

# Visualization and Scripting in Second Life

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# Visualization in Second Life





A virtual world is an online environment intended for its users to interact with others via avatars





<http://www.activeworlds.com/>



<http://www.kaneva.com/>



<http://metaverse.sourceforge.net/>



[http://www.opencroquet.org/index.php/Main\\_Page](http://www.opencroquet.org/index.php/Main_Page)



<http://secondlife.com/>



<http://www.there.com/>



<http://www.entropiauniverse.com/index.var>



<http://www.qwaq.com/>



<http://www.multiverse.net/>

## For teens and pre-teens



<http://www.clubpenguin.com/>



<http://www.habbo.com/>





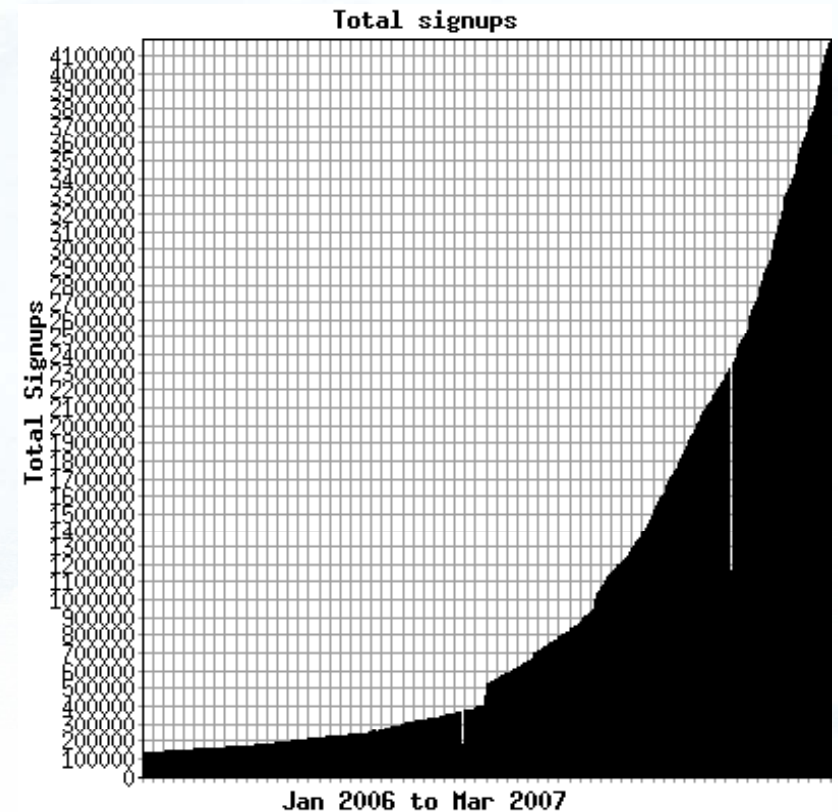


- Virtual shared 3D environment (*~3D WWW*)
- Origin in game world → non-academic language (*rez, prim,...*)
- The environment consists of objects (buildings, plants, etc.)
- Objects are made of primitives
- Primitives may have functionalities (Scripts)
- Browsing with virtual personalities (Avatars)





- The ***best known*** virtual world at the moment
- Developed by Linden Research, Inc (Philip Rosedale)
- Launched in June 2003
- Came to international attention in late 2006 and early 2007

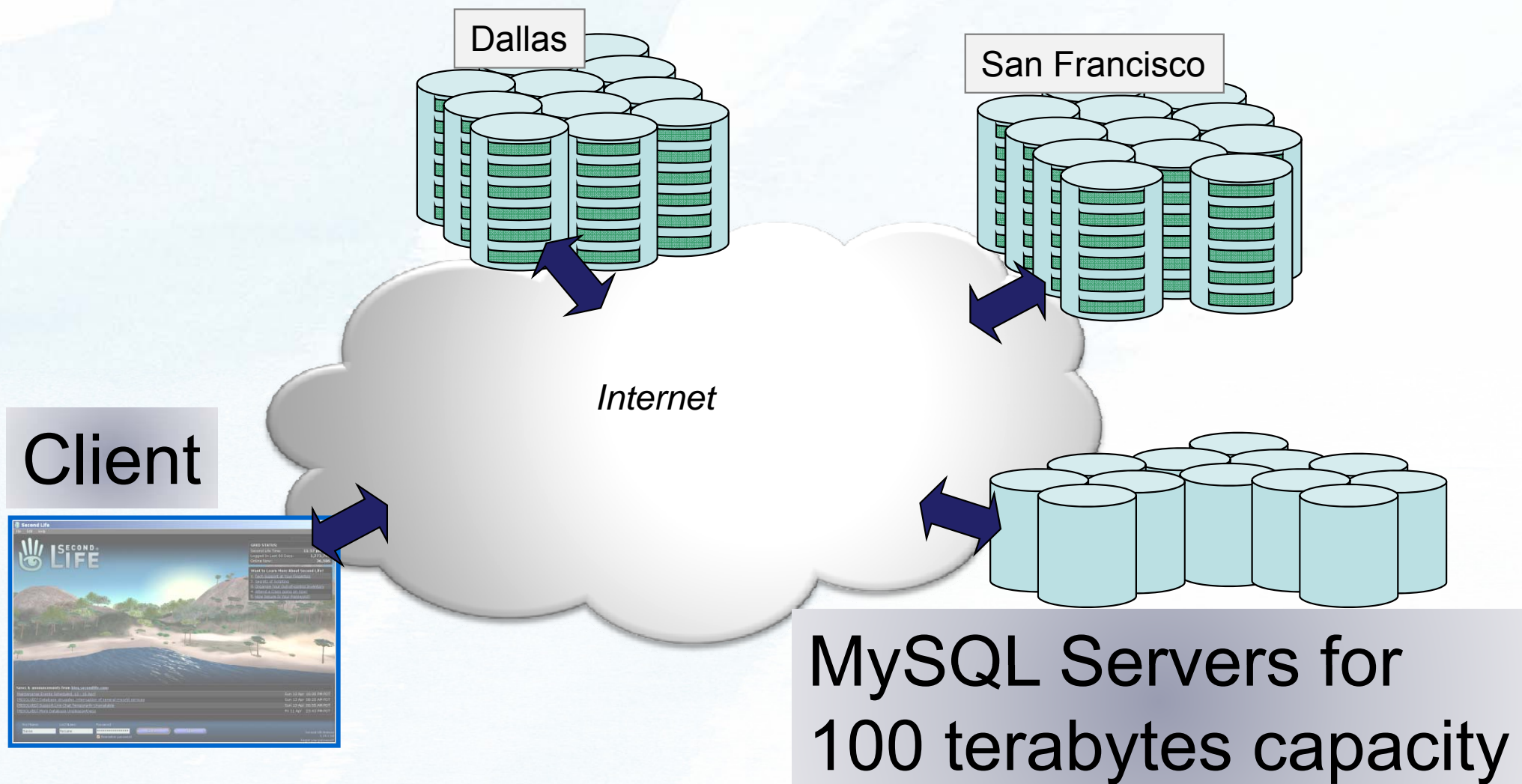


Source: [http://en.wikipedia.org/wiki/Image:Graph\\_of\\_Second\\_Life\\_population.png](http://en.wikipedia.org/wiki/Image:Graph_of_Second_Life_population.png)



# Client-Server Architecture

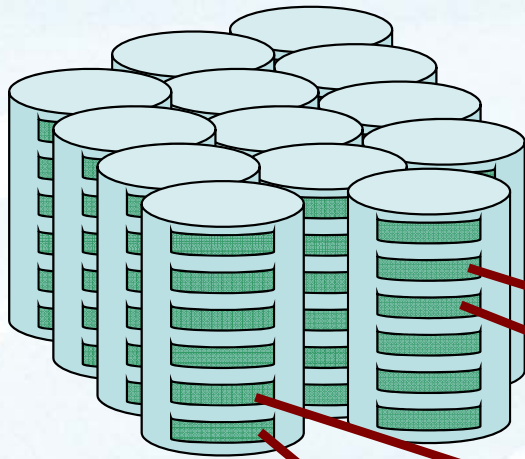
Thousands of Debian Servers



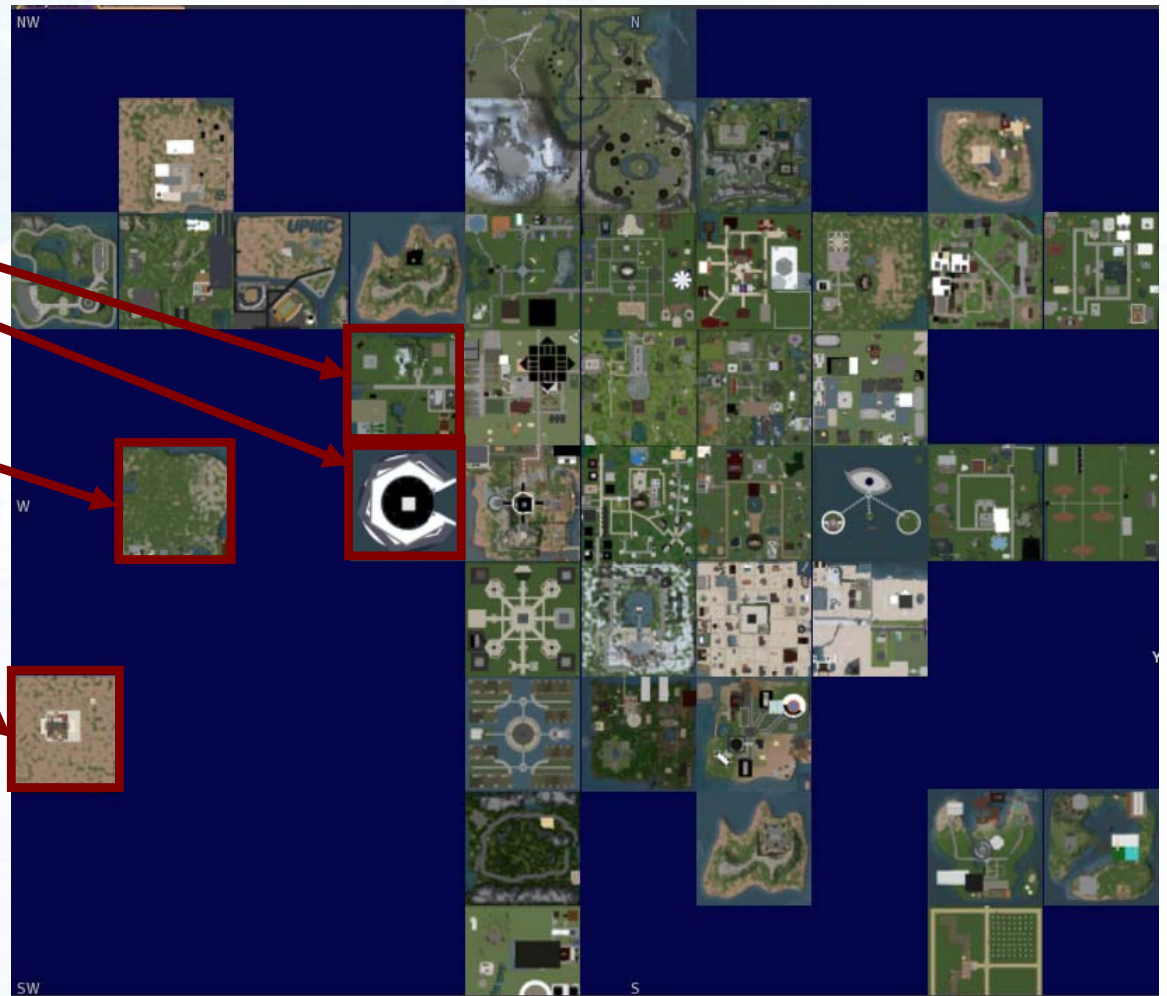


# Region Simulators (Sims)

## *Second Life World Map*



Each region  
(256 m x 256 m)  
is simulated by a  
single named  
server instance



