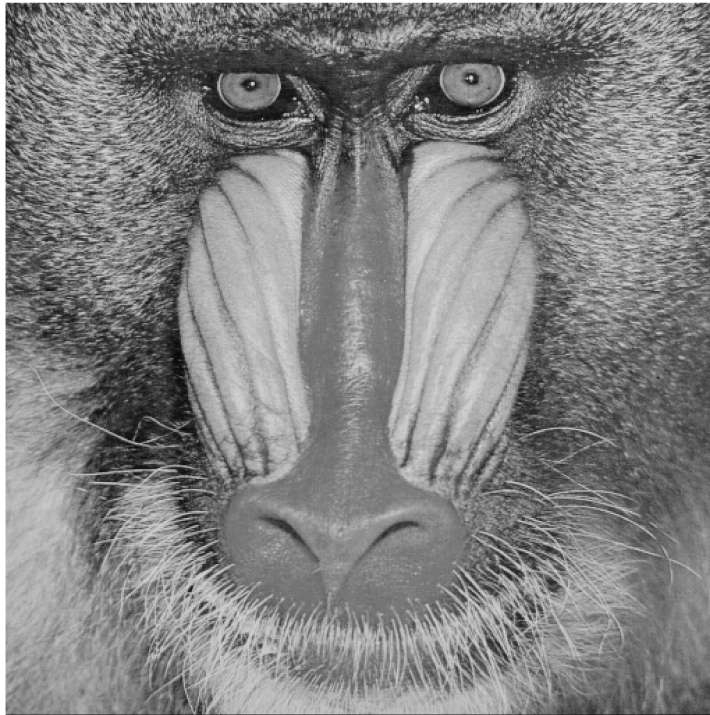# Question 5

Read input file:

```
im = imread("/MATLAB Drive/images/mandrill.tif");
imshow(im)
```
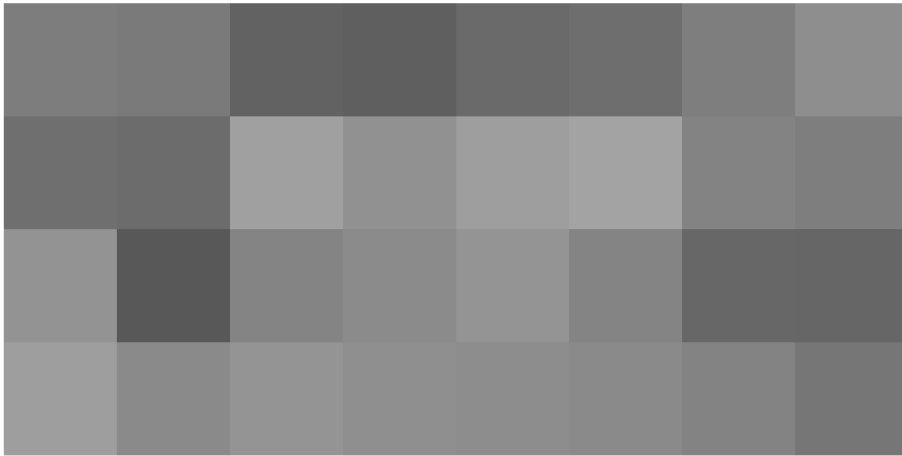

First we record the size of the original image:

```
im_sz = size(im);
```

```
im_sz = 1x2
   512   512
```

Then we shrink to an 4x8 image such that there are only 32 possible pixels. I also chose to use the bilinear to maintain a little bit more influence from all of the pixels that are lost.

```
im_small = imresize(im, [4,8],"bilinear");
imshow(im_small)
```

Finally, scale the 4x8 image back up to the original size of 512x512, using the nearest neighbor method to insure there are no new pixel values interpolated

```
im_scaled = imresize(im_small, im_sz,"nearest");
imshow(im_scaled)
```

We can check to see if this image is effectivly in 32 level grayscale by checking if it have less than 33 unique values

```
unique(im_scaled(:))
```

```
ans =  26x1 uint8 column vector
     88
     95
     98
    102
    103
    106
    108
    110
    111
    118
      :
      :
```

Since the unique number of pixel values =< 32, the original image has effectively been converted into a 32 grayscale level interpolation.

Although the image is very hard to make out, if you squint you can see the outline of the mandrill's head. Although this did give the required 32-leveled output, the quality of the resulting image is inferior to the normal quantizing operation.