Images

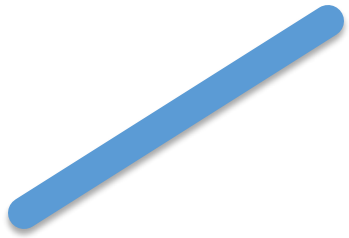
CS418 Computer Graphics

John C. Hart

Vector v. Raster Graphics

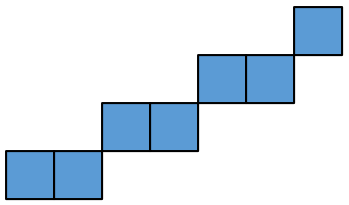
Vector Graphics

- Plotters, laser displays
- “Clip art,” illustrations
- PostScript, PDF, SVG
- Low memory (display list)
- Easy to draw line
- Solid/gradient/texture fills

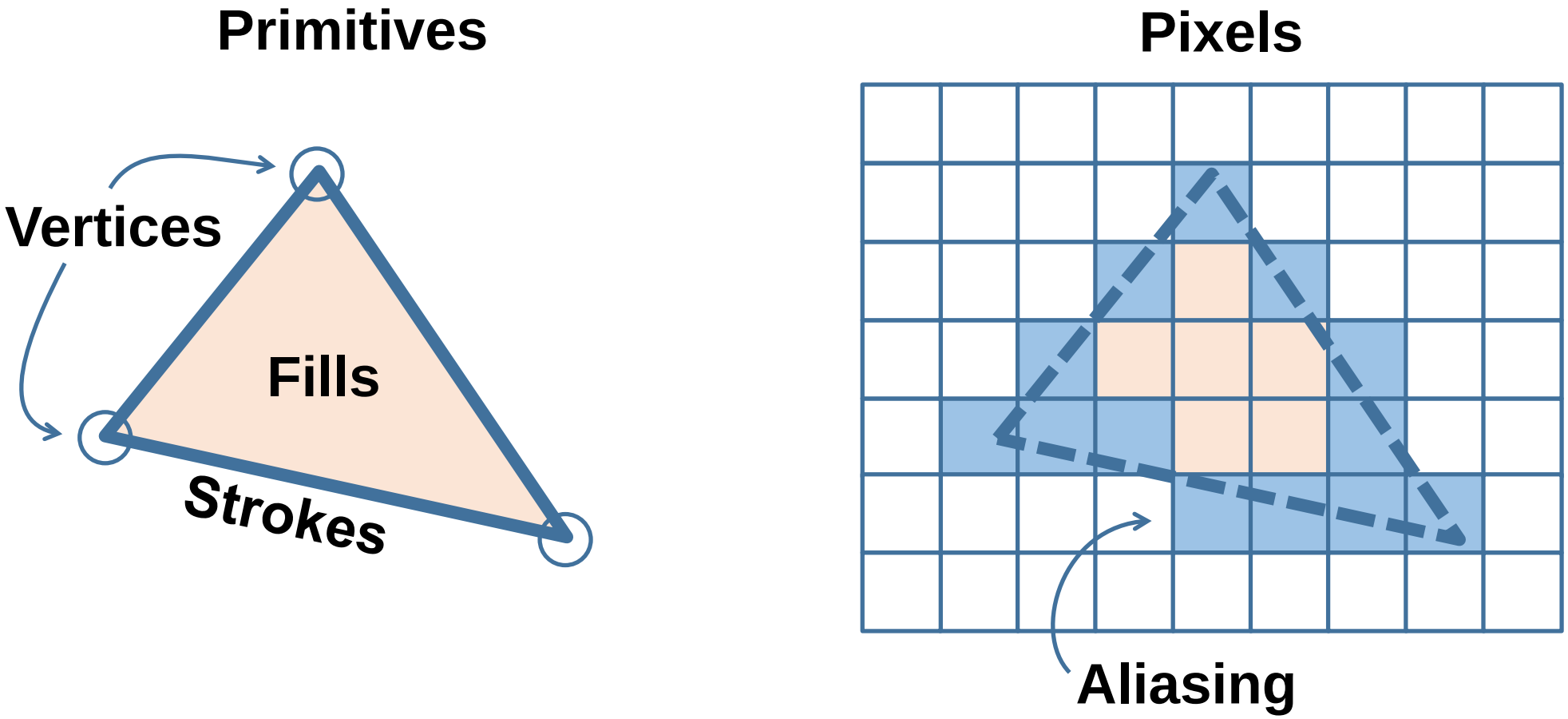


Raster Graphics

- TV’s, monitors, phones
- Photographs
- GIF, JPG, etc.
- High memory (frame buffer)
- Hard to draw line
- Arbitrary fills

