

PROGRAM:

```
import numpy as np
from scipy.cluster.hierarchy import dendrogram, linkage
import matplotlib.pyplot as plt

# Generate sample data
np.random.seed(42)
data = np.random.rand(10, 2) # 10 points in 2D space

# Perform hierarchical clustering using linkage
linkage_matrix = linkage(data, method='ward')

# Plot the dendrogram
dendrogram(linkage_matrix, labels=[f'Point {i+1}' for i in range(len(data))])
plt.title('Hierarchical Clustering Dendrogram')
plt.xlabel('Points')
plt.ylabel('Distance')
plt.show()
```

OUTPUT: