Assignment #1
Working with Numpy and Pandas

1. Create a 1-D Numpy array of all the years that lie between 1900 till 2020(included).
    1. Print the last 5 elements.
    2. Replace the first three years with number 1800.

2. Create a 4-D Numpy array filled with number 1 and shape (2, 3, 2, 3)
    1. Write two separate statements to show examples of indexing.
    2. Write two separate statements to show examples of slicing.
    3. Show how it can be reshaped to a Numpy array of shape (1, 6, 6, 1). Print the re-shaped Numpy array

Numpy Practice Script available at:
https://github.com/gatha-AUN/1-Basic-Introduction/blob/master/Jupyter%20Notebooks/numpy%20practice.ipynb

For Pandas, Please consult the scripts:
https://github.com/gatha-AUN/1-Basic-Introduction/blob/master/Jupyter%20Notebooks/iris_dataset.ipynb
https://github.com/gatha-AUN/2-Data-Preprocessing/blob/master/Jupyter%20Notebooks/EDA_using_Pandas.ipynb

3. Read the given CSV file () using Pandas.
    1. Print the Names and Types of the columns using Pandas built-in function.
    2. Print the statistical summary of the dataset.
    3. Plot a histogram of attribute **Popularity**.
    4. Plot the histogram of top-ten **Artists** with highest number of rows in the dataset.
    5. Print the count distribution of the attribute **Genre**?
    6. Plot a Pie-chart to show distribution of attribute **Genre**.
    7. Create a new categorical attribute **Popularity_classes** based on the value of **Popularity** using Pandas.cut(). Example at: https://www.absentdata.com/pandas/pandas-cut-continuous-to-categorical/
       Conversion bins: Popular = (50-75) Very = (76-85) Extreme = (86-99)
    8. Split the dataframe into input X and output Y:
       X = df.loc[:, ['Energy', 'Danceability', 'Length', 'LoudnessdB', 'Acousticness']].values
       y = df.loc[:,'Popularity_classes'].values
       Now split X and Y into training and testing sets.
    9. Train a Logistic Regression model similar to one used for Iris dataset to classify popularity classes based on the five attributes in X.
    10. Print confusion matrix, Recall, Precision and F1 values.
    11. Plot the confusion matrix using the function explained at: https://scikit-learn.org/stable/modules/generated/sklearn.metrics.plot_confusion_matrix.html