Given such general parameters pertaining to what object we could recreate in SolidWorks for this project, there were countless possibilities to choose for a topic. The first object I thought of would have been very intricate, detailed, and very time consuming. The next object I figured would be a suitable object to recreate because it incorporates various techniques that were learned in class; it also includes some practices that would require some finagling of SolidWorks to get the piece to look how I wanted. In the end, I decided on a castle in the capital of Lithuania (Figure 1).

This castle is called Gedimino Pilis, or Gediminas’s Castle in English. Gediminas was the first king of Lithuania. I feel a special kinship with Lithuania, first, because I am Lithuanian, and second, because I have been raised with a sense of pride in my heritage. As a child, I spoke Lithuanian before English, I went to Lithuanian Saturday school, and actively participated in the Lithuanian Church. I still am a Lithuanian folk dancer. The time this project was assigned was when I learned that I would have the opportunity to travel to Lithuania in the summer of 2014 to dance with the group from home. Essentially, the excitement of this news must have infiltrated all aspects of my life in order to become the object of the personal CAD project.

To make Gedimino Pilis in CAD required the construction of various planes. These planes are parallel to the top plane and were placed at various heights. On the bottom most plane, the largest hexagon shape was created. One hexagon was placed on each plane and was sized at exactly half a meter smaller than the hexagon below it. Four planes were created and four hexagons were constructed in total. Then, to make the walls of the castle, the adjacent hexagons were lofted together. The finished lofts made the object appear as a hexagonal cake.
The walls were lofted instead of extruded because they needed to be at an angle rather than straight up and down.

Next, more planes were constructed around three sides of the castle walls. Originally, the planes were made to be parallel with the face of the wall, but because the wall was slanted, the planes were also. Slanted planes would then make the extruded cuts, which would be the windows, at an angle as well. To avoid this problem, the line at the bottom of the wall was used as a reference point to generate the each plane around the object. Now the shape of the windows could be sketched on these planes and cut through two walls of the castle. A circle was drawn on the top of a sketched rectangle to create the shape of the window. Then the extruded cut feature was used to cut away the shape of a rectangle with a semi-circle on top. The cut was thick enough to go through the opposite wall as well. This procedure was done on each wall and on every level of the castle. Then, to make the castle hollow, the inside of the building was shelled so that the walls were of 0.5-meter thickness.

Lastly, separate three 0.5-meter thick hexagons were constructed. The castle and the hexagons were assembled and mated together. In order to mate these pieces together, the origin of the plane and the hexagon were made concentric. The mates were definitely the most difficult portion of the project. All too often the intended mate would come back with an error message so creative and unapparent methods of mating were done.

Finally, to finish the project, the castle was given an old brick appearance just like the real Gedimino Pilis in Vilnius, Lithuania. The finished piece can be viewed in Figure 2 below.

![Figure 2: CAD Representation of Gedimino Pilis](image)

All in all, this project was fun because it was a culmination of what was learned in CAD this semester. It is impressive what can be done with this program and that this object was constructed without directions. Also, the creation of the castle could have been done using various techniques, so it was interesting figuring out if one method did not give exactly what I wanted, I could then try another procedure. CAD is a very helpful visualization tool because it allows one to see how much work goes into the actual design of such a castle. Additionally, using CAD permits the designer to try numerous designs and ideas to visualize which he or she
likes best and, more importantly, which design would function the greatest. This project truly helped me understand the importance and usefulness of CAD. CAD can be quite helpful in understanding various factors that go into creating an actual object or building.