



ITASCA™

# Starting with FLAC3D

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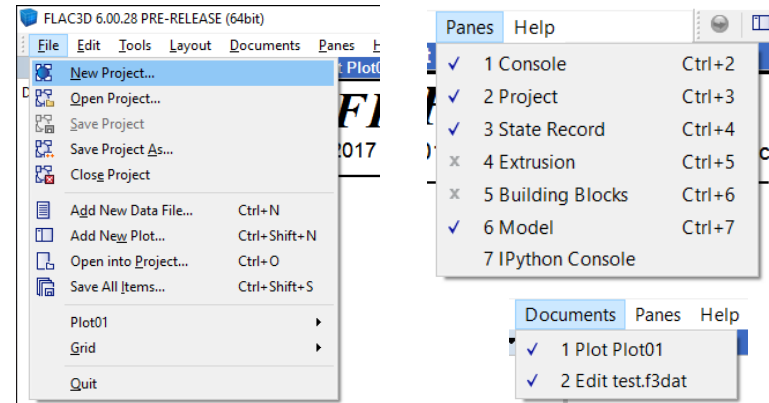
2019-01-09 – 2019-01-10

# Creating a working directory

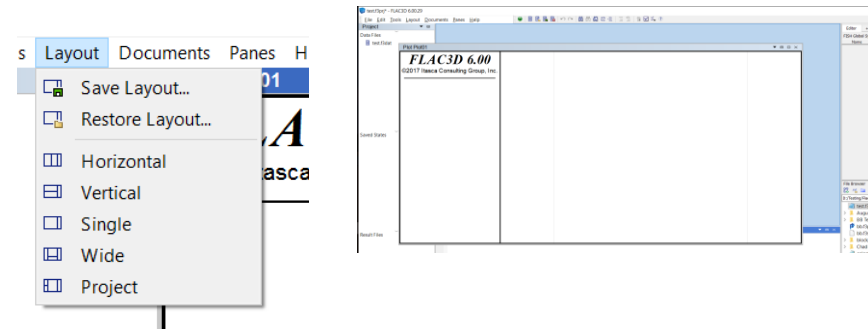
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# Project Files, Panes, and Layout

- Create a Project File
  - Tracks all files involved in all model states.
  - Stores plot views
  - Stores layout
  - Tracks Model & stores Project/Program states

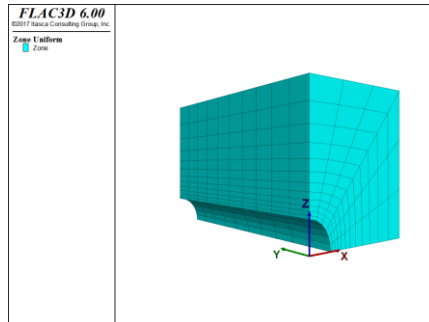


- Panes
  - Unit of user interface, organized how the user chooses
- Layout
  - Some default styles for organizing your panes
- Help and Technical Support

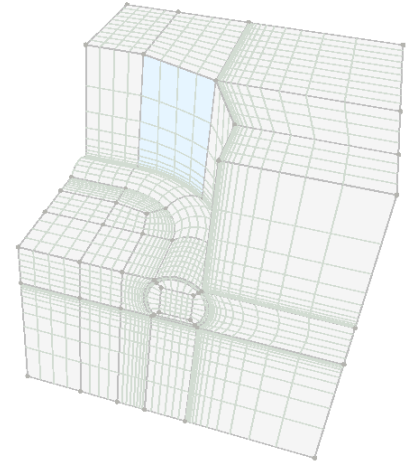


# Grid Generation

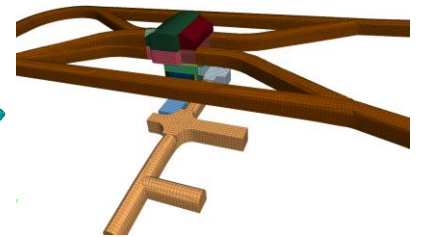
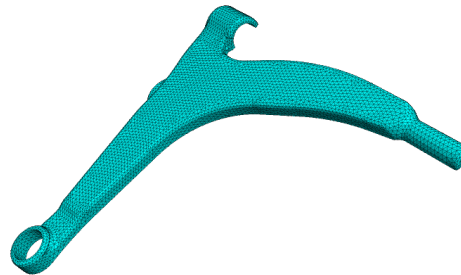
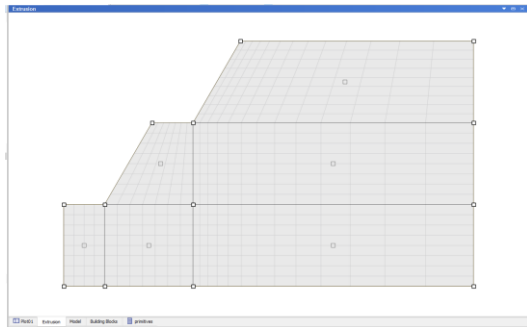
- Primitives: zone create



- Building Blocks:



- 2D Extruder:



