



2. Basics of 3D Modeling: III. Modifiers

Sobhi Ahmed
Comp3351

Outline

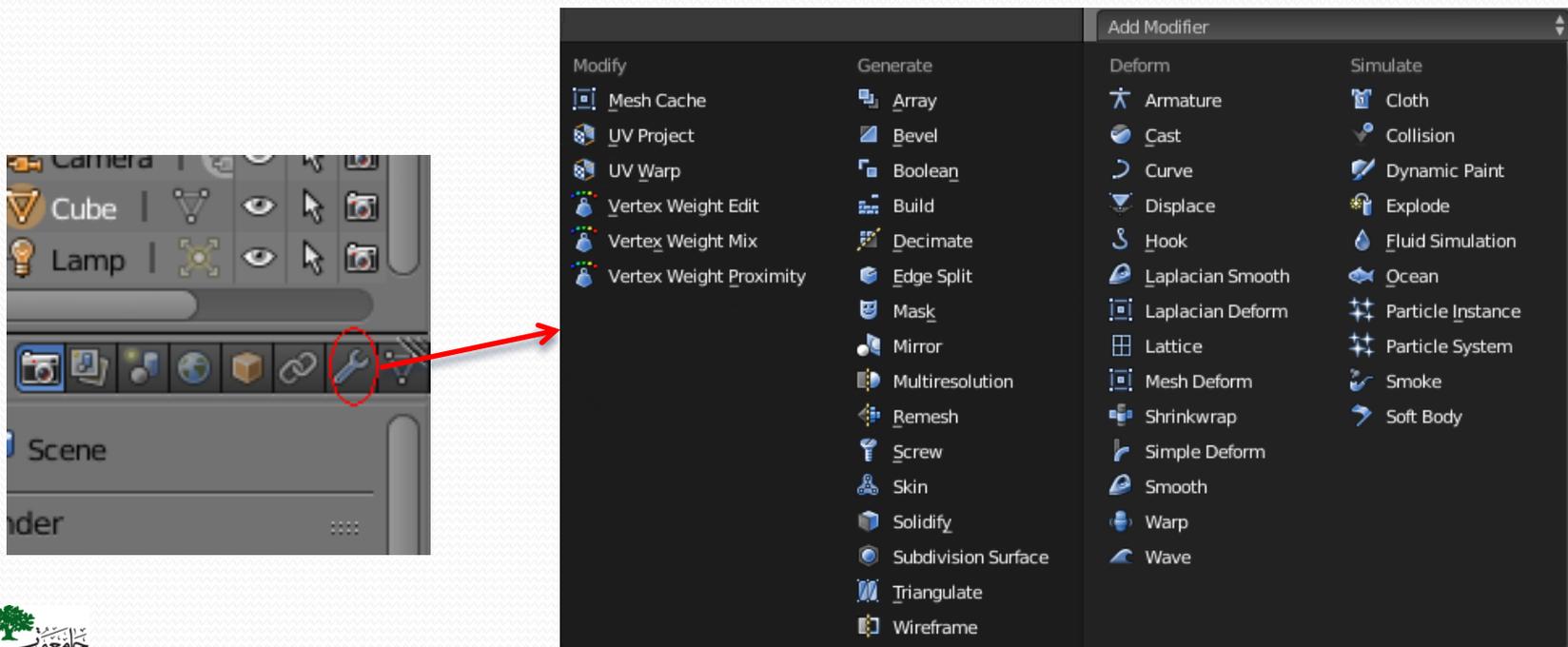
- I. Object mode
- II. Edit mode

III. Modifiers

- IV. Sculpting system
- V. Curves, surfaces, freeform modeling
- VI. Meta objects
- VII. Background image
- VIII. Procedural Description and physical simulation
- IX. Photogrammetry and Image based Modeling
- X. High and low polygon modeling

III. Modifiers

- Extend the capabilities of objects
- Let manipulate objects in various ways without disrupting the underlying mesh structure
- Some modifiers deform the shape of an object while others simulate real world physics and dynamics



