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The Aquarium:

- The attached screenshots are with a higher resolution of files, I had to compress them for submission.
- If you get lost while rotating the scene (center of scene is center of inner skybox), use **w** to activate wireframe.
- I am using a modified version of **ply.h**

I have added

```
typedef struct Vertex {  
    float x, y, z;  
    float nx, ny, nz;  
};  
  
typedef struct Face {  
    unsigned int count;  
    unsigned int *vertices;  
    float nx, ny, nz;  
};
```

to the end of **ply.h** (declaration of these structs in header file)

- Files attached (hard coded, no changes in command-line arguments):
 - display.cpp – main function
 - ply.h – modified header file
 - ply.c, plyread.cpp – to store value of ply models in the arrays
 - shark3.ply, hammerhead3.ply and dolphins3.ply – the 3 ply models used with generated normals
 - shaderSetup.cpp, shaders.vert, shaders.frag – GLSL
 - flip normal.txt and generate normal.txt – NOT used in the code, ply models with already generated normals
 - 1.ppm to 6.ppm (inner skybox textures)
 - 1c.ppm to 6c.ppm (inner cube for reflection)
 - o1.ppm to o6.ppm (outer skybox textures)
 - o1c.ppm to o6c.ppm (outer cube for reflection)
 - Lab_5.sln – Visual Studio solution file
 - Screenshot 1.png, Screenshot 2.png, Screenshot 3.png

If I skipped some file by mistake and the program is not able to run please let me know!

- Controls:
 - To get reflective spheres in center of both skyboxes, change value of global variable at line display.cpp : 24 to 1.
 - To get reflection of environment in fishes, set value of reflection at line display.cpp : 25 to 2.

- Animation to get the fish moving: *1 – start and 2 – stop.*
- Rotate camera frame: *Left click* mouse and drag. The light position does not change.
- Scale the scene: *Right click* mouse and drag.
- Enable and disable wireframe : *w*
- Control light properties-
 - Position (its local axes)-
 - +x-axis: *k*
 - -x-axis: *h*
 - +y-axis: *u*
 - -y-axis: *j*
 - +z-axis: *m*
 - -z-axis: *n*
 - Intensity-
 - Increase ambient: *A*
 - Decrease ambient: *a*
 - Increase diffuse: *D*
 - Decrease diffuse: *d*
 - Increase specular: *S*
 - Decrease specular: *s*
 - Increase shininess: *+*
 - Decrease shininess: *-*
- Camera position-
 - Up: *3*
 - Down: *4*
 - Out: *5*
 - In: *6*
 - Right: *7*
 - Left: *8*
- Restore default light properties: *q*
- Exit window: *esc*
- Moving around the scene can be a bit messy, so if you want to see the outer box properly:
Left click and rotate in inner box till you view mountains in background, zoom out to see:

