Project 2: Advancing Front 2D Grid Generation
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An advancing front 2d grid is generated using C++ programming language. The Domain to be gridded is shown in Figure 1.
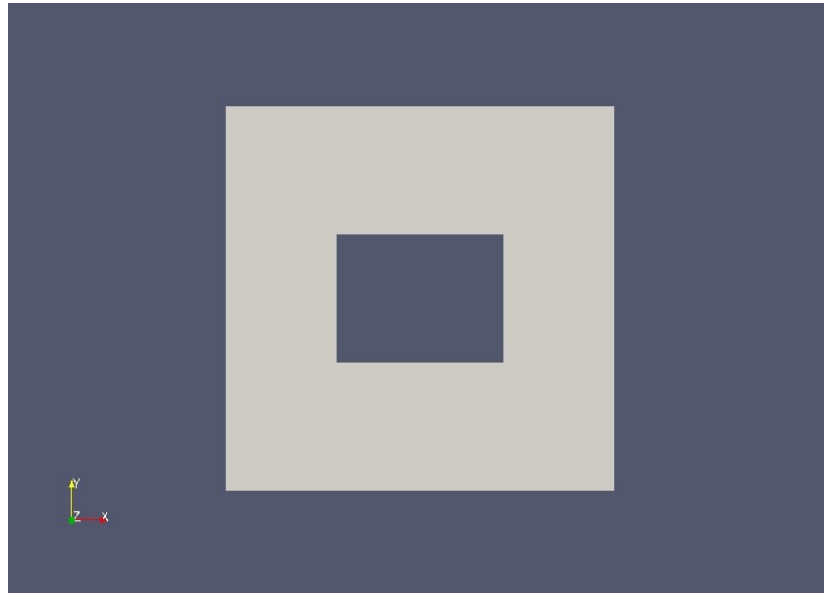

Figure 1. The domain to be gridded

Approach:
The advancing front algorithm taught in the CSI 722 (CFD-II) is implemented here in C++. For datastructures the std::vector of standard template library is used. The code has three main datastructures: coordinates, triangles and faces. The initial front is formed manually by assigning points along the boundary at constant distance. From this face list, each face is extracted one by one and the third point is calculated. If the new calculated point can be replaced by any existing point then it is used instead of the new point. It is also checked if the faces consisting of new or existing points intersect with any other point or face. The final grid is shown in Figure 2.
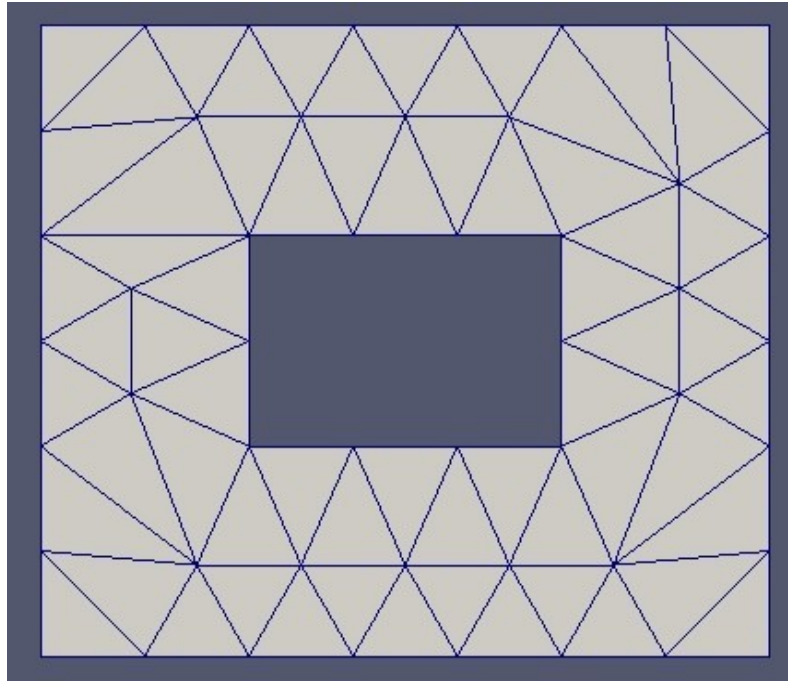
Figure 2. Grid generated using advancing front method