Physionet Data Access Demo

```
import wfdb
import matplotlib.pyplot as plt
import numpy as np

def download_and_plot_ecg():
    # Download sample data from MIT-BIH Arrhythmia Database
    # Record '100' is a commonly used example
    record = wfdb.rdrecord('100', pn_dir='mitdb')

# Get the signal data
signals = record.p_signal

# Create time array (in seconds)
time = np.arange(len(signals)) / record.fs  # record.fs is the sampling
frequency

# Create the plot
plt.figure(figsize=(12, 6))

# Plot first lead of ECG
plt.plot(time[:1000], signals[:1000, 0])  # Plot first 1000 samples

# Add labels and title
plt.xlabel('Time (seconds)')
plt.ylabel('Amplitude (mV)')
plt.title('Sample ECG from MIT-BIH Database')
plt.grid(True)

# Show the plot
plt.show()

# Print some basic information about the recording
print(f"Record duration: {len(signals)/record.fs:.2f} seconds")
print(f"Sampling frequency: {record.fs} Hz")
print(f"Number of signals: {record.n_sig}")
print(f"Signal names: {record.sig_name}")

if __name__ == "__main__":
    try:
        print("Downloading and plotting ECG data from PhysioNet...")
        download_and_plot_ecg()
    except Exception as e:
        print(f"An error occurred: {str(e)}")
```