

## Appendix A

# UNIVERSITI TUNKU ABDUL RAHMAN

## UECS1004/UECS1104 PROGRAMMING AND PROBLEM SOLVING

BACHELOR OF SCIENCE (HONS) APPLIED MATHEMATICS WITH COMPUTING

BACHELOR OF SCIENCE (HONS) SOFTWARE ENGINEERING

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| CRITERIA            | MARK |
|---------------------|------|
| Report (CO1)        |      |
| C++ Code (CO2)      |      |
|                     |      |
|                     |      |
| <b>TOTAL</b>        |      |
| <b>TOTAL (100%)</b> |      |

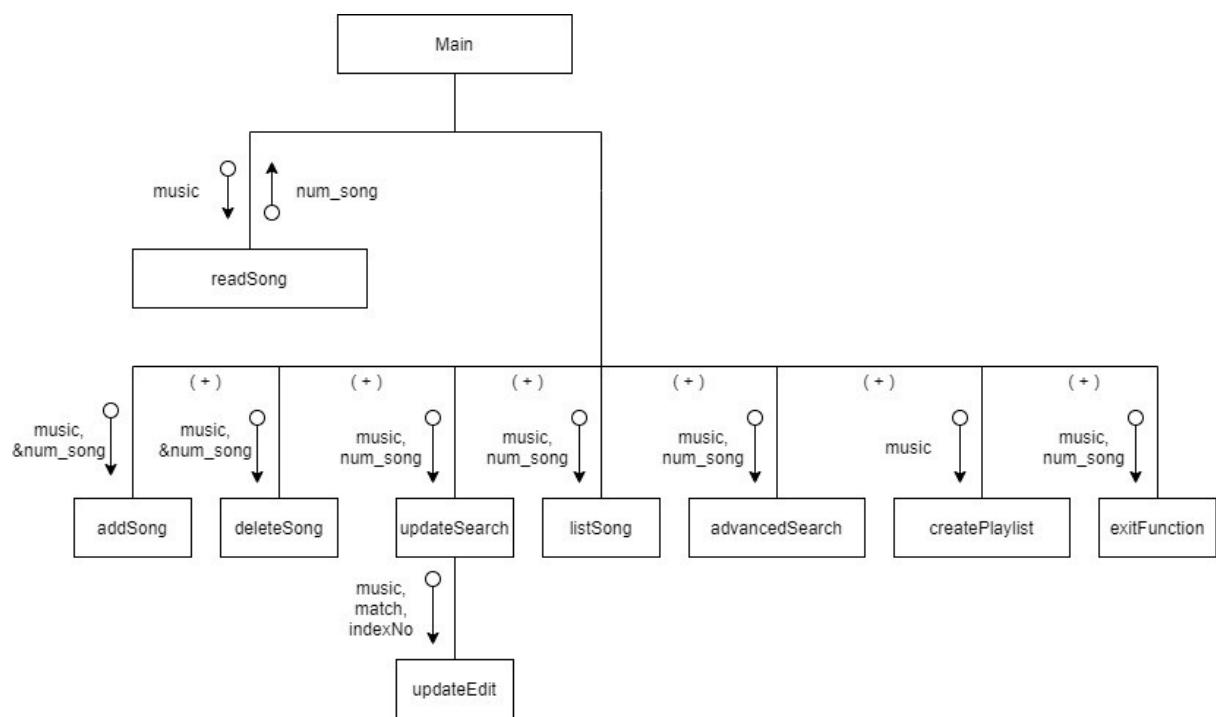
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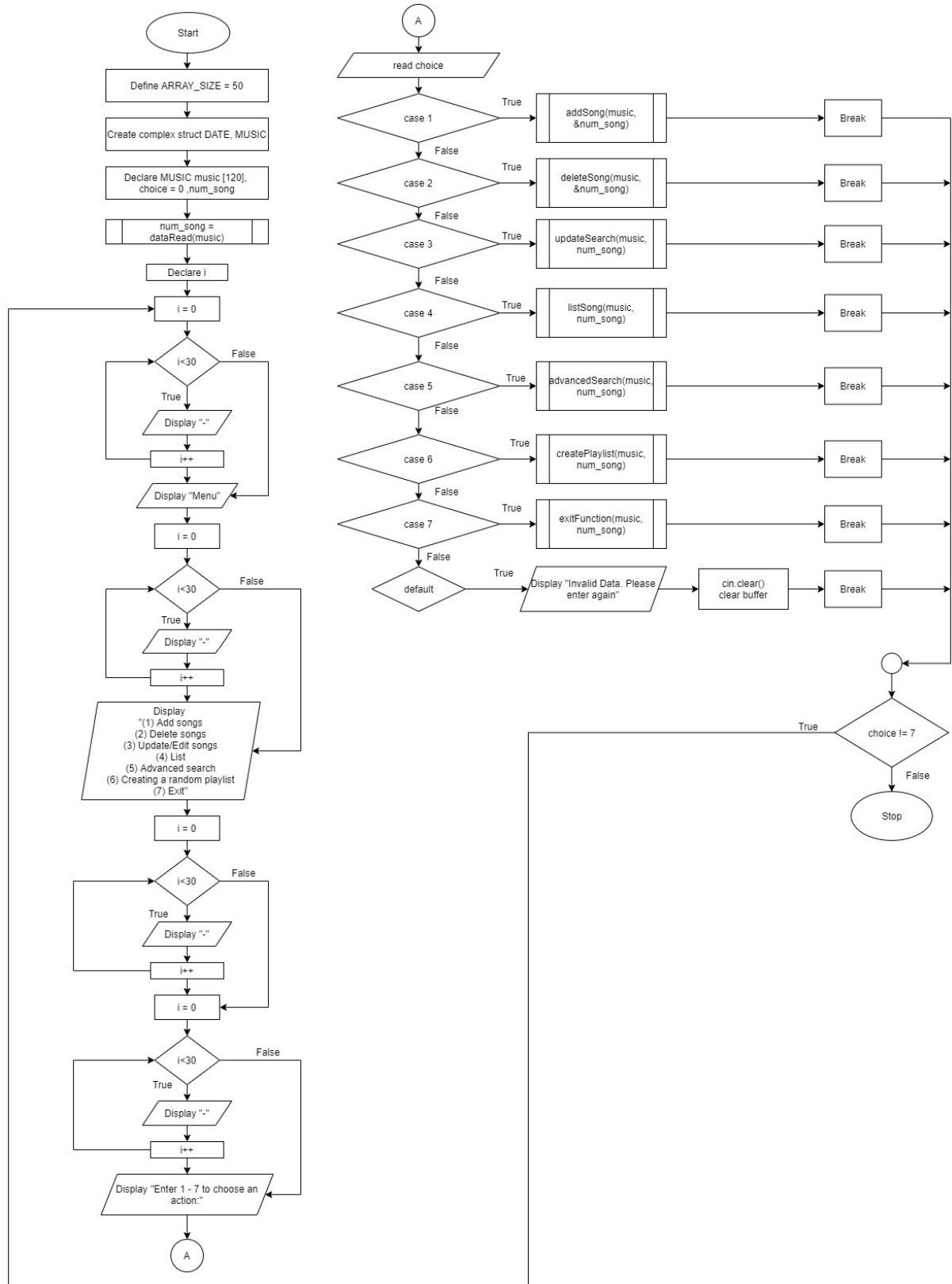
## Program Design

