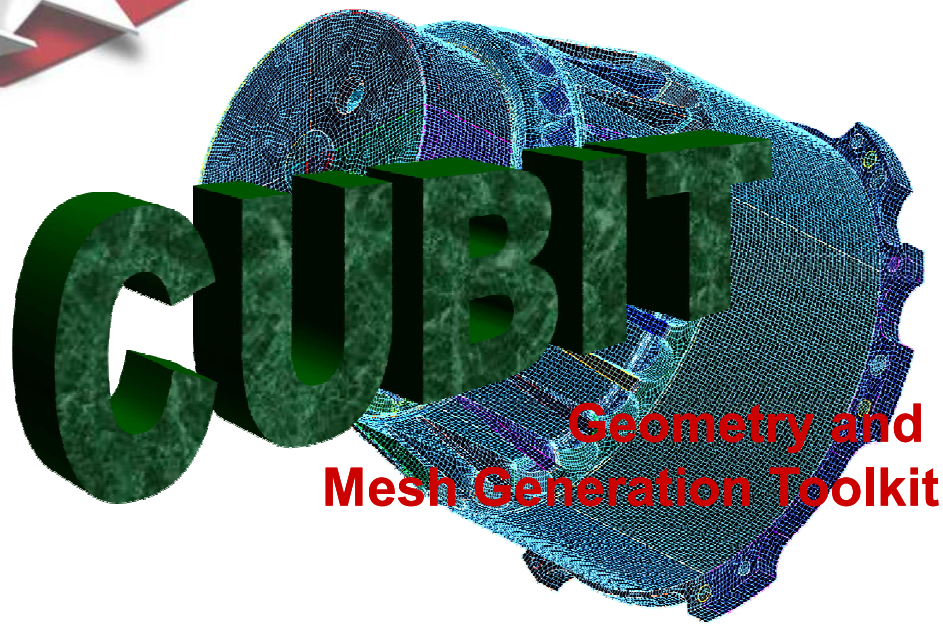
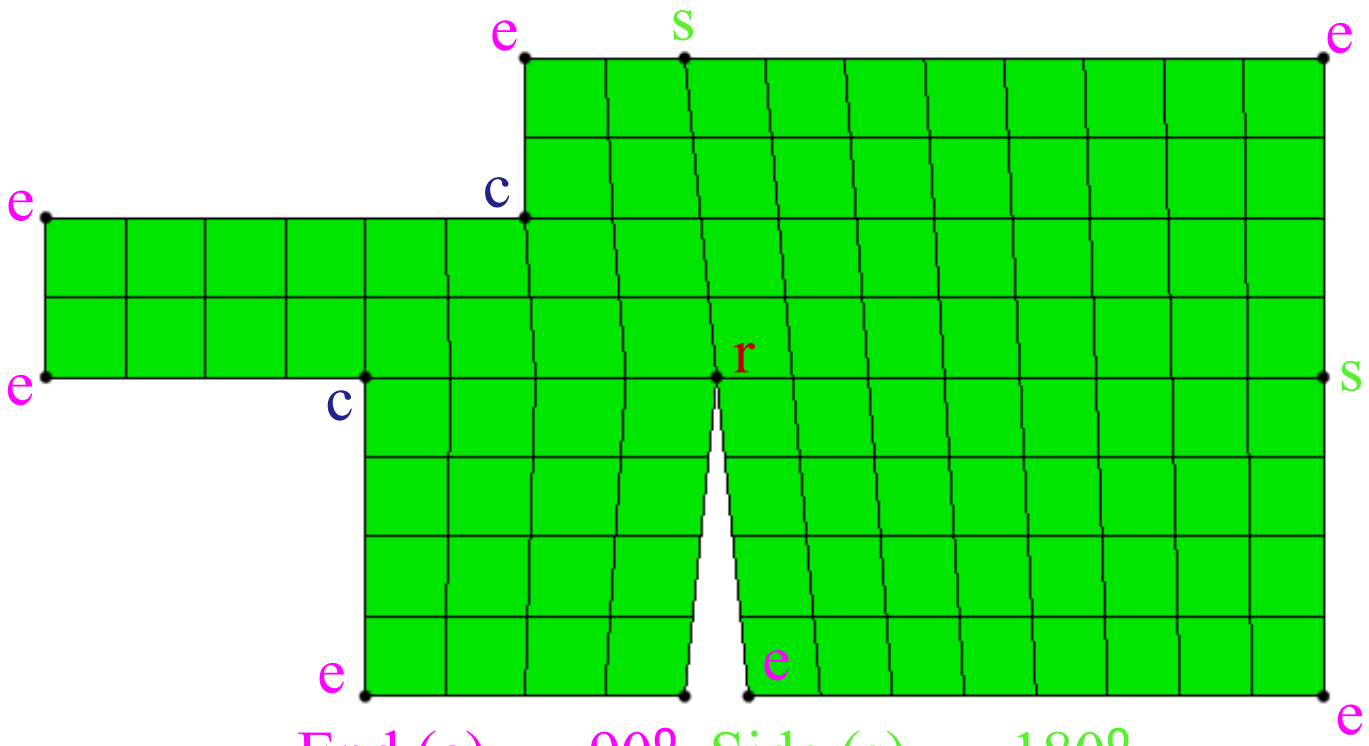
SAND2013-6393P



