assignment06

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1 This is assignment06

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1.3 import packages

```
In [4]: import numpy as np
        import matplotlib.pyplot as plt
```

1.4 Define variable & function

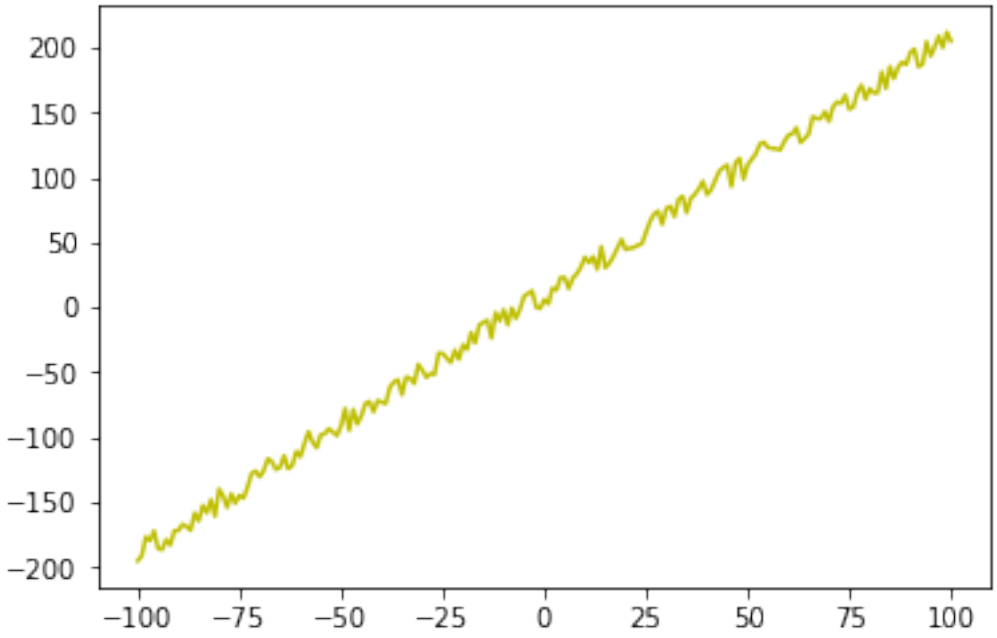
```
In [5]: num     = 201
        std     = 20
        a       = 2
        b       = 10

        n       = np.random.rand(num)
        nn      = n - np.mean(n)
        x       = np.linspace(-100,100,num)
        y1      = a * x + nn * std + b
        y2      = a * x + b
```

```
In [6]: fp1 = np.polyfit(x, y1, 1)
        f1 = np.poly1d(fp1)
```

1.5 Plot the noisy data (x, y1)

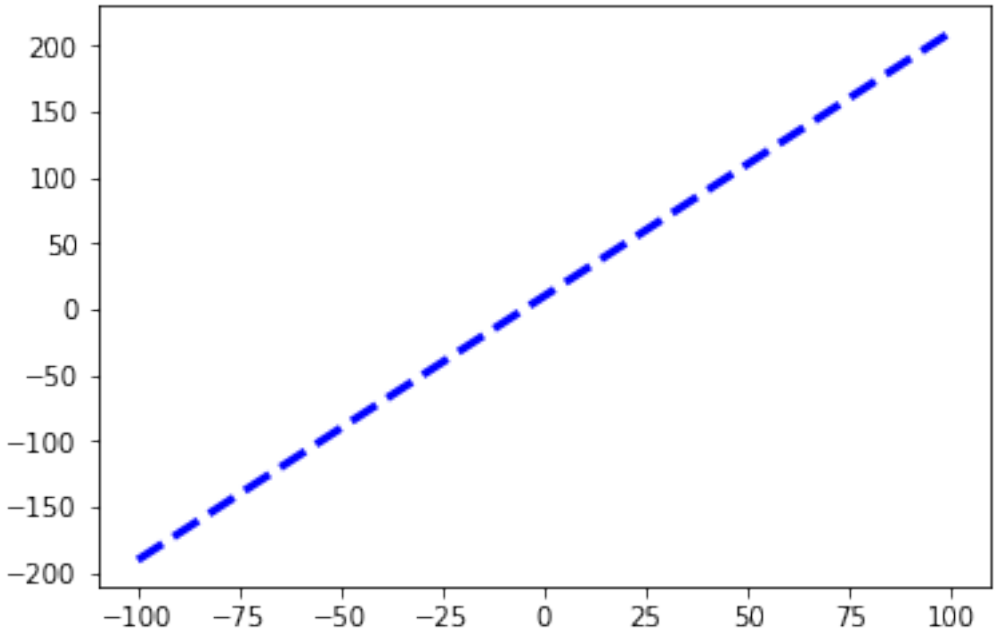
```
In [10]: plt.figure(figsize=(6,4))
         plt.plot(x, y1, label='noise', color='y')
```

```
Out[10]: [<matplotlib.lines.Line2D at 0x11bd9f4e0>]
```



