ASSIGNMENT - 5

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import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
url = 'https://archive.ics.uci.edu/ml/machine-learning-databases/mushroom/agaricus-
lepiota.data'
data = pd.read_csv(url, header=None)

        columns = ['class', 'cap_shape', 'cap_surface', 'cap_color', 'bruises', 'odor',
                'gill_attachment', 'gill_spacing', 'gill_size', 'gill_color', 'stalk_shape',
                'stalk_root', 'stalk_surface_above_ring', 'stalk_surface_below_ring',
                'stalk_color_above_ring', 'stalk_color_below_ring', 'veil_type',
                'veil_color', 'ring_number', 'ring_type', 'spore_print_color',
                'population', 'habitat']
        data.columns = columns

def plot_countplot(data, x, title, xlabel, ylabel):
    plt.figure(figsize=(8, 6))
    sns.countplot(x=x, data=data)
    plt.title(title)
    plt.xlabel(xlabel)
    plt.ylabel(ylabel)
    plt.show()

def plot_pie(data, column, title):
    plt.figure(figsize=(8, 6))
    data[column].value_counts().plot.pie(autopct='%1.1f%%')
    plt.title(title)
    plt.ylabel("")
    plt.show()

def plot_barplot(data, x, title, xlabel, ylabel):
    plt.figure(figsize=(12, 6))
    sns.countplot(x=x, data=data)
    plt.title(title)
    plt.xlabel(xlabel)
    plt.ylabel(ylabel)
    plt.xticks(rotation=45)
    plt.show()

def plot_heatmap(data, title):
    plt.figure(figsize=(10, 8))
    corr = data.drop('class', axis=1).apply(lambda x: pd.factorize(x)[0]).corr()
    sns.heatmap(corr, cmap='coolwarm', annot=True)
    plt.title(title)
    plt.show()
```

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plot_countplot(data, 'class', "Mushroom Class Distribution", "Class", "Count")
plot_pie(data, 'cap_shape', "Cap Shape Distribution")
plot_barplot(data, 'cap_color', "Cap Color Distribution", "Cap Color", "Count")
plot_heatmap(data, "Correlation Matrix")
```