For now, Linden Lab is the only company that runs sims

# Introduction (Video)



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# Avatars

- **Resident:** people providing content and contributing to the experience (*user of SL*)
- **Avatar:** The appearance of a resident





# Moving Around



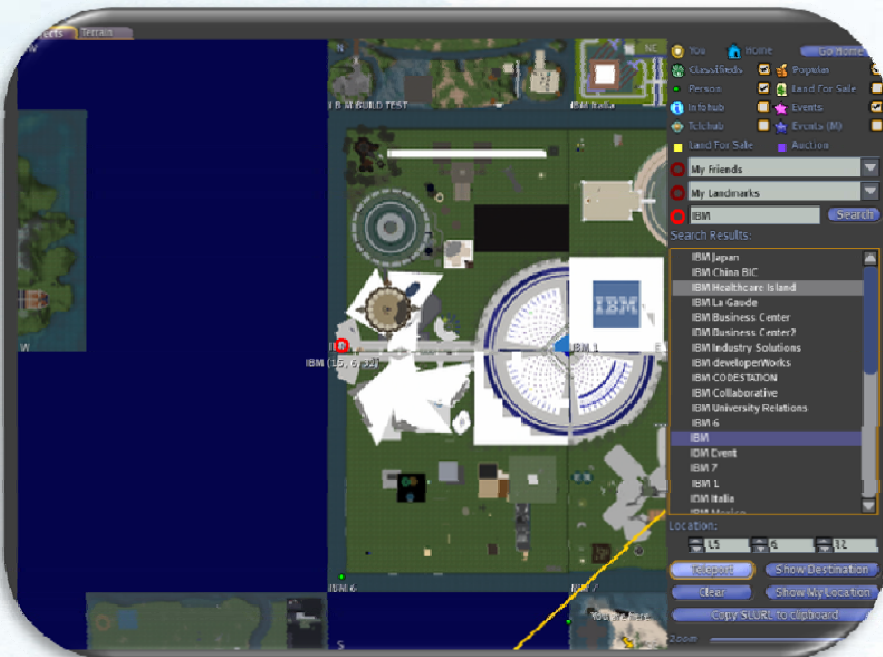
You can move **by foot**  
walk, run and jump...



... **fly**...

... **ride** in vehicles...

... or **teleport** anywhere  
in SL in an instant!



# Communicating

**private:** Instant Messages (IM)

**public:** local chat  
(whisper, talk, shout)  
or group IM



**verbally:** text and voice

**non-verbally:**  
poses, animations and gestures



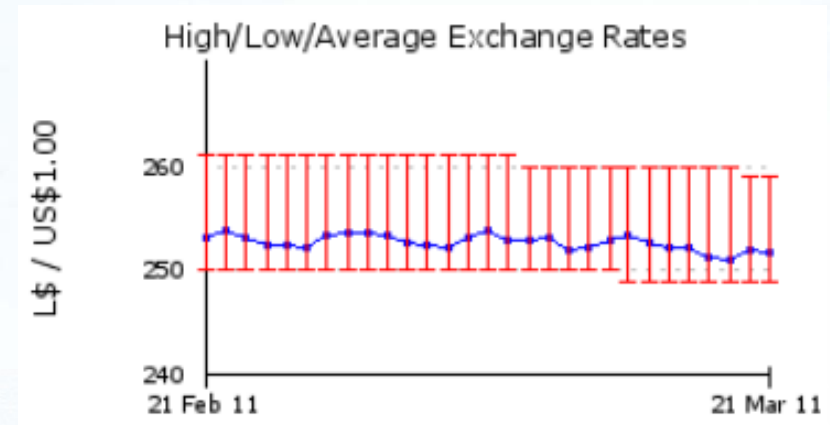
# Economy



Financed by residents

Linden Lab: SL “central bank”

Linden Dollar (L\$)



<https://secondlife.com/my/lindex/market.php>

Exchange rate quite stable: L\$ 255 to 1 US\$  
(22.3.11: 1 € = 1,4211 US\$)

=> 1 € ≈ 362 L\$      => 100 L\$ ≈ 28 snt



# Businesses and Organizations



1. Solely in-world businesses
  - Selling virtual goods and services
2. Companies participating SL
  - Assisting and advising real-life businesses on presenting themselves in SL



SL is maintained by Linden Lab, but  
it's created by it's residents!

*“Your World. Your Imagination.”*



# Creating Second Life

- All the objects in SL are created with a build-in 3D modeling tool
- The behavior is added with the Linden Script Language (LSL)

