Final Project Documentation – Jack 8.4

Goals Achieved:

1. Automate the tasks sequence
2. Change the anthropometry of the manikins
3. Generate ergonomic reports (Lower Back Analysis in this case)(L4/L5 Moments)
4. Suggest the optimum anthropometry for a specific design

JackScript Background:

1. Jack uses two types of languages Jackscript and Tool Commanding language to run the application.
2. Jackscript has the same syntax as that of python. However, a lot of arguments or functions are different from python and they are especially stored in the Jackscript library/module called js.
3. Jack's GUI provides an option of a Python console to pass arguments to the software. However, I wanted to access Jack via command prompt and also automate the process of executing a python script using Jack and then extracting results.
4. In order to achieve this I had to contact the Siemens Jack Support to confirm what parts of the Jack API are accessible to the user. They said not all part of the Jack APIs are accessible and only following things are accessible
    a. Setting the Anthropometry
    b. Assign weights or forces on a particular part of the mannequin
    c. Generate ergonomic reports
    d. Some of the human controls such as Walk, move, postures, ReachHold, Lift etc.
5. So for this project I tried including most of the above functionalities to explore the capabilities of automating Jack.

How the code functions:

1. Create a tcl file in the Home directory with commands informing Jack to execute the required python script. Eg. To inform Jack to execute the file 'lift.py' you have to give the command (jcPy_evalSimple "import lift") and save the file as '.jk.tcl'.
2. After this, you can open command prompt and access the directory to check for the Jack 8.4 installation folder and then run the file named as 'jack84-win64.bat'.
3. It will then open Jack 8.4 and execute the python file you can see the simulation running in the Jack environment. At the end of simulation it will output the values and the output will be printed in the command prompt.

Note: Please make sure to also place the BASE file in your home directory were .jk.tcl file exists and also specify the path in the python script saying cd("C:\Users\gawandm\BASE"). If you are trying to run it.

Thank You!