III. Modifiers

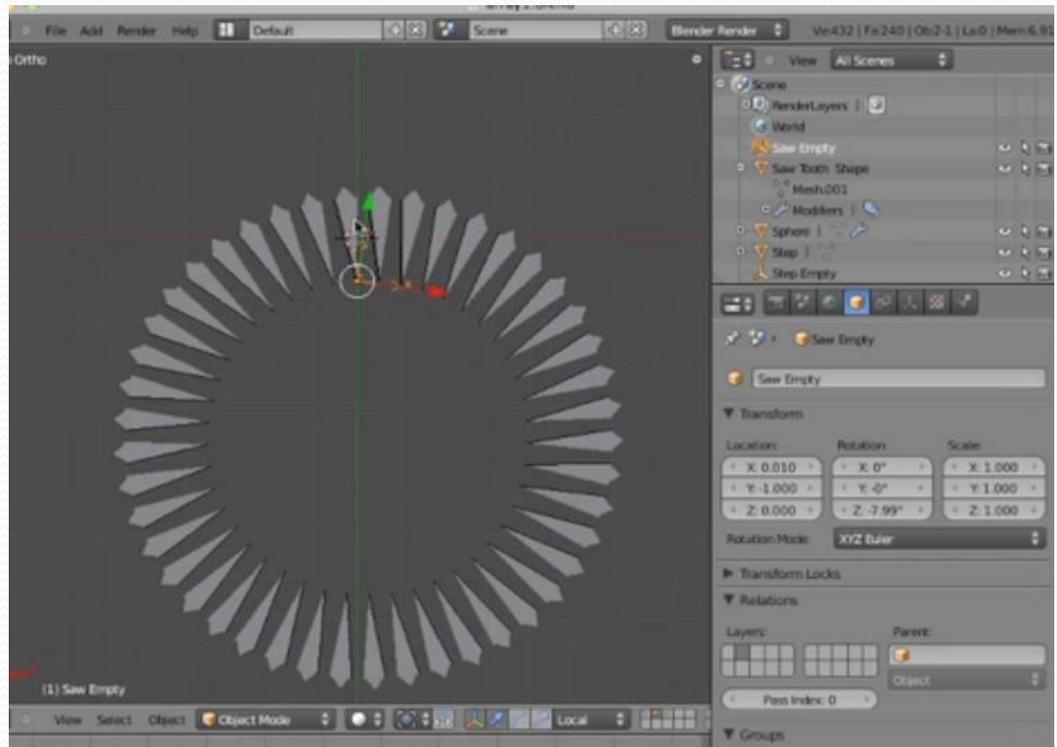
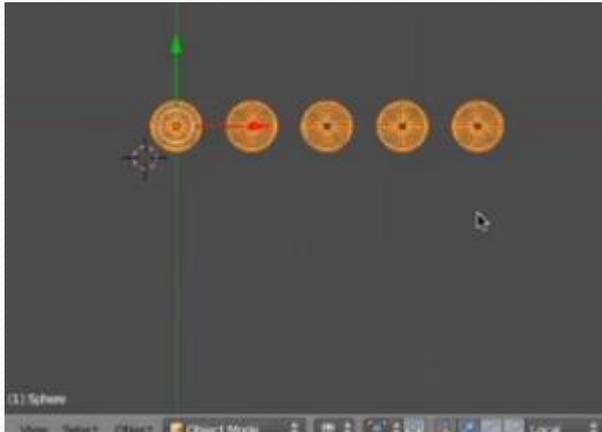
- There are four types of modifiers:
 - **Modify group** : Group of modifiers that do not directly affect the shape of the object; rather they affect some other data, like vertex groups...
 - **Generate group**: Group of modifiers that either change the general appearance of or automatically **add new geometry** to an object.
 - **Deform group**: group of modifiers that only **change the shape of an object**, and are available for meshes, and often texts, curves, surfaces and/or lattices.
 - **Simulate group**: Group of modifiers that **activate simulations**.

III. Modifiers

- **Subdivision Surface modifier:**
 - **Smoothing a Mesh** without adding more vertices.
 - Use **subdivision modifier** on your created objects in previous activities. (example cup, rabbit head, chess pawn, etc.

