In [ ]:
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# Retail Anomaly Detection – Mini Report
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# Date: October 10, 2025
# Goal: Detect unusual sales transactions using Isolation Forest
```

In [ ]:
```
import pandas as pd
import numpy as np
from sklearn.ensemble import IsolationForest
import matplotlib.pyplot as plt

print("Libraries imported successfully.")
```

In [ ]:
```
data = {
    "day": range(1, 26),
    "sales": [200, 220, 250, 260, 300, 280, 275, 290, 400, 410,
              420, 430, 390, 410, 300, 310, 320, 330, 1005,
              340, 350, 355, 360, 365, 500]
}
df = pd.DataFrame(data)
df.head()
```

In [ ]:
```
model = IsolationForest(contamination=0.1, random_state=42)
df["anomaly"] = model.fit_predict(df[["sales"]])
anomalies = df[df["anomaly"] == -1]
anomalies
```

In [ ]:
```
plt.figure(figsize=(10,5))
plt.plot(df["day"], df["sales"], label="Sales", marker='o')
plt.scatter(anomalies["day"], anomalies["sales"], color='red', label="Anomalies"
plt.title("Retail Sales Anomaly Detection")
plt.xlabel("Day")
plt.ylabel("Sales ($)")
plt.legend()
plt.show()
```

In [ ]:
```
print("Detected anomalies:")
display(anomalies)
print("\nSummary: Isolation Forest successfully flagged outlier sales points.")
```