ME EN 578

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| from: | Devin Adams |
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The purpose of this lab was to utilize the Autodesk Fusion360 tutorials found online to help introduce Application Programming Interfaces (API) and to become familiar with searching through documentation. To achieve this, a parametric design was created by writing a python script using an API within Autodesk by following several guided tutorial videos. This lab was useful in learning several new things, but it also had room for some minor improvements. Overall, applying the API could greatly improve the functionality of creating 3D models.

To begin, multiple things were learned using this lab. The first thing learned was what exactly and API is. Unlike a GUI, an API helps connect one program with another program, enabling the programmer to interact with software through code. In this lab, the API was utilized to avoid using the GUI in Fusion360 in order to create various objects or to do simple calculations. Second, some of the calculations to be made, such as solving for the length of belt needed to surround two circles of different diameters at a given distance from each other. Third, basic Python was also learned in order to more easily follow the tutorials. The next thing that was learned was how to read a program’s documentation in order to utilize tools the program offers. For example, how to use the cut feature instead of a new feature in order to subtract material from a 3D object instead of add it. In addition to reading the documentation, following examples within the documentation was also learned. Finally, the versatility and ability of GIT was actually learned in that it can accept multiple file types, including word documents, and can also be sorted by folders within a repository. This was a happy accident that was not an expected outcome of the lab.

However, as useful as this lab was in learning new skills and concepts, there are still a few ways it could be improved. First, the documentation was very dense with a lot of unfamiliar terms or terms that were very similar to each other. For example, there was a tab for “Sketches” or for just “Sketch”. What the difference was made it harder to find things. Therefore, it might be easier to learn the documentation if clearer instructions on how to find the right term were given and then gave less specific instruction on how to implement the particular item in the code, that way one can more easily find what to use and then practice learning how to use the documentation to implement it. Second, the requirements for each part of the deliverable could be a little clearer. For example, when it said the radius of the pulley should be variable in Lab 2, it could specify how that radius is determined. Does the user or the programmer decide? Other than that, I thought the labs were fairly clear and well done.

In conclusion, familiarity with what an API is and how to use the corresponding documentation was gained. It is clear that learning how to use the API could greatly enhance one’s ability to work with a 3D modeling program. For projects, such as a toy with wheels, only one wheel could be created and then easily replicated or modified through the API without having to create a new one each time. The API also allows the user to create functions, such as the belt length calculator, that would greatly aid in easily converting coordinates or measurements from the software to the real world.