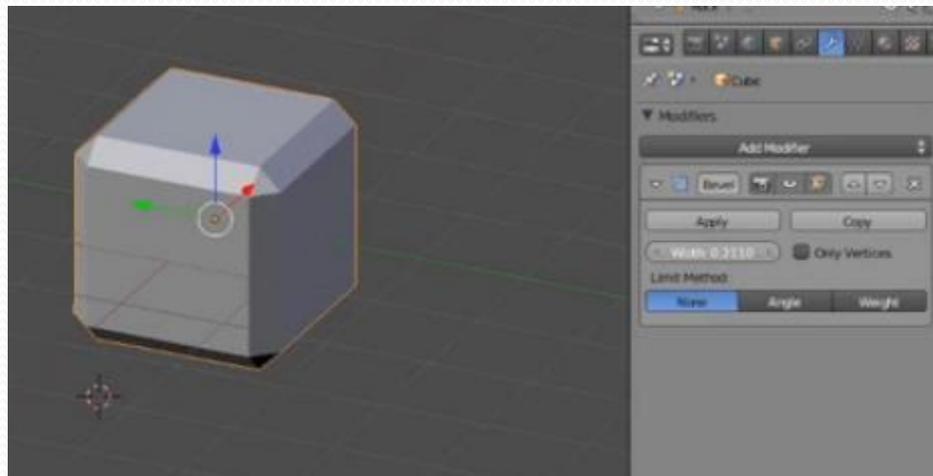
III. Modifiers

- **Array modifier:**
 - Creates **exact clones of your mesh**



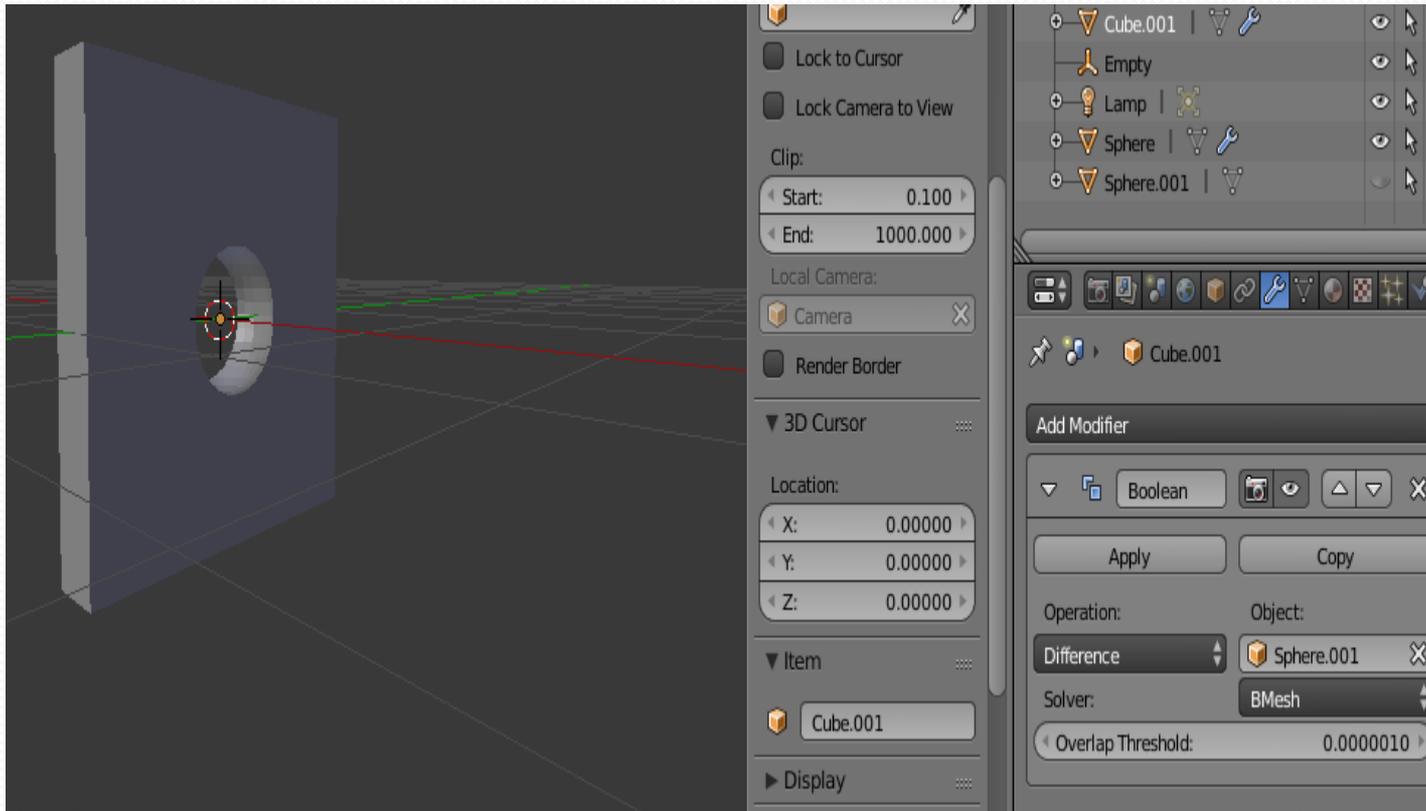
III. Modifiers

- **Bevel modifier:**
 - **smooths the edges** that define the outline of a mesh adding at the same time more polygons to it.



