

King David Concepcion

CAS-05-601P

```
import numpy as np
import matplotlib.pyplot as plt

prior_probs = np.array([[0.33,0.3], [0.2,0.17]])

plt.imshow(prior_probs, cmap='gray')
plt.colorbar()

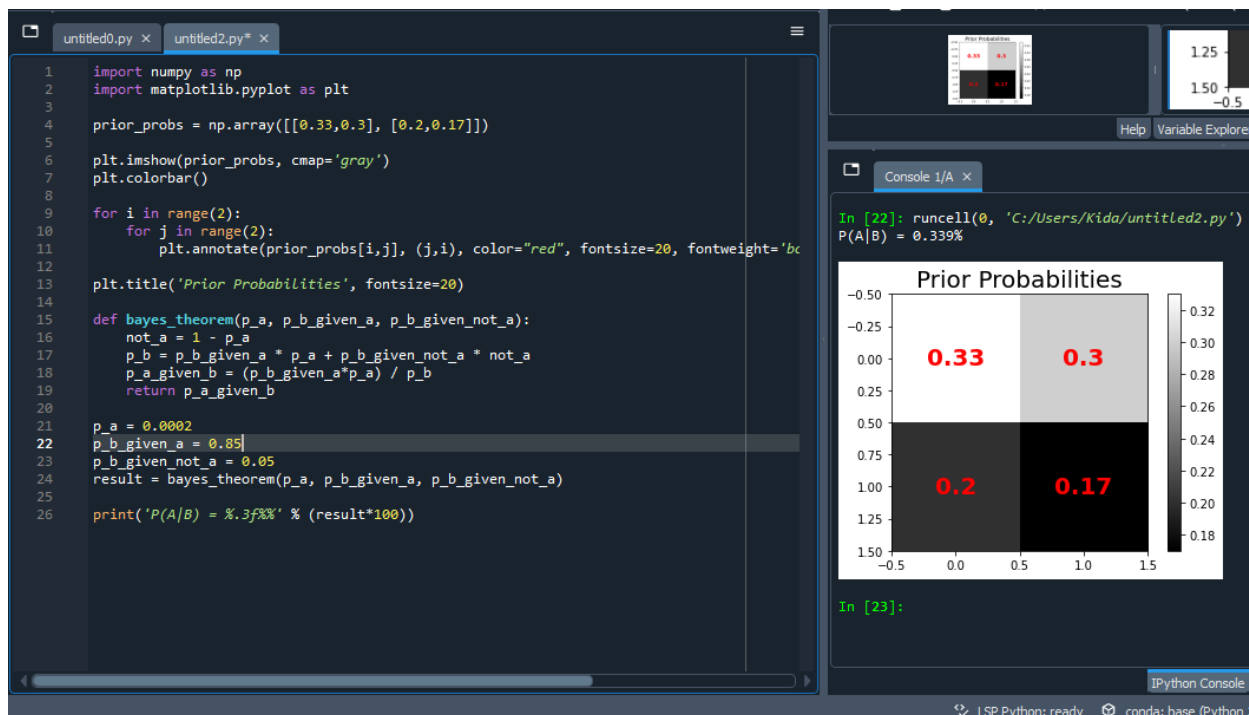
for i in range(2):
    for j in range(2):
        plt.annotate(prior_probs[i,j], (j,i), color="red", fontsize=20, fontweight='bold', ha='center', va='center')

plt.title('Prior Probabilities', fontsize=20)

def bayes_theorem(p_a, p_b_given_a, p_b_given_not_a):
    not_a = 1 - p_a
    p_b = p_b_given_a * p_a + p_b_given_not_a * not_a
    p_a_given_b = (p_b_given_a*p_a) / p_b
    return p_a_given_b

p_a = 0.0002
p_b_given_a = 0.85
p_b_given_not_a = 0.05
result = bayes_theorem(p_a, p_b_given_a, p_b_given_not_a)

print('P(A|B) = %.3f%%' % (result*100))
```



```
In [23]: runcell(0, 'C:/Users/Kida/untitled2.py')  
P(A|B) = 0.339%
```