CUBIT Fast-Start Tutorial

19. Vertex Types and Sweeping

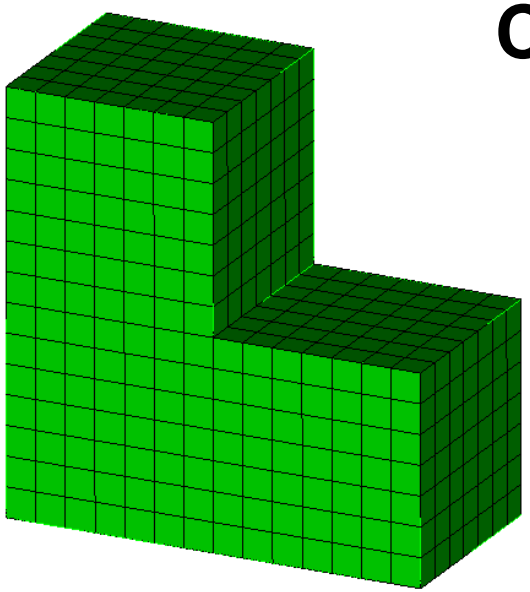
Vertex Types



End (e) = ~90°, Side (s) = ~180°,
Corner (c) = ~270°, Reversal (r) = ~360°

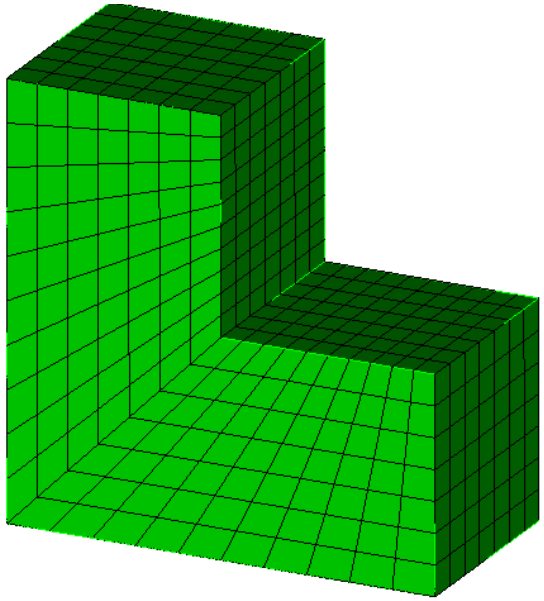
- Vertex types determine how many quads will be around the vertex
- Vertex types help determine the "flow" of a swept mesh (see example 1)
- Types are assigned by comparing the interior angle against vertex type angle ranges
- The user can force specific vertex types even if the angle does not match the specified type

Example 1: Cubit Automatically Chooses Vertex Types



Mesh using the default scheme:

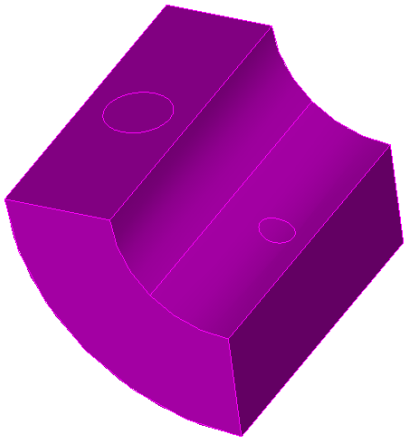
open “example1.cub”
mesh vol 1
draw surf 1 vertex type



