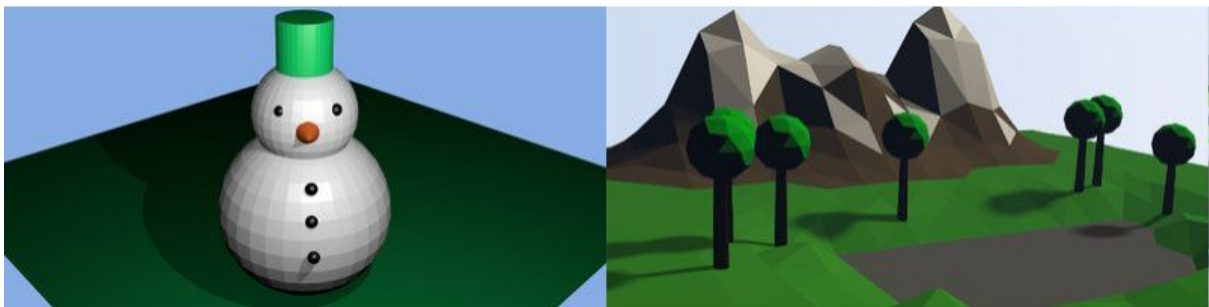


An introduction to animation, VFX and games



Name _____

Date _____

The links below are hosted externally and whilst we have used them quite safely and securely ourselves, as have thousands of other students and teachers around the world, we can never guarantee how they will interact with you and your computer. Use at your own risk.

[Support document](#)

Blender is open source software and free for you to use on your school computers and for your students to use at home.

To download blender, please go to:



blender.org

For more information on how to get amazing at
blender, please visit:

3dami.org and b3d101.org

Resources here are the result of work by Peter Kemp, Tom Haines, Monique Dewchand, the University of Roehampton, 3Dami, b3d101 and the Raspberry Pi foundation. With funding from Google, ScreenSkills, NextGen Skills Academy, New City College,

The European Union and The Skills Funding Agency

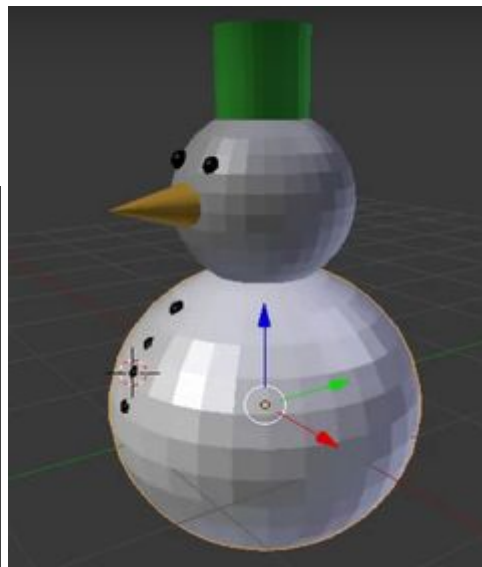
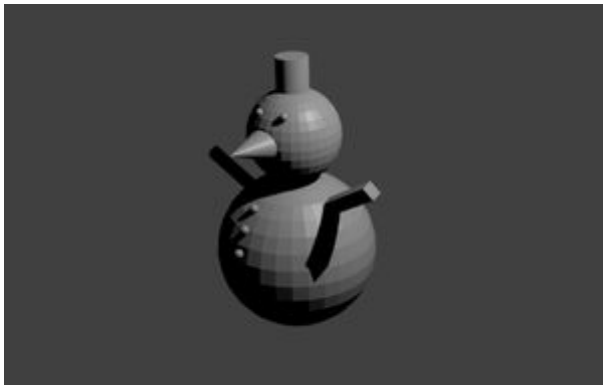
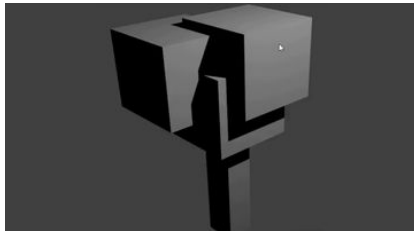
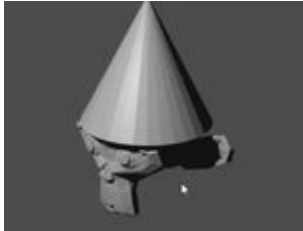
ns SA 4.0 licensing

