

Digital Imaging Systems

Project 02 – Option 0

Name- Manthan Sunil Talegaonkar

Unity Id- mstalega

Some of the function used in the code may not get executed in Jupyter Notebook as it has been coded on **Google Colab**.

Please Access the **Google Colab Link below** to access the code.

Another File with code and Images is provided names as **mstalega_document2.pdf**.

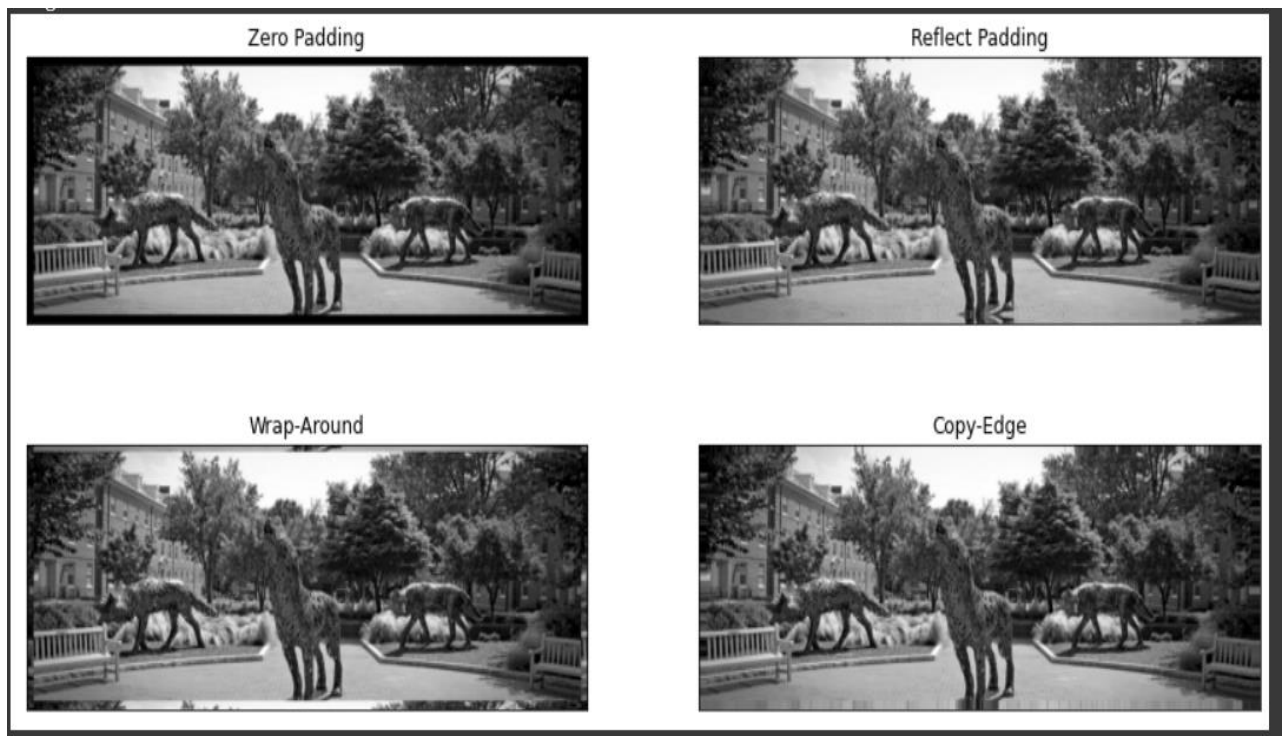
Google Colab Link -

<https://colab.research.google.com/drive/1tGOaAqCfQ2nPmkbdyLTo4b2H7tWewo5l?usp=sharing>

Note - Code is not included in this document. Only the **Result Images** have been included.

