Computer Graphics I

Assignment 11

Group III (Yavor Kaloyanov)

Jan Hendrik Dithmar
2031259

Pascal Gwosdek
2505221

11.1 Extended Bresenham

Line from (x_0, y_0) to (x_1, y_1) with slope in $]0, 1[$ (slope at 0 or 1 is trivial). Here is some pseudo-code:

```
a = y1 - y0;
b = x1 - x0;

x = x0;
y = y0;
d = 2a - b;

while (2x <= x0 + x1)
{
        setpixel(x, y);
        setpixel(x1 - x + x0, y1 - y + y0);
        if (d <= 0)
                d += 2a;
        else
        {
                d += 2a - 2b;
                y++;
        }
        x++;
}
```

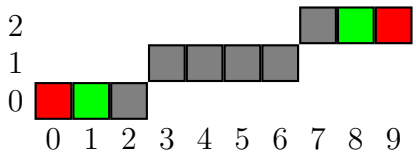

Figure 1: Sample visualisation of the Bresenham algorithm for lines, here shown from (0,0) to (9,2). The line is being constructed in a 'mirrored' manner.

11.2 Bresenham for Parabola

Here is some pseudo-code:

```
x = 0;
y = 2;
d = -0.5 / 1.2;

while (x != b)
{
        setpixel(x, y);
        if (d <= 0)
                d += 1/6 * x + 1/12;
        else
        {
                d += 1/6 * x + 1/12 - 1;
                y++;
        }
        x++;
}
```

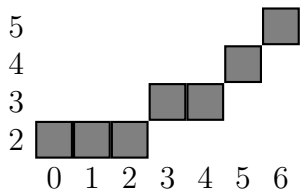

Figure 2: Visualisation of the Bresenham algorithm for the parabula from (0,2) to (6,5).