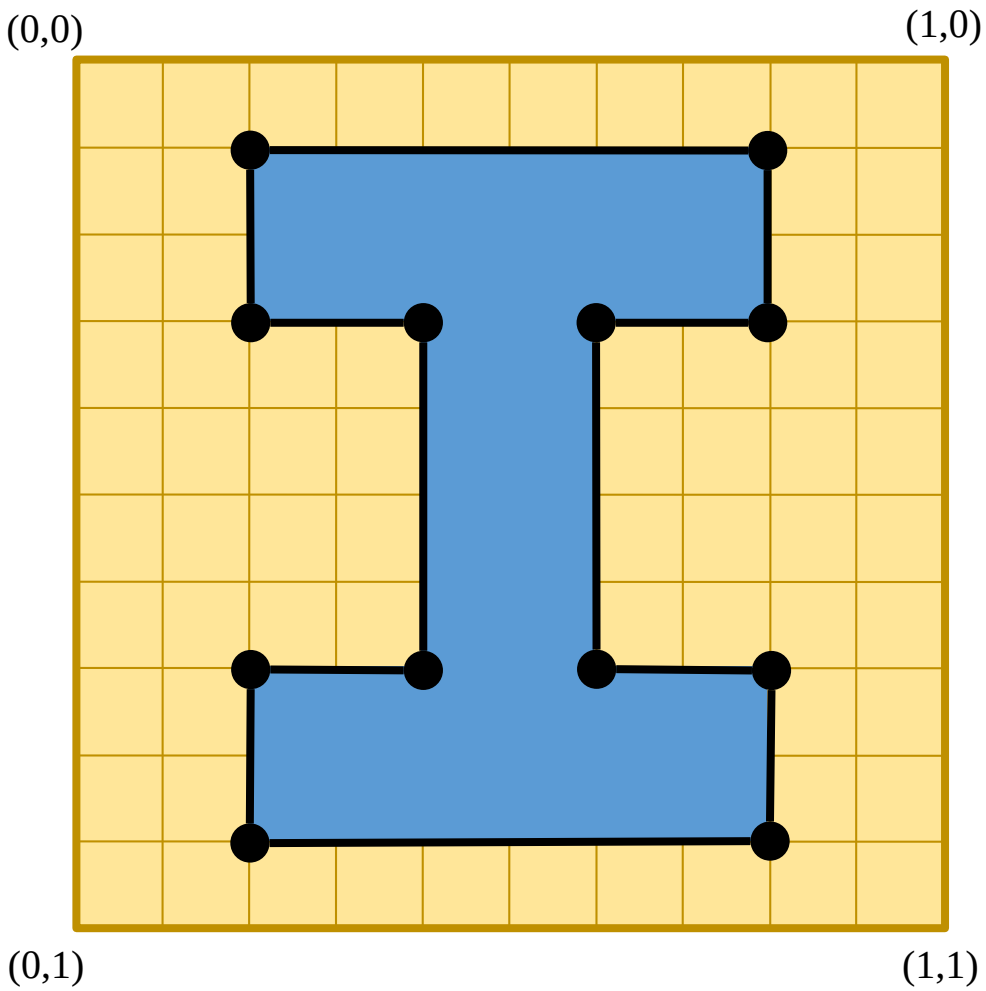


Rasterization

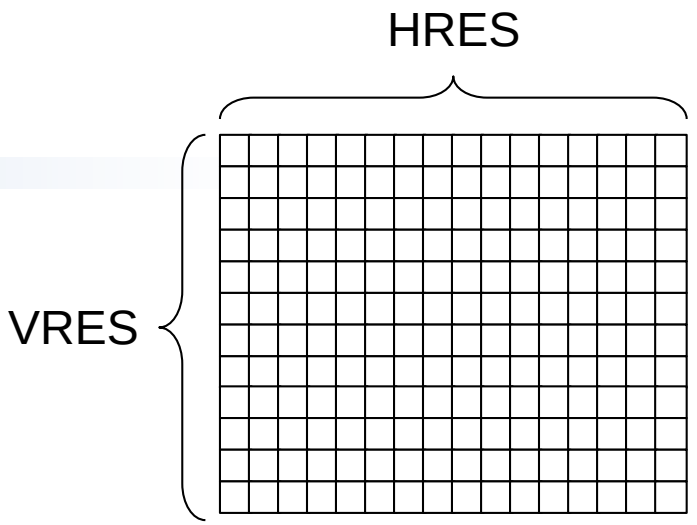


Scalable Vector Graphics

```
<svg height="500px" width="500px" viewbox="0 0 1 1">
  <path d = "M 0.2 0.0
             L 0.2 0.2
             L 0.4 0.2
             L 0.4 0.8
             L 0.2 0.8
             L 0.2 1.0
             L 0.8 1.0
             L 0.8 0.8
             L 0.6 0.8
             L 0.6 0.2
             L 0.8 0.2
             L 0.8 0.0
             Z"
     fill = blue
  />
</svg>
```



Raster Images



- 2-D Array of Color Values
- Spatial Resolution: HRES × VRES
- Image Aspect Ratio:

  HRES/VRES

  (HDTV = 1920/1080 = 1.78 = 16:9)