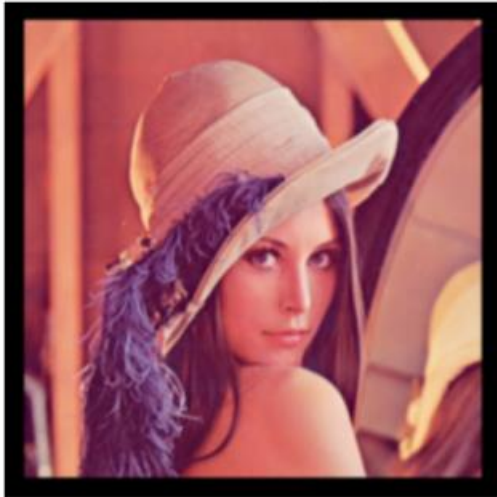
Q1.

- a. Padding For Gray Scale (wolves.png)

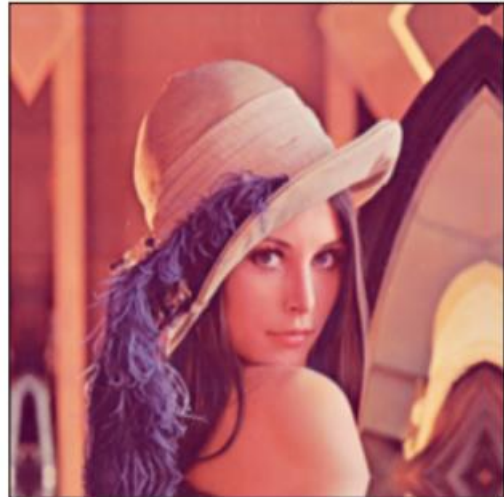


Padding for Color Image with **Box** Kernel (lena.png)

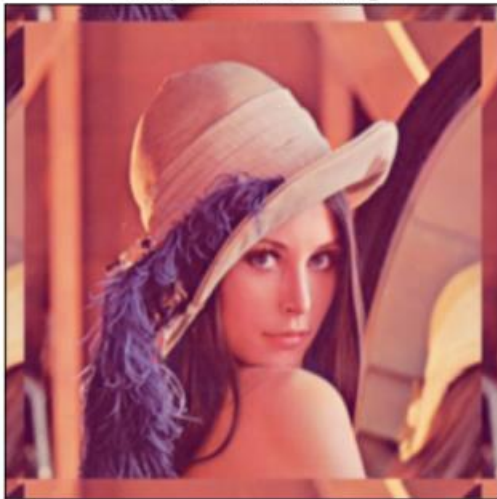
Zero Padding



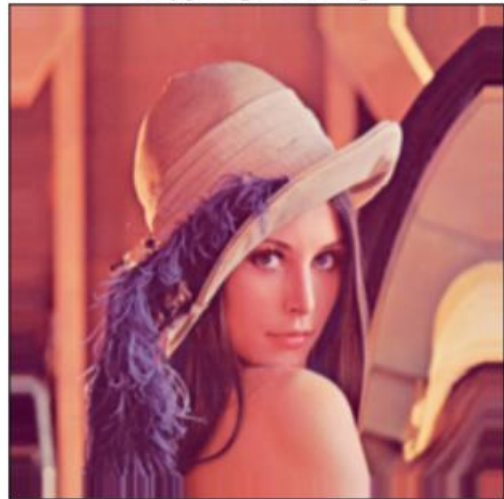
Reflect Padding



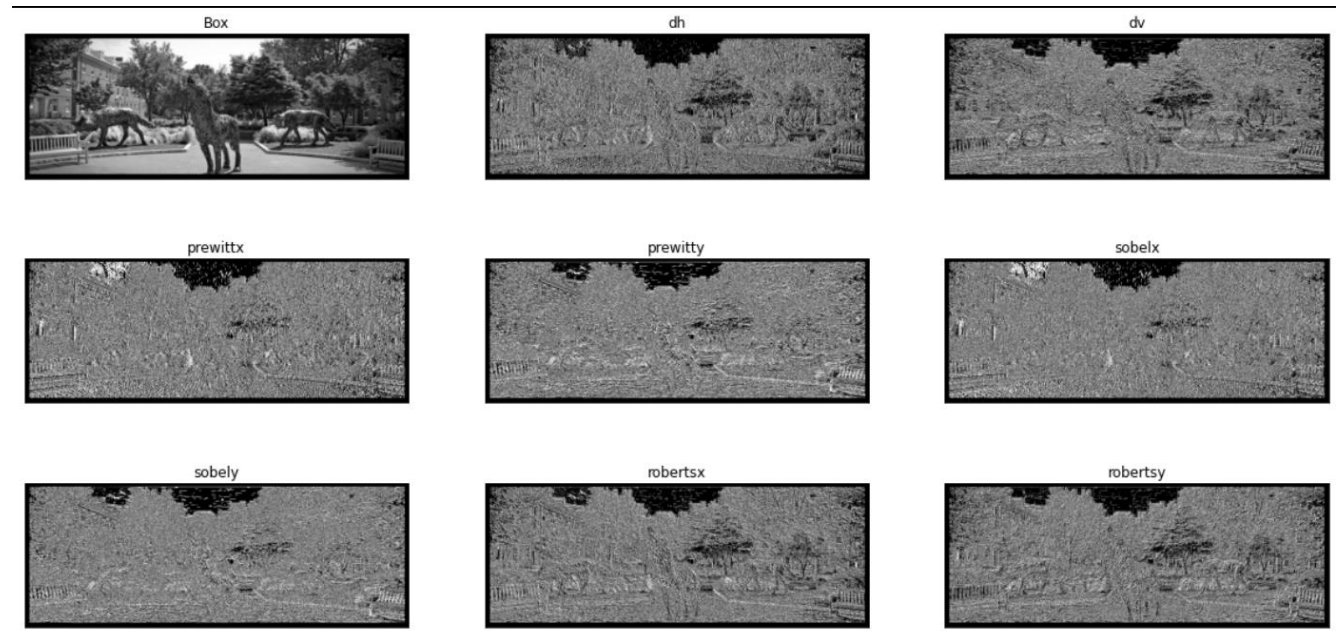
Wrap-Around Padding



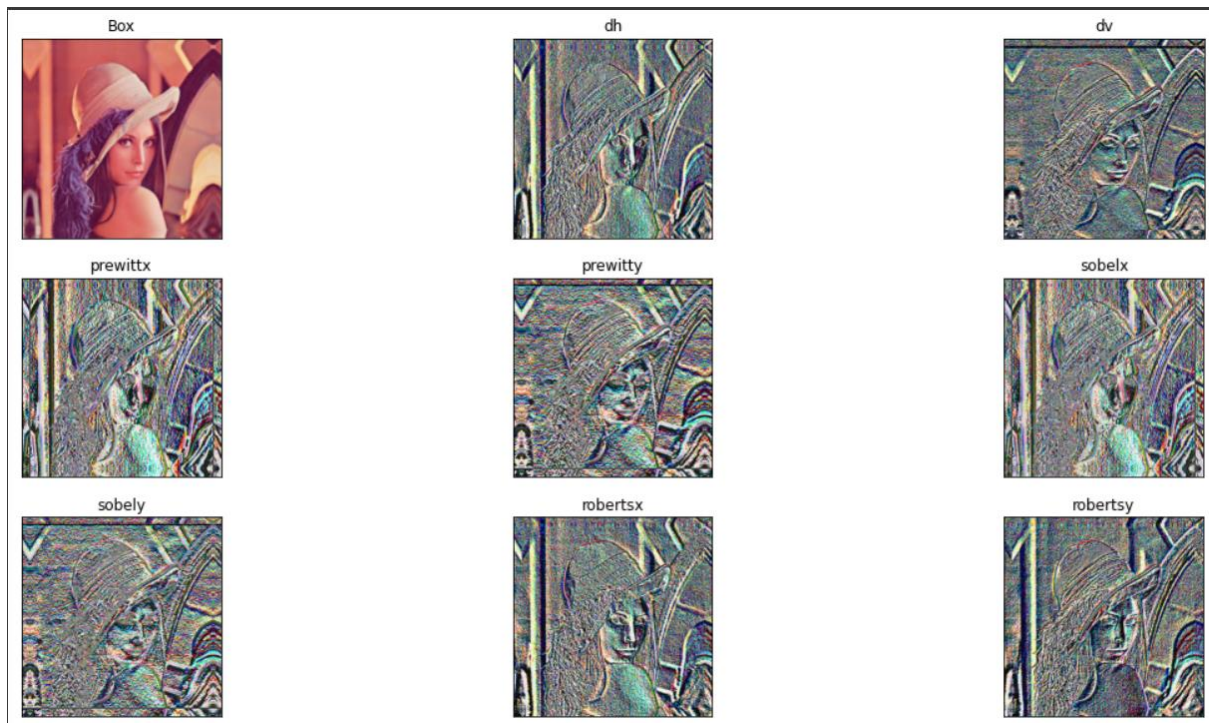
Copy-Edge Padding



Convolution for Black and White (wolves.png) with all kernels and Zero Padding. Using Matplotlib.



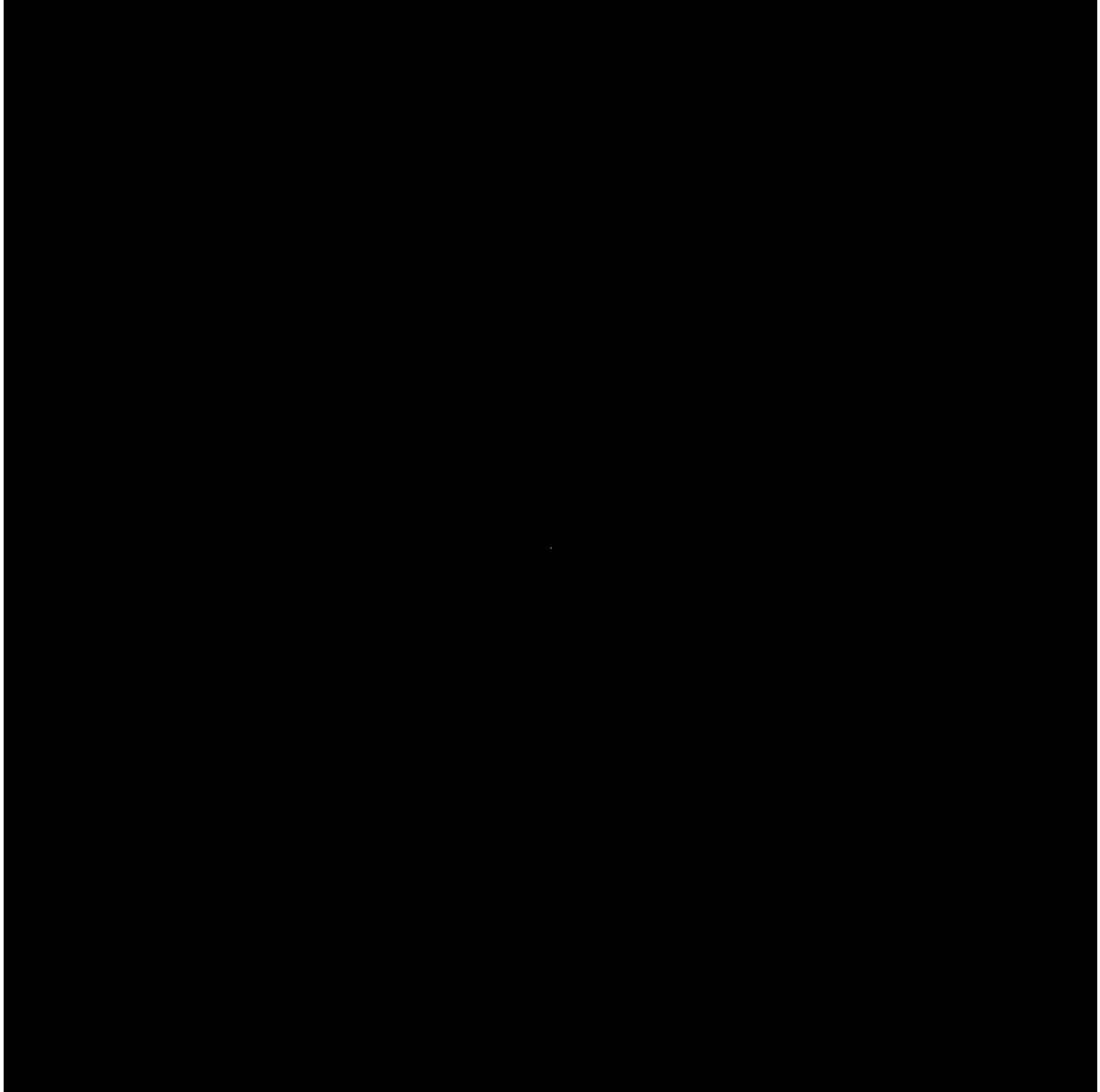
Convolution for Color (lena.png) with all Kernels and Reflect Padding. Using Matplotlib



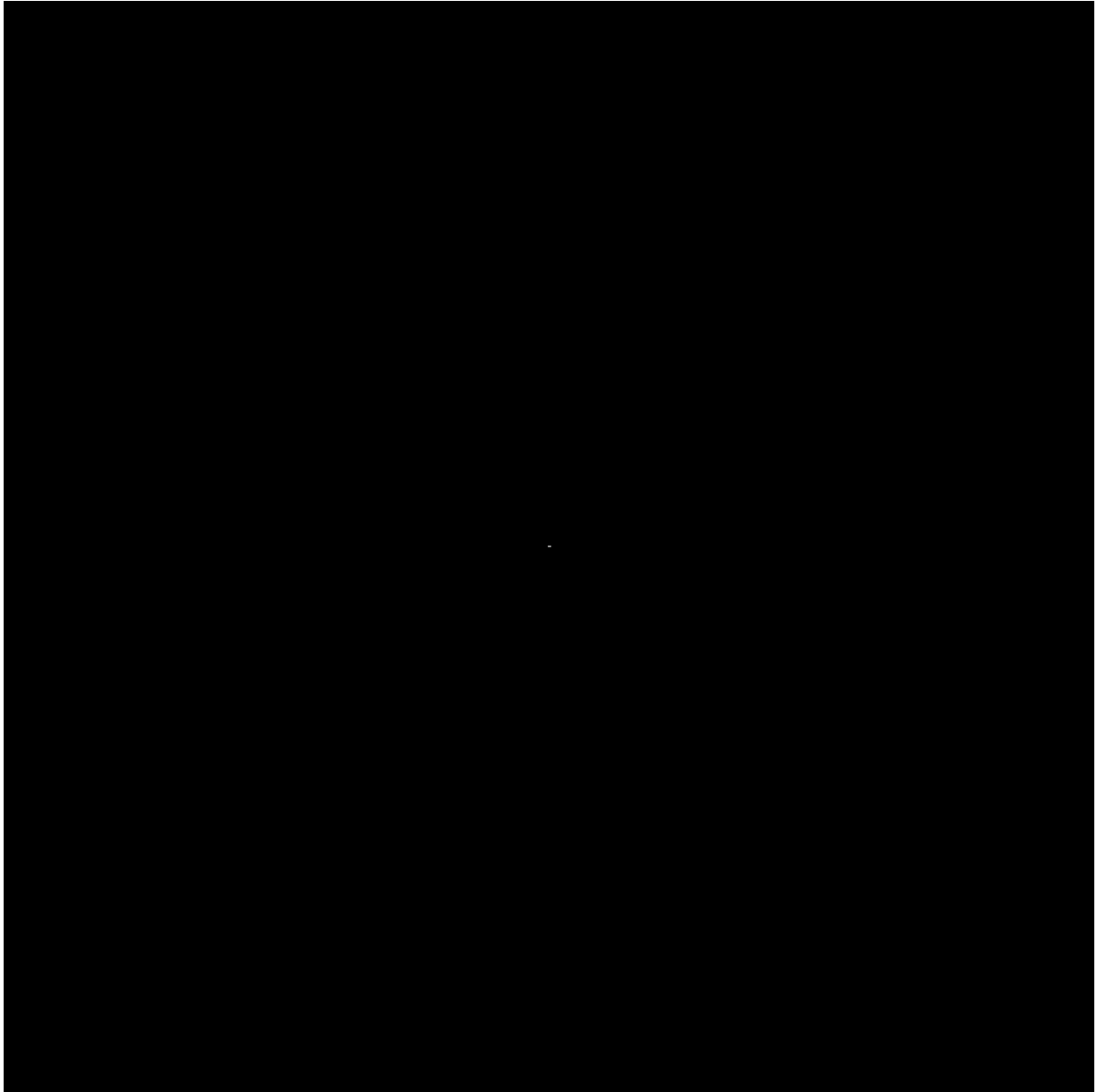
1 b.

Using Zero Padding and Prewitt Y Kernel.

Before Convolution



After Convolution



Before Convolution

```
[[ 0.  0.  0.  0.  0.]  
[ 0.  0.  0.  0.  0.]  
[ 0.  0. 255.  0.  0.]  
[ 0.  0.  0.  0.  0.]  
[ 0.  0.  0.  0.  0.]]
```

After Convolution

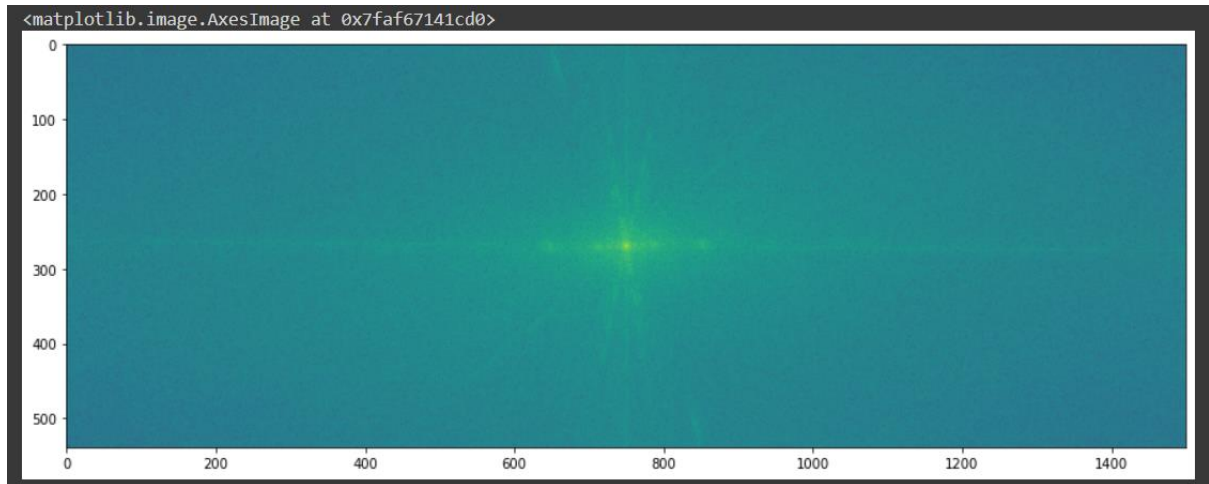
```
[[ 0.  0.  0.  0.  0.]  
[ 0. 255. 255. 255.  0.]  
[ 0.  0.  0.  0.  0.]  
[ 0. -255. -255. -255.  0.]  
[ 0.  0.  0.  0.  0.]]
```

We clearly see that Convolution is being Performed as the Values are getting changed according to Prewitt Y Kernel for the given Image.

