Review
• What is Computing?
• Occupations in CS
• What can be Programmed?
• Creative Computing
• Processing
• Downloading Processing
• Sketchpad
• Primitive Shapes
  – point
  – line
  – triangle
  – quad
  – rect
  – ellipse
• Processing Canvas
• Coordinate System
• Shape Formatting
  – Colors
  – Stroke
  – Fill

Comments
• Used to explain your source code
• Ignored by Processing

/* This is a comment
   that spans multiple lines */

// This is a comment that is restricted to a single line
line(0, 0, 10, 10);  // Can start anywhere, continue to line end

Note the color of the various items in the processing editor.

void setup()
{
  // Called once when program starts
}

void draw()
{
  /* Called repeatedly
   while program runs */
}

random(high);
random(low, high);
Generate a random number in the range
low (or 0) to high

print(something);
println(something);
Print something to the Processing console.

mouseX
mouseY
Built-in predefined variables that hold the
current mouse X and Y locations.

randomEllipse

void setup()
{
  size(300, 300);
  smooth();
}

void draw()
{
  fill(random(255), random(255), random(255));
  ellipse(mouseX, mouseY, 30, 30);
}

Controlling draw()

frameRate(fps);
Sets number of frames displayed per second.
i.e. the number of times draw() is called per
second. Default = 60.

noLoop();
Stops continuously calling draw().

loop();
Resumes calling draw().
More Graphics

arc(…)
curve (...)bézier(…)
shape(…)

Arcs

arc( x, y, width, height, start, stop );

An arc is a section of an ellipse

x, y, width, height
location and size of the ellipse
start, stop
arc bounding angles (in radians)

Spline Curves

curve( x1, y1, x2, y2, x3, y3, x4, y4 );

Spline: A smooth line drawn through a series of points
A curve is a Catmull-Rom (cubic Hermite) spline
defined by four points

x2, y2 and x3, y3
beginning/end points of visual part of curve
x1, y1 and x4, y4
control points that define curve curvature

Bézier Curves

bezíer( x1, y1, cx1, cy1, cx2, cy2, x2, y2 );

A smooth curve defined by two anchor points and
two control points

x2, y2 and x2, y2
anchor points of bézier curve
cx1, cy1 and cx2, cy2
control points that define curvature
Bézier Curves

bezr( x1, y1, cx1, cy1, cx2, cy2, x2, y2 );

Custom Shapes

• Composed of a series of vertexes (points)
• Vertexes may or may not be connected with lines
• Lines may join at vertexes in a variety of manners
• Lines may be straight, curved, or bézier splines
• Shapes may be closed or open

Example Sketches...

− LadyBug1
− Monster1
− Ndebele
− Penguin1
− SouthParkCharacter1
− Sushi
− GiorgioMorandi

Custom Shapes

beginShape( [option] );
vertex( x, y );
curveVertex( x, y );
bezrVexr( cx1, cy1, cx2, cy2, x, y );
endShape( [CLOSE] );

strokeJoin()
Dropbox

- https://www.dropbox.com/