III. Modifiers

- **Boolean modifier:**
 - **Combine/subtract/intersect** your mesh with another



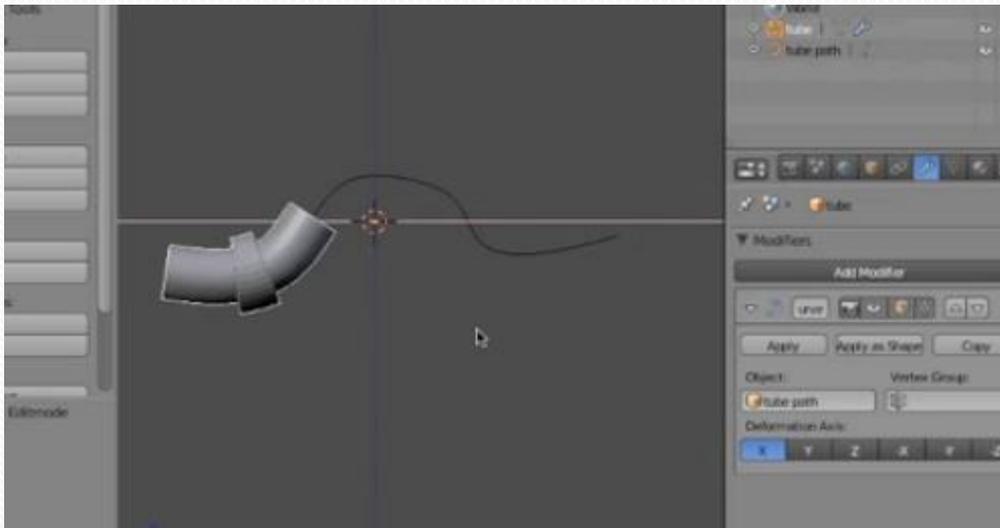
III. Modifiers

- **Mirror modifier:**
 - **Mirror an object about one of its own axes**, so that the resultant mesh is symmetrical.
 - useful when working with **meshes that have a symmetry**.
 - Allows to build only half of the mesh and Blender automatically creates the other half.



III. Modifiers

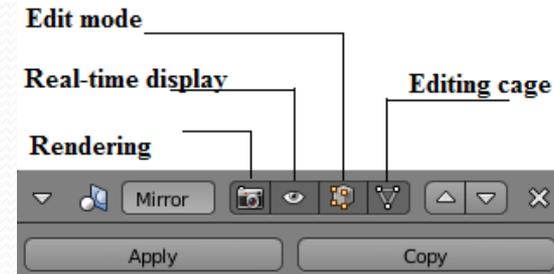
- **Curve Modifier**
 - Curve Bend your object using a **curve as guide**.
 - **Move an object through a path**



Activity

Activity 2.11	Title: Discover the modifiers panel
Type:	Group activity- Home work
Goal:	Discover the effects of Blender modifiers ILO P1
Outline:	<p>During this activity, students should:</p> <ul style="list-style-type: none">• Study and present an example of the effect of each modifier belonging to "Generate" and Deform" modifiers• Study and describe the effect of each modifier belonging to the "Simulate" modifiers• Prepare a report containing the work results
Timeline	A week
Assessment	Assess the group's report

