For my personal CAD project I decided to design a sniper rifle similar to the M40a5 rifle used by U.S. Marines. I have always had a strong interest in guns, and how they work, and how they are designed. Also, I enjoy hunting and I prefer using rifles more than shotguns. Rifles were the second guns ever crafted in history after pistols. The M40a5 is one of the most accurate rifles in the world. The rifle is composed of a few major components. The barrel ensures the bullet flies straight and true throughout its flight. The Trigger is loose and allows for slight pressure to release the firing pin which strikes the bullet. The bolt is used to guide a bullet into the chamber and remove one
once fired. The scope allows for extra distance view clarity while aiming at targets at long range. The bipod ensures extra support that reduces movement of the weapon while aiming. The body and stock of the rifle are lightweight and comfortable for the soldier holding and firing the weapon.

The M40a5 weighs 15.4 lbs. The overall weapon length is 44 inches, while the barrel alone is 24 inches. The M40 uses bolt action to feed the ammunition from the magazine. The weapon fires .308 caliber NATO round (7.62mm) at
2,500 ft/s. It has an effective range of up 1000 meters, but can reach distances beyond 1000 meters with extra bullet compensation.

There were several difficult sections while I was designing this rifle, but two in particular that I spent the most time on. First, it was difficult to model the entire body piece of the rifle. I used two processes, one was an extruded rectangle used to build most of the body and then I used a lofted base at the end of it to create the stock of the rifle. It was difficult to create each loft with a unique shape and continue extending it throughout the entire stock. The other difficult part of the building process was mating all the pieces together. Since my weapon consisted of several separate pieces it was difficult to make them all fit together. It was difficult but the end result turned out very good.
I learned after completing this project how much time it takes for someone to complete a detailed SolidWorks model. My model is of amateur level so I have a lot of respect for highly detailed models done by experts. I also learned that if you are doing something that you enjoy, it is fun to complete no matter the difficulty of the project. I enjoyed spending time critiquing and perfecting my model until it was complete. I might considered following this interest into the workplace, working with weapons or building or designing weapons.