In [129... **import** pandas **as** pd import numpy as np import matplotlib.pyplot as plt import matplotlib as mlt import seaborn as sns In [130... df=pd.read_csv(R'D:\DS BY pRAKASH SENAPATHI SIR\11th,12th APR\11th,12th\IRIS DATASET _ ADVANCE VISUALIZATION _ EDA 2\Iris.csv') Id SepalLengthCm SepalWidthCm PetalLengthCm PetalWidthCm Out[130]: Species Iris-setosa 0 1 5.1 3.5 1.4 0.2 **1** 2 4.9 3.0 1.4 0.2 Iris-setosa **2** 3 4.7 3.2 1.3 0.2 Iris-setosa 3 4 4.6 3.1 1.5 Iris-setosa **4** 5 5.0 3.6 1.4 0.2 Iris-setosa **145** 146 6.7 3.0 5.2 2.3 Iris-virginica 6.3 2.5 5.0 **146** 147 1.9 Iris-virginica **147** 148 6.5 3.0 5.2 2.0 Iris-virginica 5.4 **148** 149 6.2 3.4 2.3 Iris-virginica **149** 150 5.9 3.0 5.1 1.8 Iris-virginica 150 rows × 6 columns In [131... df.head() Id SepalLengthCm SepalWidthCm PetalLengthCm PetalWidthCm Species Out[131]: 0 1 5.1 3.5 1.4 0.2 Iris-setosa 4.9 1.4 3.0 0.2 Iris-setosa **2** 3 4.7 3.2 1.3 0.2 Iris-setosa 4.6 3.1 1.5 0.2 Iris-setosa **4** 5 5.0 3.6 1.4 0.2 Iris-setosa df.shape (150, 6) Out[132]: df.drop('Id',axis=1) $SepalLengthCm \hspace{0.2cm} SepalWidthCm \hspace{0.2cm} PetalLengthCm \hspace{0.2cm} PetalWidthCm \\$ **Species** Out[133]: 3.5 5.1 1.4 Iris-setosa 1 4.9 3.0 1.4 0.2 Iris-setosa 2 4.7 3.2 1.3 0.2 Iris-setosa 3 4.6 3.1 1.5 0.2 Iris-setosa 3.6 1.4 4 5.0 0.2 Iris-setosa 3.0 145 6.7 5.2 2.3 Iris-virginica 146 6.3 2.5 5.0 1.9 Iris-virginica 3.0 5.2 147 6.5 2.0 Iris-virginica 148 6.2 3.4 5.4 2.3 Iris-virginica 149 5.1 5.9 1.8 Iris-virginica 150 rows × 5 columns df=df.drop('Id',axis=1) Univariate Analysis df.loc[df['Species']=="Iris-setosa"] $SepalLengthCm \quad SepalWidthCm \quad PetalLengthCm \quad PetalWidthCm$ **Species** Out[135]: 5.1 3.5 1.4 0.2 Iris-setosa 1 4.9 3.0 1.4 0.2 Iris-setosa 2 4.7 3.2 1.3 0.2 Iris-setosa 0.2 Iris-setosa 4.6 3.1 1.5 4 5.0 3.6 1.4 0.2 Iris-setosa 5.4 3.9 1.7 0.4 Iris-setosa 6 4.6 3.4 1.4 0.3 Iris-setosa 5.0 3.4 1.5 0.2 Iris-setosa 4.4 2.9 1.4 0.2 Iris-setosa 4.9 3.1 1.5 0.1 Iris-setosa 10 5.4 3.7 1.5 0.2 Iris-setosa 11 4.8 3.4 1.6 0.2 Iris-setosa 12 4.8 3.0 1.4 0.1 Iris-setosa 13 4.3 3.0 1.1 0.1 Iris-setosa 14 5.8 4.0 1.2 0.2 Iris-setosa 15 5.7 4.4 1.5 0.4 Iris-setosa 16 5.4 3.9 1.3 0.4 Iris-setosa 17 5.1 3.5 1.4 0.3 Iris-setosa 18 1.7 5.7 3.8 0.3 Iris-setosa 19 5.1 3.8 