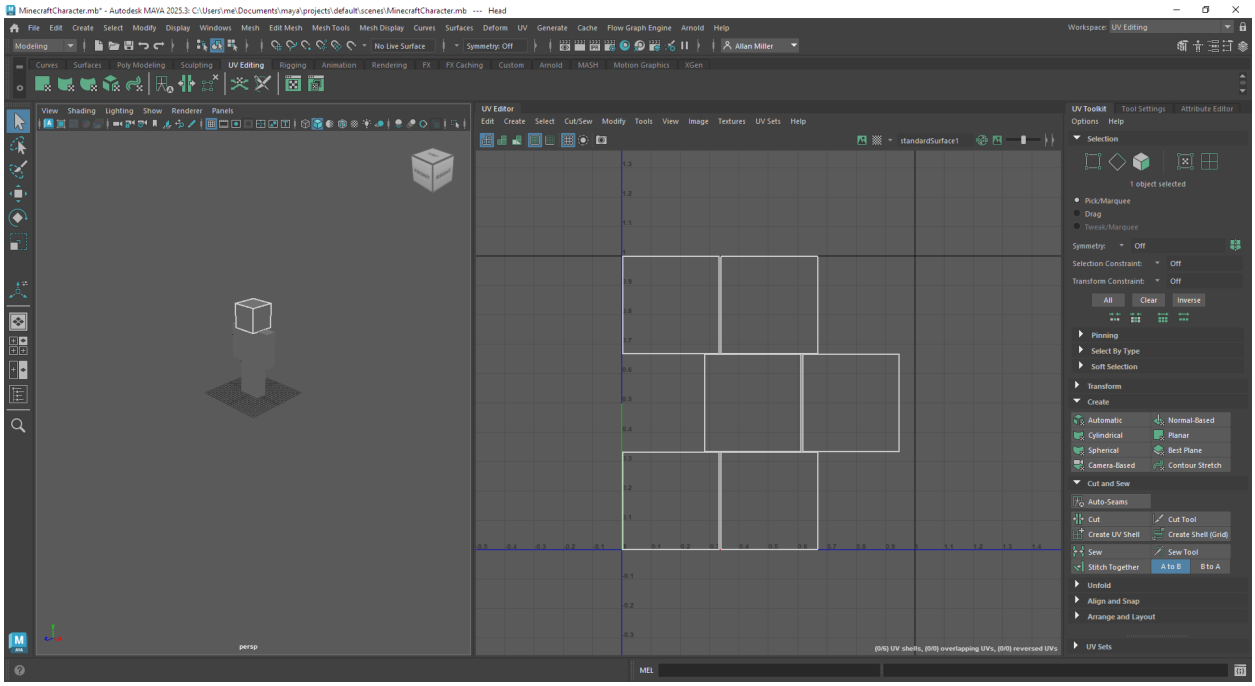
Open the UV Editing workspace

1. Select `Head` in the Outliner.
2. Change the Maya workspace to UV Editing.
3. Locate the UV Editor.
4. Make sure the head is selected in the viewport.
5. If the UV Editor does not display the model's UVs, confirm that the correct object is selected.

Create the head's UV layout

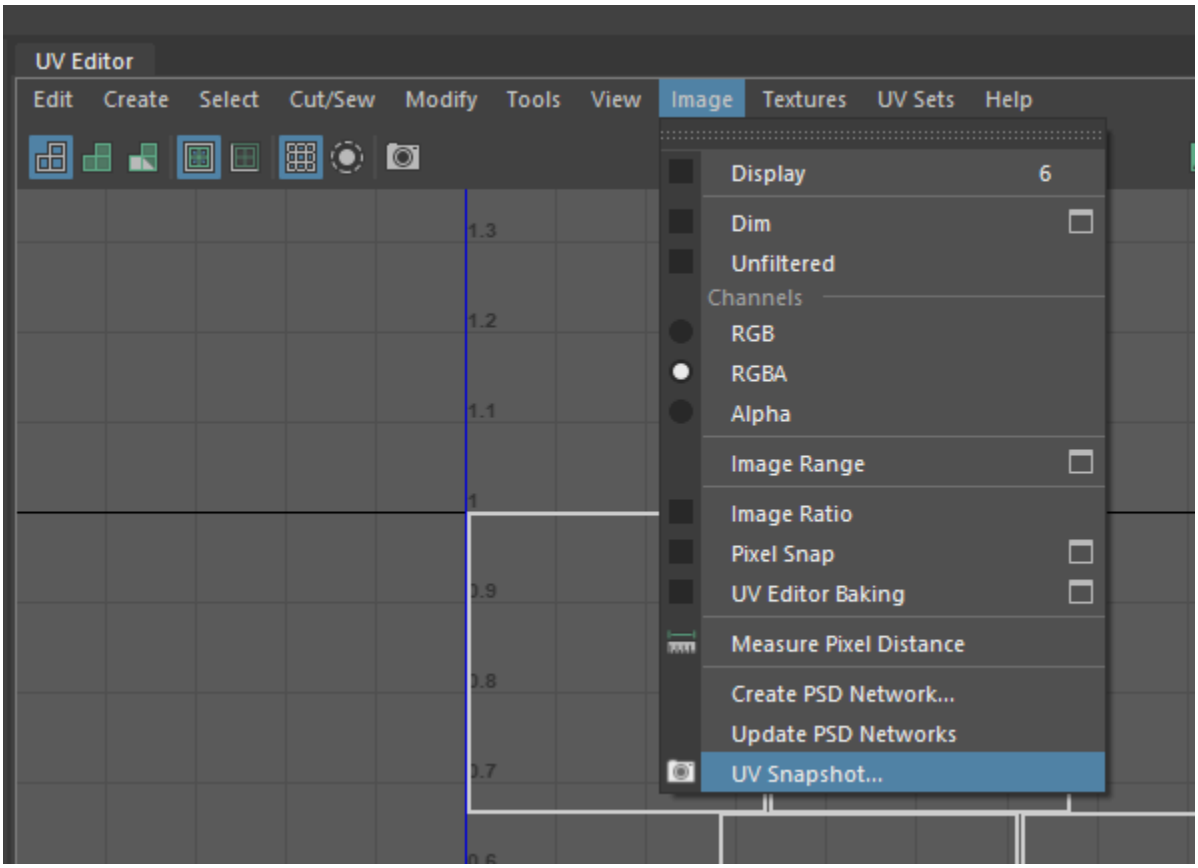
1. Select `Head`.
2. Switch to Object Mode.