III. Modifiers

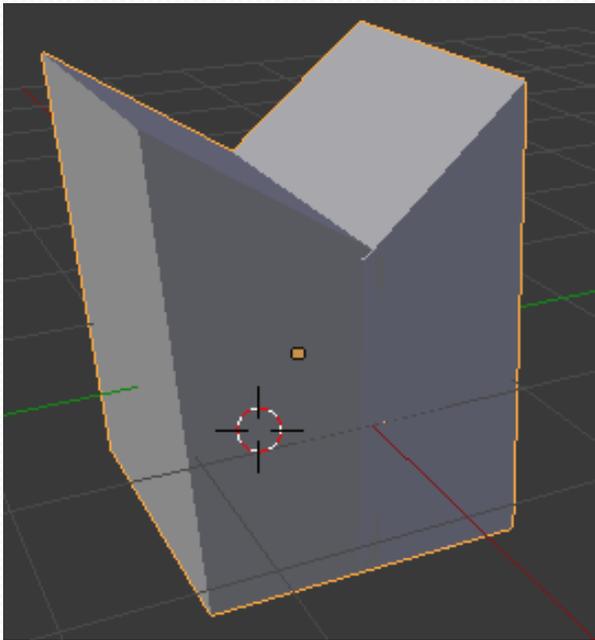


- **General setting of modifiers:**

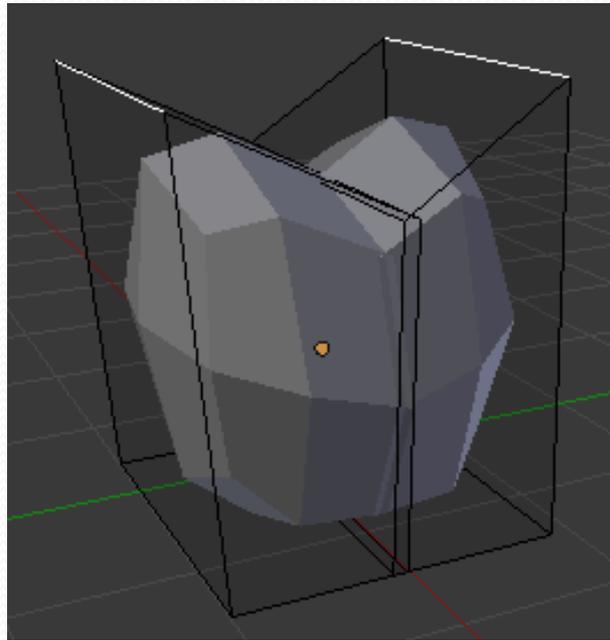
They are placed as series of buttons along the top of the Modifiers panel, next to the modifier's name:

- **Rendering:** this button determines whether the modifier's result is applied (visible) at render time.
- **Real-Time Display:** this button enables real-time display of the modifier.
- **Edit Mode:** this button turns on the modifier's display during Edit Mode.
- **Editing Cage:** When a modifier is displayed, the final effect is displayed as a ghost of sorts, leaving the original mesh.