### 1. Structure Chart

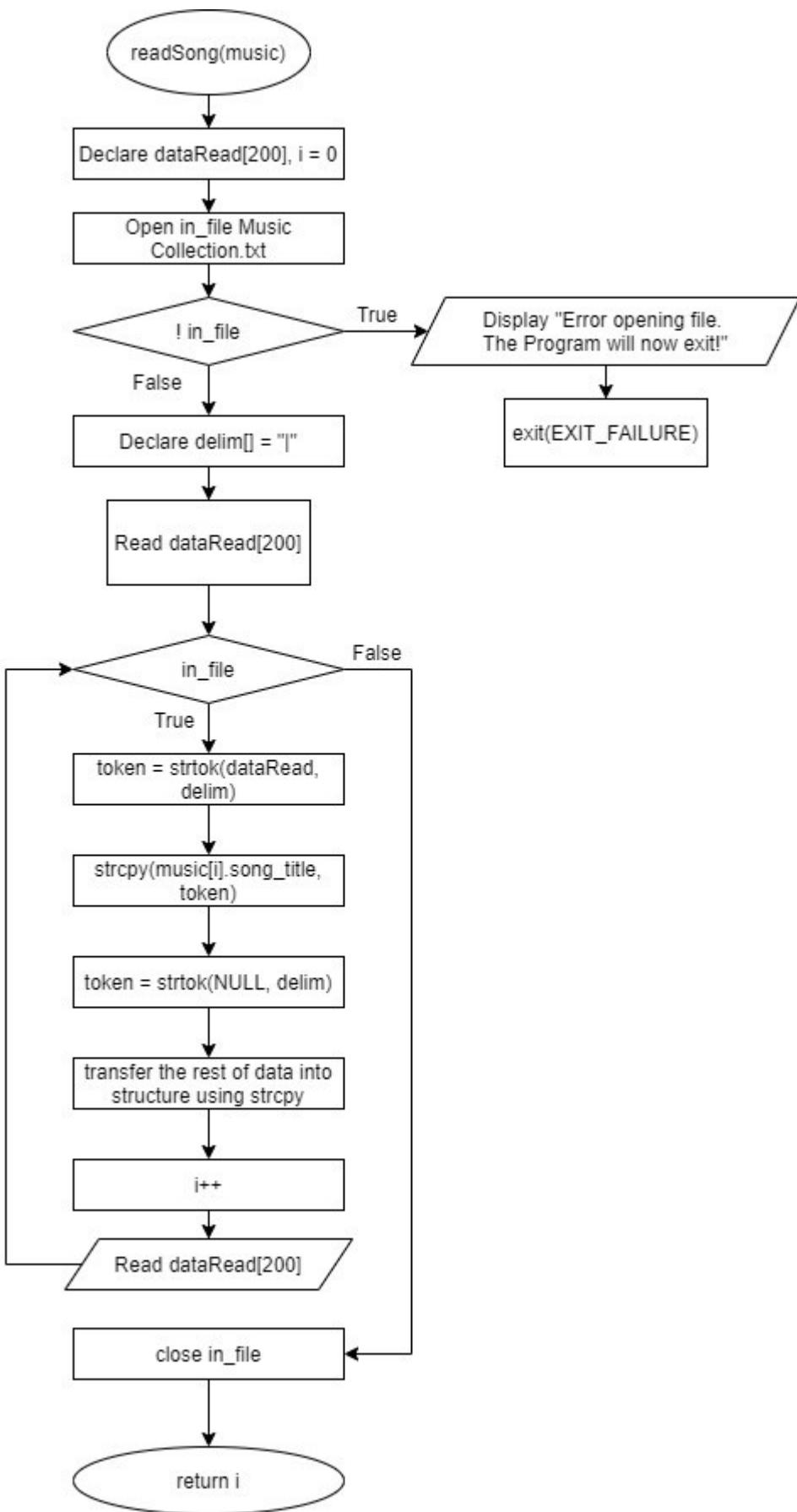


## 1.1 Flowcharts

