**How to Construct Squishes (Blender 2.79 or older)**

1. Delete stupid cube
2. Add a mesh to serve as the horizonal plane
   1. Add 🡪 Mesh 🡪 Plane
   2. Widen it to suit needs using “s” and mouse 🡪 click to finish
3. Add an object (ico sphere)
   1. Add 🡪 Mesh 🡪 Ico sphere
   2. Raise object using the z-arrow (blue)
4. Add a lattice around the ico sphere
   1. Add 🡪 Lattice
   2. Pull up into the ico sphere
   3. Hit “s” and use mouse to increase lattice size to surround sphere
   4. Use orthogonal view to ensure sphere is contained in lattice (hit Numpad 5)
5. While still on the lattice object, in Object Properties
   1. Select Object Data (grid button)
   2. Change Lattice W value to 6 (increase number of vertical segments)
   3. To observe the changes to be made on the object by the lattice:
      1. With the object selected, click on the Object Modifiers (wrench tab)
      2. Add Modifier 🡪 Deform 🡪 Lattice
      3. Add Lattice to Object field
   4. In view “Num 1”:
      1. Select the lattice, then hit “Tab” to enter Edit View
      2. Select the upper quad of the lattice by hitting “C”, then left-click on the top four corners (or just two in “1” view). Then exit Select tool “C” by right-click.
         * Can select more if desired
      3. Then hit “S” (Scale) to warp the upper third of the object, left-click to complete warp.
      4. Hit “A” (toggle select/deselect) to deselect the upper vertices
   5. Exit Edit mode (Tab)
   6. Select object and return to Modifier menu 🡪 select Apply
   7. Select lattice and hit “H” to hide
6. To add color dimension, select Object Material
   1. Click “New” and rename the material to something meaningful
   2. “Diffuse” represents the base color without light
      1. Increase intensity to 1
   3. Specular represents the color when light reflects off the object
      1. Select a white or near-white color, keeping intensity around 0.5
   4. Under Shading, keep emit around 0.5
7. Go to Object Data (make sure to be in Object Mode)
   1. Under Shape Keys, click Add to create the Basis object key (baseline shape)
   2. Then click Add again to create another object key first shape dimension extreme)
   3. Make sure to rename and select new shape key before the next step. *Take care not to change your Basis shape key!*
   4. Example (spikes):
      1. In Edit mode, all are selected. First click “A” to deselect all, then click “C” to select small circles (control the diameter of circle select using mouse wheel)
      2. Select small circles a decent distance apart (no more than 5-7 spots), then right-click to exit select mode.
      3. Use middle mouse button to turn object a bit until X-axis arrow (red) is visible.
      4. Click “O” to enable proportional editing (nearby vertices are affected smoothly). On the menu bar immediately below object screen, click the button to the right of the blue coin, selecting “Sharp”.
      5. Shift left-click undesired axis, then immediately release shift to move along remaining axes. Continue holding left-mouse during adjustments.
         * Important note: *ONLY RELEASE WHEN ABSOLUTELY SURE OF PLACEMENT. It is so goddamn hard to fix.*
         * Repeat this process for as many directions as desired
8. To add Drivers:
   1. Right-click on the numerical value beside the object shape key 🡪 Add Driver 🡪 Manually Select Later (Single)
9. Adding/Editing Bones
   1. Select Add 🡪 Armature 🡪 Single Bone
   2. Click “N” to open the Transformation menu
   3. In the right-most menu, click “X-Ray” checkbox to view bone within object
   4. Resize the bone by hitting “S” and selecting the blue arrow (Z) with middle mouse
      1. Make it very small
   5. In Edit mode, add a second bone to the previous bone by hitting “E”. Align it properly by hitting middle mouse and selecting the blue axis
   6. Separate bones to allow movement by hitting “Option-P”, then select “Disconnect Bone”
   7. Exiting Edit mode
10. To make the bone the parent of the mesh, select the mesh then the bone while holding shift
    1. Hit “Control-P” to open Parent menu
       1. Select Armature Deform (With Empty Groups)
11. Assigning vertices to groups
    1. Open Edit mode after selecting object, select all by hitting “A” twice
    2. Then click on Bone and hit “Assign”, repeat for Bone.001
12. Changing Vertex Weight
    1. In the 3D view toolbar, select Weight Paint from the drop-down menu
    2. Select Bone.001 in the Vertex Group list
    3. If unable to select bone, try clicking Pose mode, select the object, then right-click the bone again
    4. In the Tools tab, under the Blend drop-down, select Subtract
    5. Make the Radius value huge… like 1000
    6. Click Selection Limiter in 3D View
    7. Left-click to paint all – rotate and repeat to ensure coverage
13. Open Graph Editor (bottom of screen)
    1. Select Drivers instead of F-Curve from drop-down, click Keys to expand
    2. Open Properties of Graph Editor with “N”
       1. Select from Scripted Expression to Average Value
       2. Under the Drivers tab, replace Transform Channel with Single Properties
       3. Open Object mode, select a Bone with right-click (make sure in Pose Mode)
          * Right-click on Location: X, select “Copy Data Path”
          * Right-click on object to correct Graph Mode
          * Paste path into Driver tab, Path by using “Command-V”
          * Add “.x” to the end of the location, hit Enter
       4. In object view, select armature. Change to Pose Mode, then select Bone.001
          * Move Bone.001 along the X axis to ensure movement of bone causes increased spikiness.
14. Open Blender’s Text Editor 🡪 click “New”
    1. Type the following code:
       * import bge
       * scene = bge.logic.getCurrentScene()
       * armature = scene.objects["Armature"]
       * armature.channels["Bone.001"].location = 0.5, 0.0, 0.0
       * armature.update()
15. Open Logic Editor
    1. Under “Add Sensors”, click “Always”
    2. Under “Add Controller”, click “Python”
    3. Select the Python script you just made
    4. Connect Sensor dot to Controller dot (click and drag)
16. In the top menu bar, change from “Blender Render” to “Blender Game”