In-Class Exercise 6

Submit your work to moodle before 23:55 on Sunday, October 28^{th}.

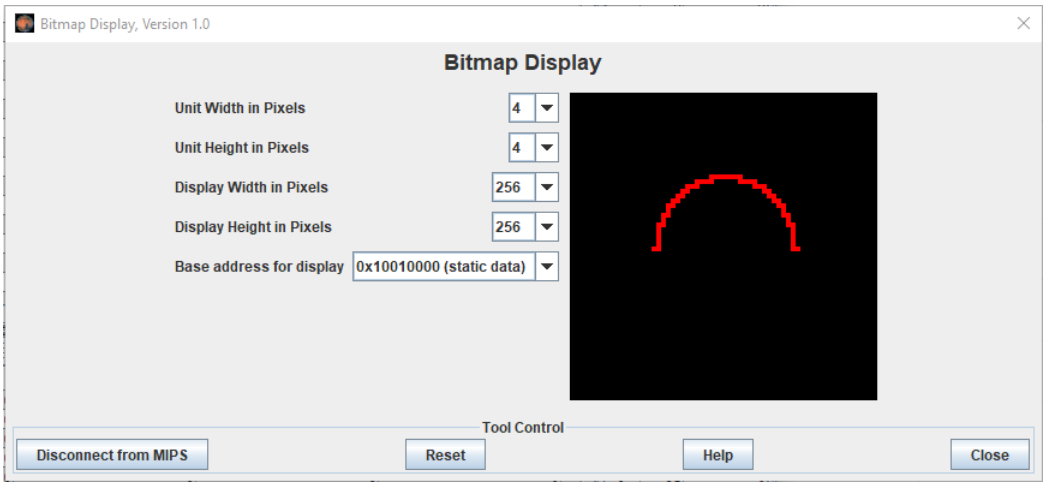
1. Use the procedure `set_pixel_color` to implement a procedure `drawRainbow` in MIPS assembly language that draws a semicircle. `drawRainbow` should take the x and y coordinates of the center of semicircle (in $a0 and $a1), the radius (in $a2), and the color of circle (in $a3) as inputs.

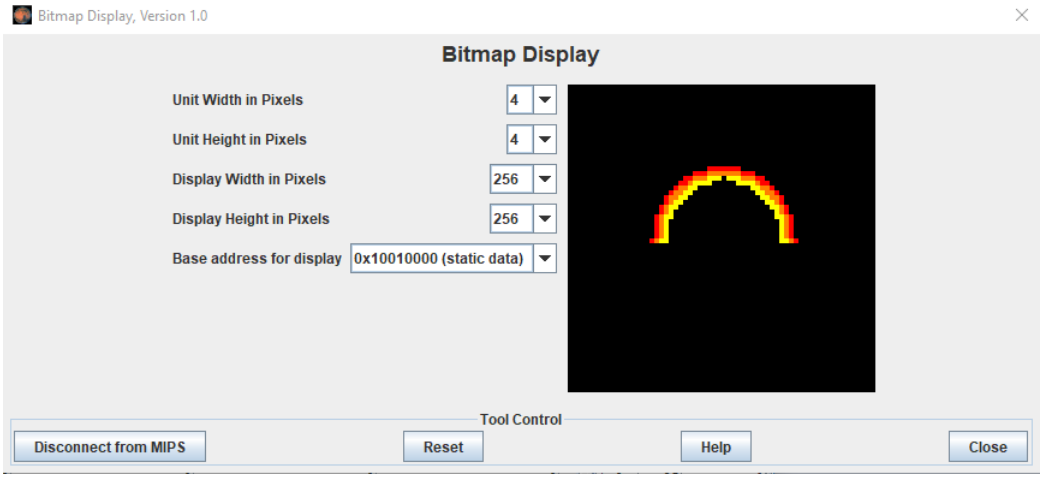
   The signature of this procedure in Java would look like this: `void drawRainbow(int x, int y, int radius, int color).`

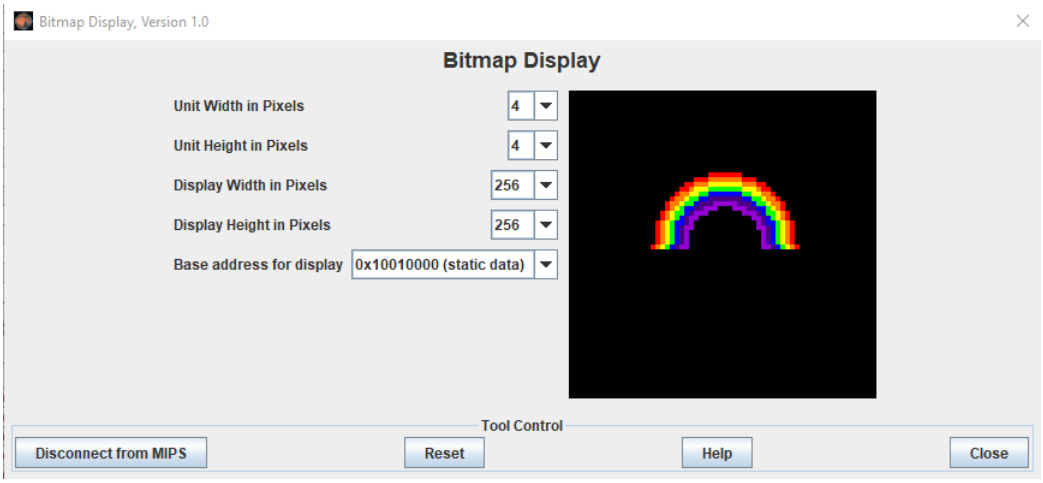
   Then, in your program, call `drawRainbow` in a loop to draw 7 semicircles. At each iteration the radius of semicircle should be reduced by 1 and the color should be changed to another color. Start your loop with a radius of 15 and stop when radius = 9 (including 9). Set both the width and height of your display to 64. Set the center of your semicircles to $(32, 32)$.

   In your Bitmap Display tool, set *Unit Width*, *Unit Height*, *Display Width*, and *Display Height* to 4, 4, 256, and 256, respectively. Do not forget to follow the MIPS convention.

   The figures below show an example of the program in action (note that there is no gap between points):






Bitmap Display, Version 1.0
Bitmap Display
Unit Width in Pixels
4
Unit Height in Pixels
4
Display Width in Pixels
256
Display Height in Pixels
256
Base address for display
0x10010000 (static data)
Tool Control
Disconnect from MIPS
Reset
Help
Close