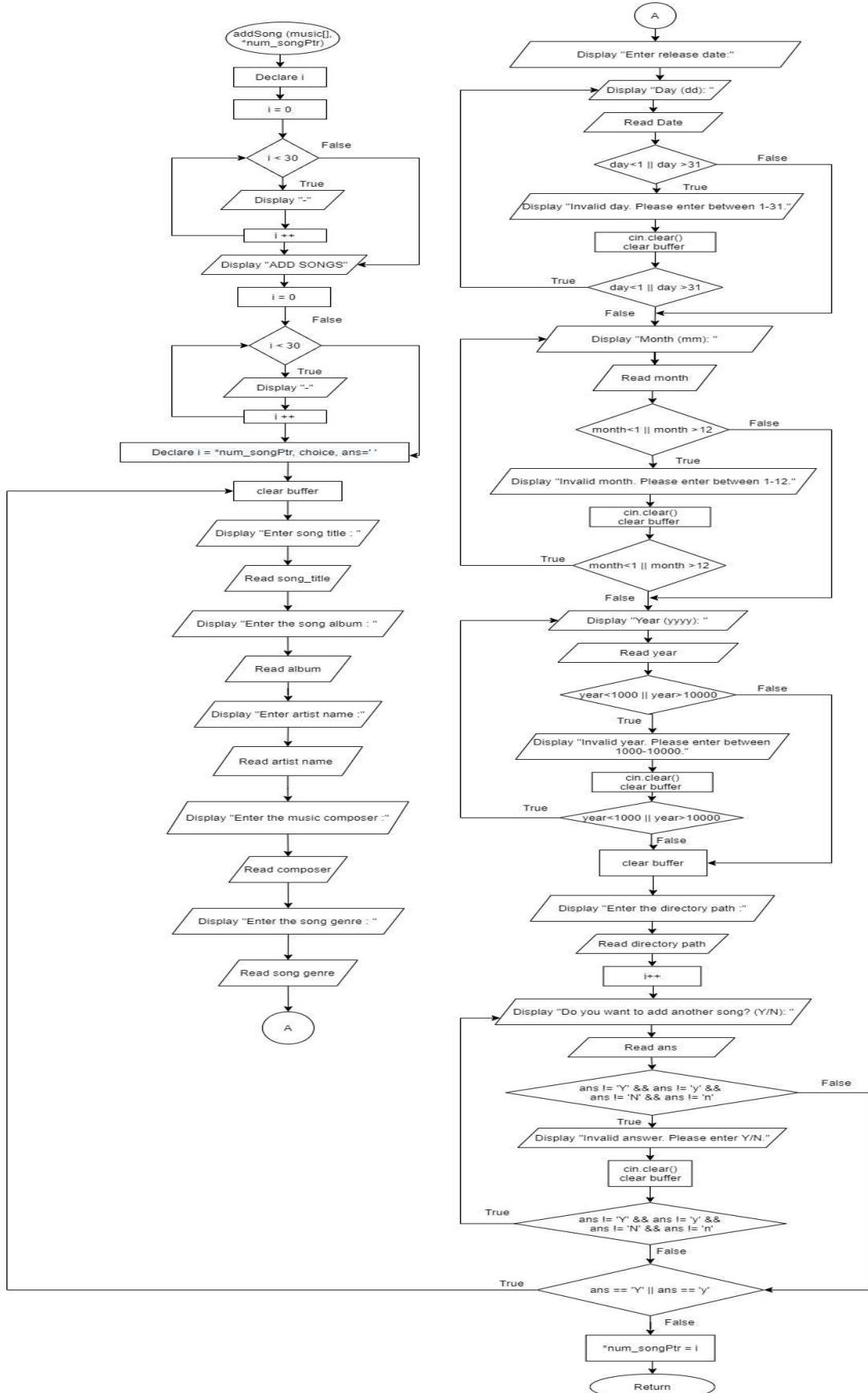
### 1.1.1 Main



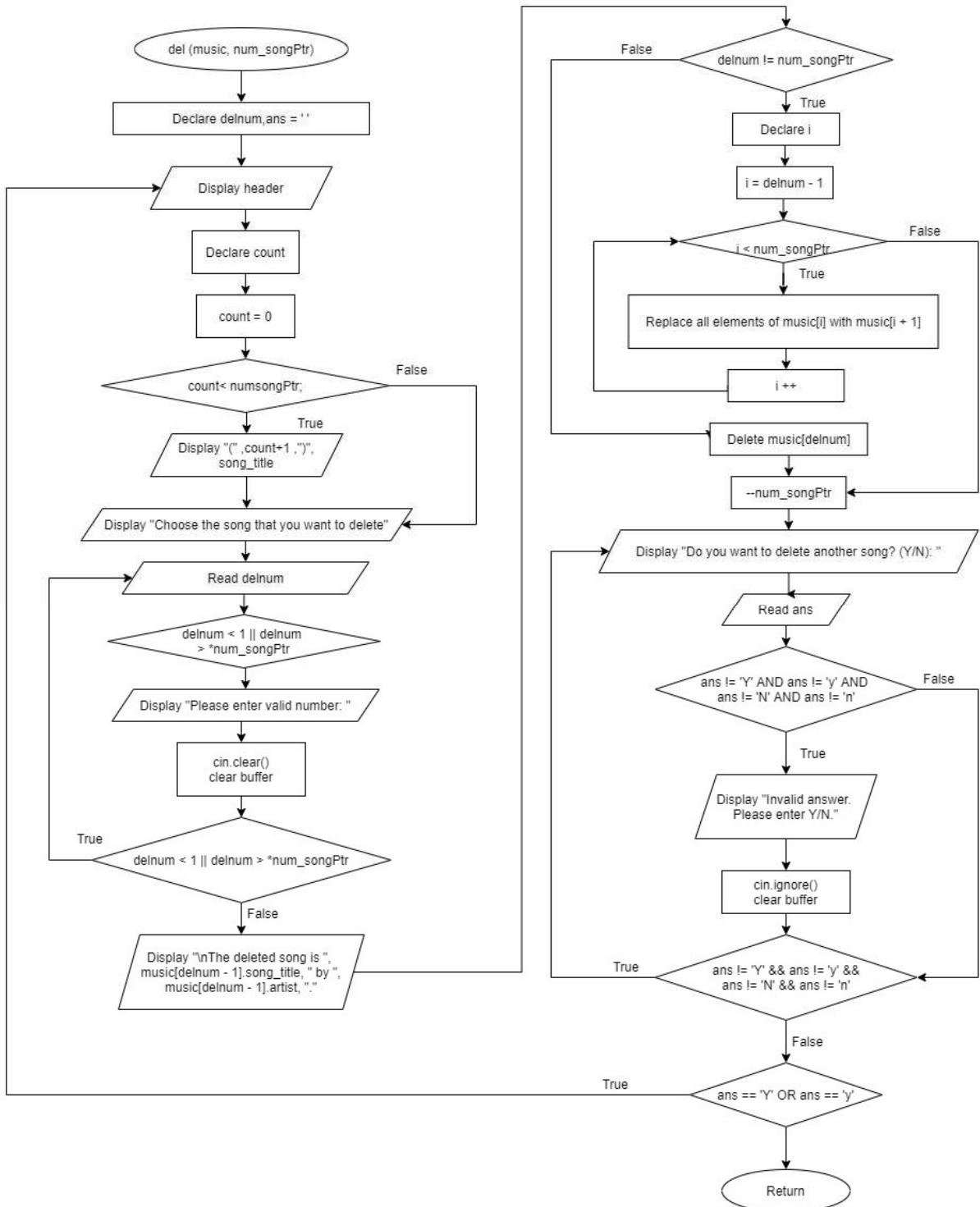