Recipe: Minecraft Character

3. Select Create → Automatic from the UV Toolkit (*on the right side*)
    a. 
4. Inspect the resulting UV shells in the UV Editor.
5. 
6. Make sure the shells are inside the main 0–1 UV tile, unless you are deliberately using a different layout.
7. In the UV Editor, select **Image > UV Snapshot**

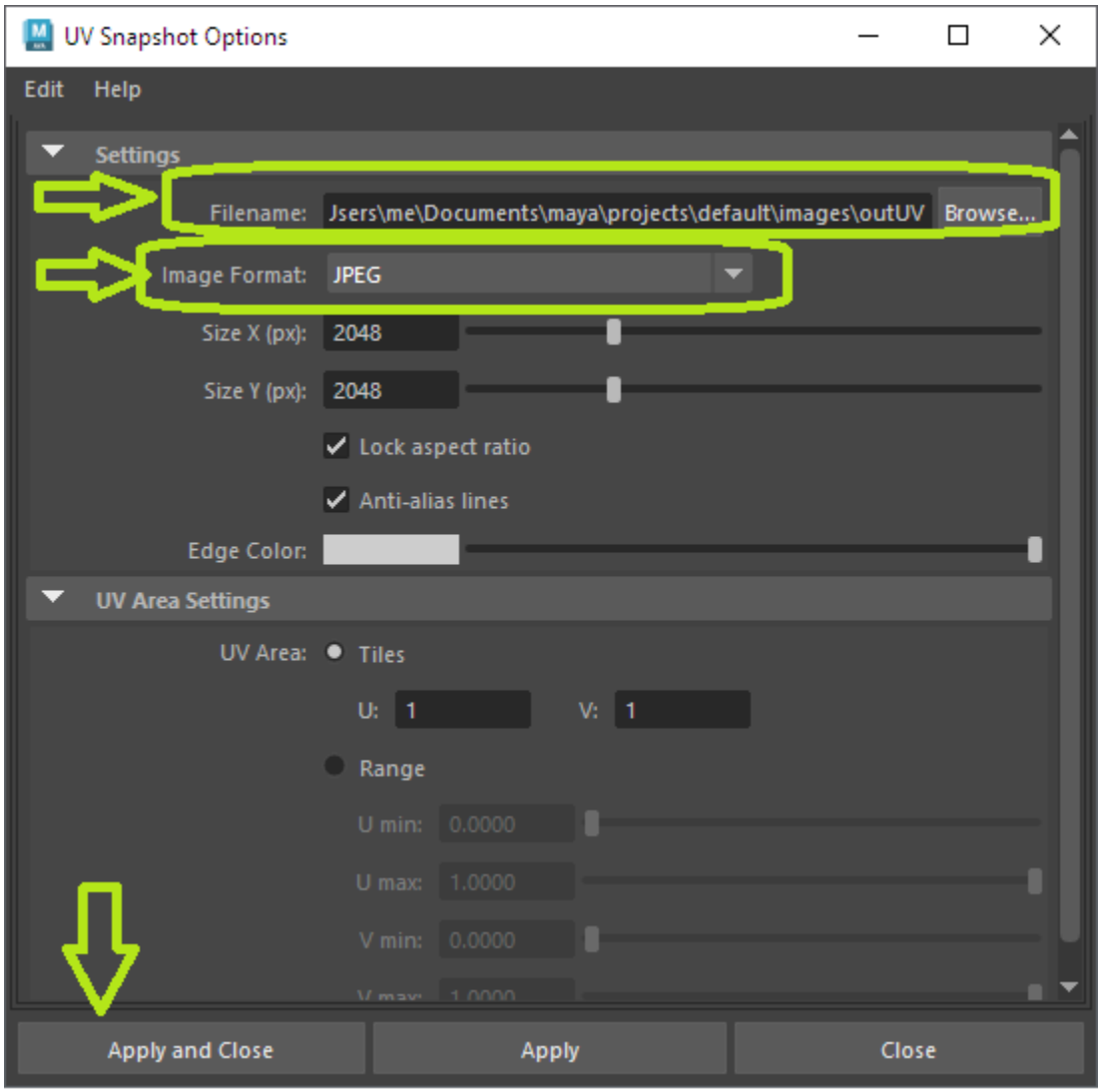
Recipe: Minecraft Character

---

a. 

