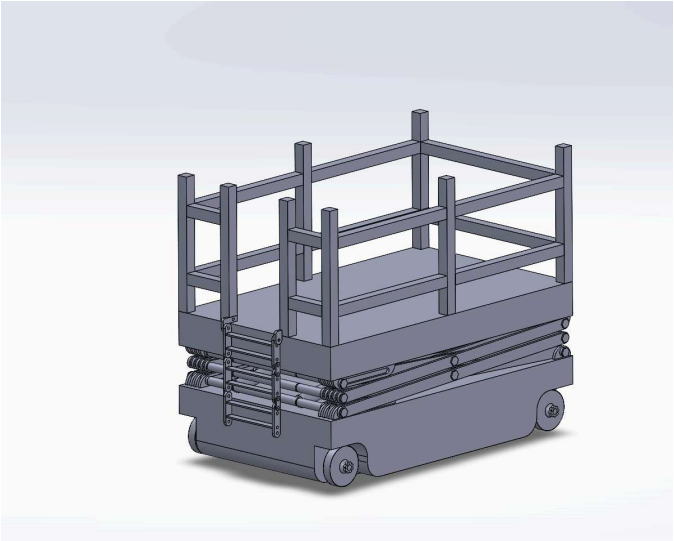
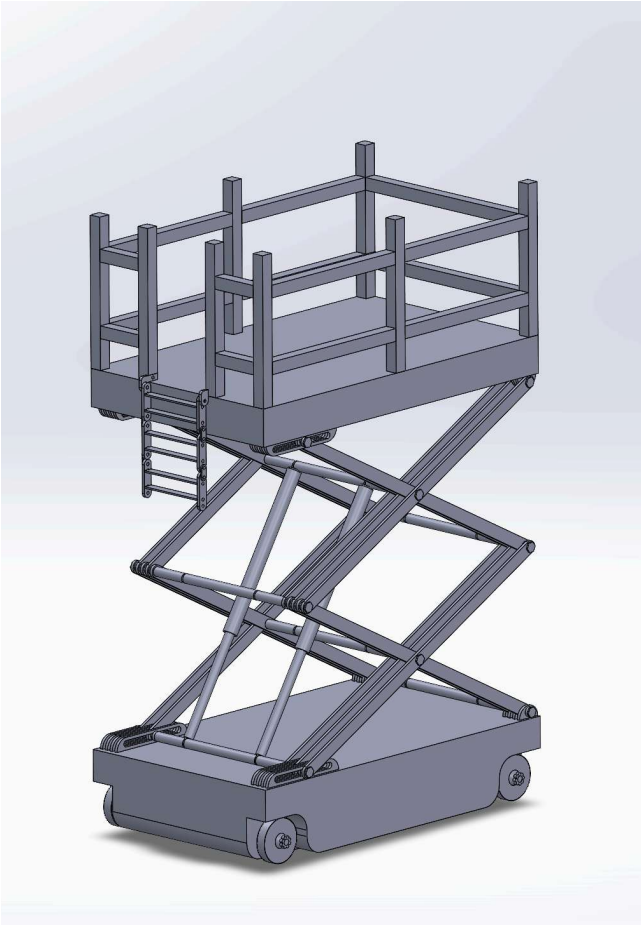
In my first year of university I was given a task to design a scissor lift that could be used for both commercial and industrial uses. The lift's design had to be simple so it could be used by anyone and also meet Ontario Safety Standards. The lift had to reach a height of 20 feet to reach the tops of most homes or tall shelves, but also reach the height of 4 feet to be easily stored in a garage.



The design was broken into three different sub assemblies: the base, the platform and the midframe.

The Base: the base was the main piece of the assembly on which the entire lift sits on. It also houses three motors within itself, two to control the movement of the wheels and the third to control the scissor lifts height.



The Platform: the platform is the piece on which the user can stand on while operating the machine. The platform was the piece that required the most safety features as it was the part the customer would use the most. Some of these safety features were a guard rail to protect the user from falling off and places to attach harness onto. Another key part of the Platform is the ladder which allows the user to climb on, once the user is on the Platform they can pull the ladder up and it becomes a section of guard railing.

The Midframe: This is the peace that has the most moving components and allows the lift to operate. The design is made of multiple skeleton arms that link up together, these arms are attached to each other in a zig zag pattern. The arms on the motor side of the base move back and forth on a grove joint lifting the ones on the fixed joint side, this in turn lifts the platform up using these arms. Once the system is at its max height a set of hydraulic presses lock it in place making sure the platform doesn't drop once the motor is off.