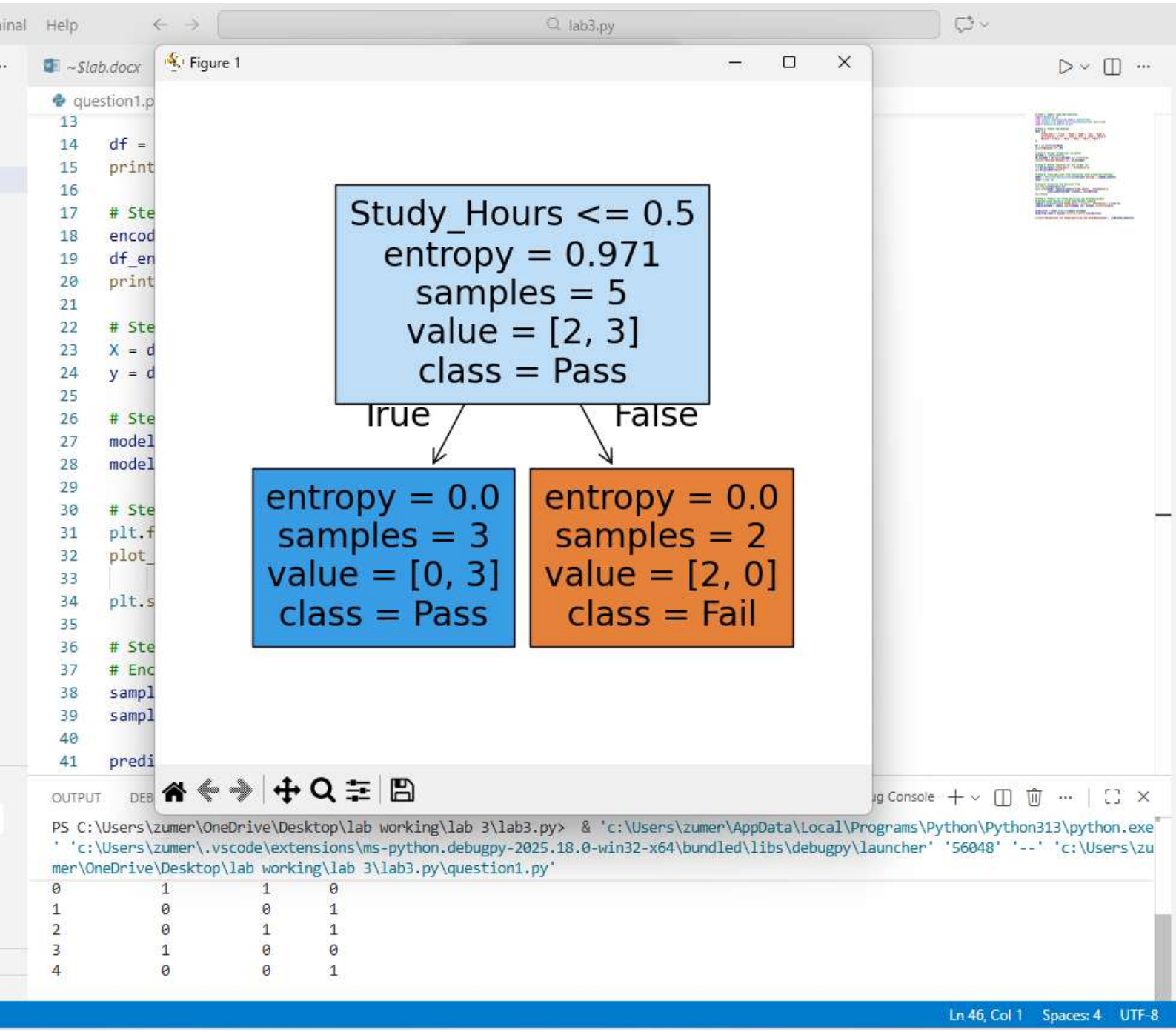



```
PS C:\Users\zumer\OneDrive\Desktop\lab working\lab 3\lab3.py>  & 'c:\Users\zumer\AppData\Local\Programs\Python\Python313\python.exe
' 'c:\Users\zumer\.vscode\extensions\ms-python.debugpy-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '56048' '--' 'c:\Users\zu
mer\OneDrive\Desktop\lab working\lab 3\lab3.py\question1.py'
0          1          1      0
1          0          0      1
2          0          1      1
3          1          0      0
4          0          0      1
```

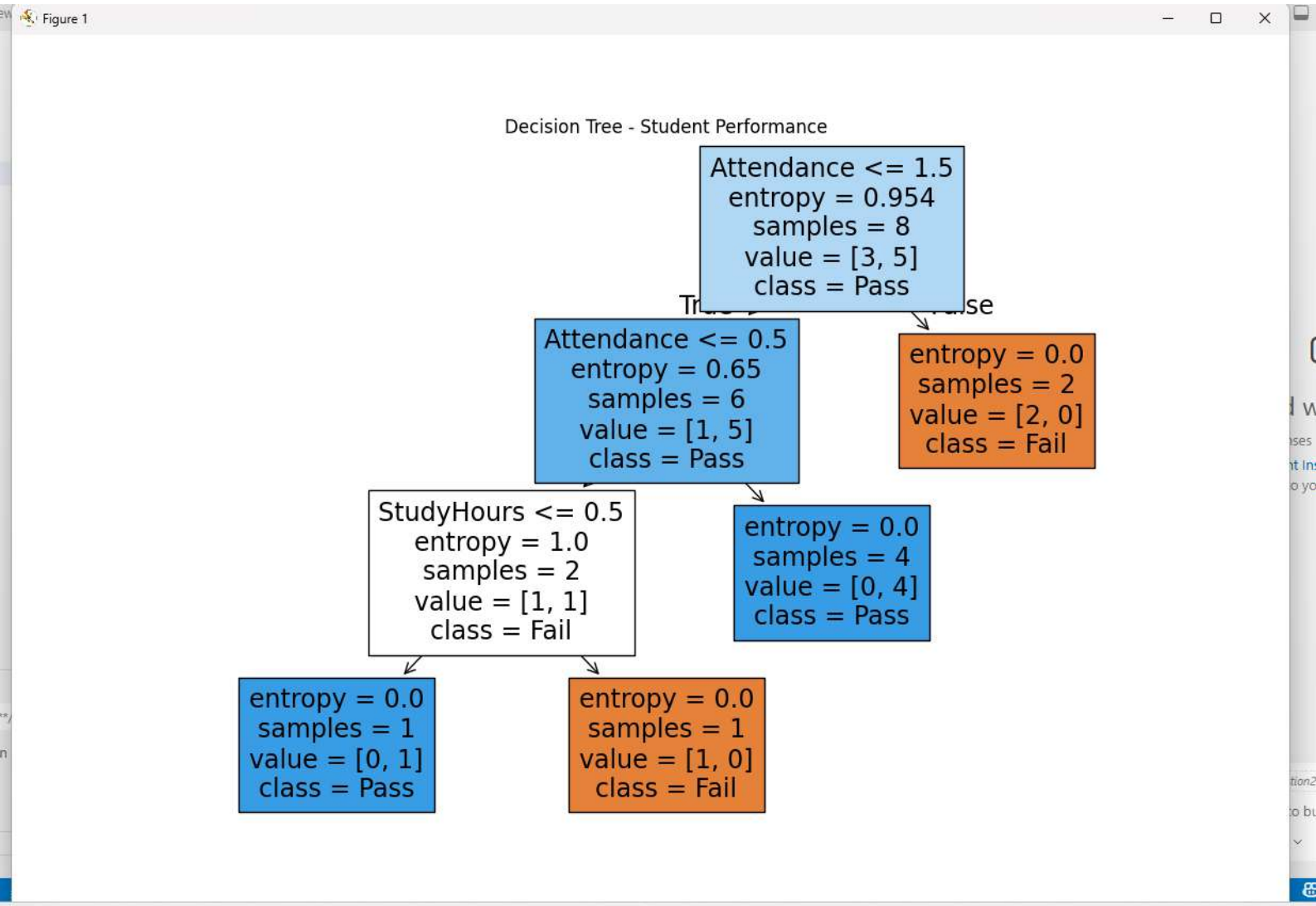
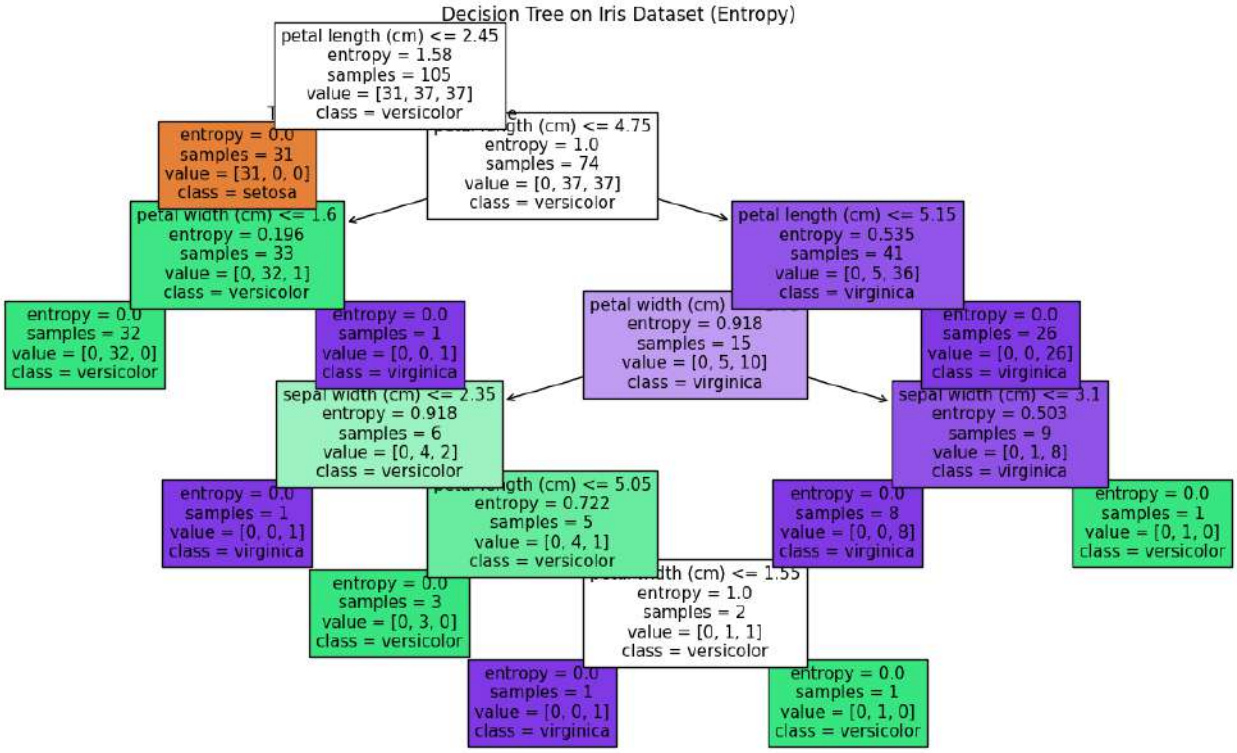
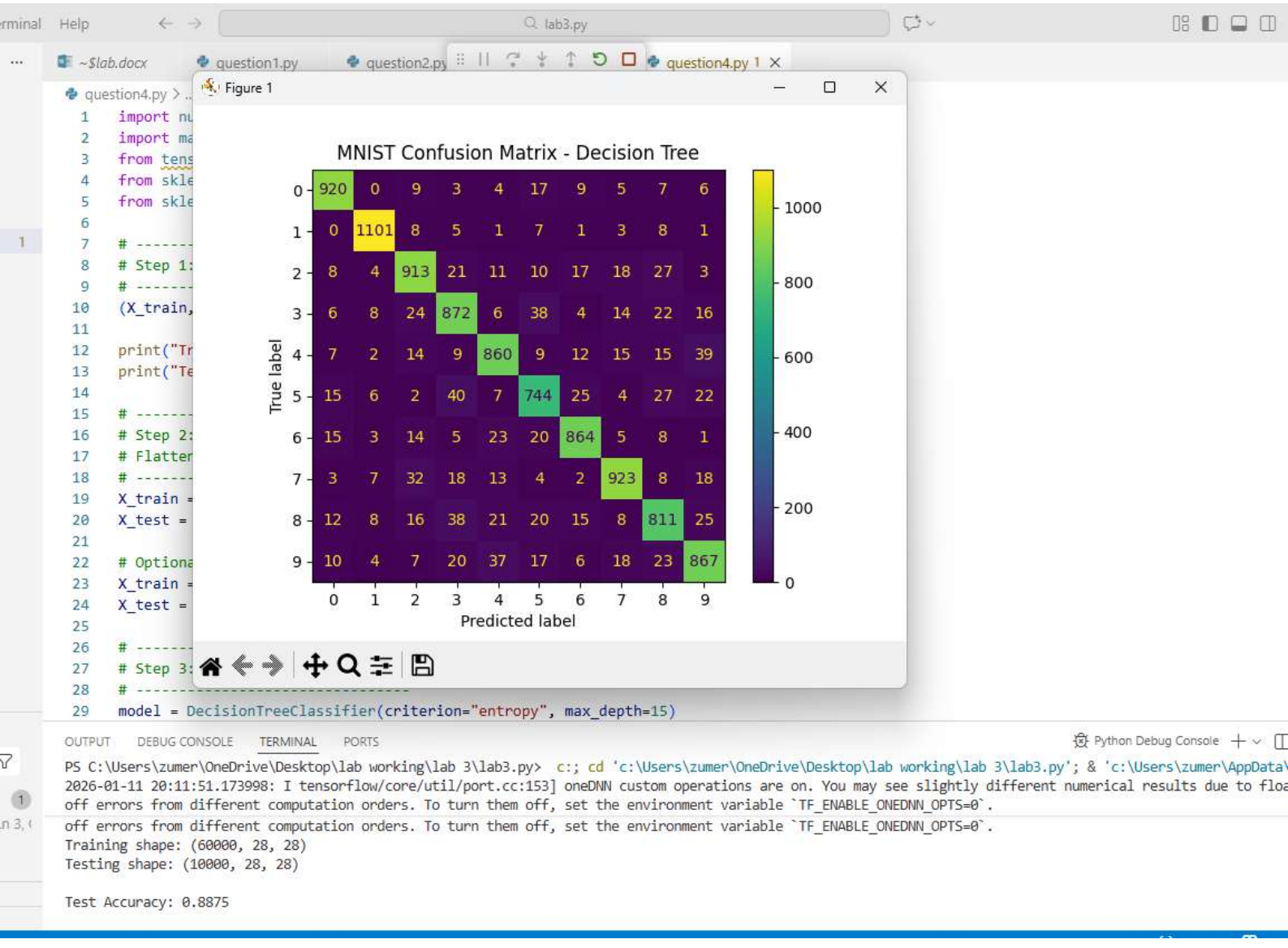


Figure 1
Decision Tree - Student Performance
Attendance <= 1.5
entropy = 0.954
samples = 8
value = [3, 5]
class = Pass
Attendance <= 0.5
entropy = 0.65
samples = 6
value = [1, 5]
class = Pass
entropy = 0.0
samples = 2
value = [2, 0]
class = Fail