Recipe: Minecraft Character

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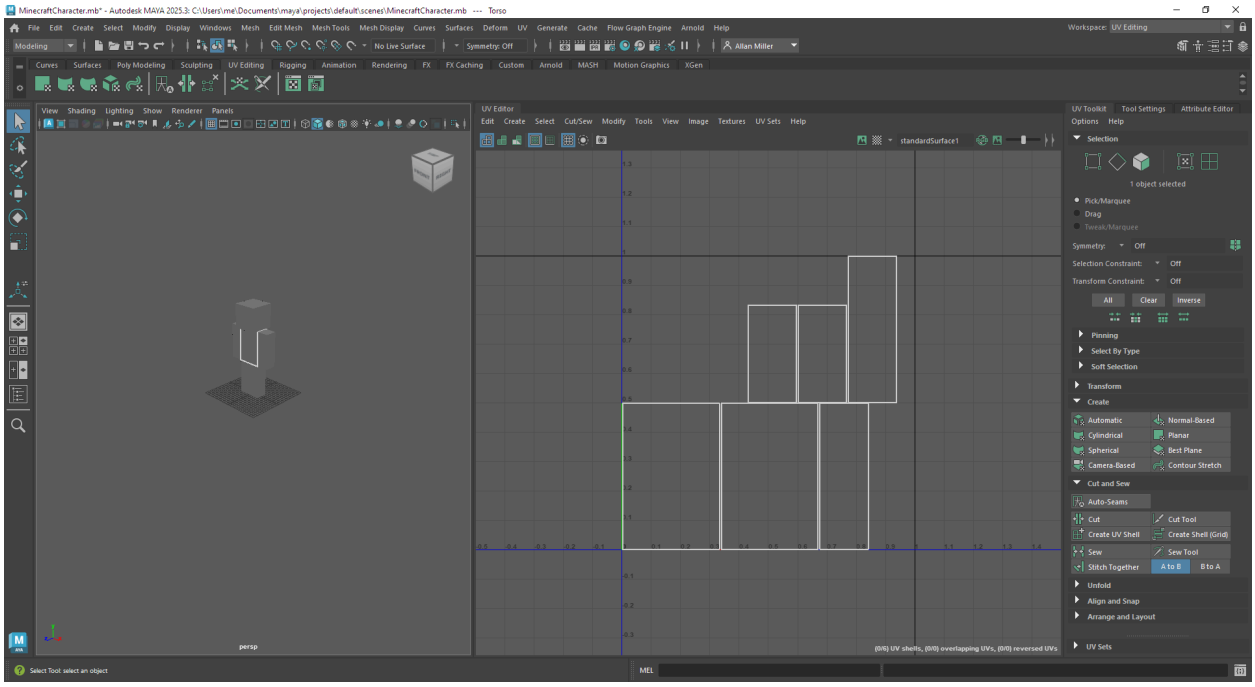
8. 

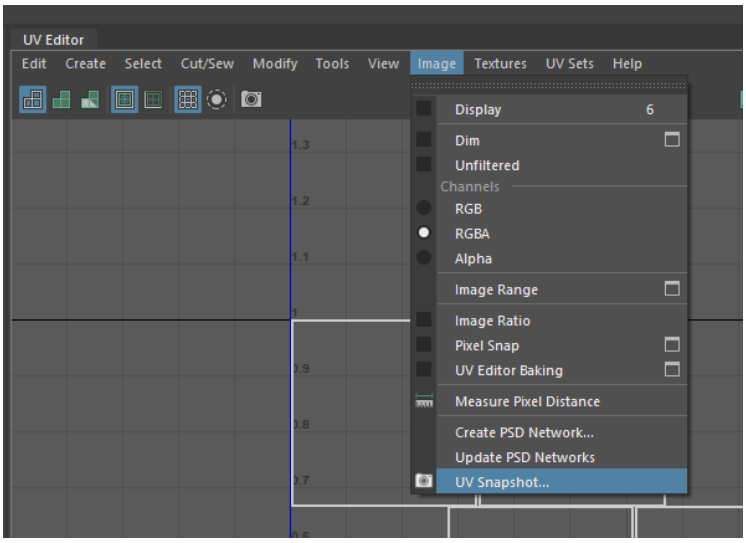
9. Rename the **outUV.jpg** to **HeadUV.jpg**
10. Open Photoshop and create your texture for the head.

