Groups and Names

and

General Meshing Strategy

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Group: Definition

- **Collection of Geometric Entities:**
  - **Body, Volume, Surface, Curve, Vertex, and**
  - **Other Groups**
- **Entities in group can be:**
  - **Homogeneous: All same type**
  - **Heterogeneous: Mixed types**

Group: Creation

Entity Specification:

- Group {<'name'>|<id>} {add|remove} <geometry_entities>
- Group {<'name'>|<id>} {add|remove} <entity_type> name 'pattern'

Booleans:

- Group {<'name'>|<id>} intersect group <id> with group <id>
- Group {<'name'>|<id>} subtract group <id> from group <id>
- Group {<'name'>|<id>} unite group <id> with group <id>
- Group ‘SomeVols’ add volume 1, 3, 9, 12, 7
- Group ‘AllSurf’ add surf all
- Group ‘TopSurf’ add surf name ‘top’
- Group ‘NonTop’ subtract TopSurf from AllSurf
- Group ‘Mix’ add surf 1 curve 3 to 5 volume 1 2 4 8 16 TopSurf

Group: Settings

- Group <group_id_range> [{Geometry|Mesh}] Visibility {on|off}
- Group <group_id_range> Interval <intervals>
- Group <group_id_range> Interval {Default|Soft|Hard|Even|Odd}
- Group <group_id_range> Label {on|off|name|interval|id|size|merge}
- Group <group_id_range> Scheme <mesh_scheme>
- Group <group_id_range> Size <interval_size>
- Group <group_id_range> Size Smallest Curve
- Group <group_id_range> Merge {on|off}
- Group <group_id> name 'entity_name'

- Group help or Group ? to see other commands

Group: Operations

- Delete Mesh Group <group_id_range>
- Draw Group <group_id_range>
- Label Group {on|off|name|id|interval|size|merge}
- List Group <group_id_range>
- List Names Group
- List Group Ids
- Mesh Group <group_id_range>
- Quality Group <range> [global]
- Smooth Group <group_id_range>

Names: Introduction

- Geometric Entities can be named
  - Body, Volume, Surface, Curve, Vertex, Group
  - An entity can have multiple names
  - A name can refer to only one entity; however,
  - Cubit will uniquify names (adds ‘@#’, #=A-Za-z0-9)
- List Names {all|group|body|volume|surface|curve|vertex}
- <entity_type> <id> name ‘entity_name’
  - surface 1 name ‘TopSurface’
- Entities can be labelled by name
  - Label surface name
- Booleans tend to ‘preserve’ names

General Meshing Strategy

- Work on small sections
  - Mesh separate components, join after meshing
- Decompose geometry, save, reset, import, mesh.
  - Easier to restart, try different options
- “Names” are somewhat persistant, IDs aren’t
  - Name entities prior to decomposition
- Quality metrics useful for judging mesh quality.
- “Hex Visibility Off” will reduce drawing time
- Use ‘master’ journal file(s), keep up-to-date
  - parameterize if possible

General Meshing Strategy (Continued)

- **Groups useful for summaries**
  - **Group ‘AllSurf’ add surface all**
  - **Group ‘AllVol’ add volume all**
  - **list AllSurf -- shows meshing scheme and meshed status for each surface, one line per surface**
- **SEAMS codes (Gen3D, GJoin, Grepos) useful with CUBIT.**