A5 Python Code

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차 례

Exercise 1 (10p)

```
N=1000
u=np.random.uniform(0,1,size=N)
x=-np.log(1-u)/3


x[:6]
```

```
## array([0.18489001, 0.23416316, 0.00589776, 0.04028318, 0.91741004,
##        0.4796504 ])
```

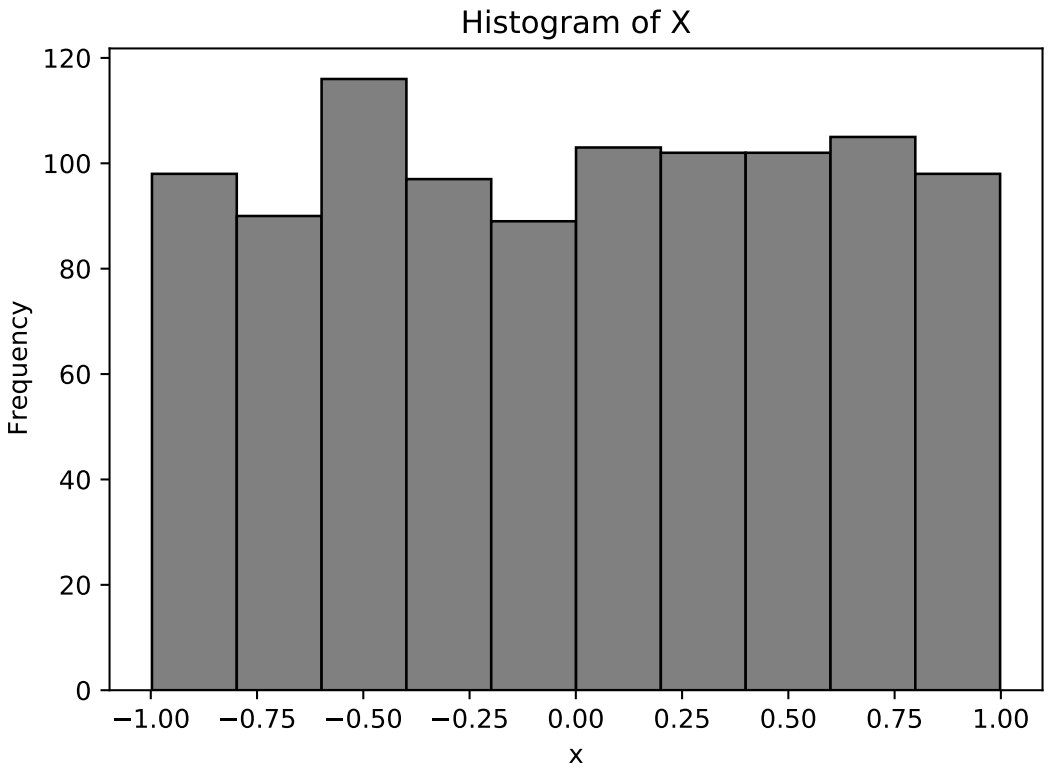
Uniform random numbers (15p)

```
x=np.random.uniform(-1,1,size=1000)


plt.hist(x,color='gray',edgecolor='black')
```

```
## (array([ 98.,  90., 116.,  97.,  89., 103., 102., 102., 105.,  98.]), array([-9.97239397e-
01, -7.97693158e-01, -5.98146919e-01, -3.98600680e-01,
##        -1.99054441e-01,  4.91797833e-04,  2.00038037e-01,  3.99584276e-01,
##       5.99130515e-01,  7.98676754e-01,  9.98222993e-01]), <BarContainer object of 10 artists>)
```

```
plt.title('Histogram of X')
plt.xlabel('x')
plt.ylabel('Frequency')
plt.show()
```