### 1.1.2 Read Data (readSong)



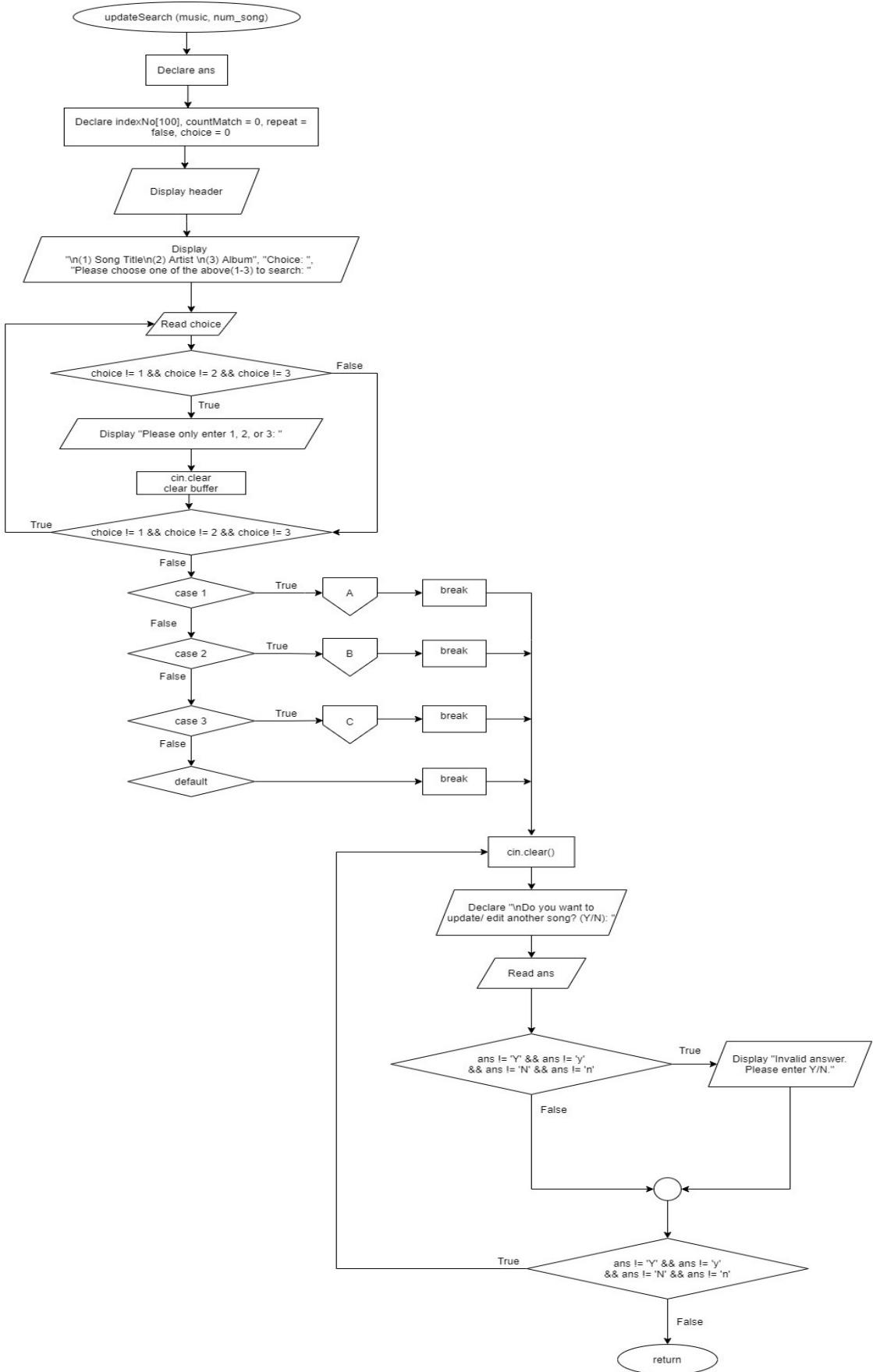
### 1.1.3 Add Songs (addSong)



