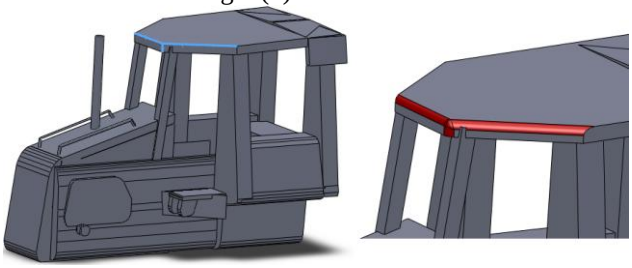
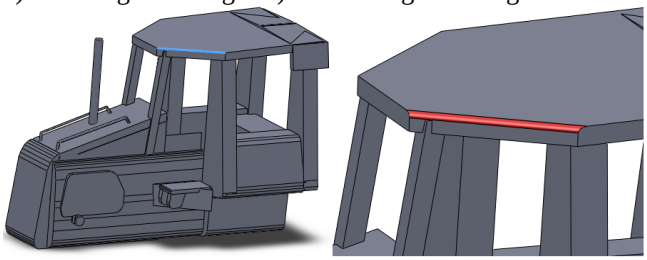
different radius values while choosing the type of *variable radius*.

Figure 8 shows the fillet operation along one or more edges in solid. We select three edges (in blue) in front of the roof in fig.8(a), and the fillet result with rounded radius 40, 50, 80mm is shown in fig. 8(b). The result along one edge with a radius 30mm is shown in fig. 8(d).



a) Selecting three edges b) Fillet along three edges



c) Selecting one edge d) Fillet along one edge

Figure 8: Fillet along one or more edges

(2) Chamfer Chamfer is an operation that forms the flat surface by cutting away the sharp edges of two meeting surfaces. In this paper, we implement the chamfer operation for an edge and for a vertex. The critical sentence for this operation is

value = instance.InsertFeatureChamfer (Options, ChamferType, Width, Angle, OtherDist, VertexChamDist1, VertexChamDist2, VertexChamDist3).

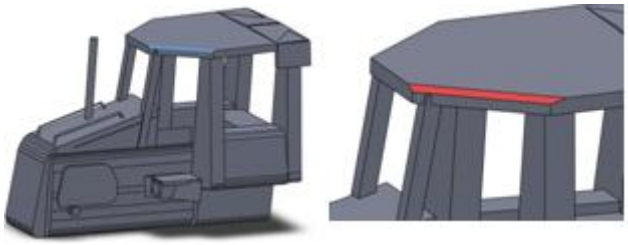
Where Options indicates various chamfer options; ChamferType represents the type of chamfer; width, Angle, etc. are the parameters related with types of chamfer.

Figure 9 shows the examples of chamfer for an edge as well as for a vertex on the roof. We pick up an edge in front of the roof and input two distance values 30 and 60mm in our designed pop-up dialog. Then the chamfer for the edge by way of distance-distance is executed and the result is shown in fig.9(b). For the way of angle-distance, we can input an angle and a distance for that. Fig. 9(d) shows the chamfer operation for a vertex with distances 60, 50, 50mm.

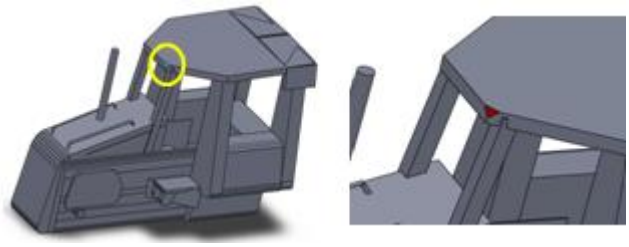
5. Conclusion

User custom-made function modules can be constructed with SolidWorks API functions. Through building a new macro in SolidWorks environment and adding references to SolidWorks libraries, we can encode for specified operations with VB and develop an ActiveX DLL project.

Aiming at the issues of some feature information lost via exchange format file, we program for achieving extrusion,



a) Selecting an edge b) Chamfer by *distance-distance*



c) Selecting a vertex d) Chamfer for the vertex

Figure 9: Chamfer for edges and a vertex

compression, fillet and chamfer operation in this paper. These functions can be applied to modeling and modifications of complicated models, simplifying operation steps and improving the degree of automation. In our investigation of the structure dynamic analysis and parameter optimization to mechanical system, the functions have been adopted for the model modification.

For the future work, we will study the extrusion from the curved surfaces with VB, as well as other functions, in order to facilitate the component modeling and modification.

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