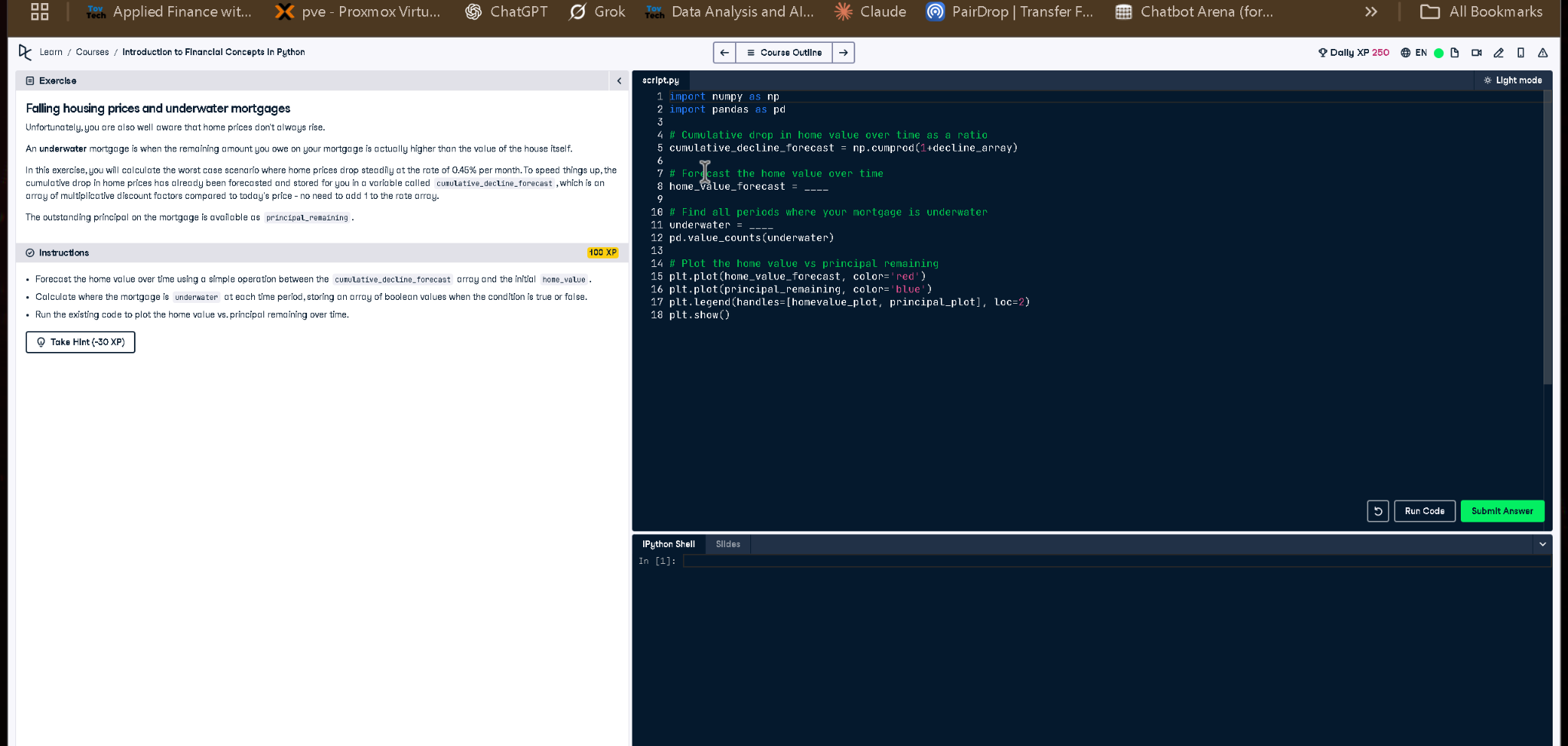
Falling Housing Prices and Underwater Mortgages - Full Answer



# Full Code Answer:

import numpy as np  
import pandas as pd  
  
# Cumulative drop in home value over time as a ratio  
cumulative\_decline\_forecast = np.cumprod(1 + decline\_array)  
  
# Forecast the home value over time  
home\_value\_forecast = home\_value \* cumulative\_decline\_forecast  
  
# Find all periods where your mortgage is underwater  
underwater = principal\_remaining > home\_value\_forecast  
pd.value\_counts(underwater)  
  
# Plot the home value vs principal remaining  
plt.plot(home\_value\_forecast, color='red')  
plt.plot(principal\_remaining, color='blue')  
plt.legend(handles=[homevalue\_plot, principal\_plot], loc=2)  
plt.show()

# Question:

How do we calculate home value decline over time and determine when a mortgage becomes underwater?

# 20-word Explanation (Question):

An underwater mortgage occurs when the remaining principal surpasses current home value due to declining property market trends.

# Answer:

We use np.cumprod() to calculate declining home values, then check if principal\_remaining exceeds home\_value\_forecast for underwater status.

# 20-word Explanation (Answer):

By multiplying home value with cumulative decline factors, we compare it with principal\_remaining to find underwater mortgage periods.