

APÉNDICE A: EJEMPLOS DE PRIMITIVAS

1. Punto $P(x, y, z)$ en el espacio:

```
Typedef struct
{
    float vx, vy, vz;
} point;
ex1()
{
    point *p;
    p = newpoint(0.0, 0.0, 0.0);

}
```

2. Línea $L(p1, p2)$:

```
typedef struct
{
    point p1;
    point p2;
} line;
ex2()
{
    point *pnt1, *pnt2;
    line *l1;
    pnt1 = newpoint(0.0, 0.0, 0.0);
    pnt2 = newpoint(1.0, 0.0, 0.0);
    l1 = newline(pnt1, pnt2);
}
```

3. Objeto N(listas de puntos, lista de líneas)

```
typedef struct
{
    point *allpoints;
    line *alllines;
} object;
```

```
typedef struct
{
    float vx, vy, vz;
    point *nextpoint;
} point;
```

```
typedef struct
{
    point *p1;
    point *p2;
    line *nextline;
} line;
```

4. Un cubo

```
object *newbox(dx, dy, dz)
float dx, dy, dz;
{
    object *box;
    point *p1, *p2, *p3, *p4, *p5, *p6, *p7, *p8;

    box = newobject();

    p1 = newpoint(box, 0.0, 0.0., 0.0);
    p2 = newpoint(box, dx, 0.0., 0.0);
    p3 = newpoint(box, dx, dy., 0.0);
    p4 = newpoint(box, 0.0, dy., 0.0);
    p5 = newpoint(box, 0.0, 0.0., dz);
    p6 = newpoint(box, dx, 0.0., dz);
    p7 = newpoint(box, dx, dy, dz);
    p8 = newpoint(box, 0.0, dy, dz);

    newline(box, p1, p2);
    newline(box, p2, p3);
    newline(box, p3, p4);
    newline(box, p4, p1);
    newline(box, p5, p6);
```

```
        newline(box, p6, p7);
        newline(box, p7, p8);
        newline(box, p8, p5);

        newline(box, p1, p5);
        newline(box, p2, p6);
        newline(box, p3, p7);
        newline(box, p4, p8);

        return(box);
}
```

5. La pirámide:

```
typedef float matrix[4][4];
object *pyramid;
{
    object *b, *pyr1, *pyr2, *pyr3;
    instance *s1, *s2, *s3, *s4;
    matrix m1, m2;

    b = newbox(1.0, 1.0, 0.25);
    ident(m1);
    trans(m1, -0.5, -0.5, 0.0);
    ident(m2);
    scale(m2, 1.2, 1.2, 1.0);
    trans(m2, 0.0, 0.0, -0.25);

    pyr1 = newobject();
    s1 = instanceof(b, m1);
    newinstance(pyr1, s1);

    pyr2= newobject();
    s2 = instanceof(pyr1, m2);
    newinstance(pyr2, s1);
    newinstance(pyr2, s2);

    pyr3= newobject();
    s3 = instanceof(pyr2, m2);
    newinstance(pyr3, s1);
    newinstance(pyr2, s3);
}
```