UV unwrap the torso

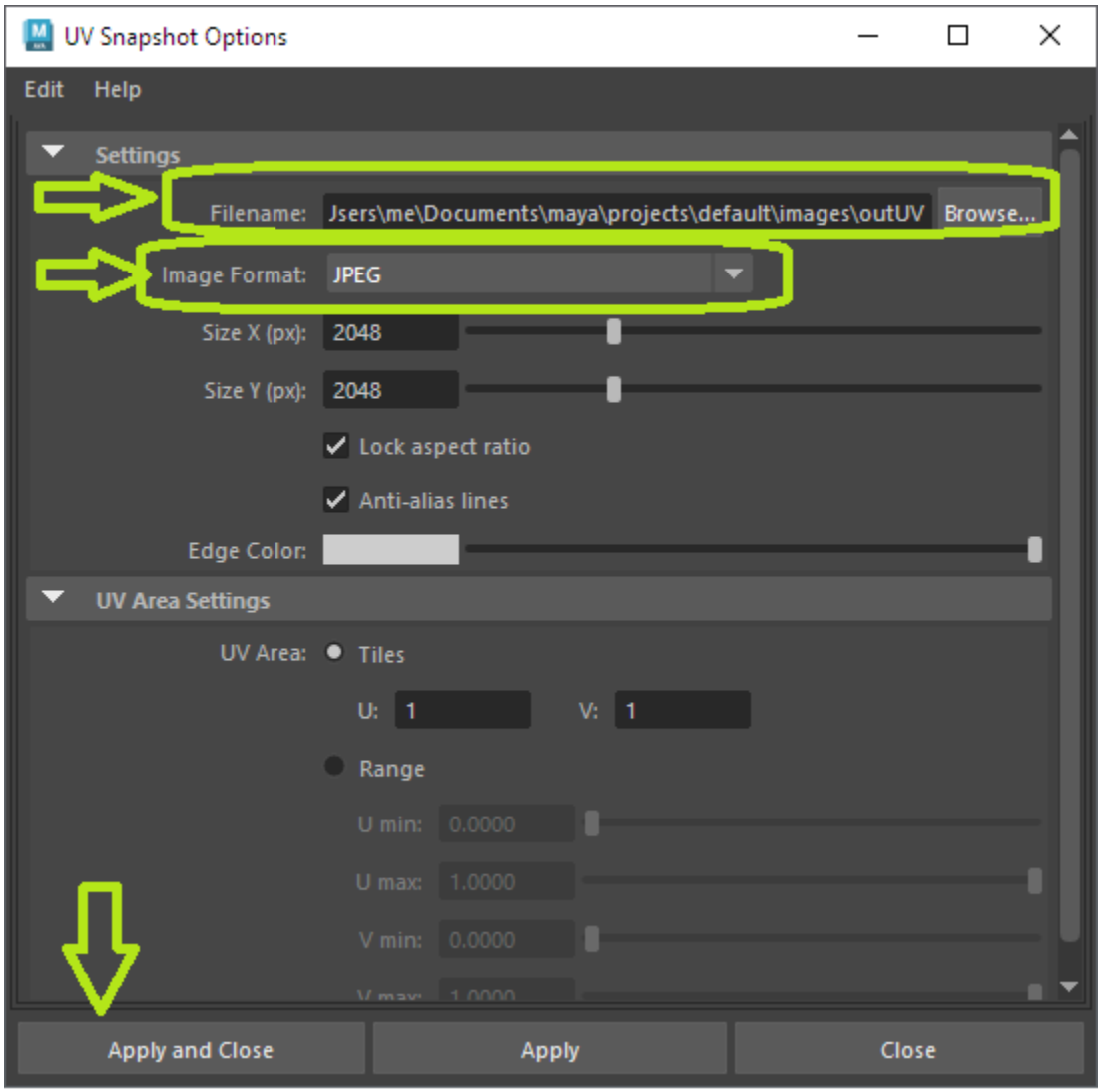
1. Select `Torso`.
2. Apply Create → Automatic.

Recipe: Minecraft Character

3. 
4. Inspect the UV shells.
5. Identify the front, back, sides, top, and bottom faces of the torso.
6. Adjust the shells if necessary to reduce stretching and make the texture orientation predictable.
7. In the UV Editor, select **Image > UV Snapshot**

a. 

Recipe: Minecraft Character

8. 

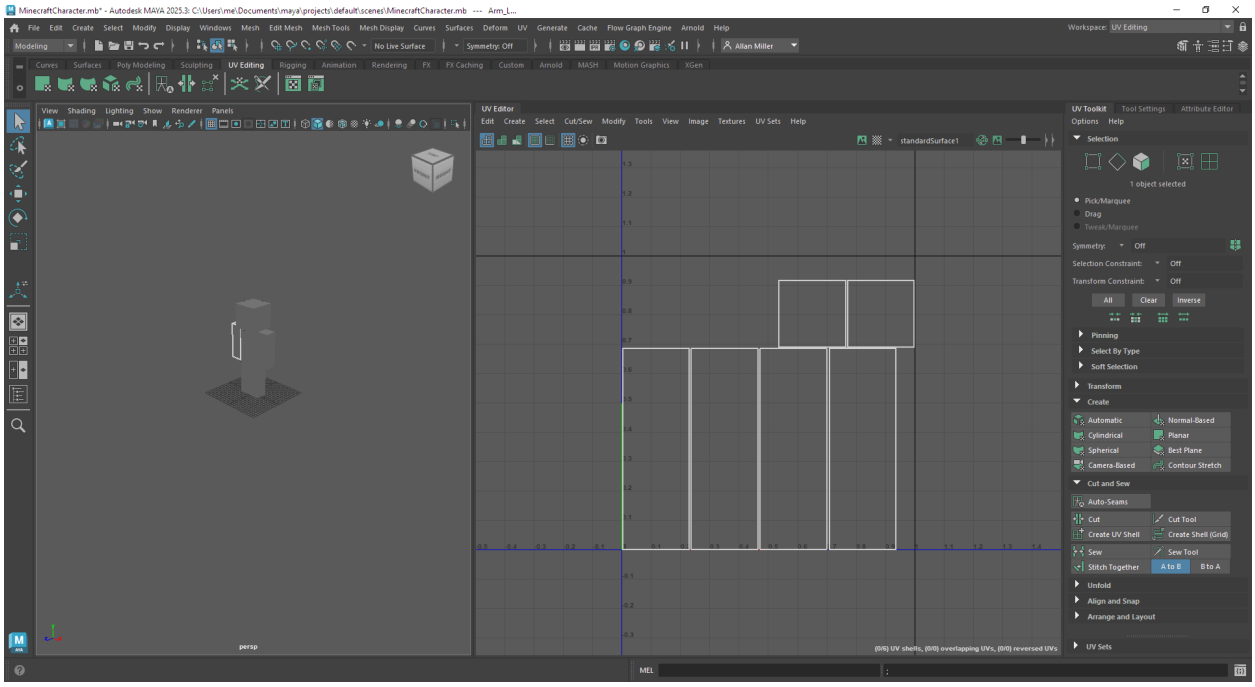
9. Rename the **outUV.jpg** to **TorsoUV.jpg**
10. Open Photoshop and create your texture for the torso.