1.5 0.3 Iris-setosa 20 5.4 3.4 1.7 0.2 Iris-setosa 21 5.1 3.7 1.5 0.4 Iris-setosa 22 4.6 3.6 1.0 0.2 Iris-setosa 23 5.1 3.3 1.7 0.5 Iris-setosa 24 4.8 3.4 1.9 0.2 Iris-setosa 25 5.0 3.0 1.6 0.2 Iris-setosa 26 5.0 3.4 1.6 0.4 Iris-setosa 27 5.2 3.5 1.5 0.2 Iris-setosa 28 5.2 3.4 1.4 0.2 Iris-setosa 29 4.7 3.2 1.6 0.2 Iris-setosa 30 0.2 Iris-setosa 4.8 3.1 1.6 31 5.4 3.4 1.5 0.4 Iris-setosa 32 1.5 0.1 Iris-setosa 5.2 4.1 33 0.2 Iris-setosa 5.5 4.2 1.4 34 4.9 3.1 1.5 0.1 Iris-setosa 35 5.0 3.2 1.2 0.2 Iris-setosa 36 5.5 3.5 1.3 0.2 Iris-setosa 37 4.9 3.1 1.5 0.1 Iris-setosa 39 5.1 1.5 0.2 Iris-setosa 40 5.0 3.5 1.3 0.3 Iris-setosa 41 4.5 2.3 1.3 0.3 Iris-setosa 42 1.3 4.4 3.2 0.2 Iris-setosa 43 5.0 3.5 1.6 0.6 Iris-setosa 44 5.1 3.8 1.9 0.4 Iris-setosa 45 4.8 3.0 1.4 0.3 Iris-setosa 46 5.1 3.8 1.6 0.2 Iris-setosa 47 4.6 3.2 1.4 0.2 Iris-setosa 48 1.5 5.3 3.7 0.2 Iris-setosa 49 5.0 3.3 1.4 0.2 Iris-setosa df_setosa=df.loc[df['Species']=="Iris-setosa"] df_virginica=df.loc[df['Species']=="Iris-virginica"] df_versicolor=df.loc[df['Species']=="Iris-versicolor"] In [137... df_setosa SepalLengthCm SepalWidthCm PetalLengthCm PetalWidthCm **Species** Out[137]: 5.1 3.5 1.4 0.2 Iris-setosa 4.9 1.4 3.0 0.2 Iris-setosa 2 4.7 3.2 1.3 0.2 Iris-setosa 4.6 1.5 3.1 0.2 Iris-setosa 4 5.0 3.6 1.4 0.2 Iris-setosa 5.4 3.9 1.7 0.4 Iris-setosa 6 4.6 3.4 1.4 0.3 Iris-setosa 3.4 1.5 5.0 0.2 Iris-setosa 8 4.4 2.9 1.4 0.2 Iris-setosa 4.9 1.5 3.1 0.1 Iris-setosa 10 5.4 3.7 1.5 0.2 Iris-setosa 11 4.8 1.6 3.4 0.2 Iris-setosa 12 4.8 3.0 1.4 0.1 Iris-setosa 13 1.1 4.3 3.0 0.1 Iris-setosa 14 5.8 4.0 1.2 0.2 Iris-setosa 15 5.7 4.4 1.5 0.4 Iris-setosa 16 5.4 3.9 1.3 0.4 Iris-setosa 17 5.1 1.4 3.5 0.3 Iris-setosa 18 5.7 3.8 1.7 0.3 Iris-setosa 19 5.1 1.5 3.8 0.3 Iris-setosa 20 5.4 3.4 1.7 0.2 Iris-setosa 21 1.5 5.1 3.7 0.4 Iris-setosa 22 4.6 3.6 1.0 0.2 Iris-setosa 23 1.7 3.3 5.1 0.5 Iris-setosa 24 4.8 3.4 1.9 0.2 Iris-setosa 25 5.0 3.0 1.6 0.2 Iris-setosa 26 5.0 3.4 1.6 0.4 Iris-setosa 27 1.5 5.2 3.5 0.2 Iris-setosa 28 5.2 3.4 1.4 0.2 Iris-setosa 29 3.2 1.6 4.7 0.2 Iris-setosa 30 4.8 3.1 1.6 0.2 Iris-setosa 31 5.4 3.4 1.5 0.4 Iris-setosa 32 5.2 4.1 1.5 0.1 Iris-setosa 33 5.5 4.2 1.4 0.2 Iris-setosa 34 4.9 3.1 1.5 0.1 Iris-setosa 35 3.2 1.2 5.0 0.2 Iris-setosa 36 5.5 3.5 1.3 