In [3]:
```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from numpy.linalg import *
```

In [4]:
```
from sklearn.datasets import load_iris

iris = load_iris()
x = iris.data
y = iris.target
x.shape
```

Out[4]: (150, 4)

In [5]:
```
from scipy.linalg import svd

# 假设 x 是已定义的矩阵
u, s, v = svd(x)
print(u,s,v)
```

```
[[-0.06161685  0.12961144  0.0021386  ... -0.09343429 -0.09573864
  -0.08085465]
 [-0.05807094  0.11101978  0.07067239 ...  0.03690405 -0.03153954
   0.01309526]
 [-0.05676305  0.11796647  0.00434255 ...  0.03066199  0.19531473
   0.13569909]
 ...
 [-0.0940593  -0.0498297  -0.04144001 ...  0.98181631 -0.02194514
  -0.00894446]
 [-0.09488961 -0.05610123 -0.21297821 ... -0.02155617  0.94178018
  -0.02971961]
 [-0.08847836 -0.0515697  -0.09575285 ... -0.0086052  -0.03021088
   0.9736599 ]] [95.95991387 17.76103366  3.46093093  1.88482631] [[-0.75110816 -
0.38008617 -0.51300886 -0.16790754]
 [ 0.2841749   0.5467445  -0.70866455 -0.34367081]
 [ 0.50215472 -0.67524332 -0.05916621 -0.53701625]
 [ 0.32081425 -0.31725607 -0.48074507  0.75187165]]
```

In [6]:
```
# newdata = u[:,2]
# fig = plt.figure()
# ax = fig.add_subplot(1,1,1)
# for i in range():
#     ax.scatter(newdata[i,0],newdata[i,1])
# plt.xlabel("svd1")
# plt.ylabel('svd2')
# plt.show()


# 假设 u 是经过 SVD 分解后的矩阵
newdata = u[:, :2]  # 选择前两列，形成 2D 数据
fig = plt.figure()
ax = fig.add_subplot(1, 1, 1)

for i in range(len(newdata)):
    ax.scatter(newdata[i, 0], newdata[i, 1])

plt.xlabel("svd1")
```

```
plt.ylabel("svd2")
plt.show()
```