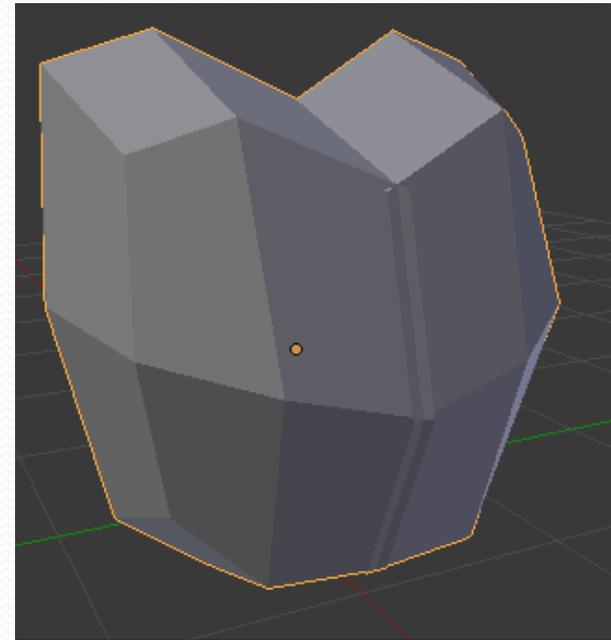
III. Modifiers



Original mesh



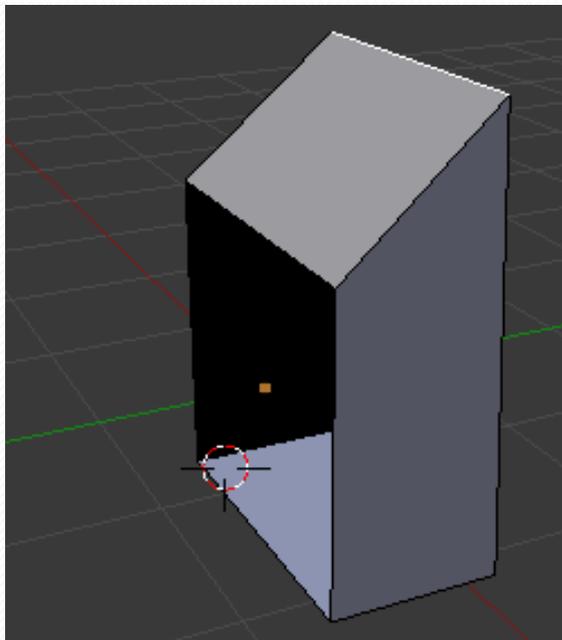
Modified mesh with Editing Cage



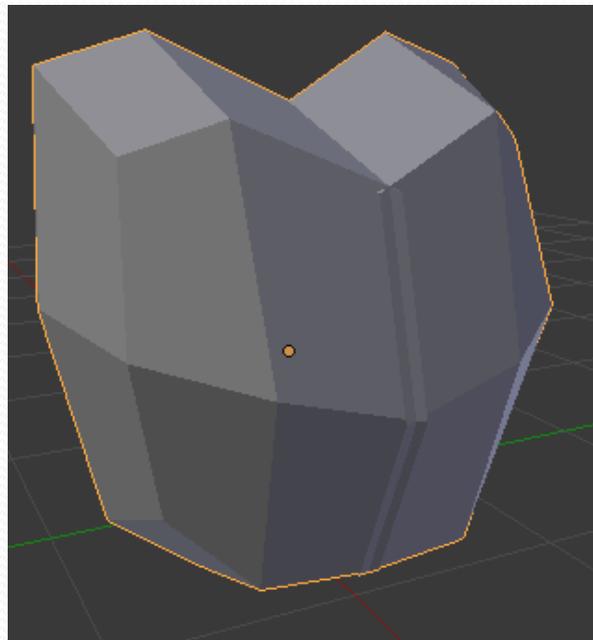
Modified mesh without Editing Cage

III. Modifiers

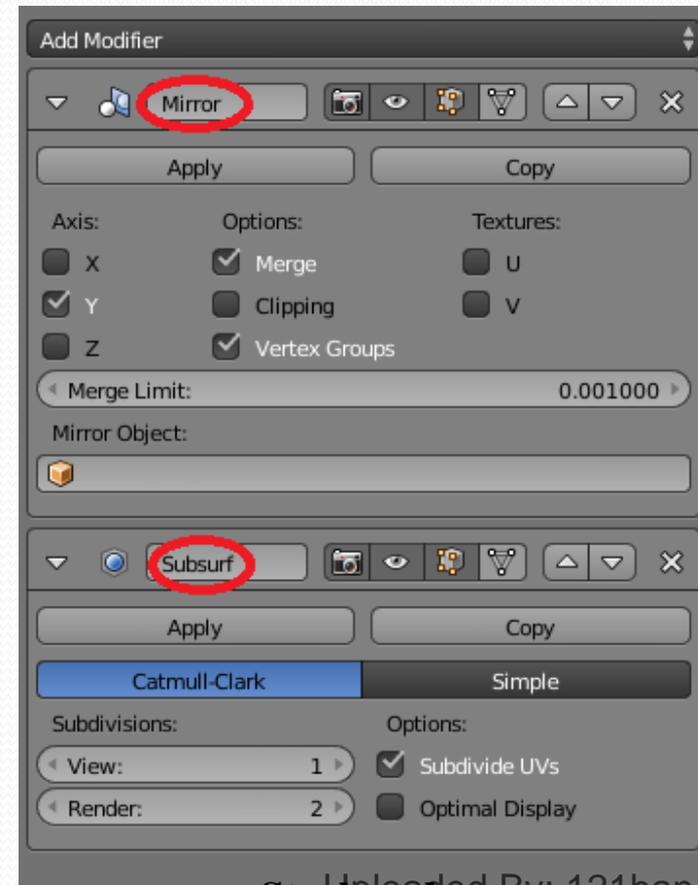
- Modifiers work in a **stack**
- Modifiers are **ordered** in which the **their effects are applied**



