# Section 1: Statement of the problem to be solved:

This project will allow users to create a Playlist, and create MP3 Objects to store inside of it. The program will allow users to display MP3s by Genre, Artist, Song Title, or all songs in the playlist. The user will also be able to sort the MP3s by song title and release date. The program is built using 6 classes.

* **Driver:** Main class the user interacts with. Provides user with Menu functionality and allows user to navigate the program and enter their desired actions.
* **Menu:** A Menu class which allows for the creation of a Menu and additions and deletions from its menu options. It has methods to allow for displaying the Menu to the Console window and for getting a menu choice from the user and validating it.
* **MP3:** MP3 Class creates attributes of the MP3 File, creates attributes the user can change, and creates string format for the values to be displayed in legible manner.
* **Playlist:** Allows Playlist to be created, MP3 Objects to be passed into it, and allows functionality for Displaying, Dropping, Editing, and Sorting MP3s.
* **Choices:** Enum of all choices a user can make from 1-11.
* **Genre:** Enum that gives genres the user can input into their MP3 file. 6 Genres to choose from starting from 1

## Section 2: List of Inputs, outputs, and processing required:

* Inputs:
  + MP3 Title
  + MP3 Artist
  + MP3 Release Date
  + MP3 Playback Time
  + MP3 Genre
  + MP3 Download Cost
  + MP3 File Size (in MBs)
  + MP3 File Path
  + Playlist Title
  + Playlist Creation Date
  + Username
* Outputs:
  + Display MP3s in Playlist
  + Display MP3s of a song title
  + Display MP3s of a certain genre
  + Display MP3s of a certain artist
  + Display sorted MP3s by song title
  + Display sorted MP3s by release date
* Processing:
  + Converting Release Date from String to DateTime
  + Sorted MP3s in Ascending Order by song title and release date

## Section 3: Identification of classes and their responsibilities:

* Class Name: Driver
  + Responsibilities:
    - Inputting UserName
    - Inputting Menu Options
    - Inputting MP3 information to be added/edited to playlist
    - Calling Playlist methods based on user input of menu option
    - Exiting Program when user inputs to quit
* Class Name: Menu
  + Responsibilities:
    - Format of interface user will see and work with
    - Allows for display of information depending on what the user enters
* Class Name: MP3
  + Responsibilities:
    - Creates default object of MP3
    - Allows for MP3s to be displayed in correct format
* Class Name: Playlist
  + Responsibilities:
    - Creates default object of Playlist
    - Allows for Playlists to be displayed in correct format with corresponding MP3s
    - Allows user to have capability to Add, Edit, Drop, Display, or sort MP3s in playlist
* Class Name: Choices
  + Responsibilities:
    - Allows user to make choices in the menu by typing number of the choice they want to make
* Class Name: Genre
  + Responsibilities:
    - Allows user to select a genre by selecting number corresponding to the genre

## Section 4: UML Class Diagram:

Diagram

Description automatically generated

## Section 5: Test Cases:

### Test Cases/Trace Table

These test cases are after a user creates a playlist, then adds 7 MP3s into the playlist. One MP3 for every different genre, and then if a user enters an invalid genre:

Table 1: Example Test Case/Trace Table

|  |  |  |
| --- | --- | --- |
| Test Input Values | | Expected Result |
| Inputs | **Values** |  |
| MP3 Title | Awesome Song Number One | “MP3 Title: Awesome Song Number One” |
| MP3 Artist | The Backstreet Boys | “Artist: The Backstreet Boys” |
| MP3 Release Date | Jan 1 2003 | “Release Date: Jan 1 2003” |
| MP3 Playback Time | 4 | “Song Playtime: 4 Minutes” |
| MP3 Genre | 5 | “Genre: Classical” |
| MP3 Download Cost | 7.99 | “Download Cost: 7.99” |
| MP3 File Size | 3 | “File Size: 3MB” |
| MP3 File Path | Path/ | “Album Photo: Path/” |
| Playlist Title | New Bops | “Playlist Name: New Bops” |
| Playlist Creation Date | 28 Oct 2022 | “Playlist Creation Date: 28 Oct 2022” |
| UserName | John | “Playlist Creator: John” |
|  | | |

Table 2: Example Test Case/Trace Table

|  |  |  |
| --- | --- | --- |
| Test Input Values | | Expected Result |
| Inputs | **Values** |  |
| MP3 Title | Funky Tune | “MP3 Title: Funky Tune” |
| MP3 Artist | John Wayne | “Artist: John Wayne” |
| MP3 Release Date | 09 July 2014 | “Release Date: 09 July 2014” |
| MP3 Playback Time | 6 | “Song Playtime: 6 Minutes” |
| MP3 Genre | 1 | “Genre: Rock” |
| MP3 Download Cost | 4.99 | “Download Cost: 4.99” |
| MP3 File Size | 2 | “File Size: 2MB” |
| MP3 File Path | DiscoSongs/ | “Album Photo: DiscoSongs/” |
| Playlist Title | New Bops | “Playlist Name: New Bops” |
| Playlist Creation Date | 28 Oct 2022 | “Playlist Creation Date: 28 Oct 2022” |
| UserName | John | “Playlist Creator: John” |

