

FLASHLIGHT – DEVELOPMENT LOG

Apropos of	Description	Status	Last Updated
Timing	Need a robust FPS timer for our game updates and need to output FPS to the game window using text.	RESOLVED	
Camera – Orthographic view	Need a 2D view for our menu state, etc, and a bool to switch between ortho and perspective - could pass this in to our GameState as a flag when we create them	RESOLVED	DONE
Camera – quat rotation	(Doing quaterion rotation for objects, but not the camera) Implement methods to allow both euler angles and quaternion rotation by passing in a bool to camera rotate function, or created two separete functions for each.	UNRESOLVED	Not completely necessary as we are using an FPS (no roll)and gimble lock is impossible due to us having constrains in place, but still be a nice feature to have quaternions as well.
Buffer classes	Tidy these up. Stick with static maps. Need to generate a layout check that checks if layout is already enabled in map and doesn't re-enable it-(as currently disabling layout more than once) check if this will work as we enable layout WITHIN VAO – does that mean it is only enabled in this VAO?? - research	RESOLVED	04/01/2018 Cleaned up class but need to check static maps – do we want these? (Or one for each object.....probably not!) 13/01/2018 Don't need to keep a record of the enabled layouts, as they are only enabled within a VAO. Therefore are disabled automatically when a VAO is not bound. Got rid of the layout maps as no longer needed.
Shaders	Tidy these up – do very few calculations, few if else statements, etc. Separate each type of shader in to a different file - Phong, Blur, Terrain, Basic textured/untextured, etc.	RESOLVED	Nice clean shader system- 4 x shaders, Interface, terrain, entity and skybox!
Screen Manager	Fix the graphics settings - create functions for multi-sampling enable/disable, ms levels, anti aliasing, etc. Organise the culling of objects - cull back face and describe if CW or CCW. Function to set the mipmaps on or off, need to get the MS levels supported from the GPU. -InitGraphics function, implement correct methods in here to enable what we need. eg. cullface back, etc.	RESOLVED	04/01/2018 Done Init graphics function but need to determine what settings we want to use and where to store these 26/03/2018 -cull backfacing/enable blending/enable depth done but need to determine ms levels and CCW or CW
Pipeline Manager/Shader	Uniform functions eg SetUniform and AddUniform are messy.	RESOLVED	13/01/2018 pipeline manager will become deprecated, added a new class called Shader which will be used instead, as need more than one shader. Still need to reorganise uniform functions
File Parser	Everything needs to be read in using files only. Implement binary functions to enable binary loading.	UNRESOLVED	04/01/2018 cleaned up class
OBJ files	Parser to write in bytes the size of an OBJ file and output text version of OBJ to a binary file. Then when reading it in, read it in in binary format instead of text format (for optimization)	RESOLVED	04/01/2018 Created txt OBJ parser 26/03/2018 Now using assimp
Copy Constructors	Need to be implemented in every class	NO LONGER REQUIRED	13/01/2018 instead of this- can make all copy constructors private so copies can't be generated, solves problem of implicit copying happening without knowing about it
Vector4f class	create a vec4 class	NO LONGER REQUIRED	13/01/2018 not required as will be using GLM in final version
Maths	tidy up maths classes- appropriate comments where needed, change names to shorter names eg vec2, vec3, to be consistent with the shaders	NO LONGER REQUIRED	13/01/2018 not required as will be using GLM in final version
Physics Engine	Encapsulate all physics and create our collisions, e.g. rigid body, collidable2D, collidable3D, sphere, AABB	UNRESOLVED	22/05/2018 Implemented AABB3D, AABB2D, Frustum Culling for sphere, point, aabb and rectangle & ray Caster. Need to research wall sliding/proper collision – Possibly learn Bullet library
Rendering Engine	Implement a rendering engine that handles all the different settings of the shaders - move all settings to do with graphics from the Screen Manager in to here, and then in Screen Manager have a simple renderEngine->Update(), renderEngine()->Draw, or something similar.	UNRESOLVED	22/05/2018 Still looking for a nice way to use multiple shaders. Either a batch renderer or something similar, not sure its a good idea to use polymorphism as it involves downcasting
Transform class	Tidy up and implement correctly	RESOLVED- using GLM with a dirty flag	13/01/2018 Current problems with this class: Transforms are updated every frame, even if no changes happened. The local transform rotations (X and Z axis) for objects doesn't work correctly. 16/01/2018 Implemented a 'dirty' recursive function that checks if every parent needs updated, and only performs updates if parent transform has changed. This is more optimized. When setting an objects local position or rotation, we can now pass in true or false to the function, to determine if we want to transform around parents transform or the current objects local transform. We have full control over all transforms now and can toggle this on and off. Areas where this would be useful is if we wanted an object to follow the player, but then stop following the player after a certain amount of time. Current problems persisting: Objects Z and X rotations are still not working correctly.
Shapes	Create some basic shapes that we can draw by passing in vectors to buffers - cubes, triangle, sphere etc. - These will be useful for attaching our lights to - so we can see where the lights are and make debugging easier.	UNRESOLVED	08/01/2018 Rather than doing by hand I used the obj loader instead – seems pointless hardcoding the values. I need to implement a game object that has a light attached to it – probably call this 'LightBox'... need to clean up Mesh, Texture, Transform etc first and do the GameObject hierarchy. 26/03/2018 – Have a simple quad and cube shape, but need sphere etc. Should be under some hierarchy 'Primitives'
Terrain	Have multiple terrains so we can switch between grid form/plane form. Implement height map for final version of game and set up collisions.	RESOLVED	04/01/2018 Created a grid and flat plane terrain

Input	Finalize inputs - mouse, keyboard, controller and tidy up this class	RESOLVED	05/01/2018 Cleaning up input class, cleaned up Update function (switch statement), now loading in buttons from txt file and storing into a map (got rid of all the enums), set up controller axis & buttons (still needs work) 08/01/2017 Finalized input. All buttons are read from mouse, keyboard and controller. Directional Pad and Axis on controller done. Mouse position reading done. 13/01/2018, NOTE: Still need to read in all the constants from a file and store in to a map, EG. Controller GUID (it's a string)
Mesh Loader and mesh class	Tidy these up!!	RESOLVED	4/1/18
Input	Load EVERYTHING from a file (GUID, constants.) May need a template function as adding different data to map, like string = number, or string = string (in terms of GUID). Figure out a good way to do this and have multiple different maps of different types...	UNRESOLVED	22052018 Loading all objects in from files but this needs to be done better, currently loading them in individually – need a resource manager and object factory/pool all working together to achieve proper resource loading
SpotLight	Fix this in the shader to project angle further	RESOLVED	
Sprites	Can do animation now from the texture class instead of updating VBO every frame- so clean this class up & implement this correctly	RESOLVED	22052018 Full support for texture atlases
Material	Store materials correctly (in an std::map or something) to prevent exception when trying to access a texture	RESOLVED	
Texture	Try and encapsulate this class further to clean it up	RESOLVED	
Font	Need to sort out GUI	RESOLVED	
Rendering CW/CWW	Make sure everything is being rendered in CCW order(terrain,primitives, etc)	RESOLVED	
Shaders	Make sure only updating if necessary- create static/dynamic update functions	RESOLVED	22052018 And using uniform blocks
AI	Need better AI – implement swept AABB, wall sliding, OBB, controller picking	UNRESOLVED	23052018 back button currently disabled as player sometimes gets stuck!!!!