Original mesh

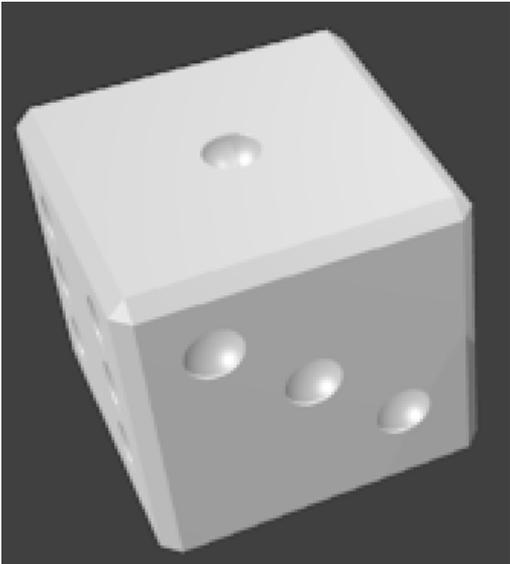


Modified mesh



Stack order
Uploaded By: 121han

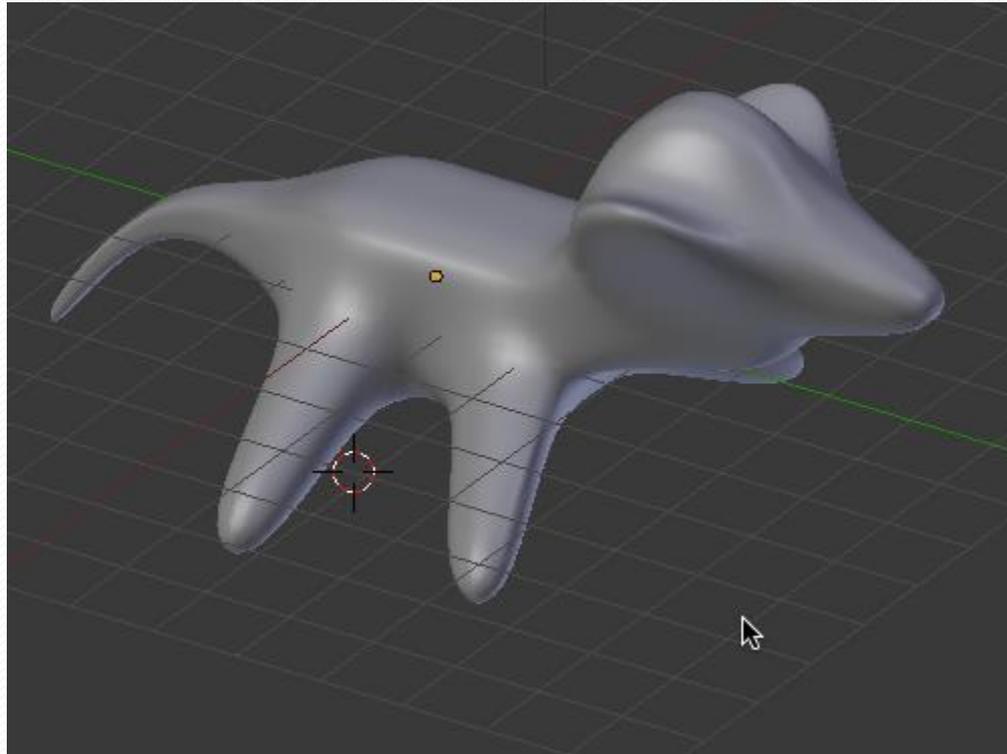
Activity

Activity 2.12	Title: Model a dice
Type:	Individual activity- Lab exercise
Goal:	Use modifiers to create a dice ILO P1
Outline:	Create a 3D dice in Blender using modifiers like shown in the following figure, starting from the default cube. 
Timeline	15 min
Assessment	Assess the student's solution

Activity

➤ Activity 2.13: Use subdivision surface modifier (1h)

