ECOAR

MIPS project number 17.

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The task:

Write a program displaying a smoothly shadowed rectangle of given height, width and vertex colors. Colors of pixels should be interpolated using fixed-point arithmetic (16.16 format).

Before starting the code it is needed to open Bitmap Display and set it as follows:

Display width in Pixels: 1024

Base adress for display: 1x10040000 (heap)

and then connect to MIPS and start the program.

The program takes color of vertices as RGB in integer form.

Implemented interpolation algorithm:

Calculate step size for X and Y direction as a difference between each color coponent (R, G and B) of the vertices (given by the user).

Step is the value to be added to previously drawn pixel to obtain next color.

InterpolationY = (color component of vertice 3 - color component of vertice 1) / height

InterpolationX = (color component of vertice 2 - color component of vertice 1) / width

InterpolationX1 = (color component of vertice 4 - color component of vertice 3) / width

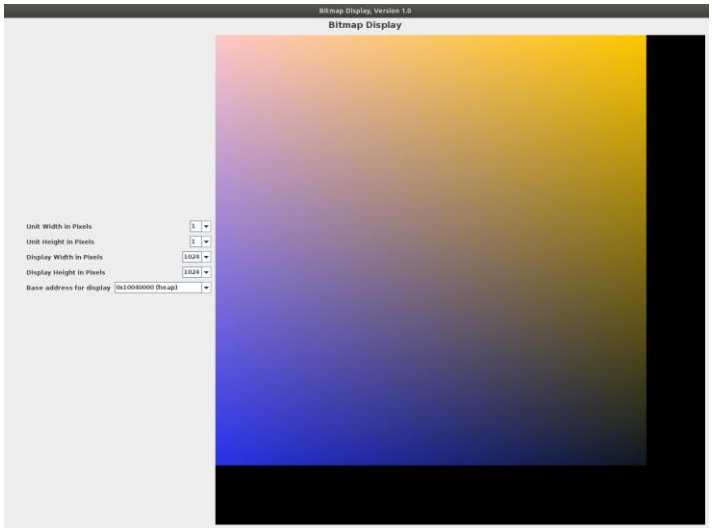
InterpolationDifference = InterpolationX1 - InterpolationX

InterpolationDifference is needed to change step size when going to the next row.

Example outputs of the program.

Color of vertices:

(PINK) 16763080 - (YELLOW) 16762880 - (BLUE) 2634473 – (GREY) 988190



Color of vertices:

(RED) 16711680 - (GREEN) 65280 - (BLUE) 255 - (WHITE) 16777215