Object File Format (.off)

Object File Format (.off) files are used to represent the geometry of a model by specifying the polygons of the model's surface. The polygons can have any number of vertices.

The .off files in the Princeton Shape Benchmark conform to the following standard. OFF files are all ASCII files beginning with the keyword OFF. The next line states the number of vertices, the number of faces, and the number of edges. The number of edges can be safely ignored.

The vertices are listed with x, y, z coordinates, written one per line. After the list of vertices, the faces are listed, with one face per line. For each face, the number of vertices is specified, followed by indices into the list of vertices. See the examples below.

Note that earlier versions of the model files had faces with -1 indices into the vertex list. That was due to an error in the conversion program and should be corrected now.

```
OFF numVertices numFaces numEdges
x y z
x y z
... numVertices like above
NVertices v1 v2 v3 ... vN
MVertices v1 v2 v3 ... vM
... numFaces like above
```

Note that vertices are numbered starting at 0 (not starting at 1), and that numEdges will always be zero.

A simple example for a cube:

```
OFF
8 6 0
-0.500000 -0.500000 0.500000
0.500000 -0.500000 0.500000
-0.500000 0.500000 0.500000
0.500000 0.500000 0.500000
-0.500000 0.500000 -0.500000
0.500000 0.500000 -0.500000
-0.500000 -0.500000 -0.500000
0.500000 -0.500000 -0.500000
4 0 1 3 2
```

```
4 2 3 5 4
4 4 5 7 6
4 6 7 1 0
4 1 7 5 3
4 6 0 2 4
```