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

IMPORTING DATA

```
df = pd.read_csv('Ads_Optimisation.csv')
df.shape
```

```
    (10000, 10)
```

## IMPLEMENTING THOMPSON SAMPLING

```
import random

N = df.shape[0]
d = df.shape[1]
ads_selected = []
number_of_rewards_1 = [0] * d
number_of_rewards_0 = [0] * d
total_reward = 0

for n in range(10000):
    ad = 0
    max_random_beta = 0
    for i in range(d):
        random_beta = random.betavariate(number_of_rewards_1[i] + 1, number_of_rewards_0[i] +
        if random_beta > max_random_beta:
            max_random_beta = random_beta
            ad = i
    ads_selected.append(ad)
    reward = df.iloc[n, ad]
    if reward == 1:
        number_of_rewards_1[ad] += 1
    else:
        number_of_rewards_0[ad] += 1
    total_reward += reward
print(total_reward)
```

```
    2600
```

```
print(ads_selected)
```

```
    [1, 9, 6, 0, 8, 2, 6, 3, 2, 4, 7, 9, 5, 7, 4, 8, 5, 6, 0, 5, 8, 8, 6, 2, 6, 6, 6, 1, 3,
```
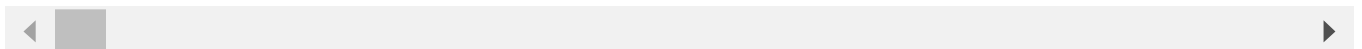
```
plt.hist(ads_selected)
plt.title('Histogram of ads selections')
plt.xlabel('ads')
plt.ylabel('Number of times each ad was selected by the selected by the algorithm')
```

Text(0, 0.5, 'Number of times each ad was selected by the selected by the algorithm')

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