Lab Objectives: Searching and Sorting.

a) Download the class **Song** and the tab-delimited data file from Moodle. Data file contains the song name, artist, duration (in seconds) and song type.

b) Update the class to include the following:
    a. Add the **__lt__** method according to the following: a song is less than another if the alphabetical `artist` is less than the other.

c) Create a class, **Playlist**, with the following data members and methods. Note all data members and class variables should be private (__).

Data Members:

- **name**: stores the name of the Playlist.
- **purpose**: stores the purpose of the playlist (for example workout, dance, party, etc).
- **length**: stores the length (in seconds) of all Songs in the list.
- **song_list**: stores a list of Songs.

Methods:

- **__init()__**: initializes the name and purpose to values passed as parameters. Initialize an empty song list, and length to zero.
- **get_song()**: returns the Song in the list with the index passed as a parameter.
- **get_num_songs()**: returns the number of Songs in the Playlist.
- **add_song()**: takes a song as a parameter and adds the Song to the song_list and updates the length of the Playlist.
- **bubbleSort()**: sorts the song_list by descending (highest to lowest) duration.
- **sort_playlist()**: sorts the song_list using default list sort.
- **Binary_search()**: takes a duration, start index and end index as parameters and returns the index of the element with the matching duration. Uses a *recursive binary search* algorithm.
- **repr()__**: returns a string representation of a Playlist object. See the sample run for the format.

d) Create a script which includes the following:

- **create_playlist():** takes a filename, a Playlist and a type as parameters, and adds all Songs in the file whose type matches the given type to the given Playlist.

- **Your script should do the following:**
    - Create a Playlist whose name matches the name of the data file (excluding file extension)
    - Read the data from the data file and add 'workout' songs to the Playlist.
    - Sort the list using bubble sort and display the sorted list.
    - Input a duration from the user and display the Song in the Playlist with the given duration(or appropriate message if no song exists)
    - Sort the list according to the default sort(artist name) and display the sorted list.

Sample Run :
Bubble sorted playlist: April2020GymHits workout 42 minutes
No Me Conoce - Remix Jhay Cortez 309
LA CANCIÓN J Balvin 243
Otro Trago Sech 226
I Don't Care (with Justin Bieber) Ed Sheeran 220
Shallow Lady Gaga 216
Happier Marshmello 214
Te Robaré Nicky Jam 202
Señorita Shawn Mendes 191
If I Can't Have You Shawn Mendes 191
One Thing Right Marshmello 182
Truth Hurts Lizzo 173
Old Town Road - Remix Lil Nas X 157

Enter duration of song: 216
Song with duration 216 Shallow Lady Gaga 216

Default sorted playlist: April2020GymHits workout 42 minutes
I Don't Care (with Justin Bieber) Ed Sheeran 220
LA CANCIÓN J Balvin 243
No Me Conoce - Remix Jhay Cortez 309
Shallow Lady Gaga 216
Old Town Road - Remix Lil Nas X 157
Truth Hurts Lizzo 173
Happier Marshmello 214
One Thing Right Marshmello 182
Te Robaré Nicky Jam 202
Otro Trago Sech 226
Señorita Shawn Mendes 191
If I Can't Have You Shawn Mendes 191