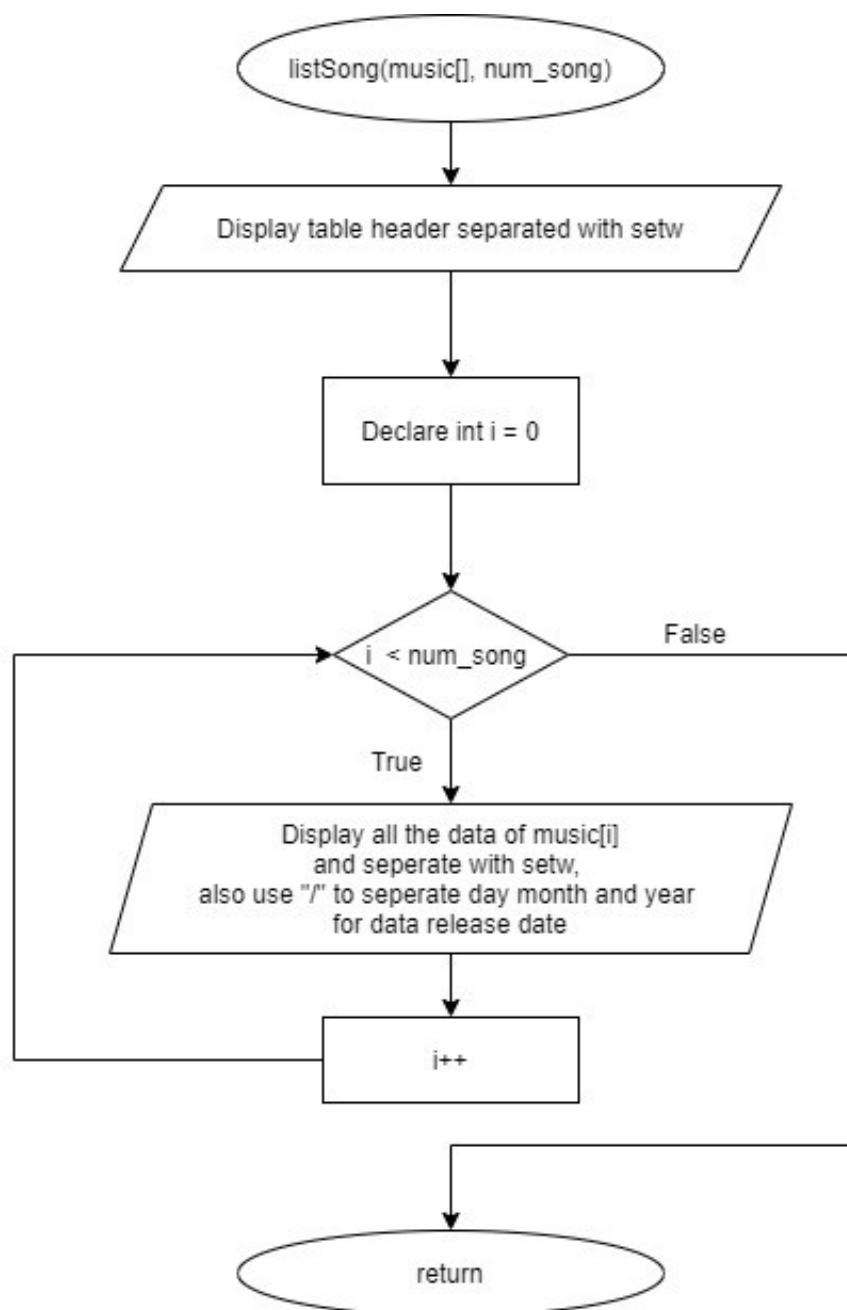
#### 1.1.4 Delete Songs (del)



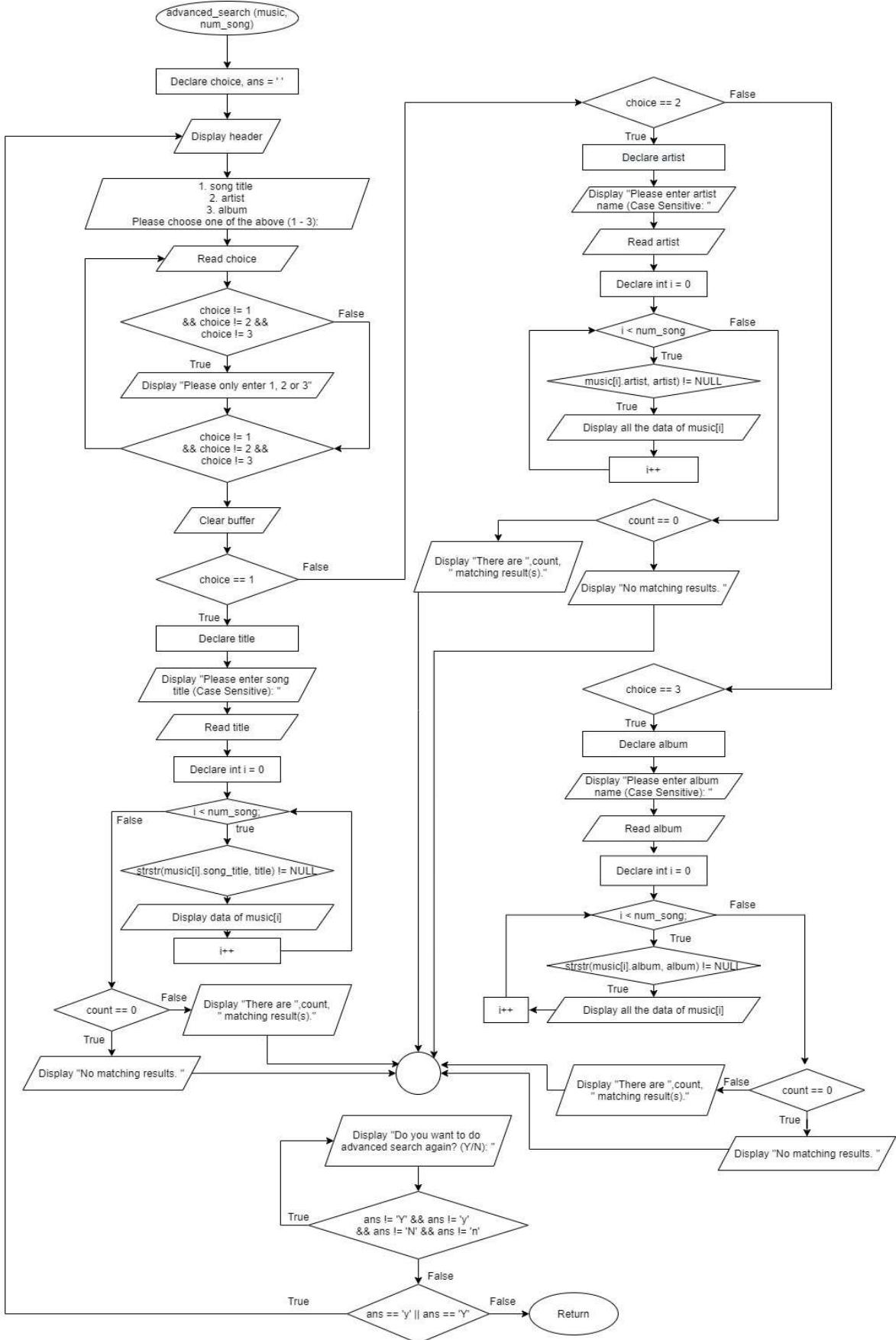
### 1.1.5 Update and Edit (updateSearch)



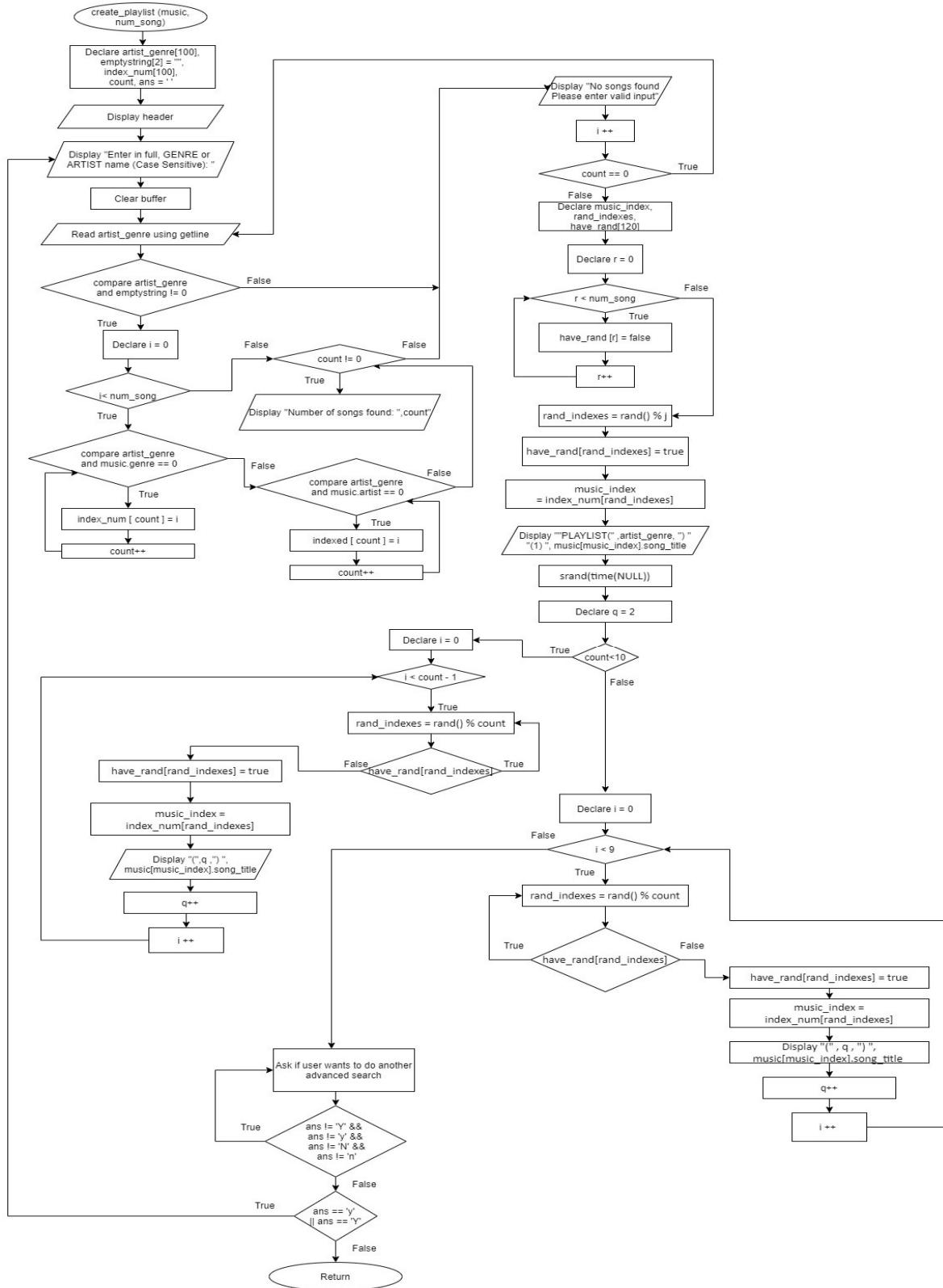
### 1.1.6 List (listSong)