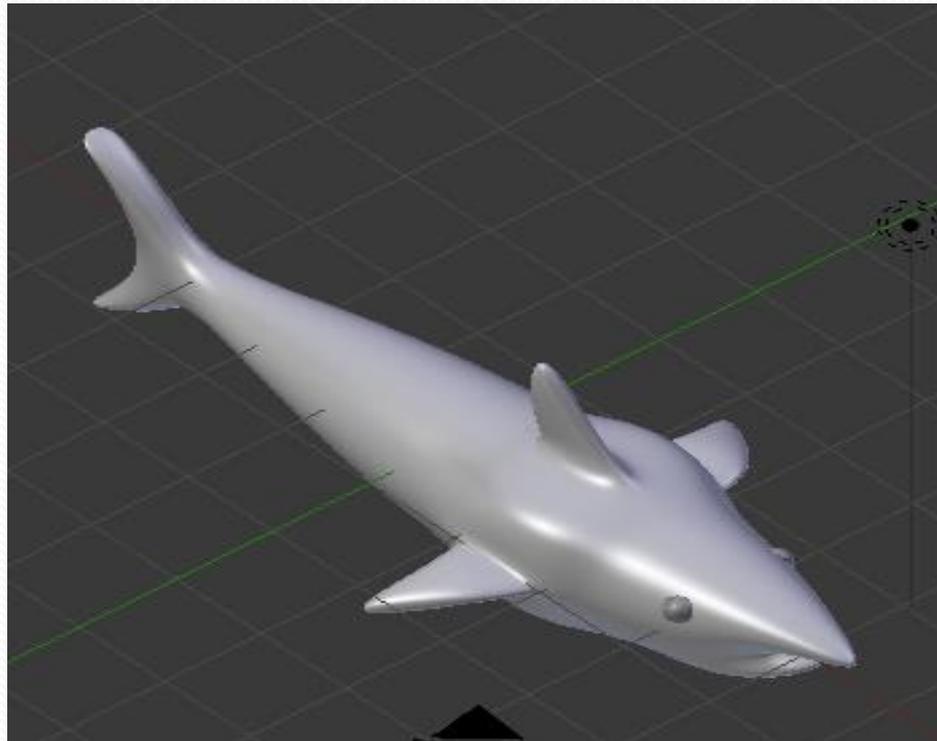
- Start with the default cube object, add a **subdivision surface** modifier and model an object something like the following image



Activity

➤ Activity Shark Modeling: Edit mode and modifiers

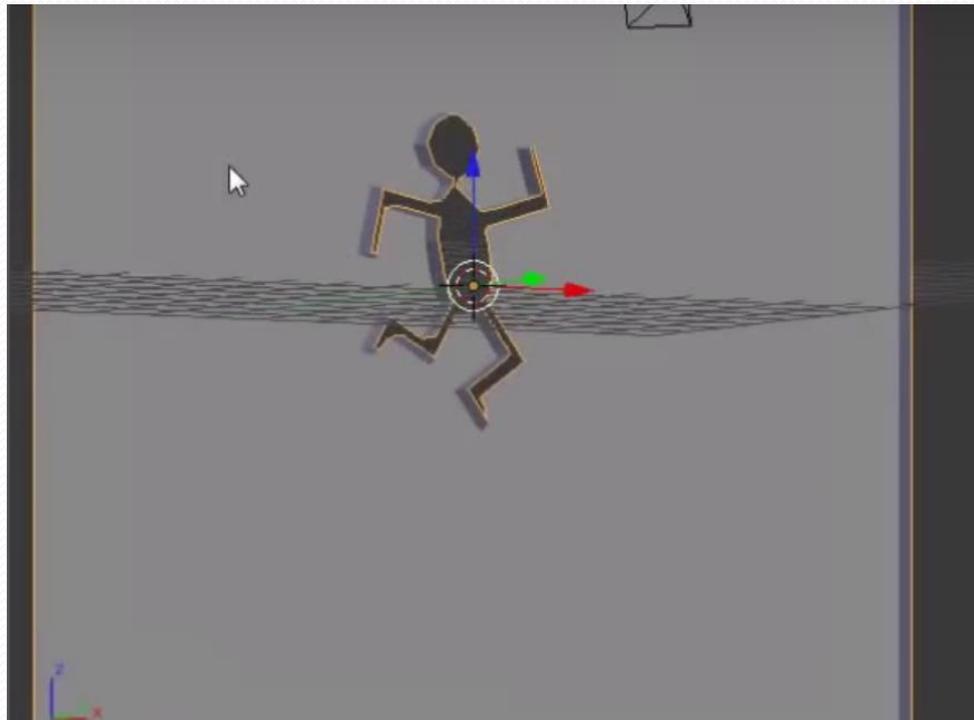
- Start with the shark image as a background then follow steps in the pdf file



Activity

➤ Activity Crossing a Wall: Edit mode and modifiers

- Use the Boolean modifier



Thank you for your attention!