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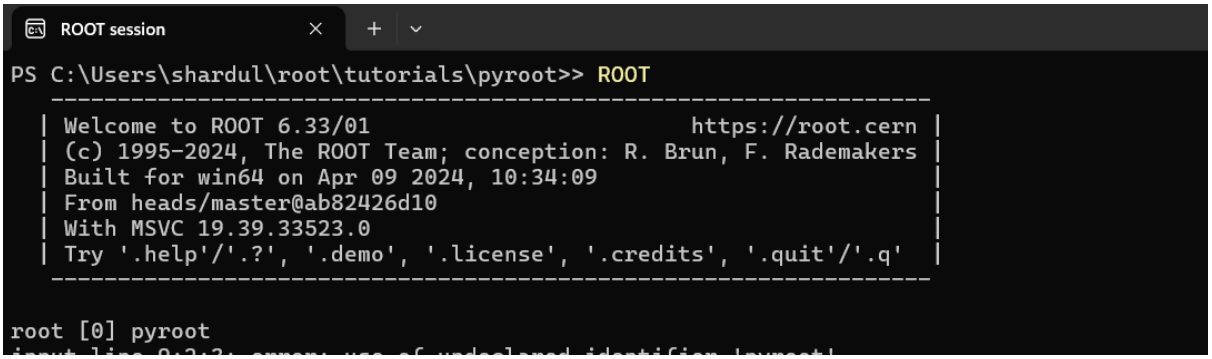
Task: Exercise 1
Project: Histogram Pythonization
Improve Python Interface for Histograms

Exercise 1 - Write Python code to fill ROOT histogram

After having familiarized with ROOT and ROOT histograms, provide some Python code doing the following, using the less code possible and being most efficient in term of computations (CPU time).

Generate a vector of data (e.g. numpy) normally distributed with mean 10 and standard deviation 3. Fill a ROOT histogram with the obtained data.

Corresponding code file to be found here : `root\tutorials\tasks\Exercise1\test1.py`



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test1.py 1 ●

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```python
from ROOT import TH1F,TCanvas
import numpy as np

# Generate data (efficiently using vectorized operations)
num_data = 10000
data = np.random.normal(loc=10, scale=3, size=num_data)
weights = np.random.rand(num_data)

# Create ROOT histogram (using efficient TH1D constructor)
hist = TH1F("my_hist", "Normally Distributed Data", 50, 4, 16)  # 50 bins from 4 to 16
for i in range(num_data):
    hist.Fill(data[i], weights[i])
# Fill the histogram (efficient vectorized filling)
c1=TCanvas()
# Optional: Draw the histogram (using efficient TH1D::Draw)
hist.Draw()
# ROOT.gApplication.Run()
input()
```