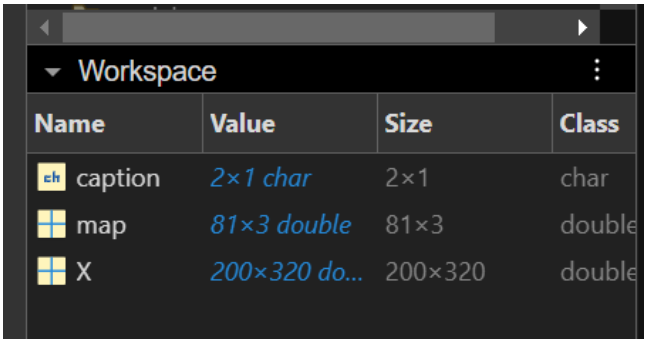
# Notes and Outputs - LAB 1

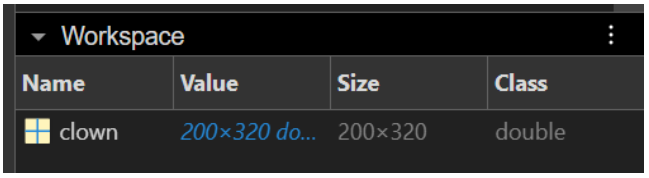


## Starting MATLAB

```
load filename % If .mat file
```




```
load ("filename.ext") % Do this regardless
```




```
clown(20,319) % .mat object
```

Output -

```
ans =

0.1554
```

Output -

## Task 1 - Rotate

```
imshow(Rotate(clown,pi/4))
```

Given function defined in Rotate.m (Run it first)

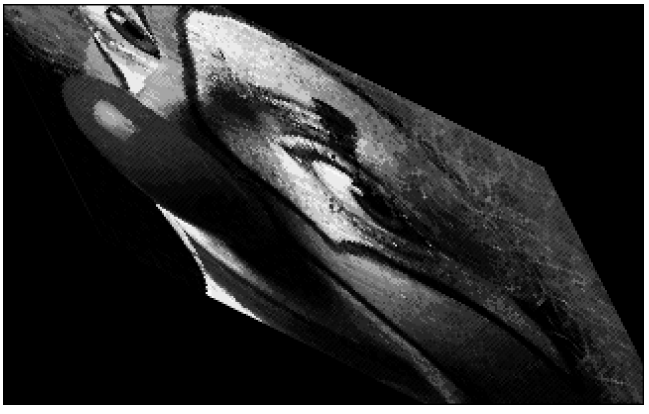
Output:

## Task 2 - Shear

```
imshow(Shear(clown,0.1,0.2))
```

Given function defined in Shear.m (Run it first)

Output:



## Relevance for Design Engineers:

Shear transformations are used to simulate perspective and "slant," which is vital for creating a sense of depth on a 2D screen.

- **Perspective Rendering**: When presenting a product concept, a shear transformation can make a flat 2D rectangle look like a side panel receding into the distance, simulating a 3D view.
- **Fabric and Material Simulation**: In fashion or soft-goods design, shearing is used to simulate how a pattern (like plaid or a grid) deforms when the fabric is pulled diagonally (the "bias").
- **Shadow Projection**: To create a realistic drop shadow for a product, you can take the product's silhouette, apply a **shear** to lean it over, and then darken it—much like the logic used in the **Checker-shadow illusion** to convey depth.