Assignment 5

1. Write a program that click five times to draw some sort of face.

There are 5 "control points" for the face that come from 5 mouse clicks by the user. In order they are:

p1: The center of the face

p2: Somewhere on the edge of the face

p3: The lower-left corner of the nose

p4: The center of the left eye

p5: The lower-left corner of the mouth

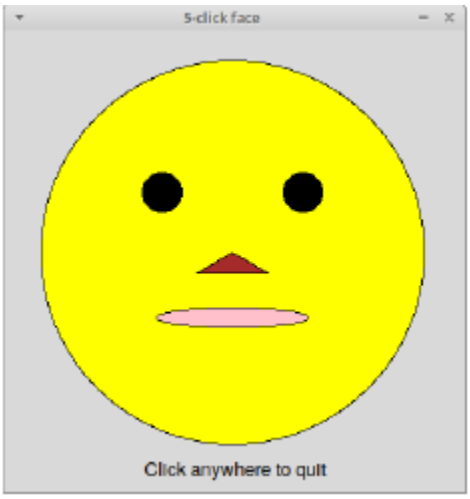
The size and locations of the various features are determined by these control points as follows:

Head: This is a circle centered at p1 and having radius equal to the distance from p1 to p2.

Nose: The nose is an isosceles triangle formed by p1, p3, and a point that is vertically aligned with p3 and the same distance to the right of p1 as p3 is to the left of p1. Thus the nose will always be symmetric and horizontally centered in the face.

Eyes: The eyes are circles with a radius equal to one-tenth the radius of the head. The left eye is centered at p4 and the right eye should be placed symmetrically to match the left.

Mouth: The mouth is an oval with the lower-left corner of its bounding-box at p5. The mouth is centered horizontally and the height of the bounding-box is the same as the radius of the eyes



2. Write a program that computes the intersection of a circle with a horizontal line and displays the information textually and graphically. Do it with a graphical user interface.

You can complete this question with the following steps

1). Draw a circle centered at (0, 0) with the given radius, r, in a window with coordinates running from -10,-10 to 10, 10.

2). Draw a horizontal line across the window with the given y-intercept.

3). Draw the two points of intersection in red.

4). Print out the x values of the points of intersection.

Hint: the formula to calculate the intersections $x = \pm\sqrt{r^2 - y^2}$

3. Modify the program of class example (circle moves), do the following tasks

(a) Make it draw squares instead of circles.

(b) Have each successive click draw an additional square on the screen(rather than moving the existing one).

(c) Print a message on the window "Click again to quit" after the loop, and wait for a final click before closing the window.