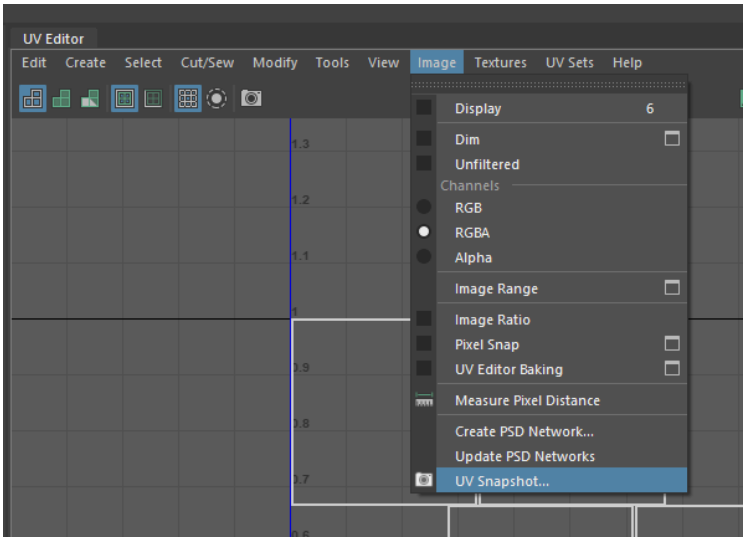
UV unwrap the arms and legs

These are the same repeated these steps for each object:

1. Select `Arm_L`.
2. Apply Create → Automatic.
3. Inspect the UV shells.

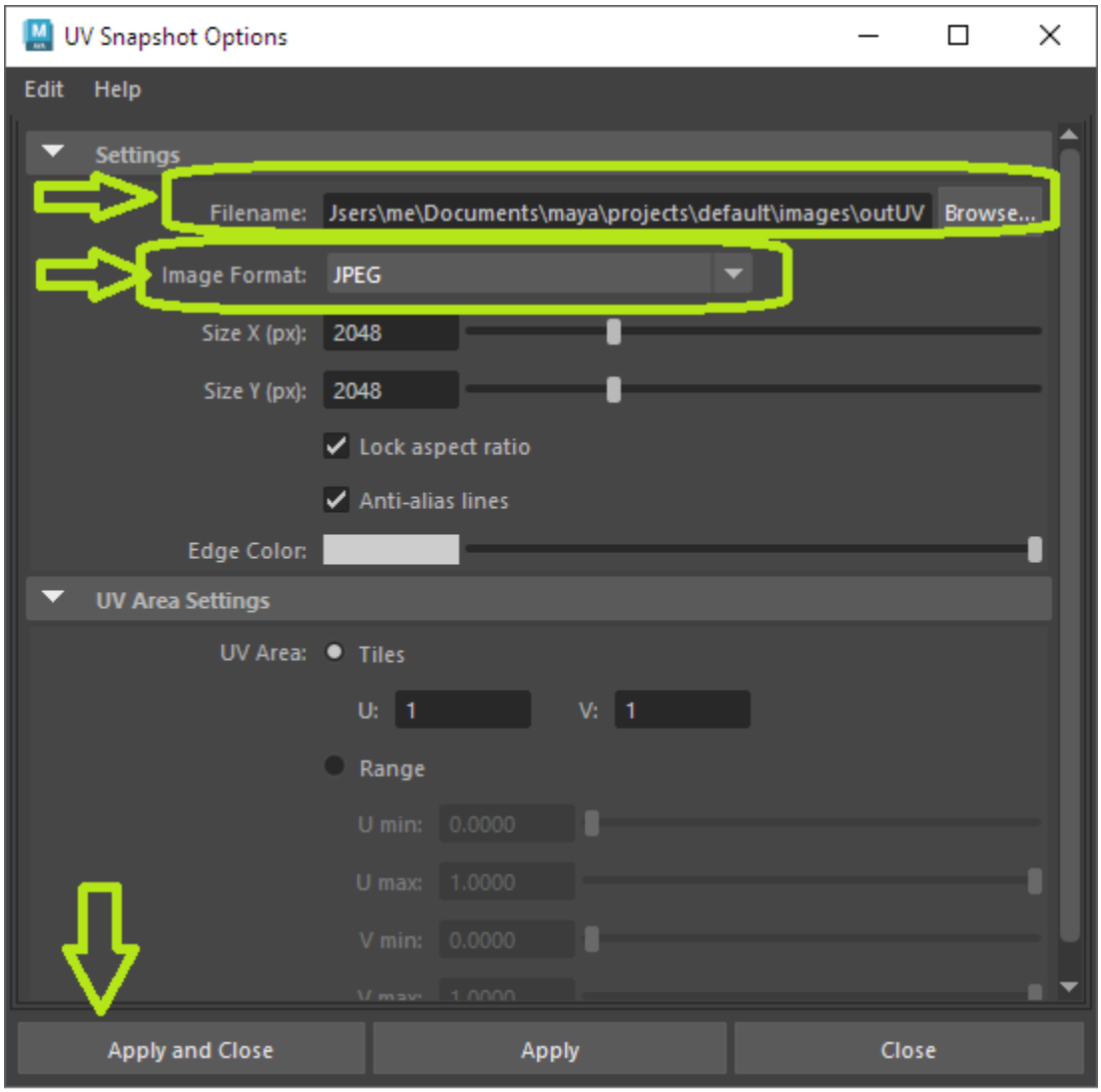
Recipe: Minecraft Character

4. 
5. n the UV Editor, select **Image > UV Snapshot**

a. 

Recipe: Minecraft Character

---

6. 