1.6 Plot the clean data (x, y2)

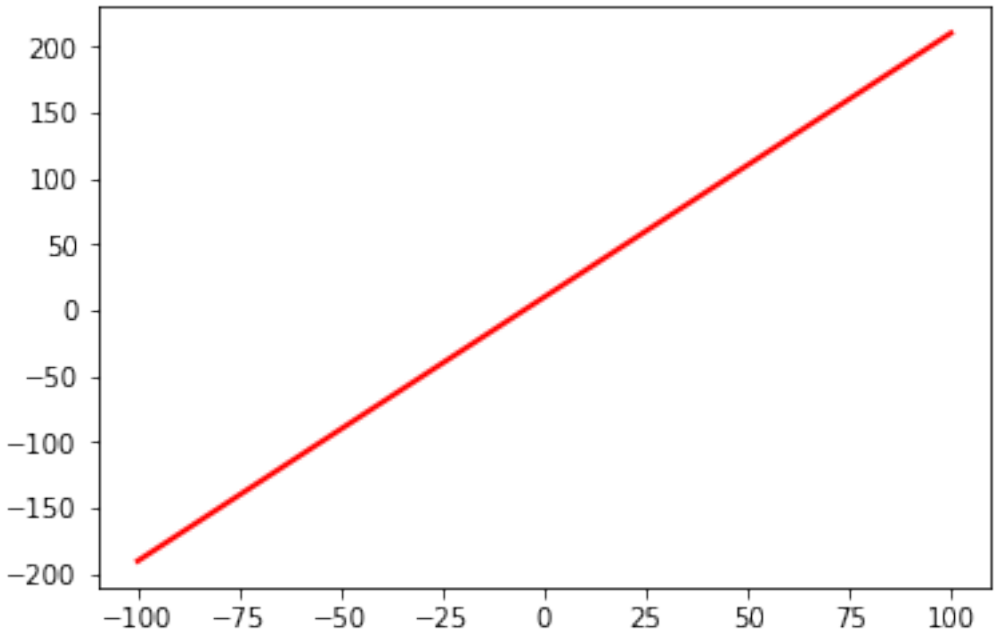
```
In [12]: plt.figure(figsize=(6,4))
         plt.plot(x, y2, ls='dashed', lw=3, color='b', label='clean')

Out[12]: [<matplotlib.lines.Line2D at 0x11be68470>]
```



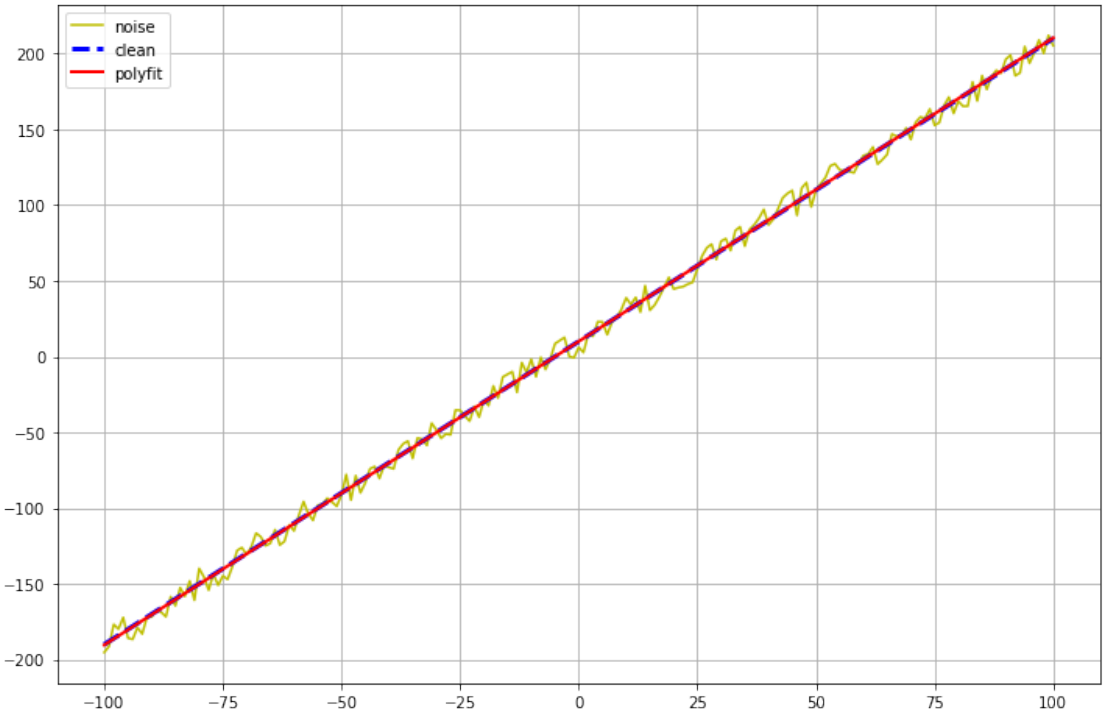
1.7 Plot the line that fits the noisy data by the least square error

```
In [14]: plt.figure(figsize=(6,4))
         plt.plot(x, f1(x), lw=2, color='r', label='polyfit')
```

```
Out[14]: [<matplotlib.lines.Line2D at 0x11bffb128>]
```




```
In [16]: plt.figure(figsize=(12,8))
         plt.plot(x, y1, label='noise', color='y')
         plt.plot(x, y2, ls='dashed', lw=3, color='b', label='clean')
         plt.plot(x, f1(x), lw=2, color='r', label='polyfit')
         plt.grid()
         plt.legend()
         plt.show()
```



1.8 The link to the github

https://github.com/JaeHyunLim/assignment.git