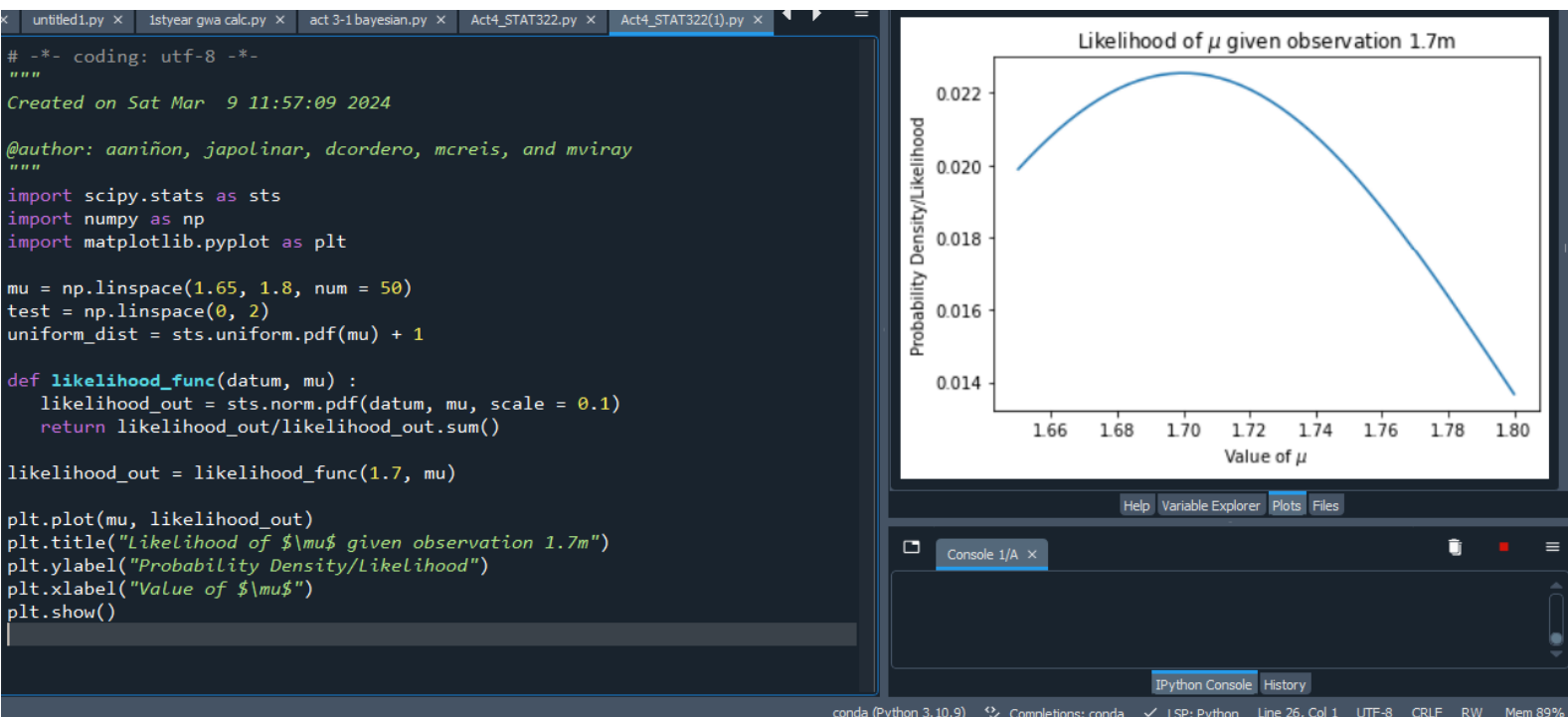
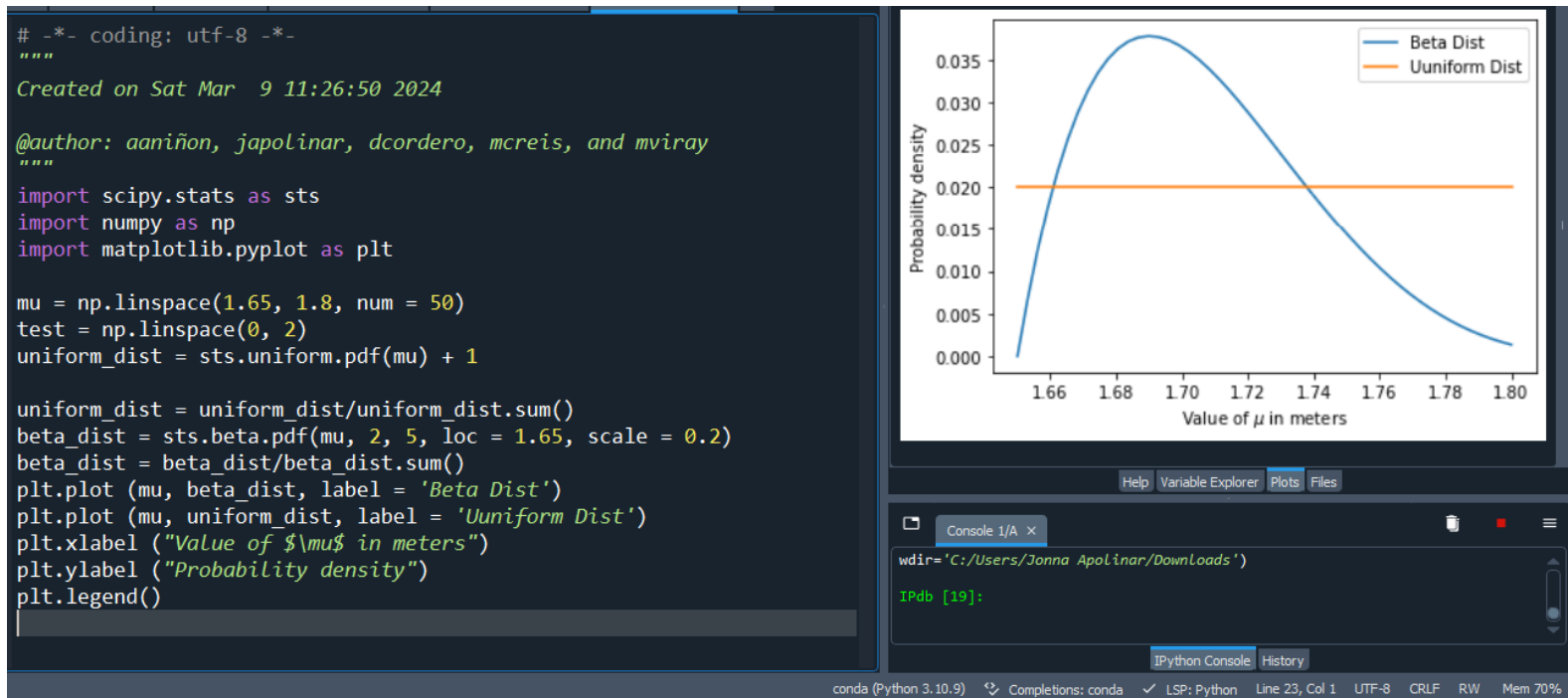