7. Rename the **outUV.jpg** to **Arm_LUV.jpg**
8. Open Photoshop and create your texture for the left arm.

Repeat for the other parts

- Repeat for `Arm_R`, `Leg_L`, and `Leg_R`.
- Keep the shells within the 0–1 UV tile for each object.
- Save the scene.

Recipe: Minecraft Character

Step 3: Create the parent-child hierarchy

The hierarchy lets you move the entire character as a unit while retaining separate control over its head, arms, and legs.

1. In the Outliner, select all six objects.
2. Press `Ctrl + G` to group them.
3. Rename the new group `Character_ROOT`.
4. Expand the group in the Outliner.
5. Confirm that all six objects are inside it.

Your hierarchy initially looks like this:

```
Character_ROOT
├── Head
├── Torso
├── Arm_L
├── Arm_R
├── Leg_L
└── Leg_R
```

Parent the body parts to the torso

1. In the Outliner, drag `Head` onto `Torso`.
2. Drag `Arm_L` onto `Torso`.
3. Drag `Arm_R` onto `Torso`.
4. Drag `Leg_L` onto `Torso`.
5. Drag `Leg_R` onto `Torso`.
6. Confirm that `Torso` remains inside `Character_ROOT`.

Your final hierarchy should look like this:

```
Character_ROOT
└── Torso
    ├── Head
    ├── Arm_L
    ├── Arm_R
    ├── Leg_L
    └── Leg_R
```

Recipe: Minecraft Character

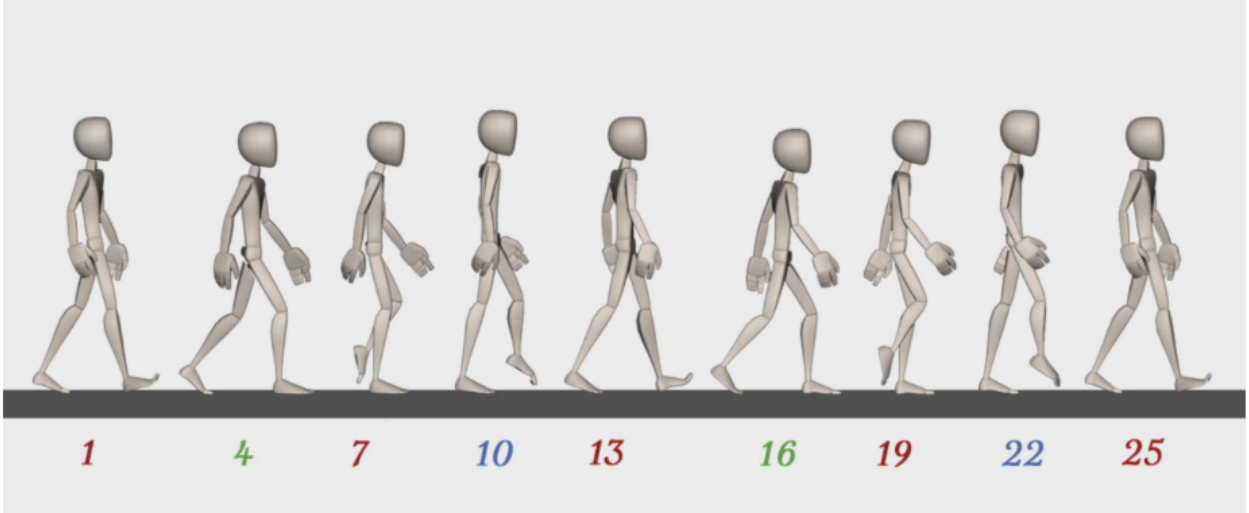
Maya normally preserves the objects' world-space positions when you parent them.

Test the parent-child relationships

1. Select `Character_ROOT`.
2. Press `W` and move the group. The entire character should move together.
3. Undo the move.
4. Select `Torso`.
5. Rotate it slightly. All five child objects should follow the torso.
6. Undo the rotation.

Important: Parenting is not the same as joining meshes. Each body part should remain a separate object. For this introductory exercise, the torso acts as the parent of the head and limbs.

