

ELISHA JOY R. YUMANG

CAS-05-601P

ACTIVITY 3

```
# -*- coding: utf-8 -*-
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"""
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"""
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```
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))