Table 3: Example Test Case/Trace Table

|  |  |  |
| --- | --- | --- |
| Test Input Values | | Expected Result |
| Inputs | **Values** |  |
| MP3 Title | Chicago | “MP3 Title: Chicago” |
| MP3 Artist | Michael Jackson | “Artist: Michael Jackson” |
| MP3 Release Date | 24 Aug 2018 | “Release Date: 24 Aug 2018” |
| MP3 Playback Time | 7 | “Song Playtime: 7 Minutes” |
| MP3 Genre | 2 | “Genre: Pop” |
| MP3 Download Cost | 2.99 | “Download Cost: 2.99” |
| MP3 File Size | 1 | “File Size: 1MB” |
| MP3 File Path | Jackson/ | “Album Photo: Jackson/” |
| Playlist Title | New Bops | “Playlist Name: New Bops” |
| Playlist Creation Date | 28 Oct 2022 | “Playlist Creation Date: 28 Oct 2022” |
| UserName | John | “Playlist Creator: John” |

## Table 4: Example Test Case/Trace Table

|  |  |  |
| --- | --- | --- |
| Test Input Values | | Expected Result |
| Inputs | **Values** |  |
| MP3 Title | Song 2 | “MP3 Title: Song 2” |
| MP3 Artist | Kohler | “Artist: Kohler” |
| MP3 Release Date | Jan 1 2009 | “Release Date: Jan 1 2009” |
| MP3 Playback Time | 3 | “Song Playtime: 3 Minutes” |
| MP3 Genre | 3 | “Genre: Jazz” |
| MP3 Download Cost | 6.99 | “Download Cost: 6.99” |
| MP3 File Size | 34 | “File Size: 34MB” |
| MP3 File Path | MP3/ | “Album Photo: MP3/” |
| Playlist Title | New Bops | “Playlist Name: New Bops” |
| Playlist Creation Date | 28 Oct 2022 | “Playlist Creation Date: 28 Oct 2022” |
| UserName | John | “Playlist Creator: John” |

|  |  |  |
| --- | --- | --- |
| Test Input Values | | Expected Result |
| Inputs | **Values** |  |
| MP3 Title | Back In Black | “MP3 Title: Back In Black ” |
| MP3 Artist | AC/DC | “Artist: AC/DC” |
| MP3 Release Date | July 26, 1987 | “Release Date: July 26, 1987” |
| MP3 Playback Time | 5 | “Song Playtime: 5 Minutes” |
| MP3 Genre | 4 | “Genre: Country” |
| MP3 Download Cost | 2.68 | “Download Cost: 2.68” |
| MP3 File Size | 12 | “File Size: 12MB” |
| MP3 File Path | Rock/ | “Album Photo: Rock/” |
| Playlist Title | New Bops | “Playlist Name: New Bops” |
| Playlist Creation Date | 28 Oct 2022 | “Playlist Creation Date: 28 Oct 2022” |
| UserName | John | “Playlist Creator: John” |

## Table 5: Example Test Case/Trace Table

|  |  |  |
| --- | --- | --- |
| Test Input Values | | Expected Result |
| Inputs | **Values** |  |
| MP3 Title | Lo/Hi | “MP3 Title: Lo/Hi ” |
| MP3 Artist | The Black Keys | “Artist: The Black Keys ” |
| MP3 Release Date | Dec 17 1991 | “Release Date: Dec 17 1991” |
| MP3 Playback Time | 4 | “Song Playtime: 4 Minutes” |
| MP3 Genre | 6 | “Genre: Other” |
| MP3 Download Cost | 2.19 | “Download Cost: 2.19” |
| MP3 File Size | 2 | “File Size: 2MB” |
| MP3 File Path | OtherSongs/ | “Album Photo: OtherSongs/” |
| Playlist Title | New Bops | “Playlist Name: New Bops” |
| Playlist Creation Date | 28 Oct 2022 | “Playlist Creation Date: 28 Oct 2022” |
| UserName | John | “Playlist Creator: John” |

## Table 6: Example Test Case/Trace Table

|  |  |  |
| --- | --- | --- |
| Test Input Values | | Expected Result |
| Inputs | **Values** |  |
| MP3 Title | Stop Me | “MP3 Title: Stop Me ” |
| MP3 Artist | Ryan | “Artist: Ryan ” |
| MP3 Release Date | Feb 22 22 | “Release Date: Feb 22 22” |
| MP3 Playback Time | 7 | “Song Playtime: 7 Minutes” |
| MP3 Genre | 15 | “ Enter value from 1-6 for Genre, try again. ”  (Loops until user enters correct format) |
| MP3 Download Cost | -- | -- |
| MP3 File Size | -- | -- |
| MP3 File Path | -- | -- |
| Playlist Title | New Bops | “Playlist Name: New Bops” |
| Playlist Creation Date | 28 Oct 2022 | “Playlist Creation Date: 28 Oct 2022” |
| UserName | John | “Playlist Creator: John” |

## Table 7: Example Test Case/Trace Table