My FLAC3D Repository

Kyeong Sun Kim

Civil and Environmental Engineering

Seoul National University

Sept, 2021

Contents

1

Working with FISH in FLAC3D

2

Using Python with FLAC3D

Contents

2.1 Geometry, Grid, Zone

The `itasca` module defines functions and classes for interaction between `Python` and `FLAC3D`.

```
"""
import itasca as it
it.command("python-reset-state false")
"""
```

The `it.command` function is used to issue a series of `FLAC3D` commands.

The `it.zone.count` function creates 1000 zones

```
"""
it.zone.count() # outputs 1000
"""
```

The `it.zone.find(1)` returns a Zone object with id 1. The object is assigned to the `Python` variable z.

```
"""
z = it.zone.find(1)
print z # outputs <itasca.zone.Zone object at 0x00000001B388600, ID : 1>
z.pos() # outputs vec3(( 5.00000e-01, 5.00000e-01, 5.00000e-01))
"""
```

The variable z is a Zone object (`FLAC3D` zone)

`pos` method of this object returns the zone centroid.

`for` statement is used to iterate over sequences of things, Loop over all `FLAC3D` zones.

```
"""
volume_sum = 0.0
for z in it.zone.list():
  volume_sum += z.vol()
"""
```

Check that the sum of the zone volumes is what we expect.

```
"""
print volume_sum # outputs 1000.0
print z.vol() * it.zone.count()
assert volume_sum == z.vol() * it.zone.count() # outputs 1000.0
"""
```

Let's find a zone near the center of the model

```
"""
z = it.zone.near ((5,5,5))
#confirm position with pos method
z.pos() # outputs vec3(( 4.500000e+00, 4.500000e+00, 4.500000e+00))
"""
```

2.2 Group, Range

```
"""


"""
```

2.3 Constitutive Model

2.4 B.C. and I.C.

2.5 Step to Equilibrium

2.6 Support, Structure, Restore

2.7 Plot

3

Illustrative Model – Mechanics of FLAC3D

Contents

3.1 Geometry, Grid, Zone

3.2 Group, Range

3.3 Constitutive Model

3.4 B.C. and I.C.

3.5 Step to Equilibrium

3.6 Support, Structure, Restore

3.7 Plot

4

Axial and Lateral Loading of a Concrete Pile

Contents

4.1 Geometry, Grid, Zone

4.2 Group, Range

4.3 Constitutive Model

4.4 B.C. and I.C.

4.5 Step to Equilibrium

4.6 Support, Structure, Restore

4.7 Plot

5

Smooth Circular Footing on an Associated Mohr-Coulomb Material

Contents

5.1 Geometry, Grid, Zone

5.2 Group, Range

5.3 Constitutive Model

5.4 B.C. and I.C.

5.5 Step to Equilibrium

5.6 Support, Structure, Restore

5.7 Plot