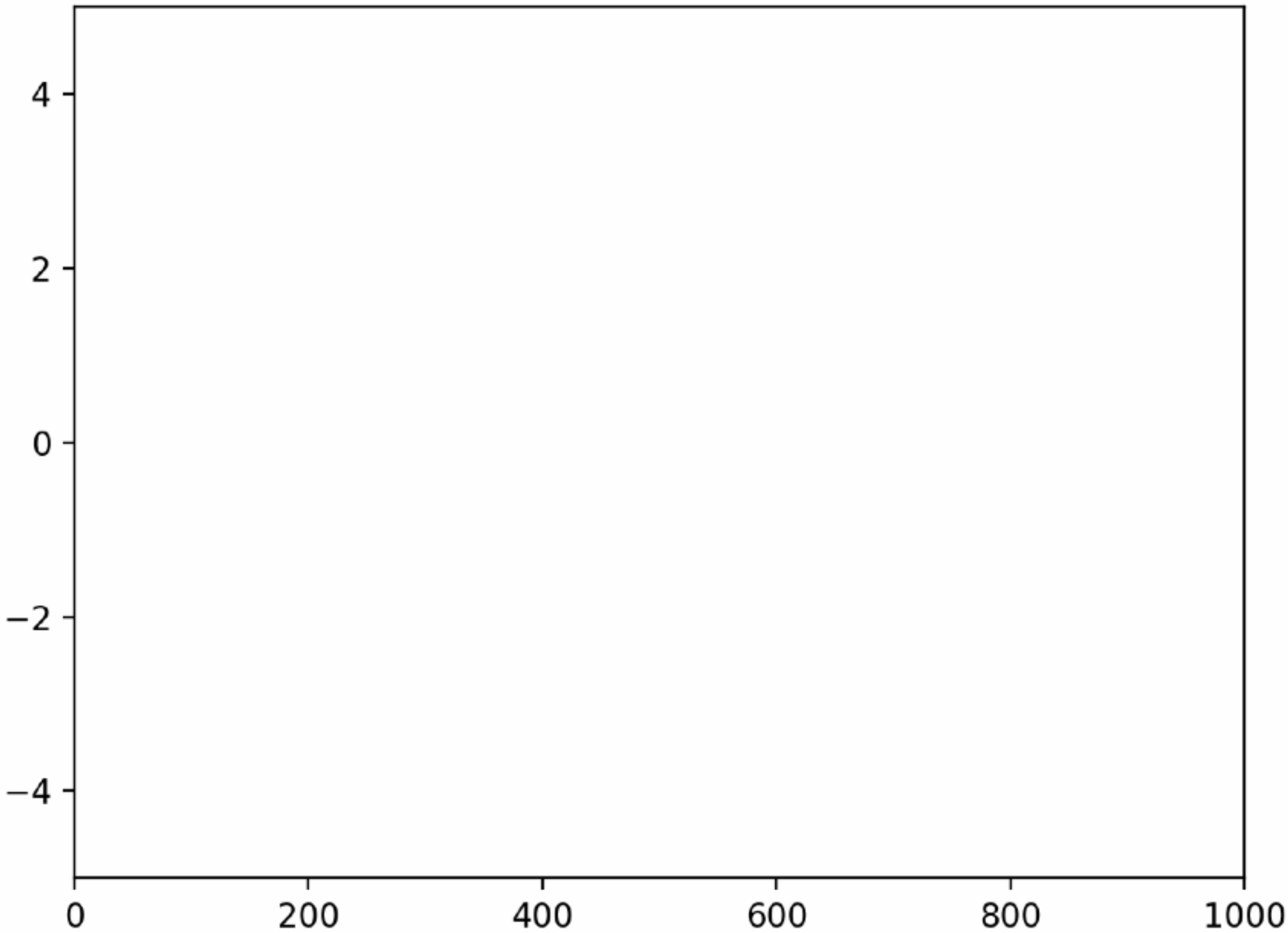
