Pixie Environment

- Development Cycle
  - write C code
  - make, linking with libri $\longrightarrow$ executable
  - run program $\longrightarrow$ RIB
  - rndr $\longrightarrow$ TIFF file
  - display imagefile

Minimal Program

```
#include "ri.h"
RtPoint Square[4]={{.5,.5,.5},{.5,-.5,.5},
                   {-.5,.5,.5},{-.5,-.5,.5}};
static RtColor Color = {.2, .4, .6};
int main ()
{
  RiBegin("square.rib"); /* start the renderer */
    RiDisplay("square.tif","file","rgb",RI_NULL);
    RiWorldBegin();
      RiSurface("constant", RI_NULL);
      RiColor(Color);      /* declare color */
      RiPatch(RI_BILINEAR,/* declare the square */
              RI_P, (RtPointer)Square, RI_NULL);
    RiWorldEnd();
  RiEnd();
  return 0;
}
```

Square RIB

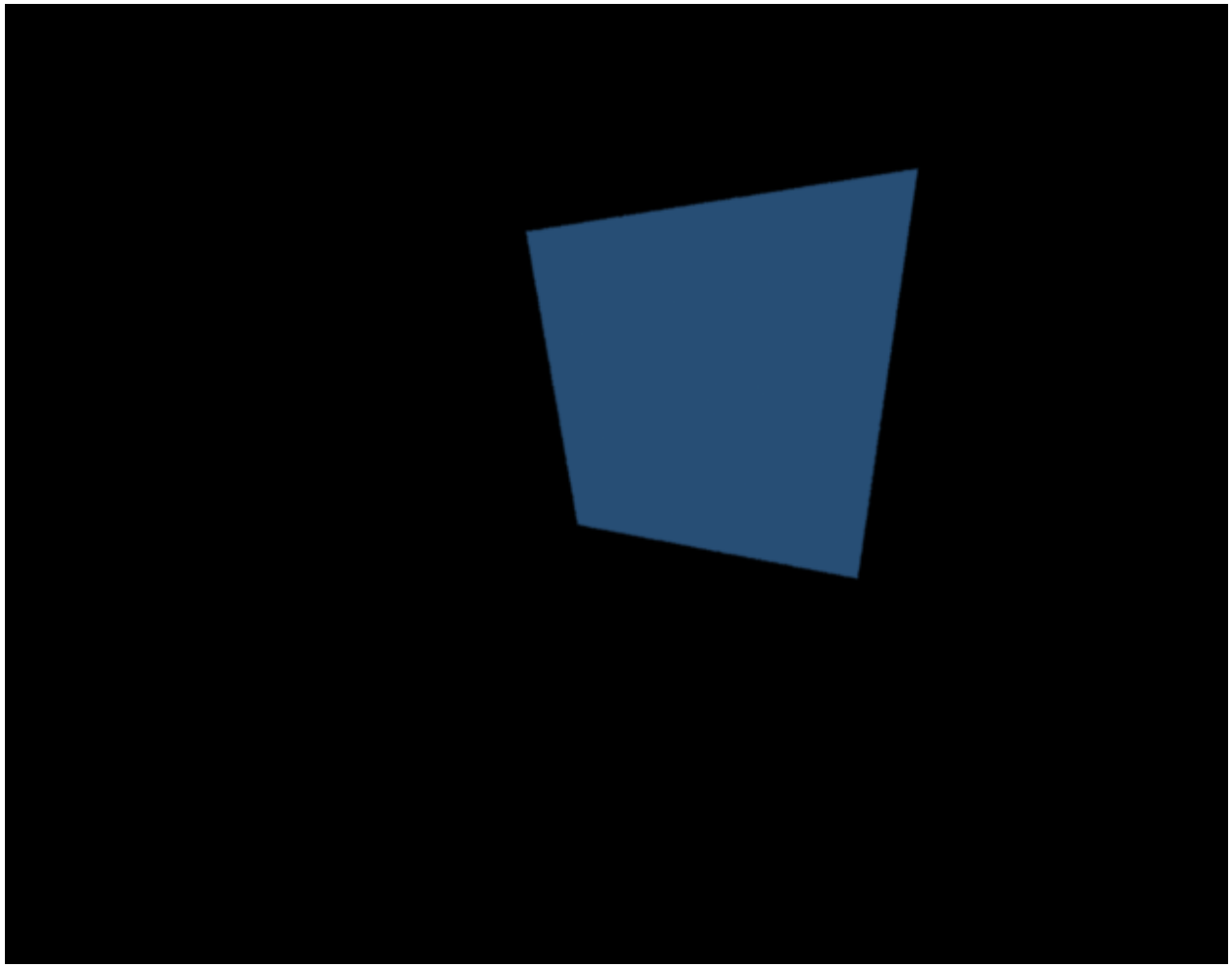
```
##RenderMan RIB-Structure 1.0
##Creator 3Delight 2.1 (Jun  5 2004)
##CreationDate Tue Aug 31 18:32:38 2004
Display  "square.tif" "file" "rgb"

WorldBegin  # {
  Surface  "constant"
  Color  [ 0.2 0.4 0.6 ]
  Patch  "bilinear"
    "P" [ 0.5 0.5 0.5 0.5 -0.5 0.5
          -0.5 0.5 0.5 -0.5 -0.5 0.5 ]
WorldEnd  # }
```

Results

Refined Program (lights, perspective)

```
RiBegin("persp.rib"); /* start the renderer */
  RiDisplay("persp.tif","file","rgb",RI_NULL);

  RiLightSource("distantlight", RI_NULL);
  RiProjection("perspective", RI_NULL);
  RiTranslate(0.0,0.0,1.0);
  RiRotate (40.0, -1.0, 1.0, 0.0);

  RiWorldBegin();
    RiSurface("matte", RI_NULL);
    RiColor(Color);       /* declare color */
    RiPatch(RI_BILINEAR,/* declare the square */
            RI_P, (RtPointer) Square, RI_NULL);
  RiWorldEnd();
RiEnd();
```

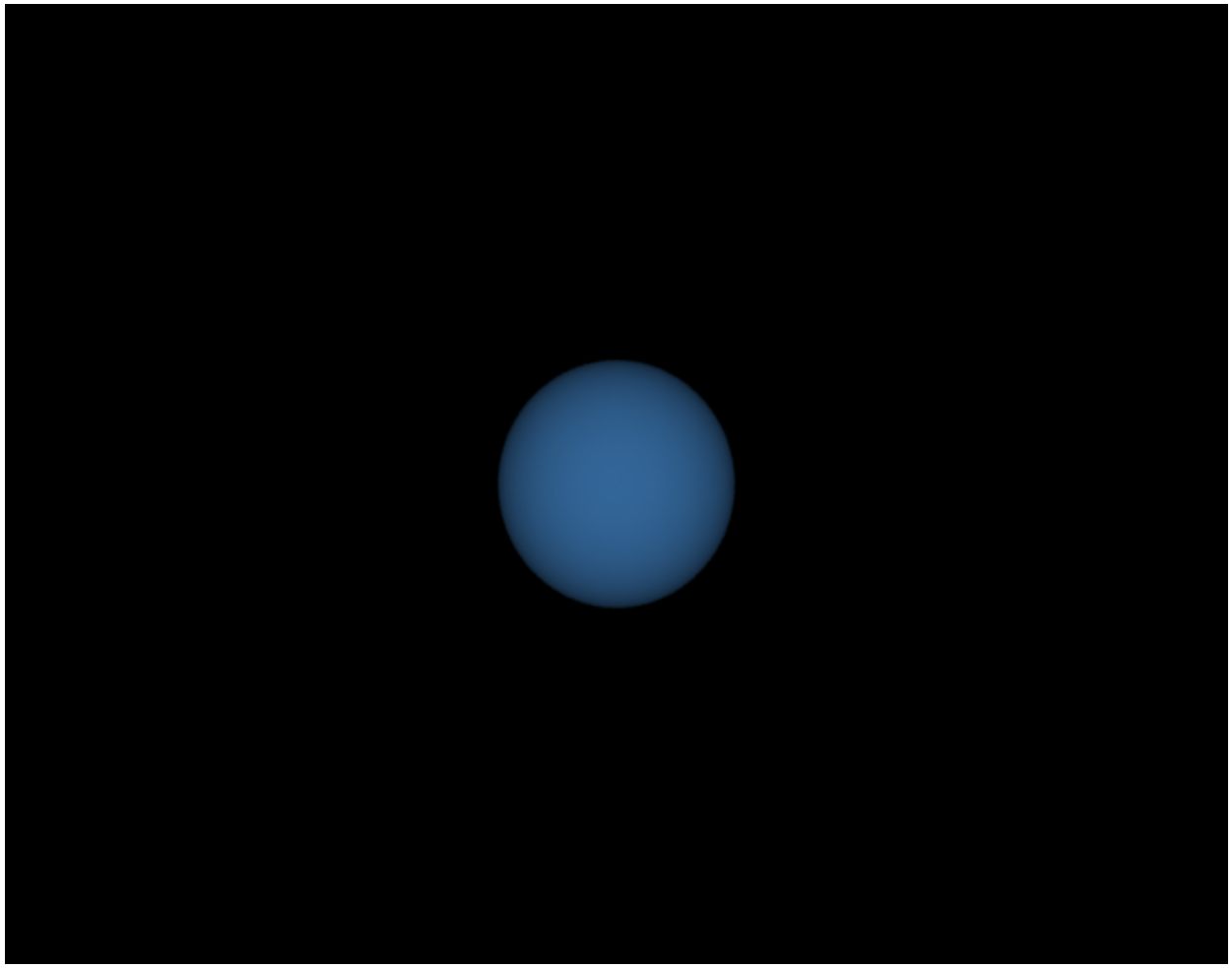
Results



Alternate Primitive (Sphere)

```
RtFloat radius=1.0, zmin=-1.0, zmax=1.0,
        thetamax=360;

...

    RiWorldBegin();
      RiSurface("matte", RI_NULL);
      RiColor(Color);     /* declare color */

      RiSphere(radius, zmin, zmax,
               thetamax, RI_NULL);

    RiWorldEnd();
```

Results



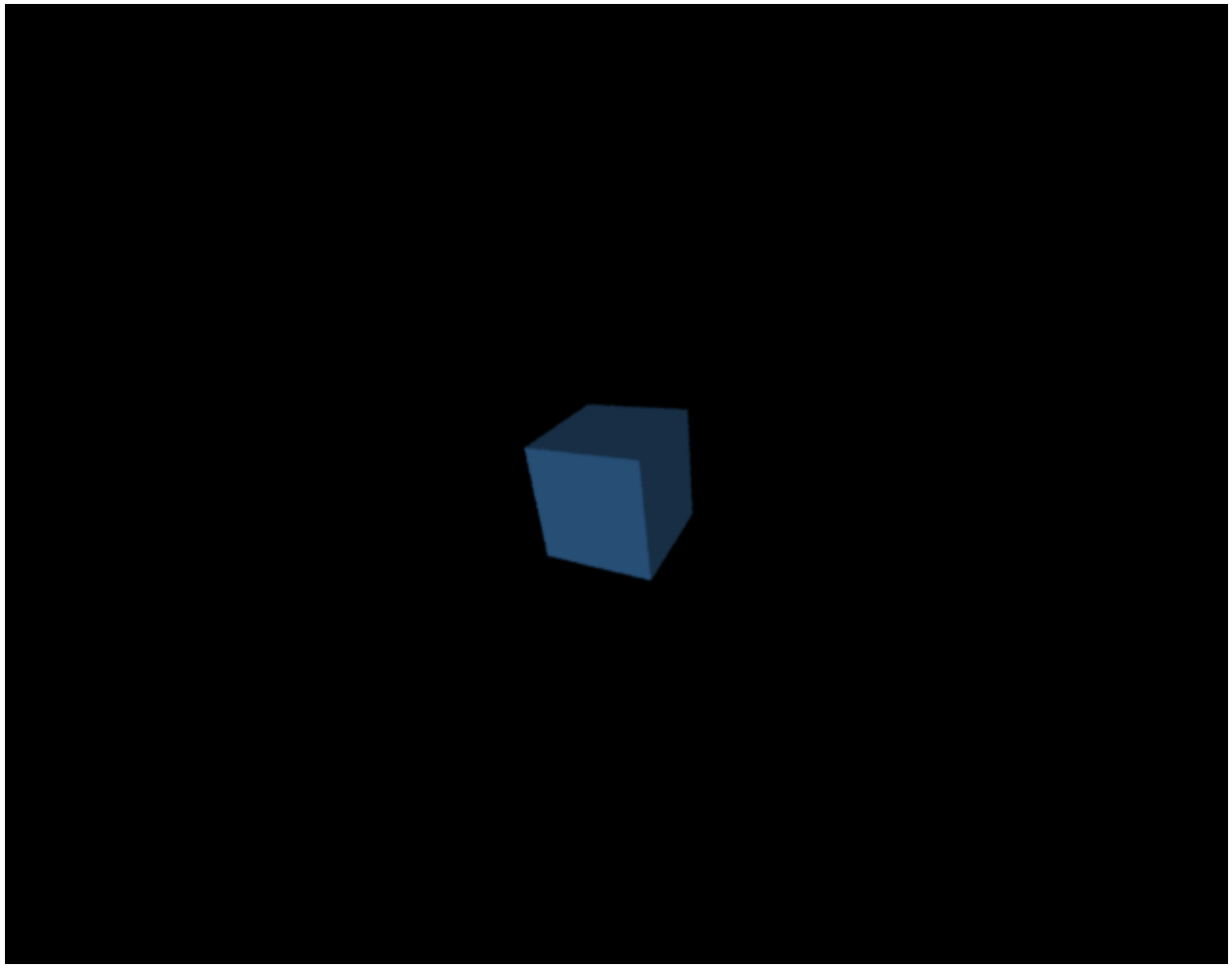
Basic Cube Program

```
RiWorldBegin();
  RiSurface("matte", RI_NULL);
  RiColor(Color);      /* declare color */

  UnitCube();

RiWorldEnd();
```