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CAS-05-601A
Bayesian Statistics

ACTIVITY 5



```

# -*- coding: utf-8 -*-
"""
Created on Sat Mar  9 11:57:09 2024

@author: aaniñon, japolinar, dcordero, mcreis, and mviray
"""
import scipy.stats as sts
import scipy as sp
import numpy as np
import matplotlib.pyplot as plt

mu = np.linspace(1.65, 1.8, num = 50)
test = np.linspace(0, 2)
uniform_dist = sts.uniform.pdf(mu) + 1

uniform_dist = uniform_dist/uniform_dist.sum()
beta_dist = sts.beta.pdf(mu, 2, 5, loc = 1.65, scale = 0.2)
beta_dist = beta_dist/beta_dist.sum()
plt.plot(mu, beta_dist, label = 'Beta Dist')
plt.plot(mu, uniform_dist, label = 'Uniform Dist')
plt.xlabel("Value of  $\mu$  in meters")
plt.ylabel("Probability density")
plt.legend()

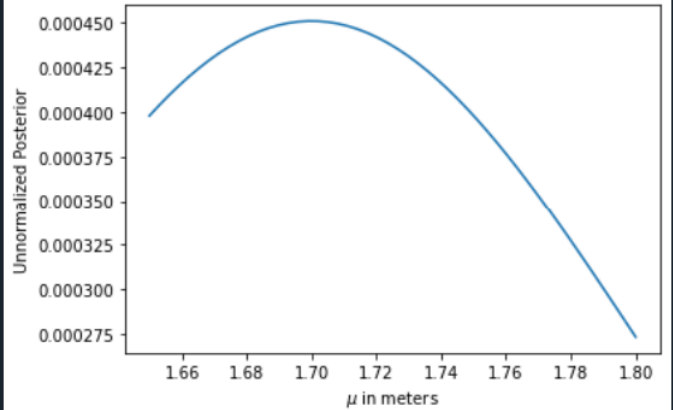
def likelihood_func(datum, mu):
    likelihood_out = sts.norm.pdf(datum, mu, scale = 0.1)
    return likelihood_out/likelihood_out.sum()

likelihood_out = likelihood_func(1.7, mu)

plt.plot(mu, likelihood_out)
plt.title("Likelihood of  $\mu$  given observation 1.7m")
plt.ylabel("Probability Density/Likelihood")
plt.xlabel("Value of  $\mu$ ")
plt.show()

unnormalized_posterior = likelihood_out * uniform_dist
plt.plot(mu, unnormalized_posterior)
plt.xlabel(" $\mu$  in meters")
plt.ylabel("Unnormalized Posterior")
plt.show()

```



Help Variable Explorer Plots Files

Console 1/A ×

```

In [16]: runfile('C:/Users/Jonna Apolinar/Downloads/Act4_STAT322(1).py',
wdir='C:/Users/Jonna Apolinar/Downloads')

In [17]:

```

IPython Console History

conda (Python 3.10.9) Completions: conda LSP: Python Line 42, Col 1 UTF-8 CRLF RW Mem 85%