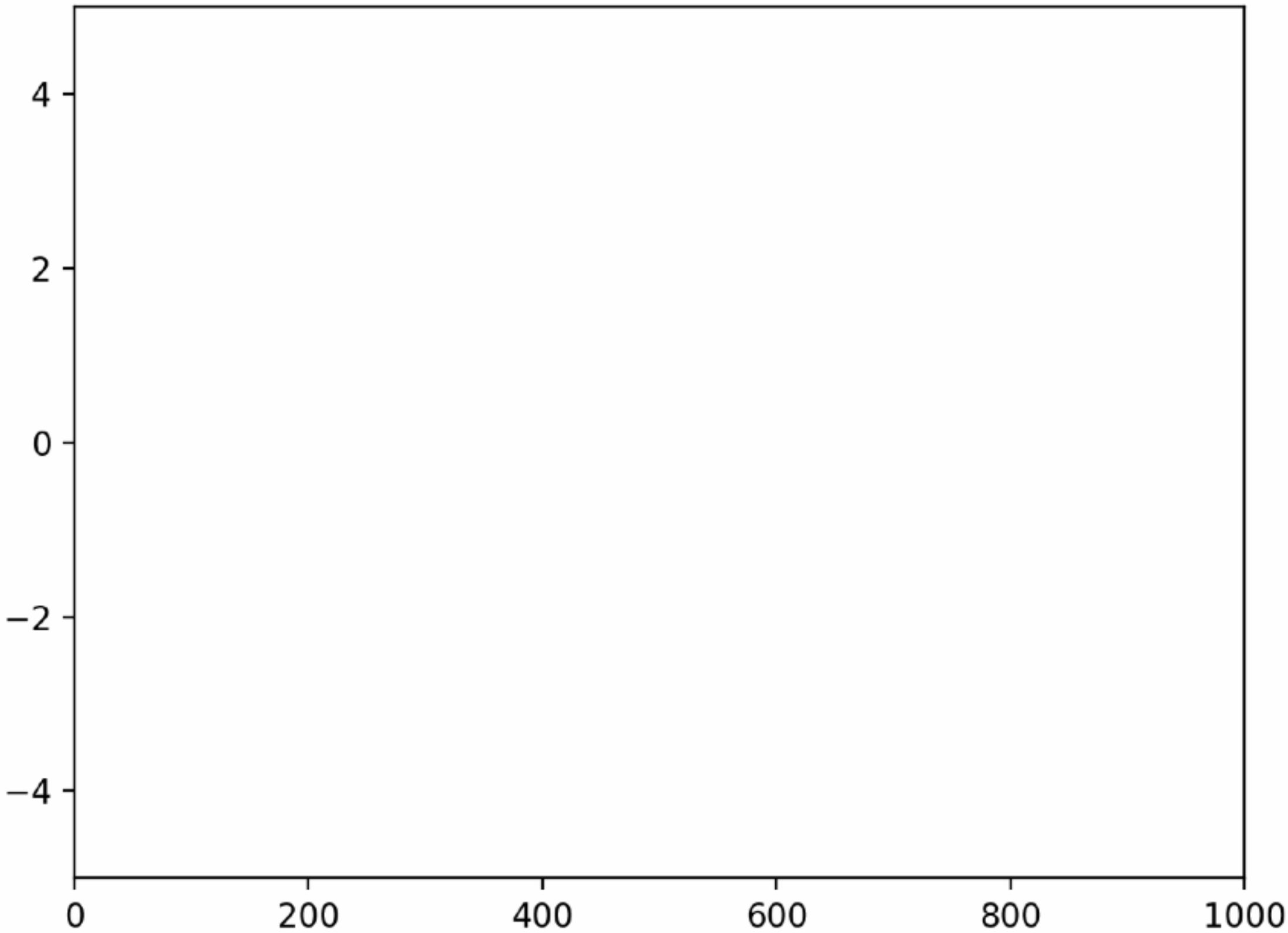
UCB working