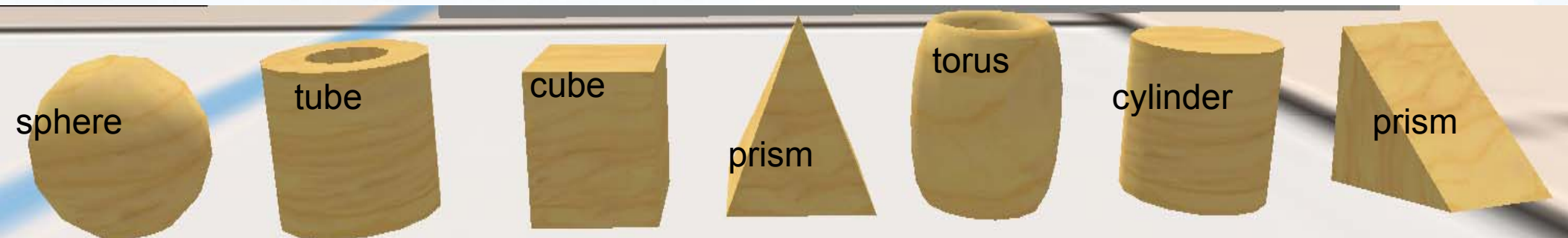
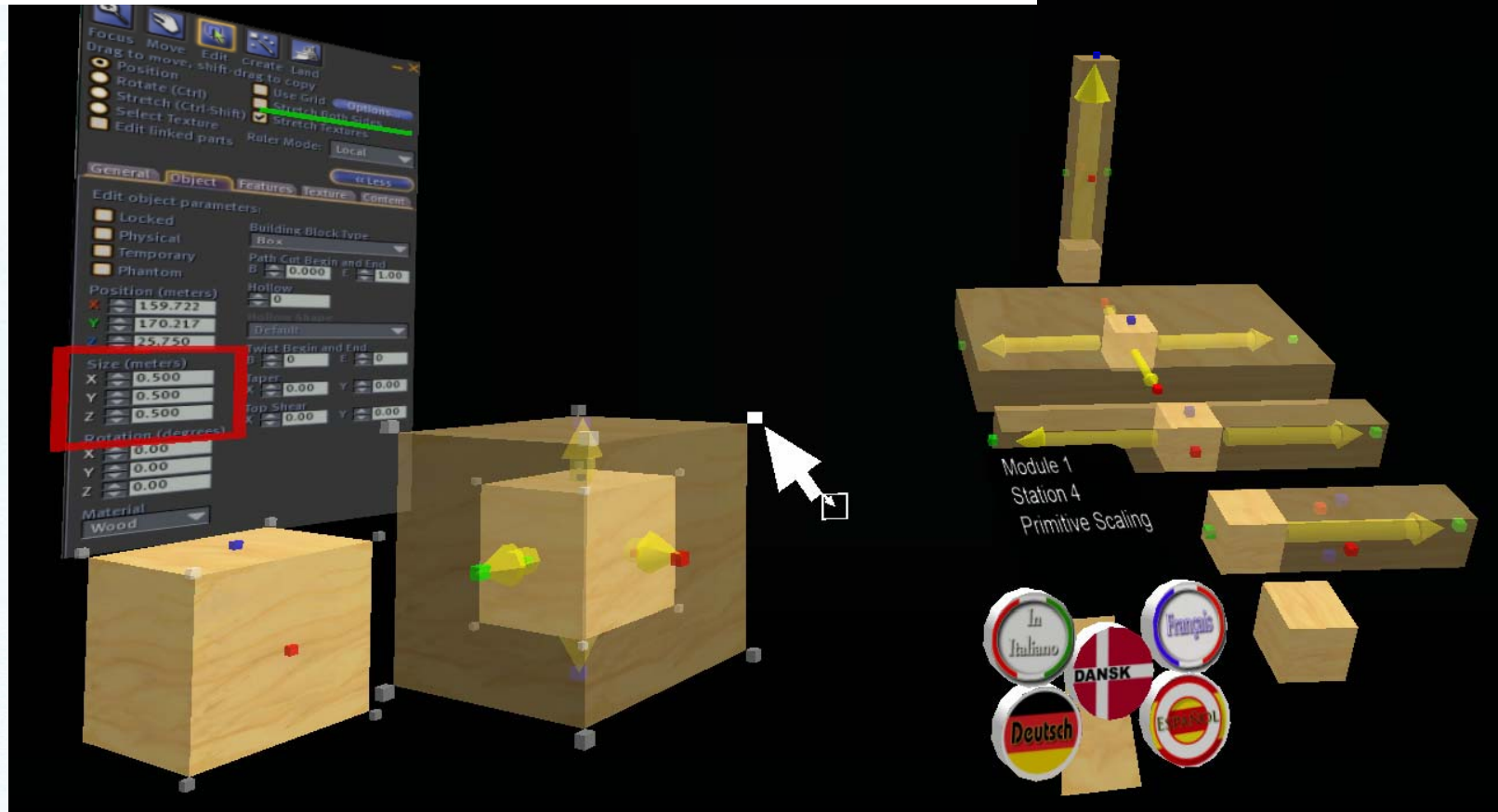


*“You create it, you own it.”*



# Primitives (prims)

The Ivory Tower Library of Primitives (Natoma 210, 164, 27)

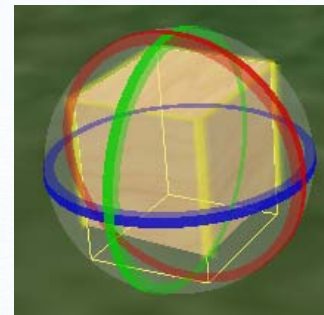
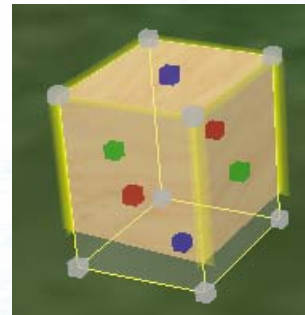
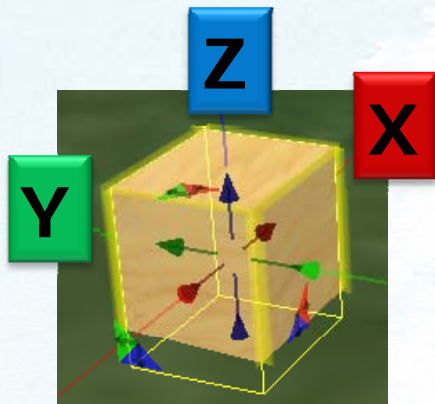


# Creating Prims

- Right-click on the ground, choose Create from the pie menu, and left-click the ground



- Prims can be moved, resized and rotated using the mouse...

