Warm-up A — Supervised learning

Goal: See how labels let us grade a detector on cyber tables.

Data: `cyber-datasets/` (next to this notebook)
Library: `seas8414-teach`

Run cells top to bottom. Short answers go in the exit ticket at the end.

In [ ]:
```
import seas8414_teach as teach
teach.setup()
print(teach.__version__)
teach.story_title_card(
    "Warm-up A · Supervised learning",
    "Labels exist → we can grade a detector.",
    ["Discover labels from data", "Ideal matrix first", "Then real model + m
)
```

In [ ]:
```
teach.list_tables()
```

In [ ]:
```
teach.story_sl_data("kdd_network.csv")
```

In [ ]:
```
fit = teach.story_ideal_vs_real("kdd_network.csv")
```

In [ ]:
```
teach.show_metrics(fit)
```

In [ ]:
```
# Optional: needs OPENAI_API_KEY in ~/.env — skip if unset
teach.ask(
    "SOC class: interpret class balance and why accuracy can mislead.",
    catch_rate=fit.catch_rate,
    precision=fit.alert_precision,
    accuracy=fit.accuracy,
    alert_class=fit.alert_class,
)
```

In [ ]:
```
board = []
board.append(teach.demo_method("logreg", "email_spam.csv", "spam"))
board.append(teach.demo_method("tree", "ssh_bruteforce.csv", "bruteforce"))
board.append(teach.demo_method("forest", "phishing_urls.csv", "phishing"))
board.append(teach.demo_method("svm", "dns_tunnel.csv", "dns_tunnel"))
board.append(teach.demo_method("knn", "port_scan.csv", "port_scan"))
board.append(teach.demo_method("boost", "malware_pe.csv", "malware"))
board.append(teach.demo_method("nb", "web_attack.csv", "web_attack"))
teach.story_methods_board(board)
```

Exit ticket

1. What is ham?

2. Where do CSVs live?
3. Name one FN and one FP.