0.2 Iris-setosa 37 1.5 4.9 3.1 0.1 Iris-setosa 38 4.4 3.0 1.3 0.2 Iris-setosa 39 3.4 1.5 5.1 0.2 Iris-setosa 40 5.0 3.5 1.3 0.3 Iris-setosa 41 4.5 2.3 1.3 0.3 Iris-setosa 42 4.4 3.2 1.3 0.2 Iris-setosa 43 5.0 3.5 1.6 0.6 Iris-setosa 44 5.1 3.8 1.9 0.4 Iris-setosa 45 4.8 3.0 1.4 0.3 Iris-setosa 46 5.1 3.8 1.6 0.2 Iris-setosa 47 3.2 1.4 4.6 0.2 Iris-setosa 48 5.3 3.7 1.5 0.2 Iris-setosa 49 5.0 3.3 1.4 0.2 Iris-setosa df_virginica Out[138]: $SepalLengthCm \quad SepalWidthCm \quad PetalLengthCm \quad PetalWidthCm$ **Species** 100 6.3 3.3 6.0 2.5 Iris-virginica 101 5.8 2.7 5.1 1.9 Iris-virginica 102 7.1 3.0 5.9 2.1 Iris-virginica 103 6.3 2.9 5.6 1.8 Iris-virginica 104 6.5 3.0 5.8 2.2 Iris-virginica 3.0 2.1 Iris-virginica 105 7.6 6.6 106 4.9 2.5 4.5 1.7 Iris-virginica 7.3 2.9 6.3 107 1.8 Iris-virginica 108 6.7 2.5 5.8 1.8 Iris-virginica 109 7.2 3.6 6.1 2.5 Iris-virginica 110 6.5 3.2 5.1 2.0 Iris-virginica 111 2.7 1.9 Iris-virginica 6.4 5.3 112 6.8 3.0 5.5 2.1 Iris-virginica 113 5.7 2.5 5.0 2.0 Iris-virginica 114 5.8 2.8 5.1 2.4 Iris-virginica 3.2 5.3 115 6.4 2.3 Iris-virginica 116 6.5 3.0 5.5 1.8 Iris-virginica 117 7.7 3.8 6.7 2.2 Iris-virginica 118 7.7 2.6 6.9 2.3 Iris-virginica 2.2 1.5 Iris-virginica 119 6.0 5.0 3.2 120 6.9 5.7 2.3 Iris-virginica 121 4.9 2.0 Iris-virginica 5.6 122 7.7 2.8 6.7 2.0 Iris-virginica 123 6.3 2.7 4.9 1.8 Iris-virginica 124 6.7 3.3 5.7 2.1 Iris-virginica 125 3.2 1.8 Iris-virginica 7.2 6.0 2.8 126 6.2 4.8 1.8 Iris-virginica 127 3.0 6.1 4.9 1.8 Iris-virginica 128 6.4 2.8 5.6 2.1 Iris-virginica 129 3.0 5.8 7.2 1.6 Iris-virginica 130 7.4 2.8 6.1 1.9 Iris-virginica 7.9 3.8 131 6.4 2.0 Iris-virginica 132 6.4 2.8 5.6 2.2 Iris-virginica 133 6.3 2.8 5.1 1.5 Iris-virginica 134 6.1 2.6 5.6 1.4 Iris-virginica 3.0 135 7.7 6.1 2.3 Iris-virginica 136 6.3 5.6 2.4 Iris-virginica 137 3.1 5.5 6.4 1.8 Iris-virginica 138 6.0 3.0 4.8 1.8 Iris-virginica 6.9 3.1 5.4 139 2.1 Iris-virginica 140 3.1 5.6 6.7 2.4 Iris-virginica 2.3 Iris-virginica 141 6.9 3.1 5.1 142 5.8 2.7 5.1 1.9 Iris-virginica 143 6.8 3.2 5.9 2.3 Iris-virginica 144 6.7 3.3 5.7 2.5 Iris-virginica 3.0 5.2 145 6.7 2.3 Iris-virginica 146 6.3 2.5 5.0 1.9 Iris-virginica 6.5 3.0 5.2 147 2.0 Iris-virginica 148 6.2 3.4 5.4 2.3 Iris-virginica 149 5.9 3.0 5.1 1.8 Iris-virginica