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Quiz #11

**1. Statement of the problem**

The problem for this quiz is to use the c programming language to make an image file. The image must be made with a set of underlying numbers. These underlying numbers must be created with a function, then drawn with a separate function. The program must also have the option of a user defing the specific location and radius of the image.

**2. Description of Solution**

By using the midpoint of an image of arbitrary size as a focal point, I use a "for" loop to create points in a ring. This for loop uses calculation based on the rotation matrix to make an arbitrary number of equidistant points around the center. This loop then calculates radii of shrinking circles that fit with the radial lines.

Rotation Matrix:

$$R = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$$ wikipedia.org

Once these points are stored in structures to hold the x and y values and the radii of the circles, another function uses the values to draw the lines and circles.

I declare a few global variables so a user can define the size of the image, the center of the drawing, and the radius of the drawing. Using these, the function can be manipulated in many different ways, and produce many unique images.

## 3. Testing and Results