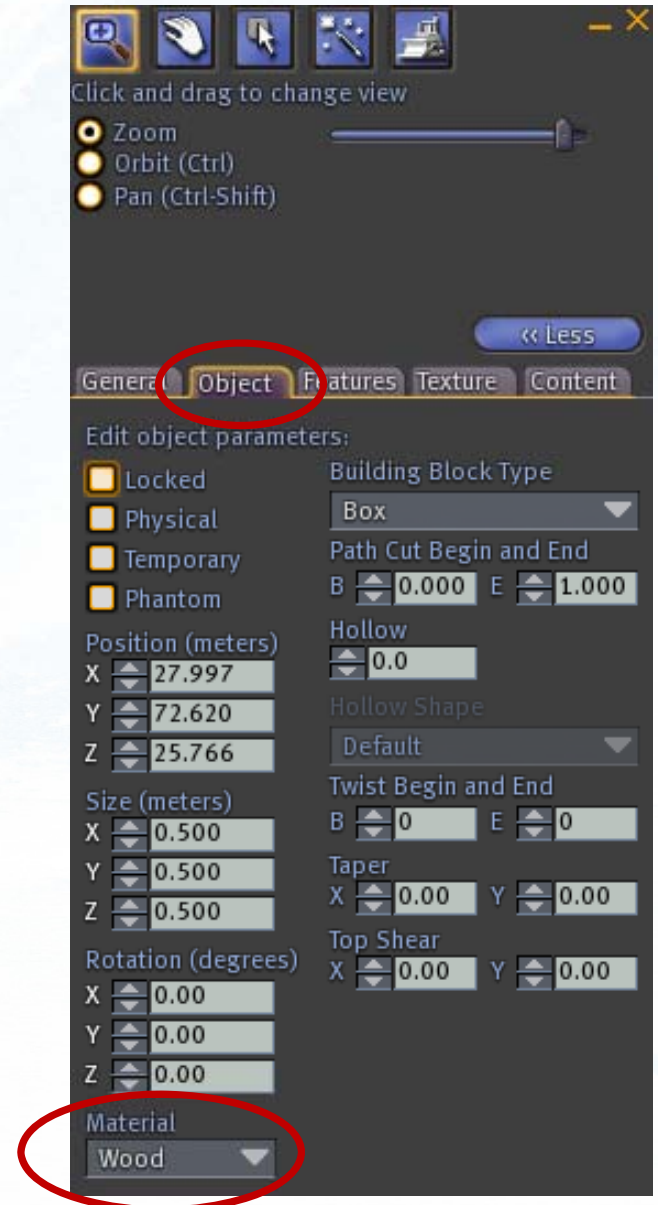


- ... **or** setting the values of x, y, and z on the Object tab of Edit window



# Material

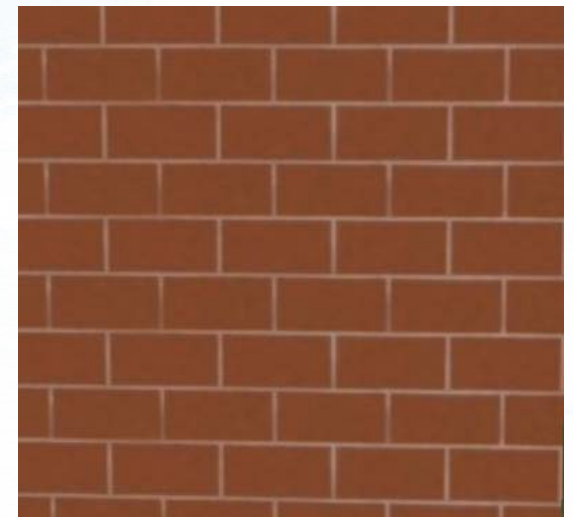
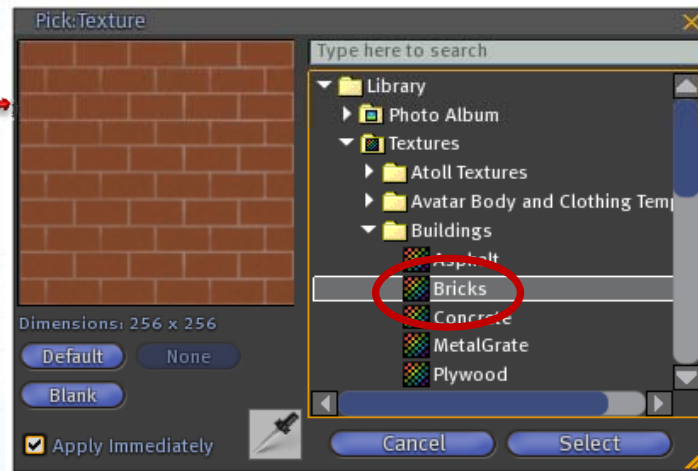
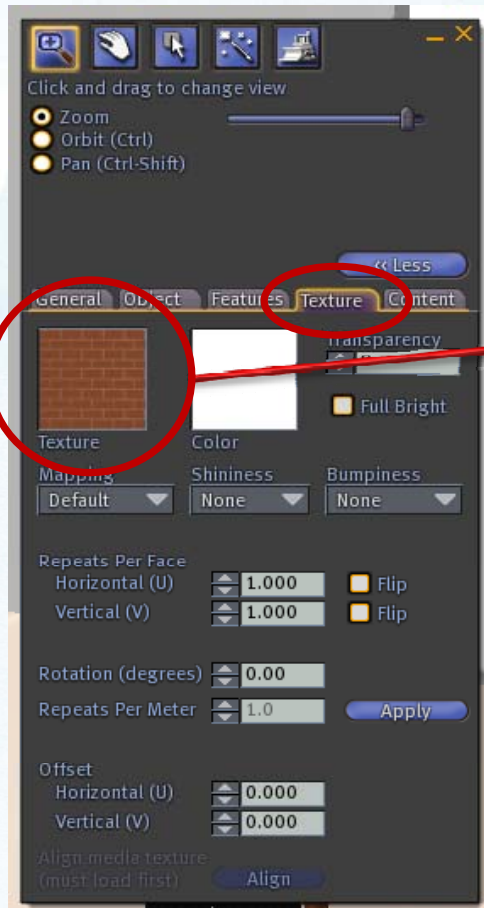
- Material will affect the
  - sound produced when colliding
  - friction when sliding, and
  - elasticity of an object
- Material available:
  - stone,
  - metal,
  - glass,
  - wood,
  - flesh,
  - plastic, and
  - rubber