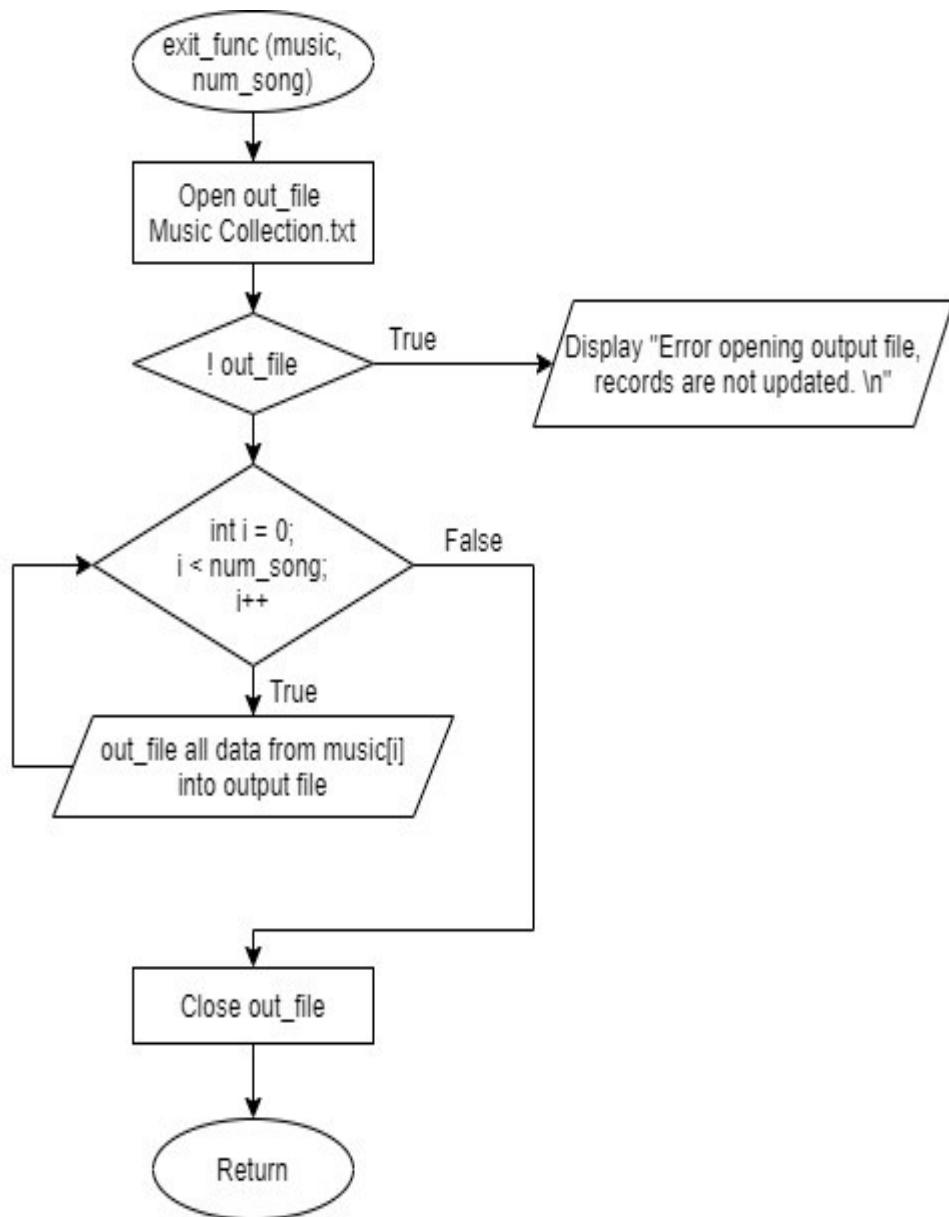
### 1.1.7 Advanced Search (advanced\_search)



### 1.1.8 Create Playlist (create\_playlist)



### 1.1.9 Exit (exit\_func)



## 2. Program Flow

### 2.1 MAIN MENU (main function)

```
C:\Users\User\source\repos\PROGRAMMING ASSIGNMENT\Debug\PROGRAMMING ASSIGNMENT.exe
```

The screenshot shows a terminal window with a black background and white text. At the top, it displays the path: C:\Users\User\source\repos\PROGRAMMING ASSIGNMENT\Debug\PROGRAMMING ASSIGNMENT.exe. Below this, the word "MENU" is centered above a dashed horizontal line. A list of seven actions is provided, each preceded by a number from 1 to 7: (1) Add songs, (2) Delete songs, (3) Update/Edit songs, (4) List, (5) Advanced search, (6) Creating a random playlist, and (7) Exit. Another dashed horizontal line follows the list. At the bottom, the text "Enter 1 - 7 to choose an action: " is displayed, followed by a cursor character.