The work, bar the logos and brand names are under creative commo



Session 1 - Basic modelling, colouring and rendering

This session will give you the basic skills needed to navigate the Blender program and create your first 3D models. You should be aiming to make some or all of the following:



The tutorials you need to follow are here:

- Party Monkey: <https://projects.raspberrypi.org/en/projects/blender-party-monkey>
- Cube tree: <https://projects.raspberrypi.org/en/projects/blender-tree-of-cubes>
- Snowman: <https://projects.raspberrypi.org/en/projects/blender-snowman>
- Colouring in: <https://projects.raspberrypi.org/en/projects/blender-colour-snowman>

HINTS:

- Use the mouse to rotate your scene every few minutes, check that everything is lined up correctly.
- Use the shortcut keys to speed up your editing.
- If something goes wrong, hit the escape key and try again
- Control-z (windows) Command-z (Mac) undoes your last edit. Try copy and paste...
- Don't be afraid to experiment

Please work with each other and ask if you have any questions.

Session 1 - Crib sheet

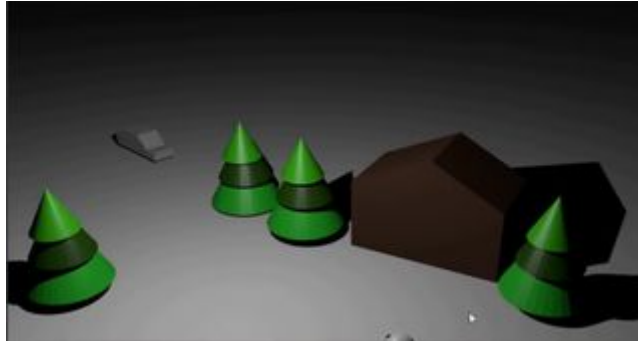
Skills learnt	Tick here
Add and Delete Objects	
Move around the scene using the mouse	
Move, Rotate and Size Objects	
Use the camera to render an image	
Colour things in	

Things made	Tick here
Party Monkey	
Snowman with [eyes carrot buttons hat arms scarf]	
Cube tree / Christmas tree	
Coloured in snowman and cube tree	
Extension: a winter scene set in a small forest	

Keyboard / mouse shortcut	What does it do	Have you used it?
G		
S		
R		
F12		
X / Delete button		
Middle mouse button		
Right mouse		
Left mouse		
Mouse wheel		

Session 2 - Animation and parenting

In this session you will make your first animations, we provide a demo scene for you to use, but you can use your own scene and props if you like.



The tutorials you need to follow are here:

- Demo scene - <http://goo.gl/GRst6Y>
- Parenting objects - <http://b3d101.org/en/parenting-objects/>
- Animation - <https://projects.raspberrypi.org/en/projects/blender-animate-snow-scene>
- Rendering video - <https://projects.raspberrypi.org/en/projects/blender-render-snow-scene>

HINTS:

- Check that you are adding a keyframe to the correct object, each object can have its own keyframes
- When animating make sure you move the timeline pointer before moving the object and pressing the keyframe button
- Use the mouse to rotate your scene every few minutes, check that everything is lined up correctly.
- If something goes wrong, hit the escape key and try again

Session 2 - Crib sheet

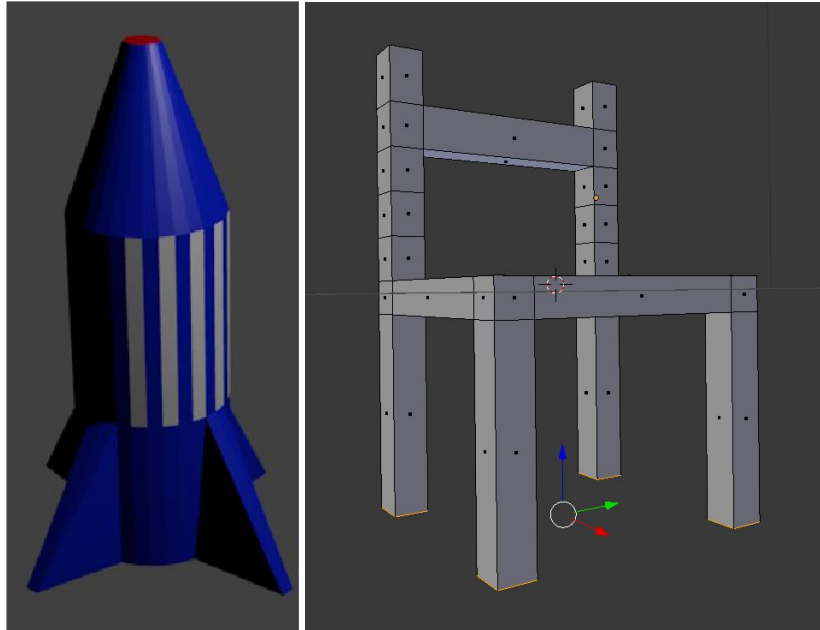
Skills learnt	Tick here
Select multiple objects using shift	
Parent objects to Empty	
Add and Delete keyframes to make an animation	
Adjust timeline	
Output a video	