# Texture

- Pretty large collection exists
- Default texture plywood
- Own textures
  - Resolution power of 2 (32x32, ...1024x1024)
  - Uploading 10 L\$
  - .tga, .bmp, .jpg, or .jpeg

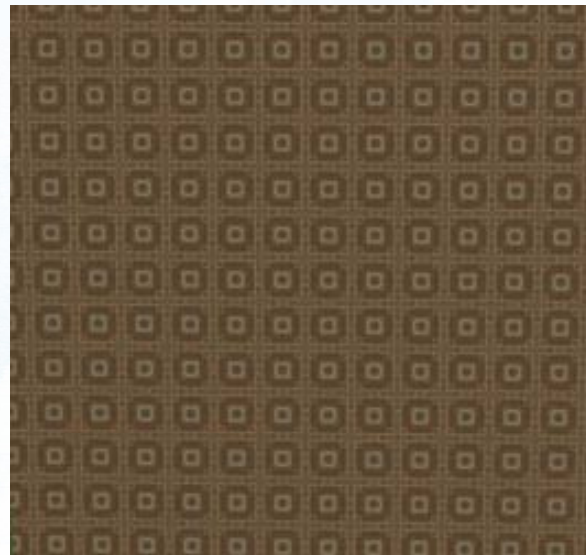
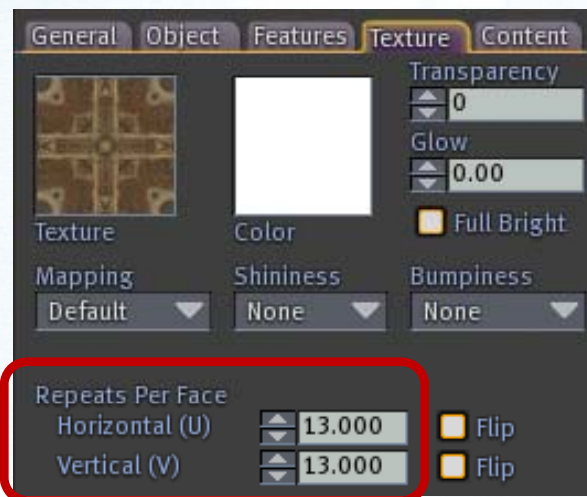
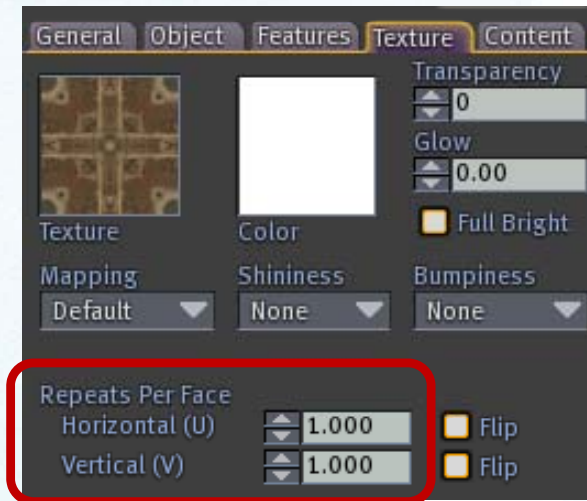


# Appearance

- Bumpiness
  - Simulates a detailed surface reacting lighting conditions
  - 17 bump maps to choose from (e.g. bricks)
- Shininess
  - Reflects the appearance of the horizon
  - Four degrees to choose from (none, low, medium, high)
  - May be turned off in the client side!
- Transparency
  - Sets the prim up to 90 % transparent
  - Useful for windows and water effects



