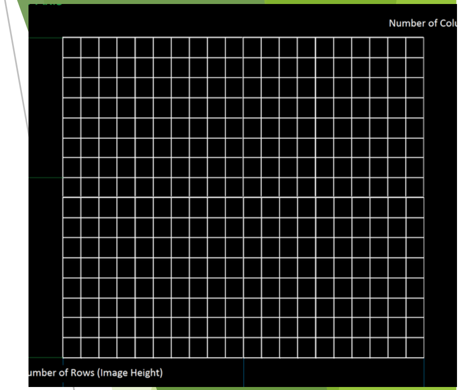
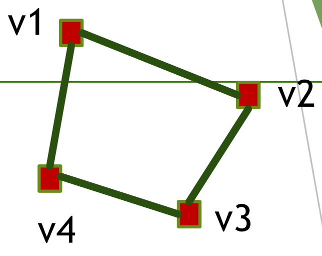
Lab 07
Rasterization -Line

Continue with the Previous Lab – 2D grid

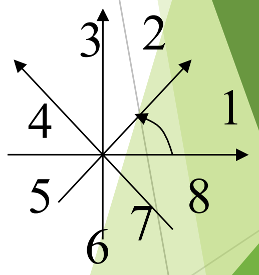


- Clickable 2D Grid
  - Provide a popup menu to select the grid dimensions: (10 or 15 or 20 etc…)
  - Draw a 2D grid based on the selected dimension.
    - The default is 10 → x: (-10 ~ 10), y: (-10 ~ 10)
    - The origin (0,0) is at center
    - When the user select 15, the grid will be re-drawn to: x: (-15 ~ 15), y: (-15 ~ 15)
  - When the user click on one of the cell
    - draw/fill the cell
      - You will need to implement a function to convert coordinates
      - Print out the coordinate (x, y) of this cell on the console window

Midpoint algorithm



- Select endpoints (for example: v1, v2, v3, v4)
  - Connect line between each two endpoints: v1v2, v2v3, v3v4 and v4v1
- Use midpoint algorithm to draw the pixels along the line
  - Draw and print out all the pixels represent the line
  - Print out the coordinate (x, y) OF EACH PIXELS
  - Print out which region it belong to (e.g.: region1 or region2, etc)
    - E.g., Line V1v2: region 8
- Color:
  - Endpoints: Red
  - Pixel of E (east): Green
  - Pixel of NE (North east): Blue
- All regions (80%)
  - Considering all regions (First 2 region for 30% each, the rest regions total 20%)
- Pop-up Menu (10%)
  - Add one more option: normal/debug mode
  - Only print out the coordinate of the pixel where you click on



Requirement

- Do not use other libraries. Only OpenGL API (gl, glu, glut) is allowed
- Write comments in your code
- Turn in your code and demo video