# Grid Generation: Primitives

```
model new  
zone create brick
```

```
model new  
zone create brick point 1 (20,0,0)
```

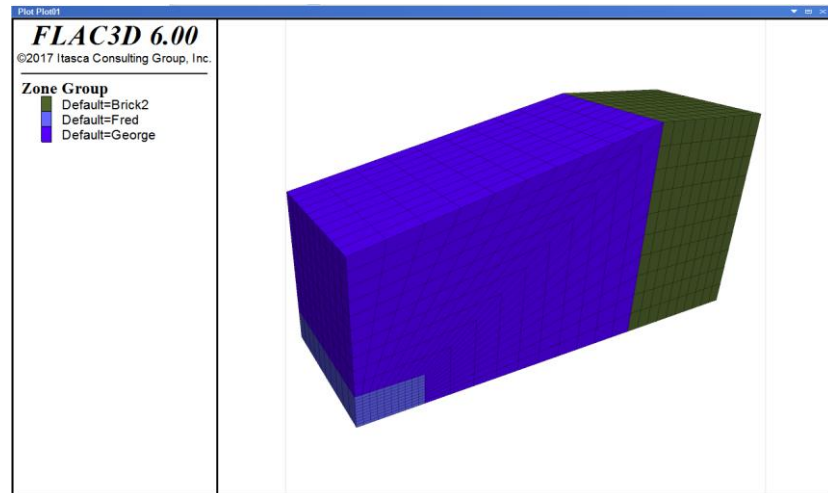
```
model new  
zone create brick point 1 (20,0,0) point 3 (10,0,10)
```

```
model new  
zone create brick point 1 (20,0,0) point 6 (20,0,15)
```

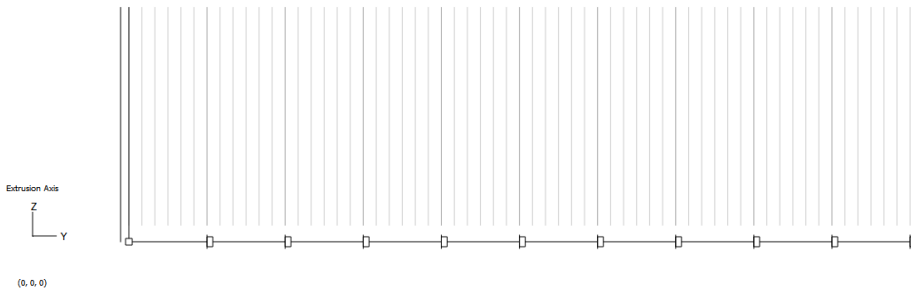
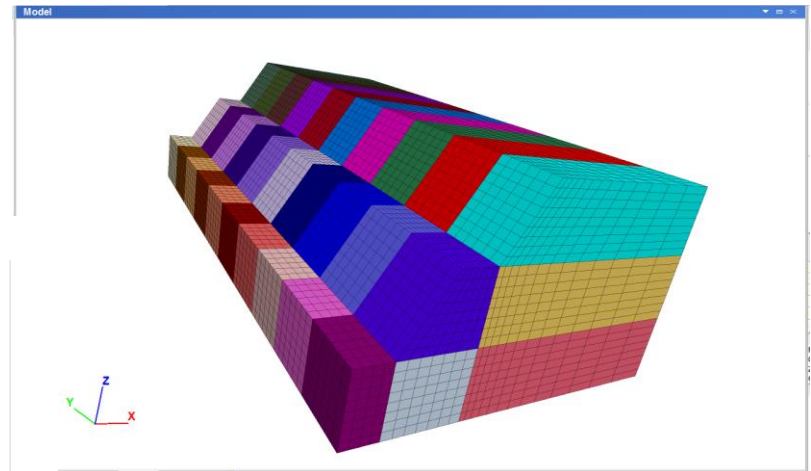
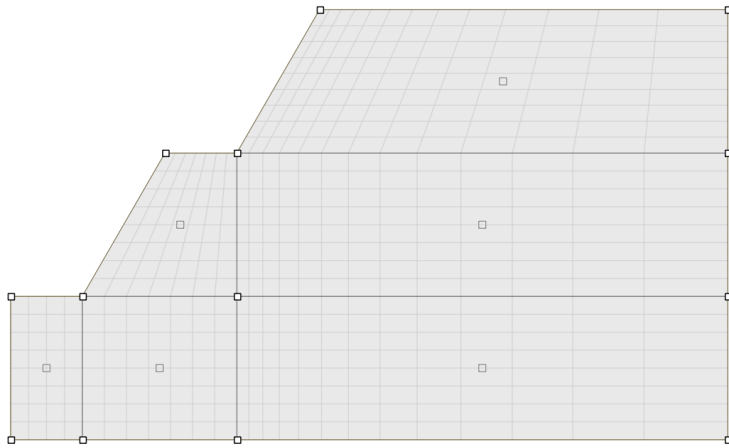
```
model new  
zone create brick point 1 (20,0,0) point 6 (20,0,15) ...  
point 7 (20,10,15)
```

```
model new  
zone create radial-tunnel point 1 (20,0,0) ...  
point 6 (20,0,15) ...  
point 7 (20,10,15)
```