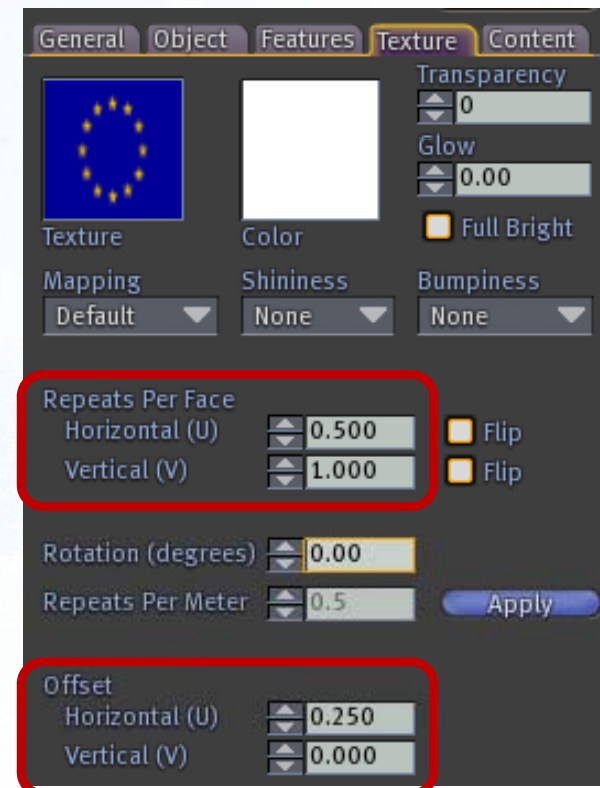
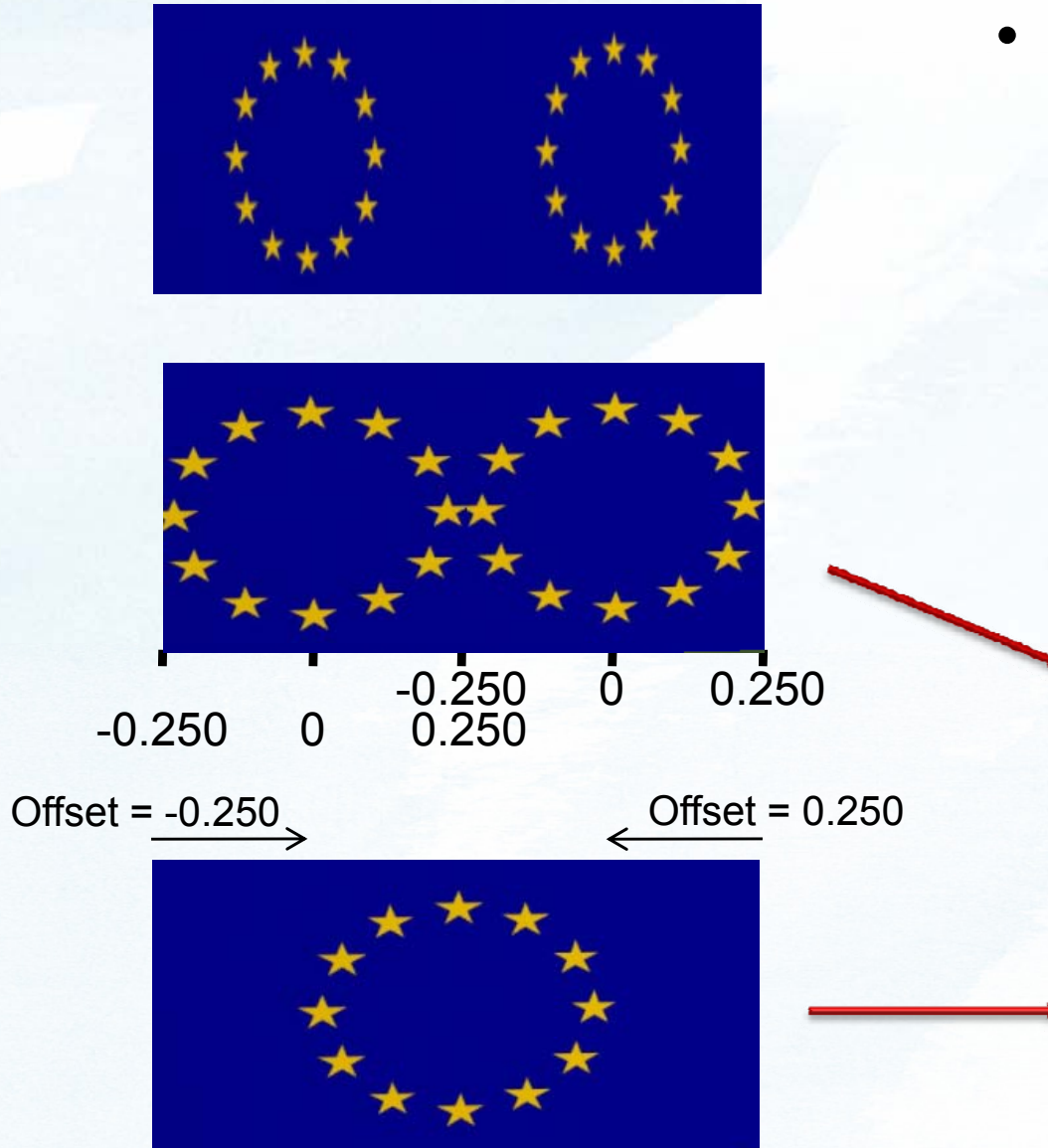
# Repeating Texture



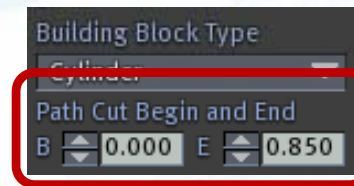
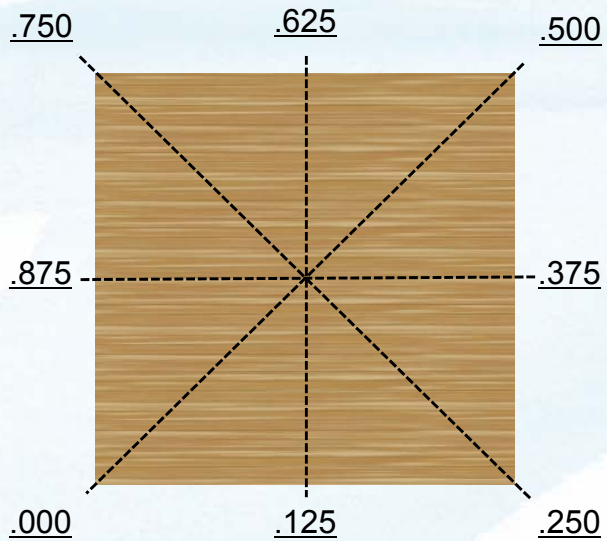