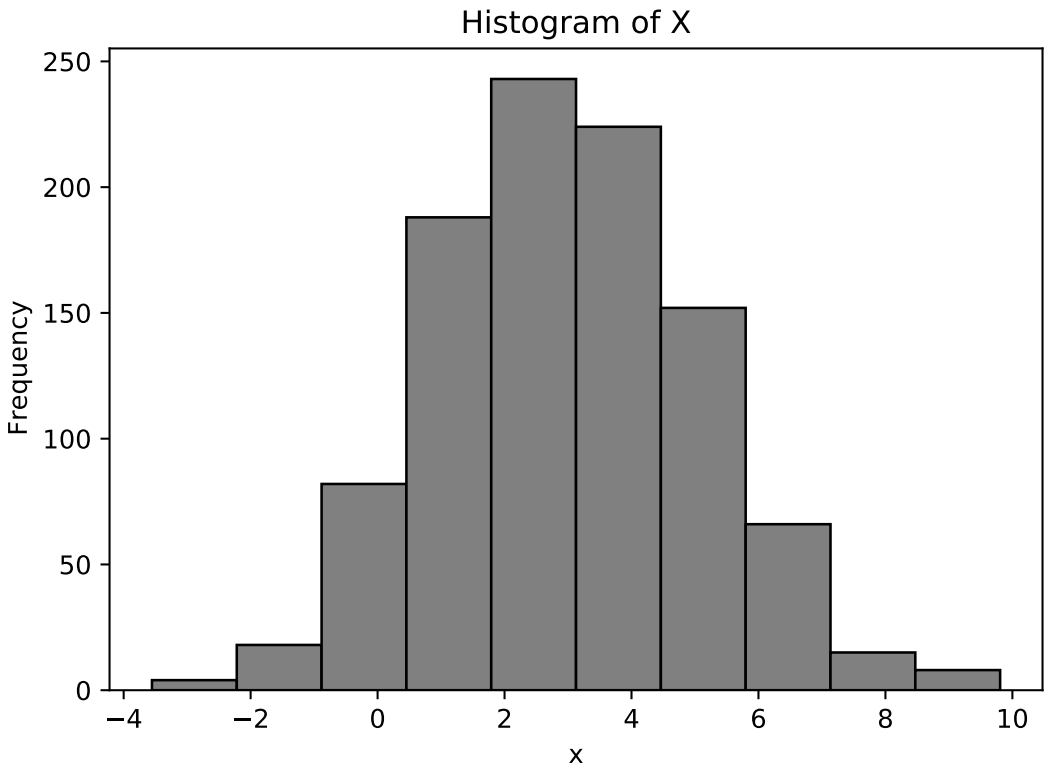
Normal random numbers (16p)

```
x=np.random.normal(3,2,size=1000)


plt.hist(x,color='gray',edgecolor='black')
```

```
## (array([  4.,  18.,  82., 188., 243., 224., 152.,  66.,  15.,   8.]), array([-3.5544285 , -2.21831009, -0.88219168,  0.45392673,  1.79004514,
##         3.12616355,  4.46228196,  5.79840037,  7.13451878,  8.47063719,
##         9.8067556 ]), <BarContainer object of 10 artists>)
```

```
plt.title('Histogram of X')
plt.xlabel('x')
plt.ylabel('Frequency')
plt.show()
```



