1. Points are at (2, 2) and (5, 5). All of the distance parts (1-5) are in distance.py
2. I used scipy.spatial.distance.euclidean to get the euclidean distance automatically. Both mine and SciPpy give 4.2426~. And this follows the distance equation based on the pythagorean theorem:

   $$\sqrt{(5-2)^2 + (5-2)^2} = \sqrt{18}$$
3. When multiplying the points to (4, 4) and (10, 10), both give a distance of 8.4852~:

   $$\sqrt{(10-4)^2 + (10-4)^2} = \sqrt{72}$$

   Multiplying each point by a scalar also increases the distance by that scalar value.

4. Here I used scipy.spatial.distance.cityblock, and both mine and SciPy give 6. This is just equal to the x difference plus the y difference:

   $$|5-2| + |5-2| = 6$$
5. When multiplying the points to (4, 4) and (10, 10), both give a distance of 12.
   $|10-4| + |10-4| = 12$
   Again, multiplying each point by a scalar value also multiplies the distance by that scalar value.

6. This part is in template_matching.py. You can run it like so:

```
python template_matching.py <main_image_path> <template_path>
```

   I have 2 sets of images in the images folder, which are what I used to make sure the script worked. When you run the script it will display the smallest difference value (closest match) out of the normalized difference matrix (values 0-255) and the position of that value in the matrix. It then creates and shows an image representation of the normalized difference matrix.