Simple Dot and Line
Due: February 17, 2020 on myCourses by 23:55

Today's lab will explore creating simple graphics programs with dots and lines.

PART 1 – Simple Dot and Line Example

Using TASM, compile and run the Lab5.asm program that comes with this lab. Take a screen shot of the output with your username showing to prove that you did this part of the lab. The program is in low-resolution mode (mode 13h → 320x200 with 256 colours, all in a single bank). The program draws pixels and lines in that mode. A house will be drawn and it will take up the whole screen.

About lab5.asm:

- It uses 4 separate line drawing functions: one horizontal, one vertical, and two diagonal functions for both slope possibilities. This is a little ugly as the code is very repetitive.
- The screen coordinates passed to the line drawing functions must be increasing - this means that the function does not make sure that X2 is larger than X1, and thus if you pass to it start and end coordinates in decreasing order it will not give the correct result. Take this into account when creating a general line drawing algorithm - the function should be able to draw to the left as well as to the right, no matter in what order you pass to it the screen coordinates.
- Screen coordinates: (0,0) is defined to be the upper left corner.
- Anti-aliasing is not included in this example program.

PART 2 – General Line Program

Modify the lab5.asm program provided in this lab in the following ways:

- Merge the 4 separate line drawing functions into a single line drawing function. Generalise and simplify the line drawing function.
- Make the function accept screen coordinates that could be increasing or decreasing.
- Call your modified program lab5b.asm

Your lab5b.asm program will display the same scene as in part 1, however in this case there will be only one general purpose line drawing function. The TA will test your coordinates to see if your program can handle increasing and decreasing slopes.

HAVE FUN!

WHAT TO HAND IN

- Part 1
  - A single screenshot of the lab5.asm program running on your account. Make sure the screenshot also shows your user ID.
- Part 2
  - Hand in lab5b.asm
  - Hand in a compiled version of lab5b.asm (lab5.exe)

- You may zip everything into a single file if myCourses gives you problems uploading. Call that file lab5.zip.

HOW IT WILL BE GRADED

This lab is worth 20 points:

- Part 1 . . . . . 5 points
- Part 2
  - Merged functions . . 10 points
  - Increasing and decreasing . 5 points