4
2
0
−2
−4
0
200
400
600
800
1000

UCB working for two coins with probability of head 0.9 (red) and 0.5 (blue)


4
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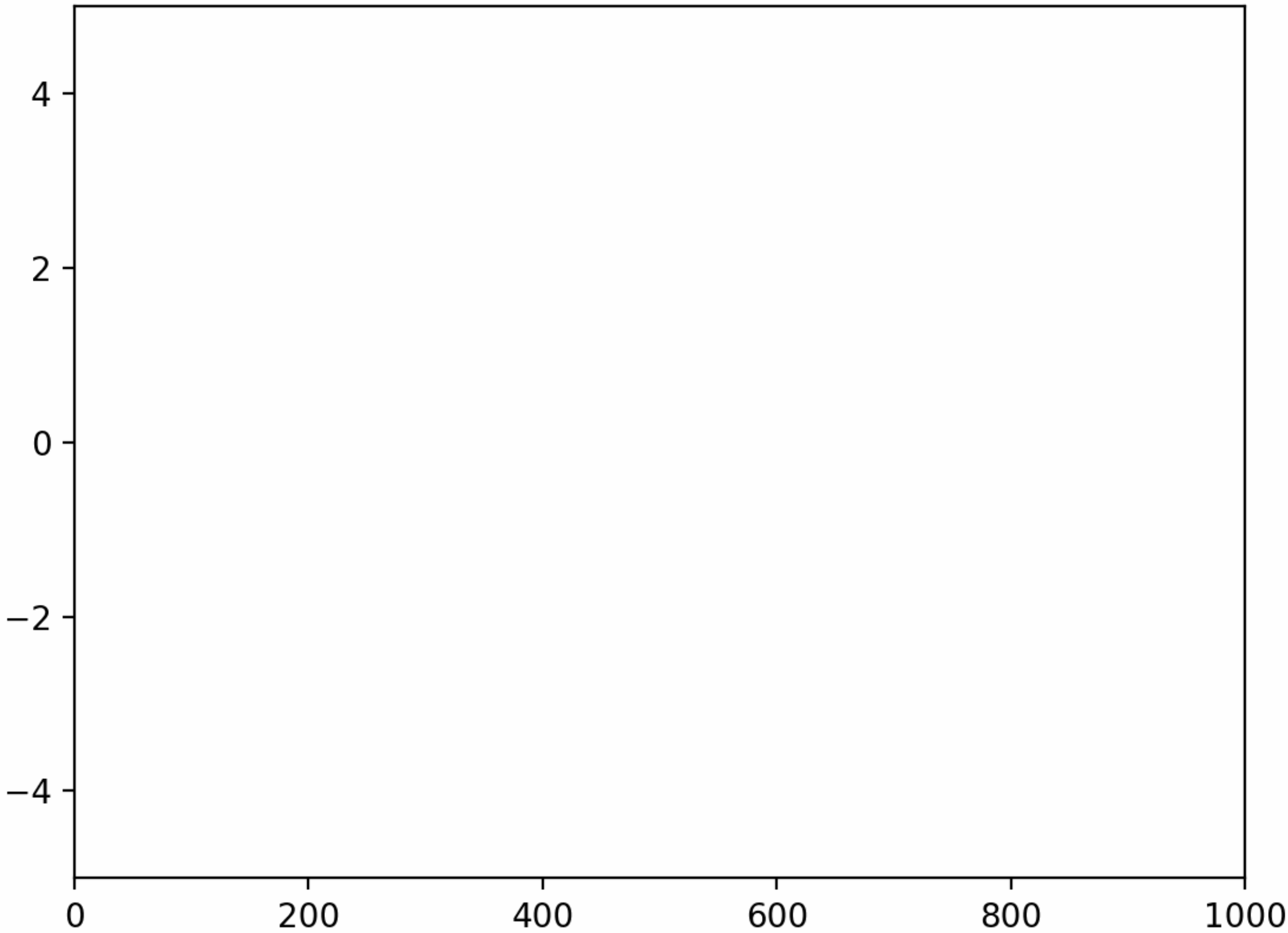
4
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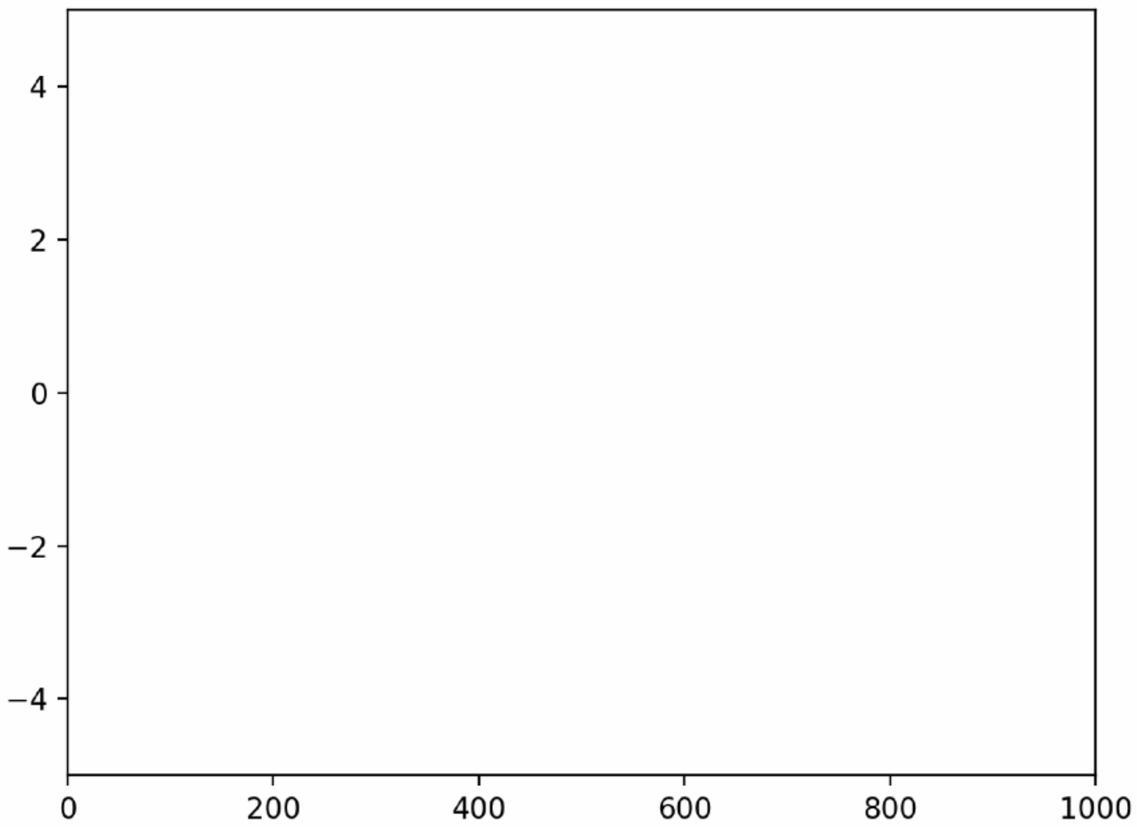
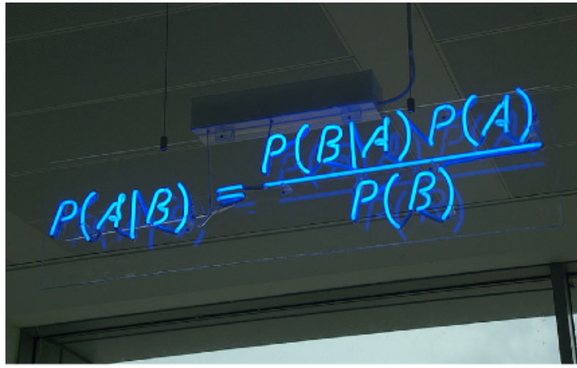
UCB working



UCB working for two coins with probability of head 0.9 (red) and 0.5 (blue)

Bayesian Inference



- Suppose you have data sampled from a parametric distribution with parameter θ.
- Our goal is to estimate θ, given the data samples.

$$\mathbb{P}(\theta \,|\, \text{data}) \;=\; \frac{\mathbb{P}(\text{data} \,|\, \theta) \times \mathbb{P}(\theta)}{\mathbb{P}(\text{data})}$$

- Posterior distribution: Represents what you know after having seen the data.
- Likelihood: How likely is the data generated from the distribution with parameter θ
- Prior: Represents what you know before seeing the data.
- $\mathbb{P}(\text{data}) \;=\; \int \mathbb{P}(\text{data} \,|\, \theta)\mathbb{P}(\theta) d\theta$: This is a normalisation factor, which is independent of θ. In general, this quantity is very difficult to compute.