```
# Install NumPy 1.24 and restart runtime (important for scikit-surprise)
!pip install numpy==1.24.4 --force-reinstall
```

```
Collecting numpy==1.24.4
  Downloading numpy-1.24.4-cp311-cp311-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (5.6 kB)
Downloading numpy-1.24.4-cp311-cp311-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (17.3 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 17.3/17.3 MB 69.0 MB/s eta 0:00:00
Installing collected packages: numpy
  Attempting uninstall: numpy
    Found existing installation: numpy 2.0.2
    Uninstalling numpy-2.0.2:
      Successfully uninstalled numpy-2.0.2
ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behaviour is the sou
tensorflow 2.18.0 requires numpy<2.1.0,>=1.26.0, but you have numpy 1.24.4 which is incompatible.
blosc2 3.3.4 requires numpy>=1.26, but you have numpy 1.24.4 which is incompatible.
jaxlib 0.5.1 requires numpy>=1.25, but you have numpy 1.24.4 which is incompatible.
xarray-einstats 0.9.0 requires numpy>=1.25, but you have numpy 1.24.4 which is incompatible.
treescope 0.1.9 requires numpy>=1.25.2, but you have numpy 1.24.4 which is incompatible.
thinc 8.3.6 requires numpy<3.0.0,>=2.0.0, but you have numpy 1.24.4 which is incompatible.
jax 0.5.2 requires numpy>=1.25, but you have numpy 1.24.4 which is incompatible.
pymc 5.23.0 requires numpy>=1.25.0, but you have numpy 1.24.4 which is incompatible.
Successfully installed numpy-1.24.4
WARNING: The following packages were previously imported in this runtime:
  [numpy]
You must restart the runtime in order to use newly installed versions.
```

RESTART SESSION

```
!pip install scikit-surprise
```

```
Collecting scikit-surprise
  Downloading scikit_surprise-1.1.4.tar.gz (154 kB)
     ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 154.4/154.4 kB 4.1 MB/s eta 0:00:00
  Installing build dependencies ... done
  Getting requirements to build wheel ... done
  Preparing metadata (pyproject.toml) ... done
Requirement already satisfied: joblib>=1.2.0 in /usr/local/lib/python3.11/dist-packages (from scikit-surprise) (1.5.1)
Requirement already satisfied: numpy>=1.19.5 in /usr/local/lib/python3.11/dist-packages (from scikit-surprise) (1.24.4)
Requirement already satisfied: scipy>=1.6.0 in /usr/local/lib/python3.11/dist-packages (from scikit-surprise) (1.15.3)
Building wheels for collected packages: scikit-surprise
  Building wheel for scikit-surprise (pyproject.toml) ... done
  Created wheel for scikit-surprise: filename=scikit_surprise-1.1.4-cp311-cp311-linux_x86_64.whl size=2469542 sha256=716bf13b495116
  Stored in directory: /root/.cache/pip/wheels/2a/8f/6e/7e2899163e2d85d8266daab4aa1cdabec7a6c56f83c015b5af
Successfully built scikit-surprise
Installing collected packages: scikit-surprise
Successfully installed scikit-surprise-1.1.4
```

```
# Import libraries
from surprise import Dataset, Reader, SVD
from surprise.model_selection import train_test_split
from surprise.accuracy import rmse
import pandas as pd

# Sample data
data_dict = {
    "userId": [1, 1, 1, 2, 2, 3, 3, 3, 4, 4],
    "itemId": [101, 102, 103, 101, 104, 102, 103, 105, 104, 105],
    "rating": [5, 3, 4, 4, 2, 2, 5, 4, 3, 5]
}
df = pd.DataFrame(data_dict)

# Define reader and load dataset
reader = Reader(rating_scale=(1, 5))
data = Dataset.load_from_df(df[['userId', 'itemId', 'rating']], reader)

# Train-test split
trainset, testset = train_test_split(data, test_size=0.25)

# Train model using SVD
model = SVD()
model.fit(trainset)

# Predict and evaluate
predictions = model.test(testset)
print("📉 RMSE (Root Mean Squared Error):")
rmse(predictions)
```

```
📉 RMSE (Root Mean Squared Error):
RMSE: 1.5646
```

```
1.5646299220819189
```

```
# Predict rating user 1 would give to item 104
uid = str(1)   # User ID
iid = str(104) # Item ID
prediction = model.predict(uid, iid)
print(f"\n🔮 Predicted rating for user {uid} on item {iid}: {prediction.est:.2f}")
```

```
🔮 Predicted rating for user 1 on item 104: 4.14
```

Start coding or generate with AI.