Step 4: Keyframing the Walking Cycle

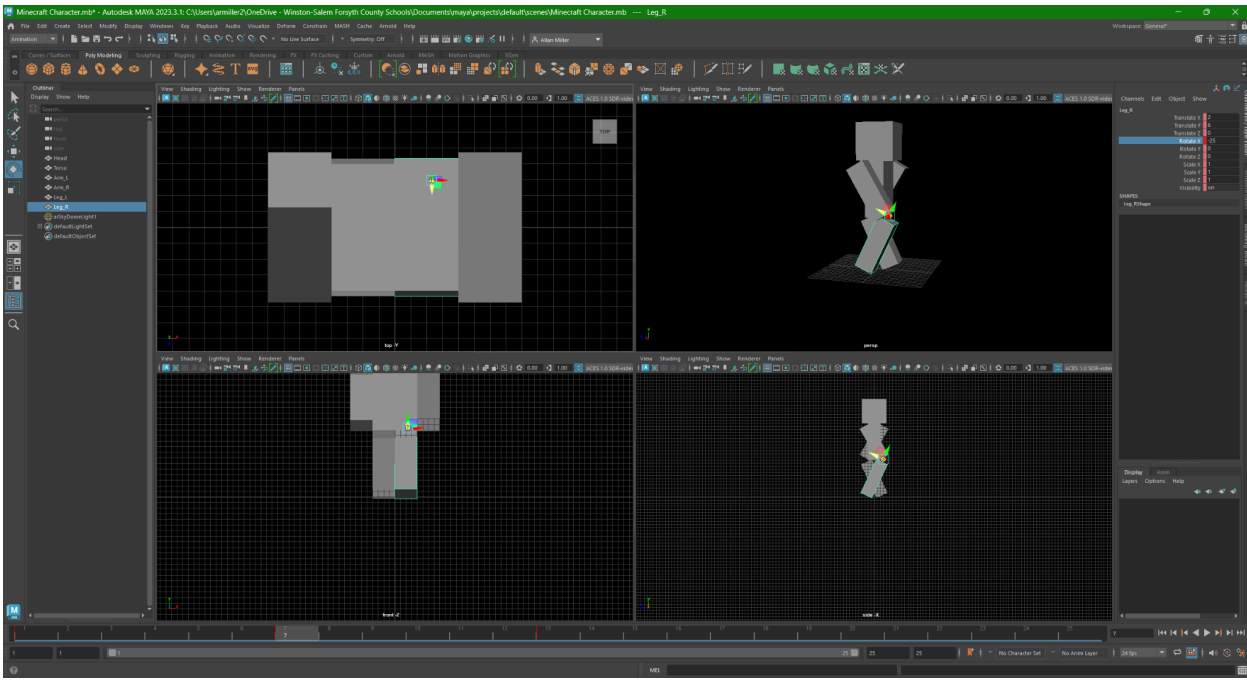


Change the pivot points for each

1. Select Leg_R and press E for rotation
2. Press D to switch to pivot point.
3. Move the pivot point to the top-center of the leg

Recipe: Minecraft Character

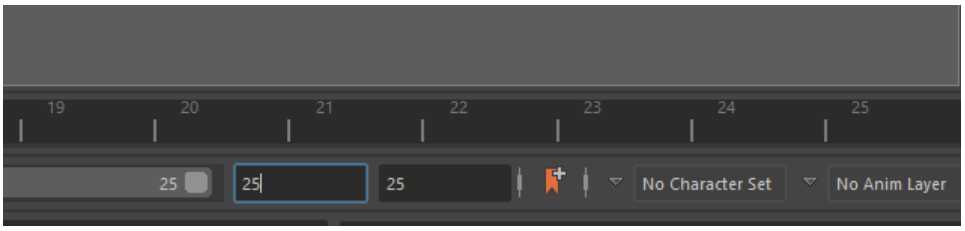
---

a. 

4. Repeat for all.

Set the timeline

1. Set the playback range to frames 1–25.

a. 

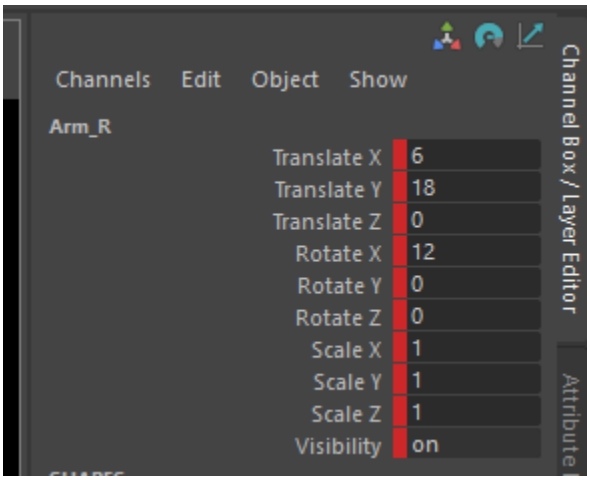
2. Set the scene frame rate to 24 fps if you want a one-second cycle.

Keyframe 1

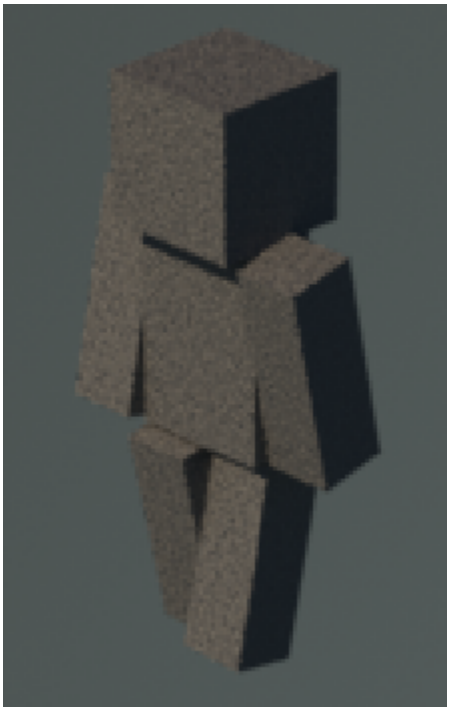
3. Go to frame 1.
4. Click on the Channel Box tab

Recipe: Minecraft Character

---

a. 

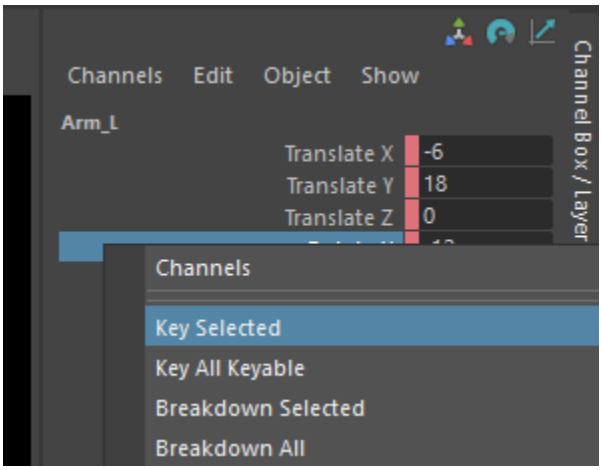
5. Click on Frame 1
6. Select each object individually(`Arm_L`, `Arm_R`, `Leg_L`, and `Leg_R`) and press `S` to key its starting pose.
    a. Enter the following Rotate X values:
        i. Arm_L: 12°
        ii. Arm_R: −12°
        iii. Leg_L: −12°
        iv. Leg_R: +12°

b. 