Things made	Tick here
A snowman and/or tree parented to an empty	
An animated snow scene	
A video of your animation	
Extension: animate the camera, animate a tree exploding	

Keyboard / mouse shortcut	What does it do	Have you used it?
Shift + left-click		
Numpad .		
Numpad 0 (press again to exit)		
Ctrl + C		
Ctrl + V		
Ctrl + Z		
Ctrl + P		
i		

Session 3 - Advanced modelling and colouring

In this session you will learn how to make complex models from simple shapes. You will then learn how to colour different parts of them different colours.



The tutorials you need to follow are here:

- Creating a house - <https://projects.raspberrypi.org/en/projects/blender-block-house>
- Creating a rocket - <http://b3d101.org/en/rocket/>
- Advanced colouring in - <https://b3d101.org/en/rocket/coloring-rocket/>
- Modelling a chair - <https://b3d101.org/en/modelling-chair/>

HINTS:

- Always be careful when swapping in and out of edit mode, check which mode you are in before moving / editing / adding objects
- When adding multiple colours make sure that you have two or more materials attached to each object
- If something goes wrong, hit the escape key and try again
- Make use of the Cmd-Z button to undo things

Session 3 - Crib sheet

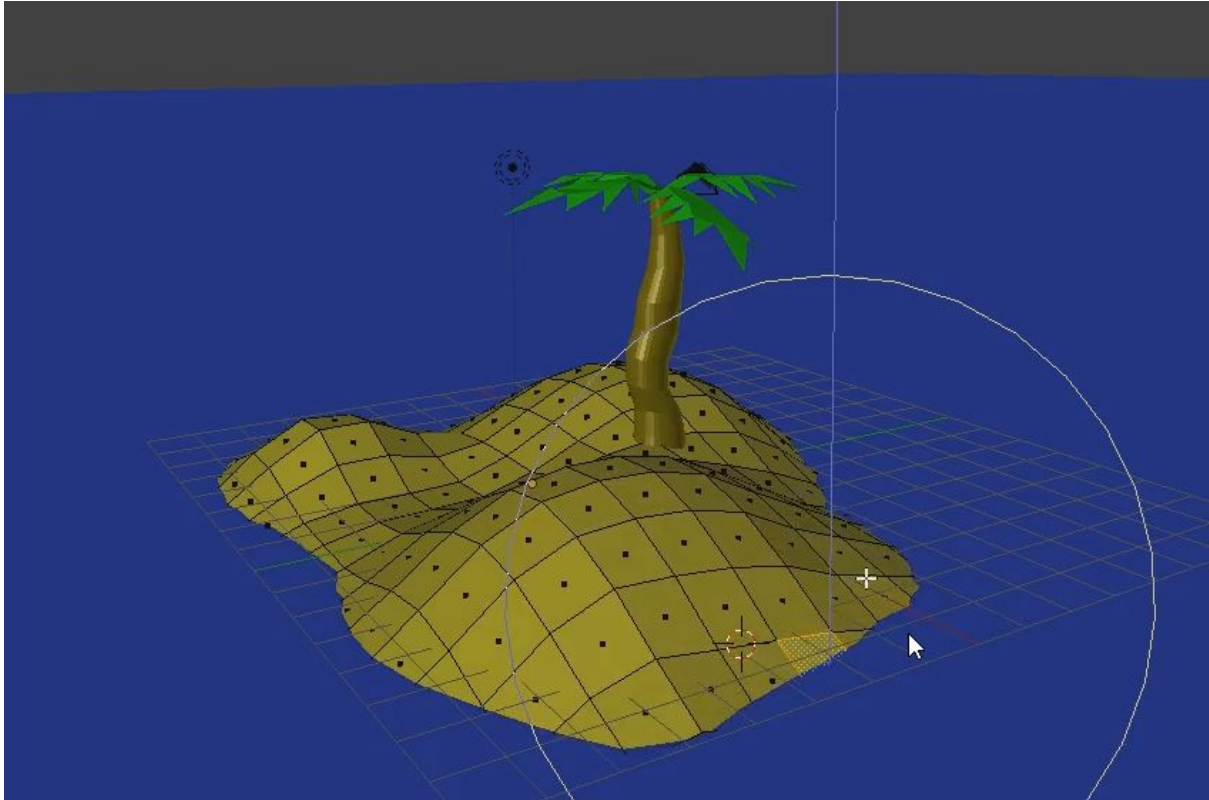
Skills learnt	Tick here
How to select edges, vertices and faces in edit mode	
How to use extrude to add parts to a model	
How to delete faces	
How to make new faces	
How to use the loop-cut	
How to colour things in	