df_versicolor In [139... SepalLengthCm SepalWidthCm PetalLengthCm PetalWidthCm Out[139]: **Species** 50 7.0 3.2 4.7 1.4 Iris-versicolor 51 6.4 3.2 4.5 1.5 Iris-versicolor 52 6.9 3.1 1.5 Iris-versicolor 4.9 53 5.5 2.3 4.0 1.3 Iris-versicolor 54 6.5 2.8 4.6 1.5 Iris-versicolor 55 5.7 2.8 4.5 1.3 Iris-versicolor 56 6.3 3.3 4.7 1.6 Iris-versicolor 57 4.9 2.4 3.3 1.0 Iris-versicolor 58 2.9 6.6 4.6 1.3 Iris-versicolor 59 5.2 2.7 3.9 1.4 Iris-versicolor 60 5.0 2.0 3.5 1.0 Iris-versicolor 61 5.9 3.0 4.2 1.5 Iris-versicolor 62 2.2 6.0 4.0 1.0 Iris-versicolor 63 2.9 6.1 4.7 1.4 Iris-versicolor 64 2.9 3.6 65 6.7 3.1 4.4 1.4 Iris-versicolor 66 4.5 5.6 3.0 1.5 Iris-versicolor 67 5.8 2.7 4.1 1.0 Iris-versicolor 68 6.2 2.2 4.5 1.5 Iris-versicolor 69 5.6 2.5 3.9 1.1 Iris-versicolor 70 5.9 3.2 4.8 1.8 Iris-versicolor 71 6.1 2.8 4.0 1.3 Iris-versicolor 72 6.3 2.5 4.9 1.5 Iris-versicolor 1.2 Iris-versicolor 73 6.1 2.8 4.7 74 6.4 2.9 4.3 1.3 Iris-versicolor 75 6.6 3.0 4.4 1.4 Iris-versicolor 76 6.8 2.8 4.8 1.4 Iris-versicolor 77 6.7 3.0 5.0 1.7 Iris-versicolor 78 6.0 2.9 4.5 1.5 Iris-versicolor 79 5.7 2.6 3.5 1.0 Iris-versicolor 80 5.5 2.4 3.8 1.1 Iris-versicolor 1.0 Iris-versicolor 81 5.5 2.4 3.7 82 2.7 5.8 3.9 1.2 Iris-versicolor 83 6.0 2.7 5.1 1.6 Iris-versicolor 84 5.4 3.0 4.5 1.5 Iris-versicolor 85 6.0 3.4 4.5 1.6 Iris-versicolor 86 6.7 3.1 4.7 1.5 Iris-versicolor 87 6.3 2.3 4.4 1.3 Iris-versicolor 88 3.0 4.1 5.6 1.3 Iris-versicolor 89 5.5 2.5 4.0 1.3 Iris-versicolor 90 5.5 2.6 4.4 1.2 Iris-versicolor 91 6.1 3.0 4.6 1.4 Iris-versicolor 92 5.8 2.6 4.0 1.2 Iris-versicolor 93 5.0 2.3 3.3 1.0 Iris-versicolor 94 5.6 2.7 4.2 1.3 Iris-versicolor 95 5.7 3.0 4.2 1.2 Iris-versicolor 96 5.7 2.9 4.2 1.3 Iris-versicolor 1.3 Iris-versicolor 97 6.2 2.9 4.3 98 2.5 5.1 3.0 1.1 Iris-versicolor 5.7 2.8 4.1 1.3 Iris-versicolor In [140... df.head() SepalLengthCm SepalWidthCm PetalLengthCm PetalWidthCm Species Out[140]: 0 0.2 Iris-setosa 5.1 3.5 1.4 1 4.9 3.0 1.4 0.2 Iris-setosa 2 4.7 3.2 0.2 Iris-setosa 1.3 4.6 3.1 1.5 0.2 Iris-setosa 4 5.0 3.6 1.4 0.2 Iris-setosa In [141... plt.plot(df_setosa['PetalLengthCm']) Out[141]: [<matplotlib.lines.Line2D at 0x224480c5430>] 1.8 1.6 1.2 1.0 10 20 30 50 plt.plot(df_setosa['SepalLengthCm']) [<matplotlib.lines.Line2D at 0x2244825baf0>] Out[142]: 