Project -2

The zip file contains all the python scripts needed. The *'main.py'* is the main python file to execute the subdivision algorithm. The *'Data'* folder contains the original .obj and .off files needed for the inputs. The *'results'* folder stores the outputs in either *'.obj'* or *'.off'* format as per the variables set in the *'main.py'*. The comments.

The Algorithm followed is as follows:

1) Create the mesh object using the Classes defined in *'halfedge_mesh.py'* and get the list of faces in the mesh object.
2) Looping through faces, calculate the mid points for each edge and update the original vertices. I used dictionary to store the new and updated vertices obtained from each face.
3) Created the list of new faces, where each face gives four faces from the six vertices. The list here stores the indices of the new face vertices.
4) Create the .obj or .off file as output.

Instructions to run the code.

The package runs without any errors in *python = 2* environment. Change the following variables in the main.py:

1) mesh – Change the path provided in *'HalfedgeMesh'* function to read the input file in *'.off'* format.
2) output_file_path – Output path to save the output file in *'.obj'* or *'.off'* format.
3) Obj_output – Boolean parameter to decide the format of output (*'True'* for *.obj* and *'False'* for *.off)*

The needed functions are defined in the *'utils.py'* file. The comments in the functions explain the input and outputs. For the second iteration, I used the *.off* file output obtained from the first iteration as an input.

The results for first and second iteration (in both *.obj* and *.off* format) are placed in *'results'* folder as a part of submission.