StudyHours <= 0.5
entropy = 1.0
samples = 2
value = [1, 1]
class = Fail
entropy = 0.0
samples = 4
value = [0, 4]
class = Pass
entropy = 0.0
samples = 1
value = [0, 1]
class = Pass
entropy = 0.0
samples = 1
value = [1, 0]
class = Fail


Decision Tree on Iris Dataset (Entropy)
petal length (cm) <= 2.45
entropy = 1.58
samples = 105
value = [31, 37, 37]
class = versicolor
entropy = 0.0
samples = 31
value = [31, 0, 0]
class = setosa
gth (cm) <= 4.75
entropy = 1.0
samples = 74
value = [0, 37, 37]
class = versicolor
petal width (cm) <= 1.6
entropy = 0.196
samples = 33
value = [0, 32, 1]
class = versicolor
petal length (cm) <= 5.15
entropy = 0.535
samples = 41
value = [0, 5, 36]
class = virginica
entropy = 0.0
samples = 32
value = [0, 32, 0]
class = versicolor
entropy = 0.0
samples = 1
value = [0, 0, 1]
class = virginica
petal width (cm)
entropy = 0.918
samples = 15
value = [0, 5, 10]
class = virginica
entropy = 0.0
samples = 26
value = [0, 0, 26]
class = virginica
sepal width (cm) <= 2.35
entropy = 0.918
samples = 6
value = [0, 4, 2]
class = versicolor
sepal width (cm) <= 3.1
entropy = 0.503
samples = 9
value = [0, 1, 8]
class = virginica
entropy = 0.0
samples = 1
value = [0, 0, 1]
class = virginica
gth (cm) <= 5.05
entropy = 0.722
samples = 5
value = [0, 4, 1]
class = versicolor
entropy = 0.0
samples = 8
value = [0, 0, 8]
class = virginica
entropy = 0.0
samples = 1
value = [0, 1, 0]
class = versicolor
entropy = 0.0
samples = 3
value = [0, 3, 0]
class = versicolor
dth (cm) <= 1.55
entropy = 1.0
samples = 2
value = [0, 1, 1]
class = versicolor
entropy = 0.0
samples = 1
value = [0, 0, 1]
class = virginica
entropy = 0.0
samples = 1
value = [0, 1, 0]
class = versicolor




```
import nu
import ma
from tens
from skle
from skle

# -------
# Step 1:
# -------
(X_train,

print("Tr
print("Te

# -------
# Step 2:
# Flatter
# -------
X_train =
X_test =

# Optiona
X_train =
X_test =

# -------
# Step 3:
# --------------------------------
model = DecisionTreeClassifier(criterion="entropy", max_depth=15)
```

OUTPUT DEBUG CONSOLE TERMINAL PORTS

Python Debug Console

```
PS C:\Users\zumer\OneDrive\Desktop\lab working\lab 3\lab3.py>  c:; cd 'c:\Users\zumer\OneDrive\Desktop\lab working\lab 3\lab3.py'; & 'c:\Users\zumer\AppData\
2026-01-11 20:11:51.173998: I tensorflow/core/util/port.cc:153] oneDNN custom operations are on. You may see slightly different numerical results due to floa
off errors from different computation orders. To turn them off, set the environment variable `TF_ENABLE_ONEDNN_OPTS=0`.
off errors from different computation orders. To turn them off, set the environment variable `TF_ENABLE_ONEDNN_OPTS=0`.
Training shape: (60000, 28, 28)
Testing shape: (10000, 28, 28)

Test Accuracy: 0.8875
```