Things made	Tick here
A rocket, coloured in	
A chair	
Extension: A table, a car, the eiffel tower(?!)	

Keyboard / mouse shortcut	What does it do	Have you used it?
E		
Tab		
G + X		
R + Z		
F		
Control + J		
[in Edit mode on a joined object] + P		

Session 4 - proportional editing

In this session you will learn how to use proportional editing to create natural looking objects, you will learn how to use the knife tool to cut your own shapes.



The tutorials you need to follow are here:

- Creating a tree trunk - <https://b3d101.org/en/palm-tree/tree-trunk/>
- Creating a palm leaf - <https://b3d101.org/en/palm-tree/palm-leaves/>
- Create an island and some sea - <https://b3d101.org/en/palm-tree-sand-and-ocean/>

HINTS:

- Always be careful to check that you are in object mode before adding new objects
- Parent the leaves to your palm tree so that you can move it more easily
- Adjust the power of proportional editing to meet your needs

Session 4 - Crib sheet

Skills learnt	Tick here
Turn proportional editing on	
Adjust the power of proportional editing	
How to use the knife tool	
Delete faces	
Rotate around the x y z axis by a set number of degrees	
Subdivision	

Things made	Tick here
A palm tree trunk	
A palm tree leaf	
A desert island	
An ocean	
EXTENSION: Create a sailboat that sails around the island	

Keyboard / mouse shortcut	What does it do	Have you used it?
K		
R + X + -90		
R + Z + -180		
G		
[in Edit mode] + W		
NUMPAD + 1,3,7,9		

Session 5 - Lights, camera, text action

In this session you will learn how to create animated text and move the camera with pinpoint precision.



The tutorials you need to follow are here:

- Moving the camera - <https://youtu.be/03FU2Hx7m7E>
- Creating and animating text - <https://b3d101.org/en/animating-text/>
- Adding lights - <https://b3d101.org/en/lights/>
- Download the desert island scene - <http://goo.gl/eytHdY>