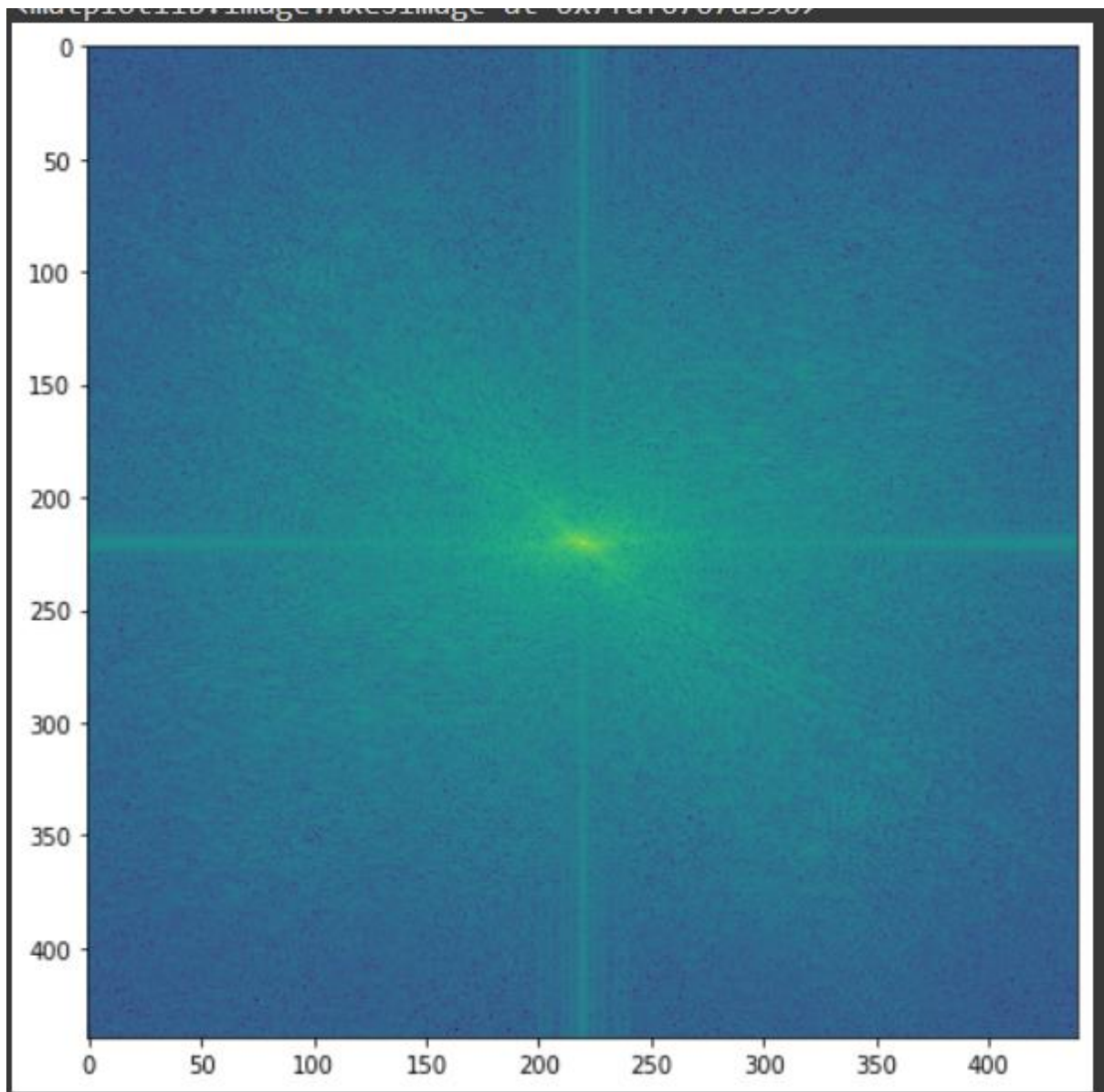
Q2.

a.

Output for 2d- DFT function for **wolves.png**



Output for 2d -DFT function for **lena.png**



b.