5.8 5.6 5.4 5.2 5.0 4.8 4.6 50 10 30 40 20 In [143... plt.plot(df_setosa['PetalWidthCm']) [<matplotlib.lines.Line2D at 0x22448104760>] Out[143]: 0.6 0.5 0.4 0.3 0.2 0.1 20 30 50 plt.plot(df_setosa['SepalWidthCm']) [<matplotlib.lines.Line2D at 0x224481608e0>] Out[144]: 4.0 3.5 2.5 10 20 30 40 50 In [145... df.head() Out[145]: SepalLengthCm SepalWidthCm PetalLengthCm PetalWidthCm **Species** 0 5.1 3.5 1.4 0.2 Iris-setosa 1 4.9 3.0 0.2 Iris-setosa 1.4 2 4.7 3.2 1.3 0.2 Iris-setosa 3 4.6 3.1 1.5 0.2 Iris-setosa 0.2 Iris-setosa 4 5.0 3.6 1.4 plt.plot(df_setosa['SepalLengthCm'], np.zeros_like(df_setosa['SepalLengthCm']), 'o') In [146... plt.plot(df_virginica['SepalLengthCm'], np.zeros_like(df_virginica['SepalLengthCm']), 'o') plt.plot(df_versicolor['SepalLengthCm'], np.zeros_like(df_versicolor['SepalLengthCm']), 'o') plt.xlabel("Sepal Length") plt.show(), 0.04 0.02 0.00 -0.02-0.047.0 7.5 4.5 5.0 5.5 6.0 6.5 8.0 Sepal Length (None,) Out[146]: **Bivariant Analysis** sns.FacetGrid(df,hue="Species",size=3).map(plt.scatter,"SepalLengthCm","SepalWidthCm").add_legend();plt.show() In [147... C:\ProgramData\Anaconda3\lib\site-packages\seaborn\axisgrid.py:337: UserWarning: The `size` parameter has been renamed to `height`; please update your code. 4.5 4.0 SepalWidthCm Species Iris-setosa Iris-versicolor Iris-virginica 2.5 2.0 8 SepalLengthCm In [148... sns.FacetGrid(df, hue="Species", size=3).map(plt.scatter, "PetalLengthCm", "SepalWidthCm").add_legend();plt.show() C:\ProgramData\Anaconda3\lib\site-packages\seaborn\axisgrid.py:337: UserWarning: The `size` parameter has been renamed to `height`; please update your code. warnings.warn(msg, UserWarning) 4.5 4.0 SepalWidthCm Species Iris-setosa Iris-versicolor Iris-virginica 2.5 2.0 2 PetalLengthCm **Multivariant Analysis** sns.pairplot(df, hue="Species", size=2) C:\ProgramData\Anaconda3\lib\site-packages\seaborn\axisgrid.py:2076: UserWarning: The `size` parameter has been renamed to `height`; please update your code. warnings.warn(msg, UserWarning) <seaborn.axisgrid.PairGrid at 0x224482cfdf0> Out[149]: SepalLengthCm 4.5 2.5 SepalWidthCm 2.0 Species Iris-setosa Iris-versicolor PetalLengthCm N h 9 Iris-virginica 2.5 PetalWidthCm 0.0 8 8 0 2 PetalWidthCm SepalLengthCm SepalWidthCm PetalLengthCm In []: