```python
import numpy as np
```

```python
def MatrixDFT(x, N):

    #Zero Padding
    signal = np.zeros(N)
    signal[:len(x)] = x

    W = np.exp(-2j*np.pi/N)

    k = np.zeros((N, N), dtype = complex)

    for i in range(N):
        for j in range(N):
            k[i][j] = W**(i*j)

    X = np.zeros(N, dtype = complex)

    X = np.matmul(k, signal)

    return X
```

```python
test = np.random.rand(16)
numpy = abs(np.fft.fft(test, 32))
meu = abs(MatrixDFT(test, 32))

print('Numpy =  {}'.format(numpy))
print('Meu = {}'.format(meu))
```

```
Numpy =  [6.4110177  4.22729938 0.21927354 1.59449034 1.01480919 0.67250986
 1.64706019 2.16005166 0.7904308  0.962581   1.09740455 1.46026051
 1.98935732 1.288833   0.41414644 0.26171709 0.19811192 0.26171709
 0.41414644 1.288833   1.98935732 1.46026051 1.09740455 0.962581
 0.7904308  2.16005166 1.64706019 0.67250986 1.01480919 1.59449034
 0.21927354 4.22729938]
Meu = [6.4110177  4.22729938 0.21927354 1.59449034 1.01480919 0.67250986
 1.64706019 2.16005166 0.7904308  0.962581   1.09740455 1.46026051
 1.98935732 1.288833   0.41414644 0.26171709 0.19811192 0.26171709
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 0.7904308  2.16005166 1.64706019 0.67250986 1.01480919 1.59449034
 0.21927354 4.22729938]
```