PRAKTIKUM FISIKA KOMPUTASI

SUPPORT VECTOR MACHINE

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KODE PROGRAM

```
from sklearn import svm

x = [[0,0], [0,1], [1,0], [1,1]]
y = [0, 0, 0, 1]

clf = svm.SVC()
clf.fit(x,y)

print("Logika AND Metode Support Vector Machine (SVM)")
print("Logika = Prediksi")
print("0 0 = ",clf.predict([[0,0]]))
print("0 1 = ",clf.predict([[0,1]]))
print("1 0 = ",clf.predict([[1,0]]))
print("1 1 = ",clf.predict([[1,1]]))
```

```
Logika AND Metode Support Vector Machine (SVM)
Logika = Prediksi
0 0 =  [0]
0 1 =  [0]
1 0 =  [0]
1 1 =  [1]
```

```
import numpy as np
import pandas as pd
from sklearn import svm
from google.colab import drive
import matplotlib.pyplot as plt

drive.mount('/content/drive')

file_path = '/content/drive/My Drive/svm.txt'

Database = pd.read_csv(file_path, sep=",", header=0)
```

```
x = Database[['a', 'b']]
y = Database['Target']

clf = svm.SVC()
clf.fit(x.values,y)

y_pred = clf.predict(x.values)
```

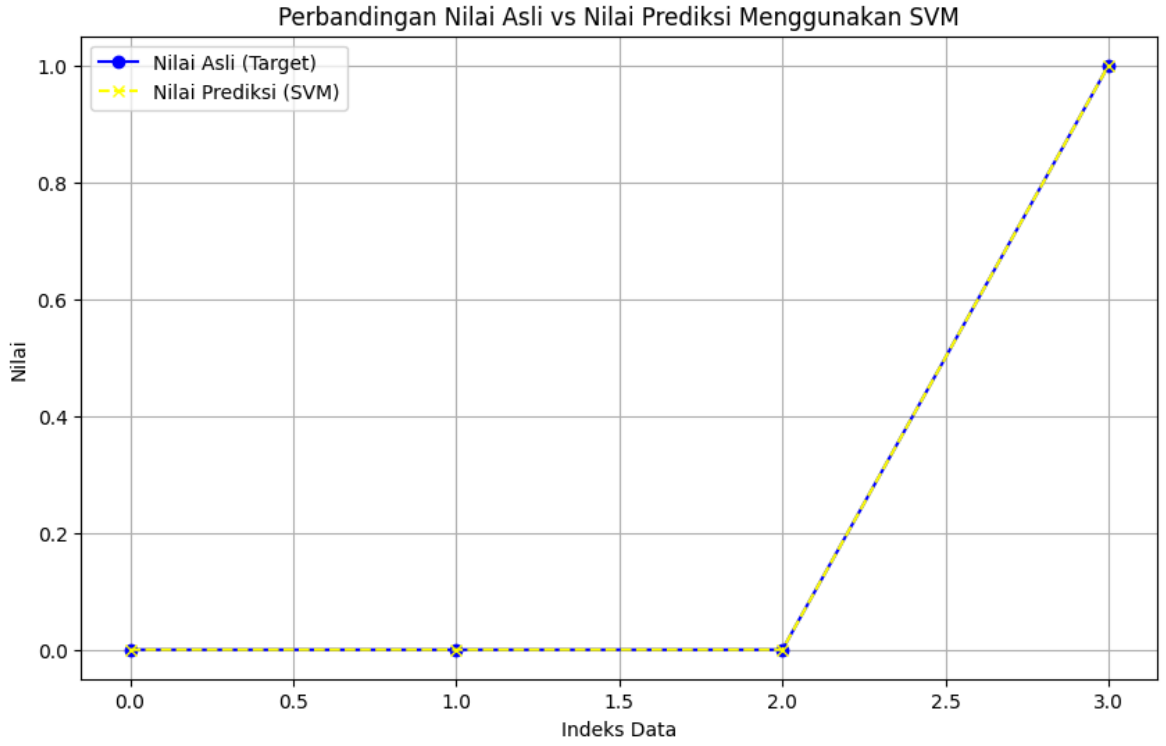
```
print("Hasil prediksi:")
for i, pred in enumerate(y_pred):
    print(f"{x.iloc[i, 0]} , {x.iloc[i, 1]} , {pred}")

plt.figure(figsize=(10, 6))
plt.plot(range(len(y)), y, 'o-', label='Nilai Asli (Target)',
color='blue')
plt.plot(range(len(y_pred)), y_pred, 'x--', label='Nilai Prediksi
(SVM)', color='yellow')

plt.xlabel('Indeks Data')
plt.ylabel('Nilai')
plt.title('Perbandingan Nilai Asli vs Nilai Prediksi Menggunakan
SVM')
plt.legend()
plt.grid()
plt.show()
```

Hasil prediksi:

```
0,0,0
0,1,0
1,0,0
1,1,1
```




```
def Trapezoid(a,b,f):
    n = 100
    def trapezoid(f, a, b, n=100):
        h = (b-a)/n
        sum = 0.0
        for i in range (1,n):
            x = a+i*h
            sum = 0.0
            for i in range (1,n):
                x = a+i*h
                sum = sum +f(x)
            integral = (h/2)*(f(a)+2*sum+f(b))
            return integral
    integral = trapezoid(f, a, b, n)
    print(a,",",b,",",round(integral,2))

for i in range(0,5):
    Trapezoid(i+2,i+4,lambda x: 2*x)
```

```
2 , 4 , 12.0
3 , 5 , 16.0
4 , 6 , 20.0
```

```
5 , 7 , 24.0
6 , 8 , 28.0
```

```
import numpy as np
import pandas as pd
from sklearn import svm
from google.colab import drive
import matplotlib.pyplot as plt

drive.mount('/content/drive')

file_path = '/content/drive/My Drive/Trapezoid.txt'
```

PENJELASAN

Dari hasil kode program yang dijalankan, didapatkan terdapat grafik pada support vector machine serta trapezoid yang berbeda. Hal ini dikarenakan terdapat hasil prediksi yang berbeda pada turunan yang berbeda sehingga mendapatkan nilai prediksi dan grafik yang berbeda.