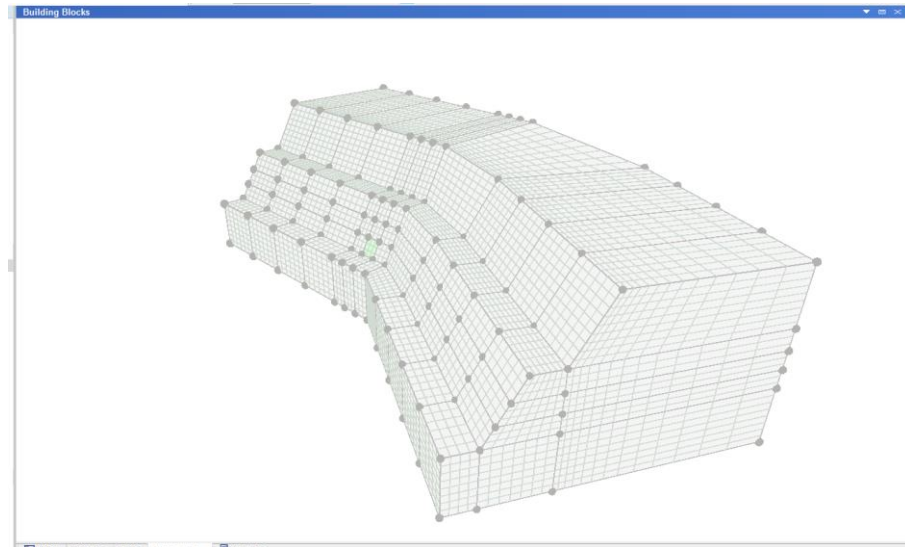
```
model new  
zone create radial-tunnel point 1 (20,0,0) ...  
point 6 (20,0,15) ...  
point 7 (20,10,15) ...  
group 'George' fill group 'Fred'  
zone create brick point 0 (20,0,0) point 3 (20,0,15)
```



# Grid Generation: Extruder

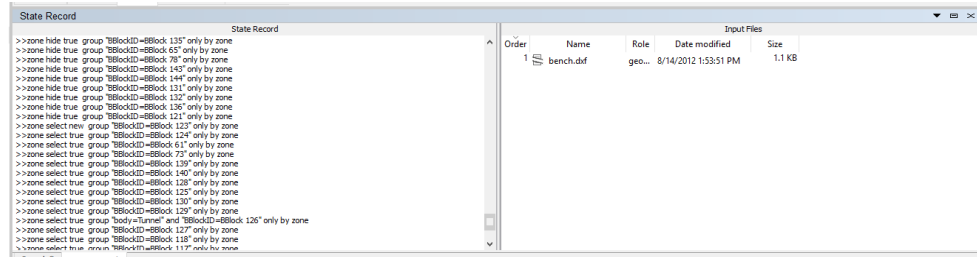
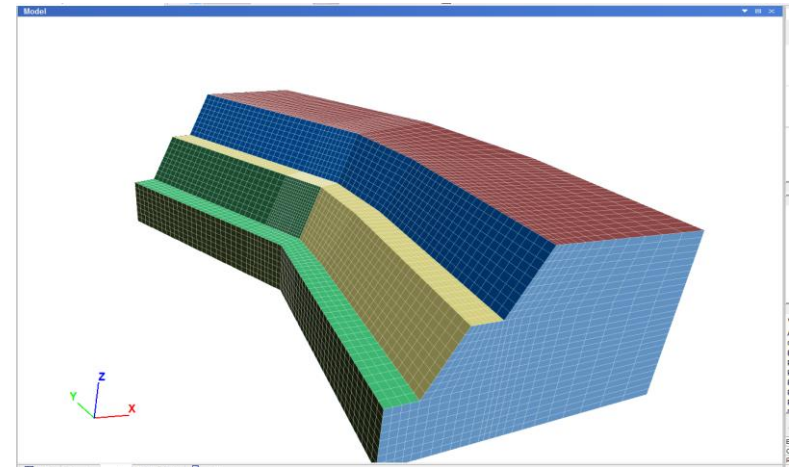


# Grid Generation: Extruder



# Model Pane Controls

- Select: Ctrl, Alt
- Hide: Alt, hide selection, show selection only
- Disambiguate
- Densify
- Assign group names to faces
- Face plotting, group selection, options
- Surface selection
- Save Geometry
- State Record





# What happens when you click a button?

- FLAC 3D sends a "command" as an instruction to the program

# Commands

- Constitutive Model: `zone cmodel assign`
  - CTRL-SPACE, F1
- Properties: `zone property`
- Boundary conditions: `zone face apply`
- Initial Conditions: `zone initialize-stresses`
- Initial Equilibrium: `model solve`
- Excavation: `zone relax excavate`
- Final State: Plotting
- Convergence

# What's so useful about commands?

- Reduces reliance upon the GUI
- Enables creation of data files (text files, composed of commands)
- Complete record of what has happened in the model
- Method to create, run and analyse models without constant user involvement
- Combined with Itasca's programming language, FISH, commands are a powerful tool