**Exercise 10**

**Aim**

To develop a data visualization program using the Iris dataset to display various plots using the Seaborn library.

**Algorithm**

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| Step 1 | **:** | Start the Program. |
| Step 2 | **:** | Import the seaborn library |
| Step 3 | **:** | Load the iris Dataset |
| Step 4 | **:** | Create a Pair plot, Heatmap, Violin plot, Strip plot |
| Step 5 | **:** | Display all the plots |
| Step 6 | **:** | Stop the Program. |

**Program:**

import seaborn as sns

# Load the Iris dataset

iris = sns.load\_dataset('iris')

# Display the first few rows of the dataset

print(iris.head())

# Pairplot to visualize relationships between all features

plt.figure(figsize=(10, 6))

sns.pairplot(iris, hue='species', markers=["o", "s", "D"])

plt.suptitle('Pairplot of Iris Dataset', y=1.02)

plt.show()

# Heatmap to visualize the correlation between features

plt.figure(figsize=(8, 6))

correlation = iris.corr(numeric\_only=True) # Only take numeric columns

sns.heatmap(correlation, annot=True, cmap='coolwarm', fmt='.2f')

plt.title('Correlation Heatmap of Iris Features')

plt.show()

# Violin plot for petal length and width by species

plt.figure(figsize=(10, 6))

sns.violinplot(data=iris, x='species', y='petal\_length', hue='species', inner='quartile', legend=False)

plt.title('Violin Plot of Petal Length by Species')

plt.xlabel('Species')

plt.ylabel('Petal Length (cm)')

plt.show()

# Strip plot to show distribution of petal width by species

plt.figure(figsize=(10, 6))

sns.stripplot(data=iris, x='species', y='petal\_width', jitter=True, hue='species', legend=False)

plt.title('Strip Plot of Petal Width by Species')

plt.xlabel('Species')

plt.ylabel('Petal Width (cm)')

plt.show()

Output

**Result**

The Data Visualization Program was successfully executed using the Seaborn library and displayed various plots of the Iris dataset.