Lab 10 Eoin Abbey-Maher C00217717

**Circle to Rectangle Collision:**

CircleDistX= absolute(circleMidX– rectangleTopLeftX)

CircleDistY= absolute(circleMidY – rectangleTopLeftY)

If(CircleDistX > (rectangleWidth/2 + radius))

Return false

If(CircleDistY > (rectangleHeight /2 + radius))

Return false

If(CircleDistX <= (rectangleWidth/2))

Return true

If(CircleDistY <= (rectangleHeight /2))

Return true

cornerDistSquared = (CircleDistX – rectangleWidth /2) ^2 + (CircleDistY – rectangleHeight /2) ^2

return (cornerDistSquared <= (radius^2))

**Rectangle to Rectangle Collision:**

If( rect1X < rect2X + rect2Width &&

rect1X +rect1Width > rect2X &&

rect1Y < rect2Y + rect2Height &&

rect1Y +rect1Height > rect2.y)

**Dot inside Pentagon Collision:**

Draw a Horizontal line on the right of each point and draw the line to Infinity

Count how many times the line intersects the polygon

If the number of intersections is odd or point lies on edge of a polygon. If none of the conditions is true the point is outside

**Rotated Point:**

Initial Position: P(-1,2)

X = -1 \* cos(30) – 2sin30 = -1.87 , Y = 2 \* cos(30) + (-1)sin30 = -1.98

New Position : P’( -1.87, 1.23)