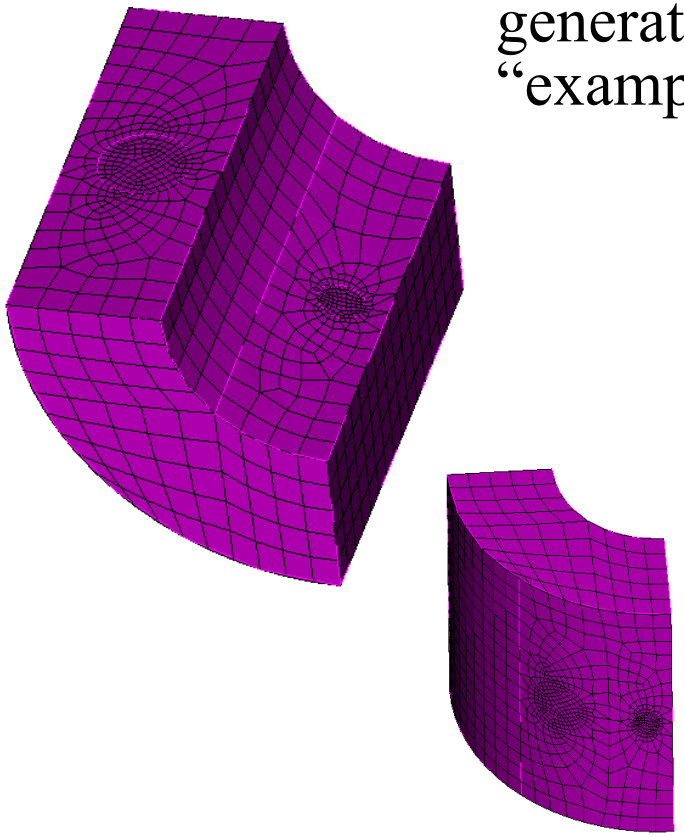
Force a swept mesh:

delete mesh
volume 1 scheme sweep source surface 17 target surface 12
mesh volume 1
draw surf 1 vertex type

Example 2: Forcing Vertex Types for Sweeping



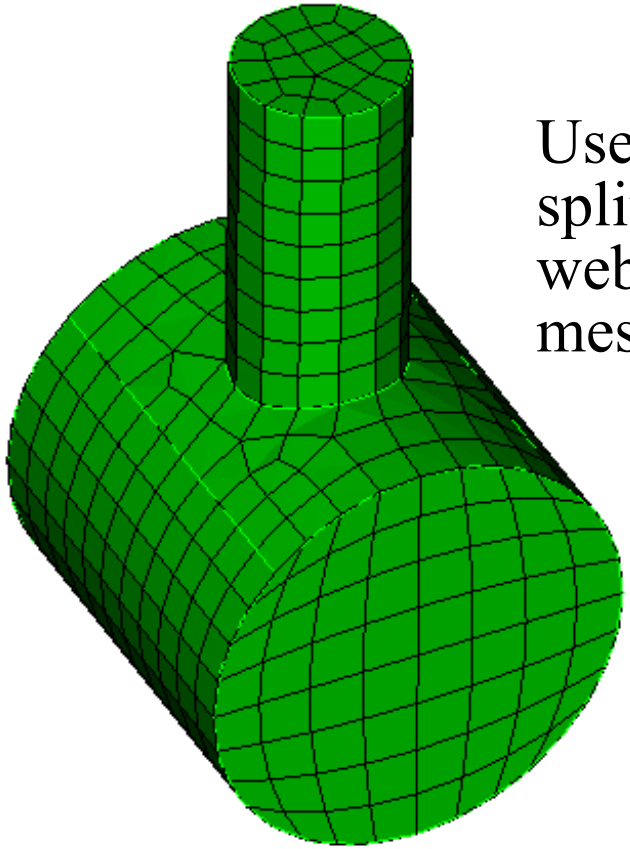
Manually set vertex types to generate the mesh on the left for "example2.cub".



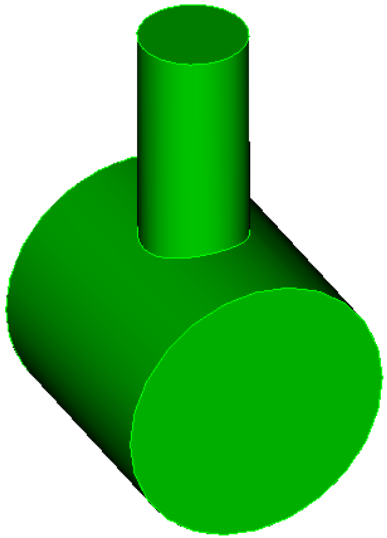
Hints:

- Use the default mesh size for the volume
- Use a size of .03 and .05 for the small and large circular surfaces respectively
- There are 4 source surfaces and 1 target surface
- Command for setting vertex types is
  "surf <id> vert <id> type <type_name>"

Example 3: Using Surface Splits and Vertex Types for Sweeping



Use only curve splits, surface splits, and setting vertex types (no webcutting!) to generate a hex mesh for “example3.cub”.



Example 4: Using Vertex Types for Sub-mapping

Use only manually set vertex types to generate a sub-mapped hex mesh for “example4.cub”.