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SolidWorks Independent Project: Uneven Bars
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Figure 1: Bars Assembly Rendered
For my SolidWorks independent project, I decided to do the uneven gymnastic bars. I used a picture off of the internet as my base model for what they should look like, refer to picture two. I chose to make this for my project because gymnastics has been a big part of my life until I came to college. For approximately six years I have been involved in gymnastics, I competed all four years in high school and was a captain my senior year. I picked the bars in particular because bars is my favorite event so I wanted to be able to recreate the item that always gives me a lot of joy.

To make my item, I had to use several techniques in SolidWorks, both including ones that we have used in class prior and also new ones. My total part count was thirteen. Extruded base was one the ones I used the most, I used it to make many of the bars, poles, and the tops of screws. I also used extruded cut to make many holes in my project. One of the newer features that I used was mirror, I used this technique to mirror the bottom base, and other locations to save time and ensure that everything is aligned perfectly when the item was symmetrical. Another feature that I used was lofted base and that was also used to make some of the bars where it was more convenient for example the bar that acts as the base. I used a linear pattern of circles to make the holes going down the side of the bar to make the bars adjustable, similarly to how it would be in a real set of the uneven bars, this was a new technique which I learned how to use through a SolidWorks tutorial. In order to make the carabiners I used the swept boss/base tool by making the shape of the carabiner the path and then making a circle the width that I wanted the carabiners to be as the other part of the sweep. I also used the swept boss/base tool to make my wire, but this required a line as a path, three circles that were close together, and I had to use the “turns” option to make the circles turn around the line to give it the appearance of a wire. Another tool that I used was shell, this was used to hollow out some of the bars that were used. These are all of the major tools that I used in order to make a model of the uneven bars. Some examples of the parts that were created with these features are demonstrated in pictures three through seven. The picture found on the cover page is the image of my product rendered and figures eight and nine show two different angles of the bars, not rendered.

The hardest part to make of my project was the wire. It was difficult to come up with a way to replicate the twisting pattern of the wire. Although the feature to use for it itself was not that difficult, it was difficult to determine what was the best approach of making this wire. I was unaware of the “turns” feature under swept boss/base, but once I discovered it, it made the wire not as difficult of a task. Also another big problem that I had with the wire was the assembly. It was difficult to mate all of the smaller carabiners to the wire attachment. And sometimes when the mating worked, it did not let me arrange the wire in a way that would replicate how a real life set of bars would look like. Therefore everything dealing with the wire was my major problem while creating this project, not counting the problems that I had along the way such as different errors or dimensioning mistakes.

While doing my independent SolidWorks project, I learned how much more confident I grew with using this program. It seemed more fluent to know which feature to use in which
scenario. Being capable of using programs such as this one makes it relatively easy to create models. This is also a good tool when it comes to graphics, when I did not understand the sectioning portion of graphics, I was able to use this program to make a model to be able to understand how sectioning really works which was a good learning aid. Our ability to use SolidWorks was also tested when we had to make a prototype of our project for the Lockheed Martin project because if we wanted a good representation of our prototype we had to be able to make a good model on SolidWorks in order to 3D print our prototype. Overall I learned how to use many features on this program but I also learned the convenience of this tool and real life applications for it.

Pictures

Figure 2: Online Model of Bars (5)  
Figure 3: Piece that attaches bar to the stand

Figure 4: Bars with attachments

Figure 5: Wire with attachments
Figure 6: Part of the bar base

Figure 7: One of the bar bases

Figure 8: Bars

Figure 9: Bars view two
Works Cited:

Lamp Project

Figure 10: Lamp Assembly Rendered

Figure 11: Lamp Assembly