

Importing Fragments

Overview

FrameUP allows geometry and other objects that have been saved in external files to be imported into a document using a command called `Import`. This statement copies the contents of an external file into a FrameUP document. For example, suppose a particularly effective collection of light sources had been used in a RIB script. The `LightSource` statements describing the lights could be saved in a separate file, perhaps called "spherical lighting" ie.

A sample fragment

RIB (fragment)

```
# a good set of modelling lights
# for use with rounded objects
LightSource "ambientlight" 1 "intensity" 0.1
LightSource "distantlight" 2 "intensity" 0.7 "from" [4 0 0] "to" [0 0 0]
LightSource "distantlight" 3 "intensity" 1.2 "from" [0 4 0] "to" [0 0 0]
```

This RIB 'fragment' could be re-used in another scene using the `Import` command eg.

Importing correctly

RIB

```
# using Import to insert a
# fragment of RIB script
Projection "perspective" "fov" 40
Display "square" "framebuffer" "rgba"
Format 200 200 1

Translate 1 0 23
Rotate 360 0 1 0
WorldBegin
  Import "fragment" "spherical lighting"
  Polygon "P" [-3 3 0 -3 -3 0 3 -3 0 3 3 0]
WorldEnd
```

Because FrameUP does not make any assumptions about the file that is being imported, and hence it does not check the validity of the file, it is your responsibility to ensure the contents of the imported file "make sense" in the context in which they are used. For example, it would be useless to import the lights in the manner shown below,

Importing incorrectly

RIB

```
# using Import to incorrectly insert a
# fragment of RIB script
Projection "perspective" "fov" 40
Display "square" "framebuffer" "rgba"
Format 200 200 1

Translate 1 0 23
Rotate 360 0 1 0
```

```
WorldBegin
  Polygon "P" [-3 3 0 -3 -3 0 3 -3 0 3 3 0]
  Import "fragment" "spherical lighting"
WorldEnd
```

In theory, RenderMan should allow external objects, which it refers to as 'entities', to be imported into a RIB file using a command called "Geometry". However, because this facility has not yet been implemented by PIXAR, the Import statement was added to the list of commands understood by FrameUP so that useful fragments of RIB script could be reused. The Import command also allows objects of arbitrary complexity, perhaps generated by sophisticated modelling software, to be inserted into what are otherwise hand written FrameUP documents. Provided an object has been exported by a modeller as a RIB file and has been subsequently edited to remove any RIB statements that do NOT refer to the surfaces that comprise the object there should not be any rendering problems.

Fragments and objects

When making a library object, either by writing the RIB script by hand or with a modeller, it is essential to locate the local origin of the object in such a way that when the object is imported into a scene it can be positioned, rotated and scaled as conveniently as possible. For example, in the case of a four legged chair the origin might best be located as follows,

On the other hand if the chair was a rocker it might be better to locate the origin as shown below.

When importing objects, rather than say light sources or other 'none surfaces', it is best to insert a pair of AttributeBegin/AttributeEnd statements at the beginning and end of the file. In this way any transformations and shading used within the imported file will not have any unexpected effects on the objects added to a scene after the import command. Refer to the section Shaping Up ex.7b (page 22) for an explanation about the use of AttributeBegin/AttributeEnd.

Restrictions

Imported files cannot import copies of themselves or other fragments. For example, the following version of "spherical lighting" is illegal,

```
RIB (fragment)
# fragments cannot refer to themselves
# this will make FrameUP crash!!

LightSource "ambientlight" 1 "intensity" 0.1
LightSource "distantlight" 2 "intensity" 0.7 "from" [4 0 0] "to" [0 0 0]
LightSource "distantlight" 3 "intensity" 1.2 "from" [0 4 0] "to" [0 0 0]
Import "fragment" "spherical lighting"
```

Attributes that form part of an imported file cannot be changed unless the imported file is itself edited. It is sometimes better not to set the shading of an object within the import file. For example, suppose several chairs are required in a scene but each must be a different colour. Assuming the existence a library file called "seat" that contains the geometry defining the chair, it would be used as follows,

RIB

```
Projection "perspective" "fov" 40  
Display "office seating" "framebuffer" "rgb"  
Format 300 200 1
```

```
Translate 0 0 5  
Rotate -120 1 0 0  
Rotate 25 0 0 1
```

```
Import "fragment" "spherical lighting"  
WorldBegin  
Color 1 0 0  
Import "fragment" "seat"
```

```
Color 1 0 0  
Import "fragment" "seat"
```

```
Color 1 0 0  
Import "fragment" "seat"  
WorldEnd
```