Keyframe 7

Recipe: Minecraft Character

---

1. Move to frame 7.
2. Enter the following Rotate X values:
    a. Arm_L: +30°
    b. Arm_R: −30°
    c. Leg_L: −25°
    d. Leg_R: +25°
3. Select each object and press S to set its keyframe or right click in the Channel Box and click on Key Selected
    a. 

Note: These values are starting examples. Depending on your character's facing direction and Maya's local axes, you may need to reverse the signs.

Keyframe 13 - Create the opposite stride

1. Move to frame 13. (*frame 13 is the half way point*)
2. Reverse the rotations of frame 1:
    a. Enter the following Rotate X values:
        i. Arm_L: -12°
        ii. Arm_R: 12°
        iii. Leg_L: 12°
        iv. Leg_R: -12°°
3. Set a keyframe on each object by pressing S.

Keyframe 19

1. Move to frame 19.
2. Repeat the frame 7 pose *but opposites*
    a. Arm_L: -30°
    b. Arm_R: +30°

    c. Leg_L: +25°
    d. Leg_R: -25°
3. Keyframe all four limbs.

Keyframe 24

4. Move to frame 24.
5. Return all four limbs to the starting pose (frame 1) and keyframe each one.
    a. Arm_L: 12°
    b. Arm_R: −12°
    c. Leg_L: −12°
    d. Leg_R: +12°
6. Play the animation and make any adjustments

If the character appears to jerk at the end of the cycle, open Windows → Animation Editors → Graph Editor and adjust the animation curves. A seamless loop requires the first and last poses to match, with appropriate curve tangents.

Step 5: Animate a walking cycle

Create a simple four-pose walk cycle using keyframes. The arms and legs should swing in opposition: the left arm moves with the right leg, and the right arm moves with the left leg.

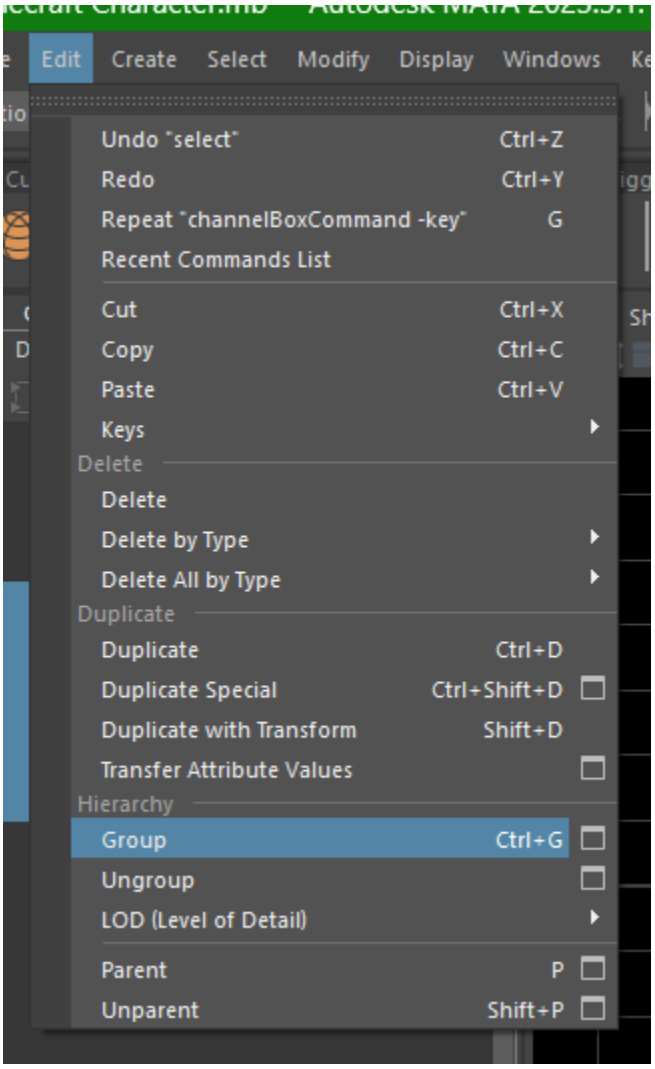
Animate the whole character

To move the character forward while walking:

1. Select all the parts
2. Click on Edit > Group or CTRL+G

Recipe: Minecraft Character

---

a. 

3. Rename to `Character_ROOT`.
4. At frame 1, set its starting position and press `S`.
5. Move to frame 24.
6. Move the root group forward along the direction the character is facing.
7. Press `S` again.

For a stationary looping walk, leave the root group in place.

Step 6: Create a playblast and save the project

Preview the animation

1. Set the playback range to frames 1–24.

Recipe: Minecraft Character

---

2. Position the perspective camera so the entire character is visible.
3. Select Windows → Playblast or use the Playblast command available in your Maya version.
4. Preview the animation.
5. Check that the arms swing from the shoulders and the legs swing from the hips.
6. Correct any problems and preview again.

Save

1. Select File → Save Scene.
2. Confirm that the Maya file is saved as `MinecraftCharacter_Model.mb`.
3. Save a screenshot of the finished textured model.
4. Save your playblast or export a final MP4 if required by the assignment.
5. Keep the project textures in the `sourceimages` folder so the scene can find them later.