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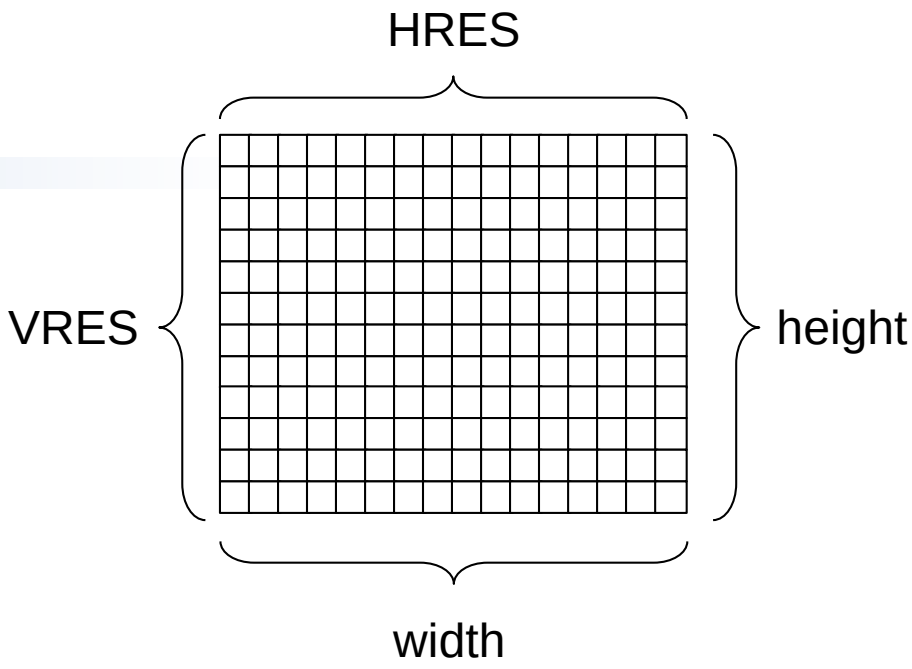
- Pixel Aspect Ratio:

  (height/width) / (HRES/VRES)

  Square pixels are 1:1



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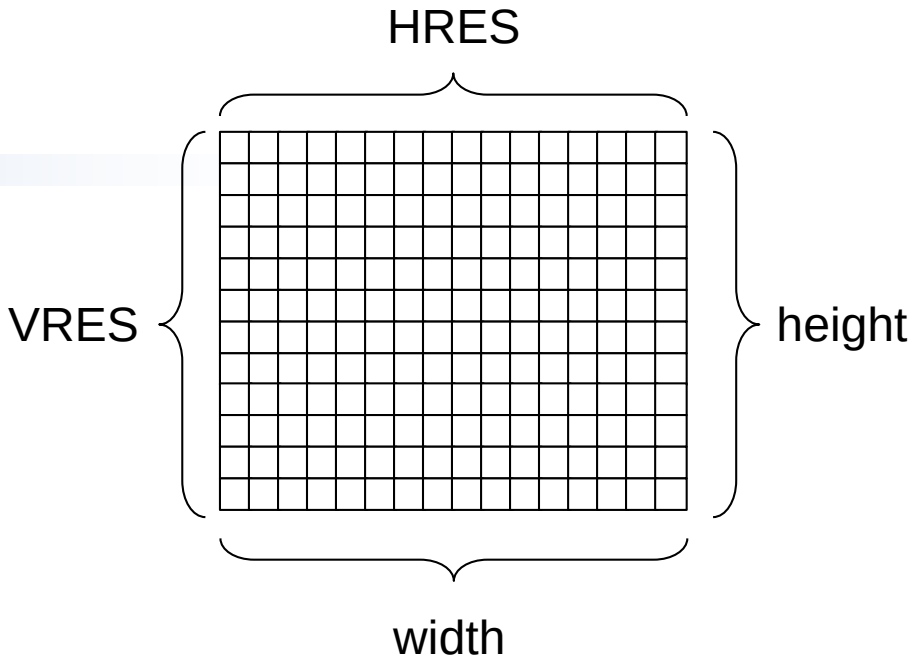

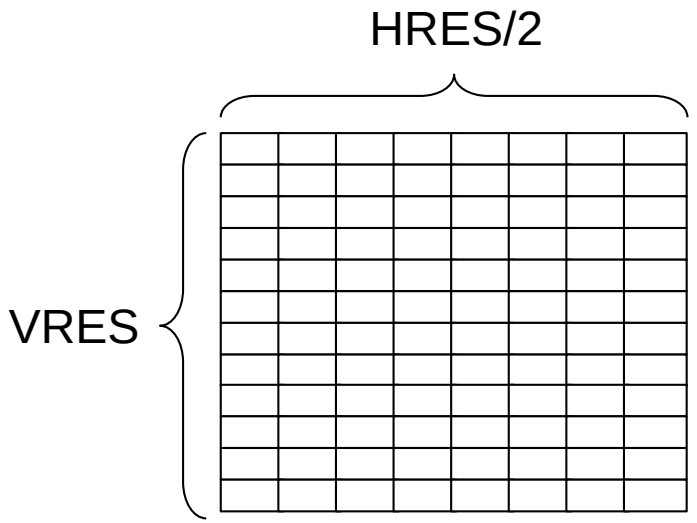

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  Square pixels are 1:1
- Color Resolution (bits per pixel)
  1 bpp: 0 1
  8 bpp: = 1 1 1 0 1 1 0 1
  24 bpp: = #FF6D55