

```
import pandas as pd
df = pd.DataFrame(data = X, columns = iris.feature_names)
df.head()
```

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2

```
# Train SVM models with different hyperparameters and find the best accuracy
for params in hyperparameters:
    model = SVC(kernel=params['kernel'], gamma=params['gamma'], C=params['C'], decision_function_shape='ovr')
    model.fit(X_train, y_train)
    accuracy = model.score(X_test, y_test)
    support_vectors = model.n_support_.sum()
    print(f"For hyperparameters: {params}, Accuracy: {accuracy}",
          "Total Support Vectors: {support_vectors}")
    if accuracy > best_accuracy:
        best_accuracy = accuracy
        best_model = model
        best_support_vectors = support_vectors
```

```
For hyperparameters: {'kernel': 'rbf', 'gamma': 0.5, 'C': 0.01}, Accuracy: 0.3 Total Support Vectors: {support_vectors}
For hyperparameters: {'kernel': 'rbf', 'gamma': 0.5, 'C': 1}, Accuracy: 1.0 Total Support Vectors: {support_vectors}
For hyperparameters: {'kernel': 'rbf', 'gamma': 0.5, 'C': 10}, Accuracy: 1.0 Total Support Vectors: {support_vectors}
```

```
print("Best accuracy:", best_accuracy)
print("Total support vectors on test data:", best_support_vectors)
```

```
Best accuracy: 1.0
Total support vectors on test data: 39
```