UnitCube Function

```
#define L -.5 // #define D -.5 // #define N -.5
#define R .5  // #define U .5  // #define F .5
UnitCube () {
  static RtPoint Cube[6][4] = {
    {{L,D,F}, {R,D,F}, {R,D,N}, {L,D,N}}, /*bottom*/
    {{L,D,F}, {L,U,F}, {L,U,N}, {L,D,N}}, /*left*/
    {{R,U,N}, {L,U,N}, {L,U,F}, {R,U,F}}, /*top*/
    {{R,U,N}, {R,U,F}, {R,D,F}, {R,D,N}}, /*right*/
    {{R,D,F}, {R,U,F}, {L,U,F}, {L,D,F}}, /*far*/
    {{L,U,N}, {R,U,N}, {R,D,N}, {L,D,N}}};/*near*/
  int i;
  for (i = 0; i < 6; i++) {
    RiPolygon(4,RI_P,(RtPointer)Cube[i],RI_NULL);
  }
}
```

Results



Refined UnitCube

```
RtPoint Square[4]={{.5,.5,.5},{.5,-.5,.5},
                   {-.5,.5,.5},{-.5,-.5,.5}};
UnitCube ()
{
  RiTransformBegin();
    RiPatch(RI_BILINEAR,RI_P,(RtPointer)Square,
            RI_NULL);
    RiRotate(90.0, 0.0, 1.0, 0.0); /*right face*/
    RiPatch(RI_BILINEAR,RI_P,(RtPointer)Square,
            RI_NULL);
    RiRotate(90.0, 0.0, 1.0, 0.0); /*near face*/
    RiPatch(RI_BILINEAR,RI_P,(RtPointer)Square,
            RI_NULL);
    RiRotate(90.0, 0.0, 1.0, 0.0); /*left face*/
    RiPatch(RI_BILINEAR,RI_P,(RtPointer)Square,
            RI_NULL);
  RiTransformEnd();
```

Refined UnitCube (cont)

```
    RiTransformBegin(); /*bottom face*/
      RiRotate(90.0, 1.0, 0.0, 0.0);
      RiPatch(RI_BILINEAR,RI_P,(RtPointer)Square,
              RI_NULL);
    RiTransformEnd();
    RiTransformBegin(); /*top face*/
      RiRotate(-90.0, 1.0, 0.0, 0.0);
      RiPatch(RI_BILINEAR,RI_P,(RtPointer)Square,
              RI_NULL);
    RiTransformEnd();
}
```

Results