# Offset

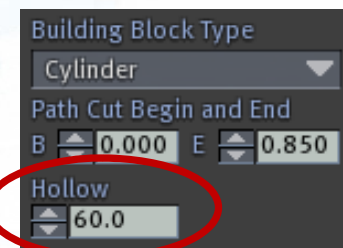
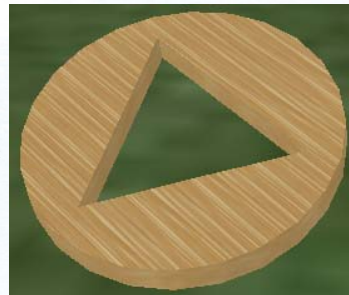
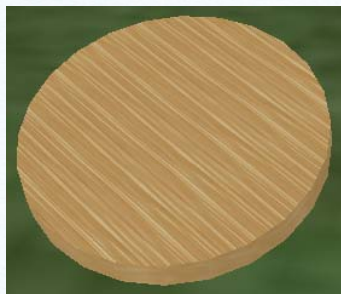
- Defines the middle point of the texture on a prim



# Bath Cut



# Hallow

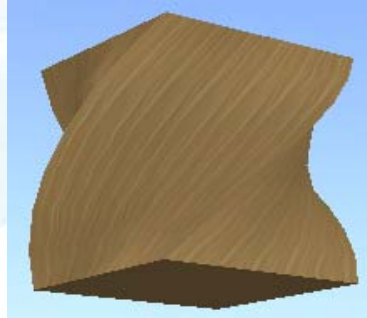


# Twist

Twist Begin and End  
B 0 E 0



Twist Begin and End  
B 0 E 90



Twist Begin and End  
B 0 E 180

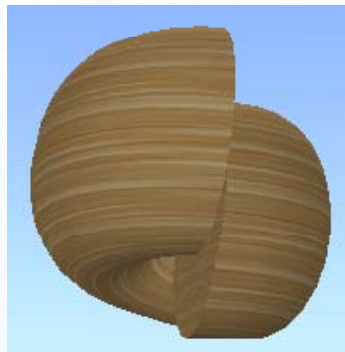


# Skew

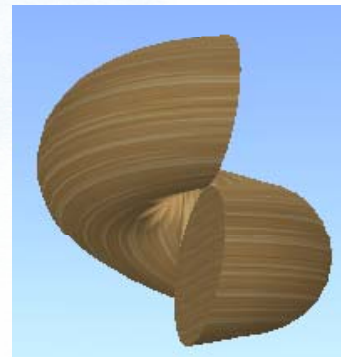
Hollow 0.0 Skew 0.00



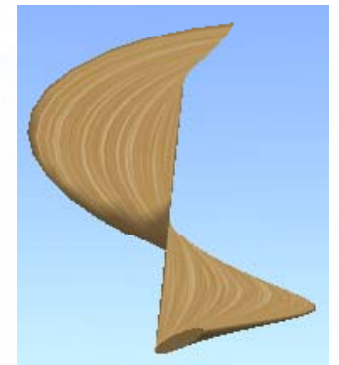
Hollow 0.0 Skew 0.25



Hollow 0.0 Skew 0.50



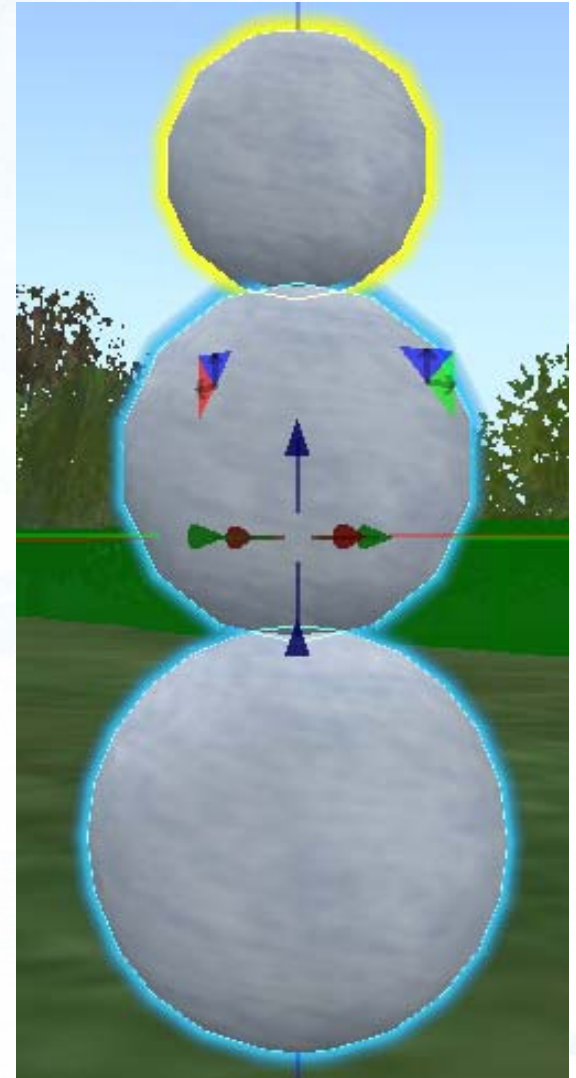
Hollow 0.0 Skew 0.95





# Linked Prims - Objects

- Linking
  - Select the prims → Ctrl+L (Tools → Link)
  - Max 256 prims, for physical objects 31 prims
- Unlinking
  - Shift+Ctrl+L (Tools → Unlink)
- Root prim
  - The last prim selected (glow yellow)
  - Carries the most of the characteristics of the linked set (e.g. name, and scripts)



# How to Get into Second Life?

## ***1. Create an account***

- choose a name for your avatar,
- select an avatar, and
- choose the account type (basic or premium)





## 2. *Get a Client*

Open source client for entering the virtual world



Third party viewers exist (even non-graphic)



# Exercise: Getting Started

1. Create an account (secondlife.com)
2. Open the Second Life client on your computer and get into Second Life (use the password sent to your email)
3. Learn to move and communicate in Second Life and find your way out of the Help Island
4. Teleport to Paijat-Hame Edu Island and find the Sandbox
5. Build there a house with a chimney, a doorway, and some windows
6. Make the house one object, name it and take it to your inventory

