Training Phase & Output of Detection Report and Evaluation Matrix:

```
train_lof_detector("binary_dataset.csv")

Training LOF detector from binary_dataset.csv...
Training completed with 467 samples
Feature matrix shape: (467, 10)
Model saved to lof_model.pkl
True
```

```
PERFORMANCE METRICS
==============================
Accuracy:  0.8000
F1 Score:  0.7778
Precision: 0.8750
Recall:    0.7000

Confusion Matrix:
TP: 7  FP: 1
FN: 3  TN: 9
```

```
DETECTION RESULTS
================================================
Binary              Verdict  Score          Status
------------------------------------------------
head                MALWARE  -1179948859.413 FALSE
less                LEGIT    6.807          TRUE
cat                 LEGIT    6.203          TRUE
d33c0f71...63.elf   MALWARE  -1.000         TRUE
ls                  LEGIT    7.035          TRUE
2f54e7f5...9a.elf   MALWARE  -1.000         TRUE
dir                 LEGIT    7.040          TRUE
dfa47a2d...ae.elf   MALWARE  -1.000         TRUE
243efb26...94.elf   LEGIT    1.586          FALSE
808aef66...a6.elf   MALWARE  -1.000         TRUE
cp                  LEGIT    6.952          TRUE
cut                 LEGIT    7.024          TRUE
mv                  LEGIT    6.955          TRUE
873c279f...9b.elf   LEGIT    2.165          FALSE
date                LEGIT    6.451          TRUE
0c3be1ea...ae.elf   MALWARE  -1.000         TRUE
31e93d1e...ad.elf   LEGIT    1.586          FALSE
6feaf27c...aa.elf   MALWARE  -1.000         TRUE
11fe2e39...a0.elf   MALWARE  -1.000         TRUE
echo                LEGIT    7.046          TRUE
------------------------------------------------
```