Session 5 - Crib sheet

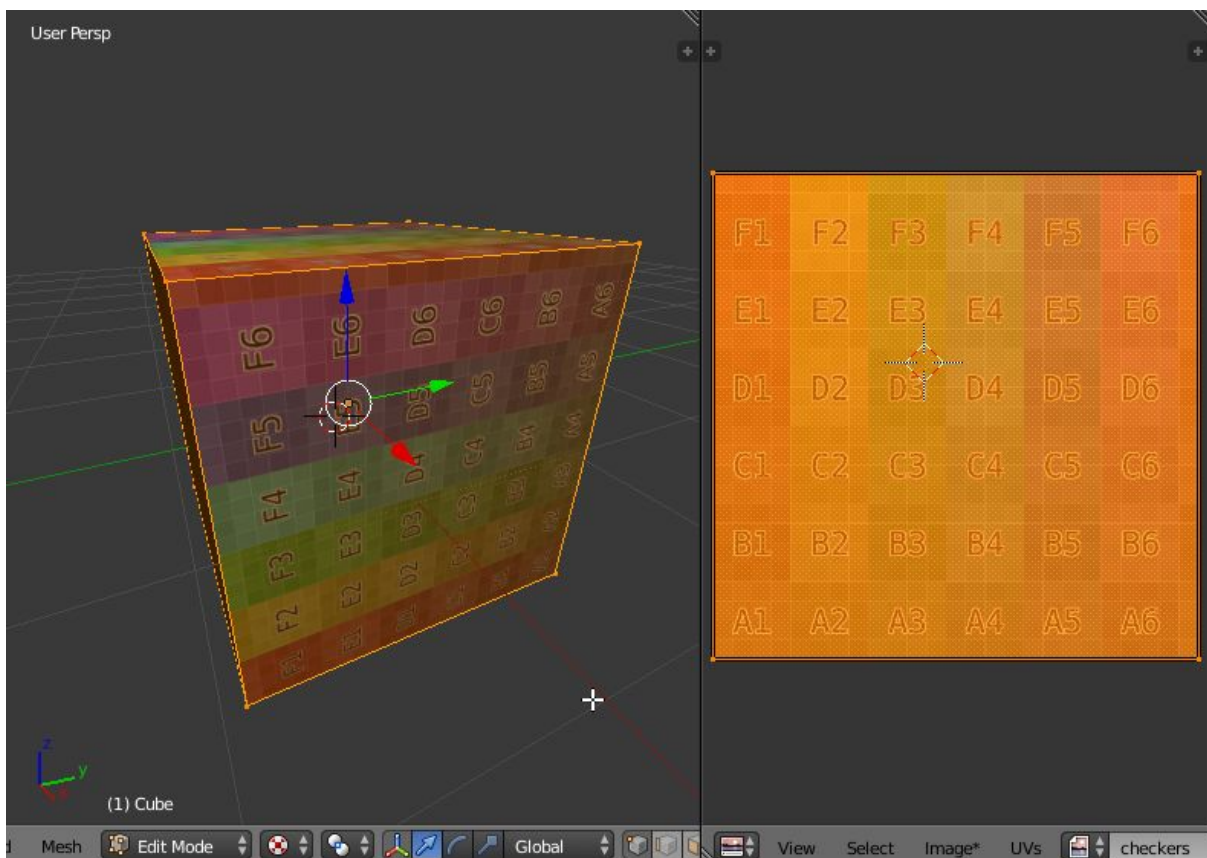
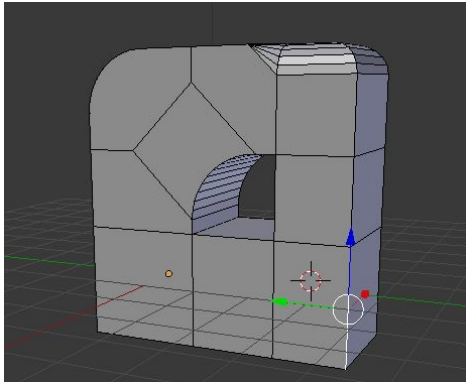
Skills learnt	Tick here
How to move the camera using the normal controls	
How to move the camera using flying mode	
Add text and change the font	
Animate text attributes using key frames	
How to create multiple lamps [sun spot point]	

Things made	Tick here
A well shot island scene	
A static piece of text using [colour bevel offset different font]	
An animated text scene	
Add animated lights to your text scene	
EXTENSION: add lights to the car in your snow scene	

Keyboard / mouse shortcut	What does it do	Have you used it?
Shift + F		
NUMPAD + 0		
N		

Session 6 - Advanced blender, ray tracing and 3D

In this session you will learn some cutting edge techniques used to make 3D films. This will include the cycles renderer,



The tutorials you need to follow are here:

- Ray tracing: <https://b3d101.org/en/cycles-gpu/>
- Using your own textures: <https://youtu.be/vJOXAQPLYSQ>
- Round those edges, bevel: <https://b3d101.org/en/bevel-tool/>
- Creating a 3D image: <http://b3d101.org/en/vr/>

Session 6 - Crib sheet

Skills learnt	Tick here
How to render using Cycles	
How to enable your GPU to help you render	
How to UV unwrap an object and apply an image	
How to Bevel edges and make them softer	
How to render to 3D	

Things made	Tick here
A stapler (with rounded edges!)	
A plane cube that emits light	
A textured cube	
VR version of a file	
Upload your VR file to b3d101	

Keyboard / mouse shortcut	What does it do	Have you used it?
W + B		
U		