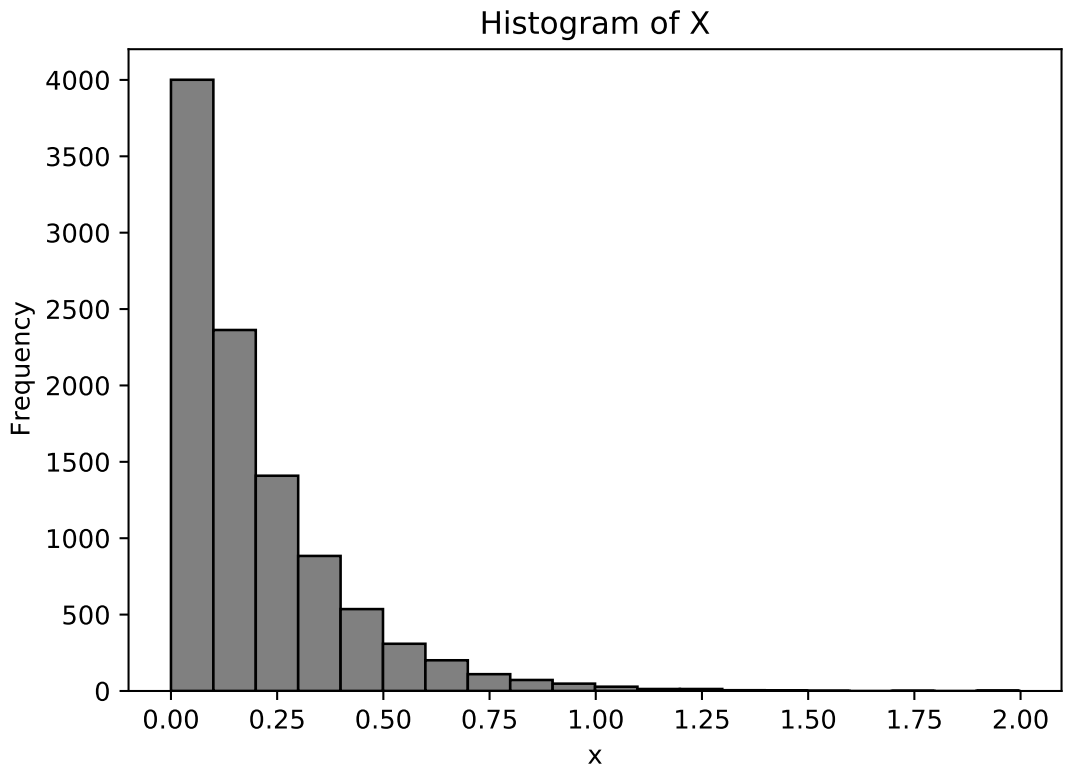
Exponential random numbers (17p)

```
x=np.random.exponential(1/5,size=10000)


plt.hist(x,bins=20,color='gray',edgecolor='black')
```

```
## (array([4.001e+03, 2.363e+03, 1.409e+03, 8.840e+02, 5.360e+02, 3.090e+02,
##         2.010e+02, 1.100e+02, 7.200e+01, 4.800e+01, 2.800e+01, 1.300e+01,
##         1.300e+01, 5.000e+00, 4.000e+00, 1.000e+00, 0.000e+00, 1.000e+00,
##               0.000e+00,  2.000e+00]),  array([8.44565750e-06,  9.98373312e-02,  1.99666217e-
01, 2.99495102e-01,
##         3.99323988e-01, 4.99152873e-01, 5.98981759e-01, 6.98810644e-01,
##         7.98639530e-01, 8.98468415e-01, 9.98297301e-01, 1.09812619e+00,
##         1.19795507e+00, 1.29778396e+00, 1.39761284e+00, 1.49744173e+00,
##         1.59727061e+00, 1.69709950e+00, 1.79692838e+00, 1.89675727e+00,
##         1.99658616e+00]), <BarContainer object of 20 artists>)
```

```
plt.title('Histogram of X')
plt.xlabel('x')
plt.ylabel('Frequency')
plt.show()
```



Poisson random numbers (18p)

```
x=np.random.poisson(5, size=10000)


plt.hist(x,bins=20,color='gray',edgecolor='black')
```

```
## (array([  67.,  344.,  800.,    0., 1409., 1734., 1805.,    0., 1461.,
##         1040.,  657.,    0.,  374.,  180.,   81.,    0.,   30.,   13.,
##            3.,    2.]), array([ 0.  ,  0.75,  1.5 ,  2.25,  3.  ,  3.75,  4.5 ,  5.25,  6.  ,
##          6.75,  7.5 ,  8.25,  9.  ,  9.75, 10.5 , 11.25, 12.  , 12.75,
##         13.5 , 14.25, 15.  ]), <BarContainer object of 20 artists>)
```

```
plt.title('Histogram of X')
plt.xlabel('x')
plt.ylabel('Frequency')
plt.show()
```