## OCM Improvements

1. Adding GameObject to GameObjectCollection is manual. I tried to make it automatic by putting GameObjectCollection::Add(this) in the constructor of GameObject.
2. A component can be added to a GameObject multiple times. I tried to prevent multiple TransformComponents by putting a check at the top of AddComponent to see if it

already has a transform component. If already got, print to console and return nullptr.

1. The GameObject’s transform component needs to be accessed using gameObject->GetComponent<TransformComponents>(). So I created a public GetTransform() method in GameObject to return its protected transform member variable.
2. Game developers can accidentally add the same GameObject twice in GameObjectCollection because it uses std::vector. I tried to prevent that by using std::unordered\_set instead to have a set of unique objects.
3. OCM does not support GameObject parenting. I tried to add hierarchical transformation by going into the TransformComponent and adding a parent variable with its getter and setter, and a GetMatrix() method that will have a glm::mat4 that scales first, then rotates, then translates last. If it has a parent, then it will get the parent’s matrix and multiply with the mat4 model, else it will just return the model by itself.
4. There is no way to find GameObject by name like in Unity, so I tried to add it by making a public Find(string) method in GameObjectCollection. Foreach object in the collection, it will find the first game object that matches the target name and return it.