Figure 1.1

## 2.2 ADD SONG (addSong)

```
-----  
ADD SONGS  
-----  
Enter song title: songtitle1  
Enter song album: album1  
Enter artist name: artist1  
Enter music composer: composer1  
Enter song genre: genre1  
Enter release date:  
Day (dd): 20  
Month (mm): 9  
Year (yyyy): 2000  
Enter the directory path : directorypath1  
Do you want to add another song? (Y/N) : y  
Enter song title: songtitle2  
Enter song album: album2  
Enter artist name: artist2  
Enter music composer: composer2  
Enter song genre: genre2  
Enter release date:  
Day (dd): 20  
Month (mm): 9  
Year (yyyy): 2000  
Enter the directory path : directorypath2  
Do you want to add another song? (Y/N) : n
```

Figure 2.1

- Figure 2.1 shows the addition of two sample songs “songtitle1” & “songtitle2”.

### 2.3 DELETE SONG (deleteSong)

```
-----  
          DELETE SONGS  
-----  
(1) Dance Monkey  
(2) Blinding Lights  
(3) Roses  
(4) Rockstar  
(5) Cardigan  
(6) Mood  
(7) Positions  
(8) Willow  
(9) All I Want for Christmas Is You  
(10) Adore You  
(11) Smoke On the Water  
(12) Smells Like Teen Spirit  
(13) Walk This Way  
(14) More Than a Feeling  
(15) Call Me Maybe  
(16) I Wanna Dance with Somebody  
(17) Rain On Me  
(18) Uptown Funk  
(19) Idol  
(20) Juicy  
(21) STILL D. R. E.  
(22) Puff The Magic Dragon  
(23) The Last Thing On My Mind  
(24) Gentle On My Mind  
(25) Believer  
(26) Thunder  
(27) Whatever It Takes  
(28) Next to Me  
(29) Sucker for Pain  
(30) Bleeding Out  
(31) Battle Cry  
(32) Shots  
(33) Billie Jean  
(34) Smooth Criminal  
(35) Beat It  
(36) Bad  
(37) Jam  
(38) Man In The Mirror  
(39) Heal The World  
(40) Rock with You  
(41) Wanna Be Startin Somethin  
(42) Dont Stop Til You Get Enough  
(43) Remember the Time  
(44) The Last Great American Dynasty  
(45) Exile  
(46) My Tears Ricochet  
(47) Mirrorball
```

Figure 3.1

```
(48) Seven
(49) August
(50) This Is Me Trying
(51) Epiphany
(52) Betty
(53) Peace
(54) Hoax
(55) Nocturne
(56) Gravity
(57) End Credits
(58) Gold
(59) Crash
(60) Untitled
(61) Projector
(62) Love, Death, Distraction
(63) Isohel
(64) Comethru
(65) Still
(66) Somebody Loves You
(67) Orchid
(68) Julia
(69) Anyone
(70) Holy
(71) Lonely
(72) Yummy
(73) Peaches
(74) As I Am
(75) Hold On
(76) Intention
(77) Despacito
(78) Baby
(79) Cold Water
(80) Monster
(81) Up
(82) Unstable
(83) U Smile
(84) Beauty And A Beat
(85) Perfect
(86) One Less Lonely Girl
(87) Gas Pedal
(88) Minefields
(89) Love Me Now
(90) You & I
(91) Ordinary People
(92) U Move, I Move
(93) Wild
(94) We Don't Talk Anymore
(95) Attention
```

Figure 3.2

```
(96) One Call Away
(97) How Long
(98) Done For Me
(99) The Way I Am
(100) I Hope
(101) songtitle1
(102) songtitle2
```

Choose the song that you want to delete: 97

The deleted song is How Long by Charlie Puth.

Do you want to delete another song? (Y/N): y

Figure 3.3

```
(75) Hold On
(76) Intention
(77) Despacito
(78) Baby
(79) Cold Water
(80) Monster
(81) Up
(82) Unstable
(83) U Smile
(84) Beauty And A Beat
(85) Perfect
(86) One Less Lonely Girl
(87) Gas Pedal
(88) Minefields
(89) Love Me Now
(90) You & I
(91) Ordinary People
(92) U Move, I Move
(93) Wild
(94) We Don't Talk Anymore
(95) Attention
(96) One Call Away
(97) Done For Me
(98) The Way I Am
(99) I Hope
(100) songtitle1
(101) songtitle2
```

Choose the song that you want to delete: 100

The deleted song is songtitle1 by artist1.

Do you want to delete another song? (Y/N) : █

Figure 3.4

- Figure 3.1 through 3.4 is the continuation from Figure 2.1 where songtitle1 and songtitle2 was added to music collection, where songs are deleted.

**2.4 EDIT/UPDATE SONG (updateSearch + updateEdit)**

```

Enter 1 - 7 to choose an action: 3
-----
UPDATE / EDIT
(1) Song Title
(2) Artist
(3) Album

Please choose one of the above(1 - 3) to search: 1
Enter song title(Case Sensitive): Dance

There are 2 matching result(s).

(1) Dance Monkey           The Kids Are Coming   Tones and I       Toni Watson          Electropop  10/ 5/2019  C:\Users\User\Music\ DanceMonkey
(2) I Wanna Dance with Somebody   Whitney           Whitney Houston   Whitney Houston      Pop        25/10/2009  C:\Users\User\Music\I Wanna Dance With Somebody

Please enter the number for your song choice: 1

Enter new song name: songtitle3
Enter new album name: album3
Enter new artist name: artist3
Enter new music composer name: composer3
Enter new song genre: genre3
Enter new release date:
Day (dd): 20
Month (mm): 9
Year (yyyy): 2000
Directory path: directorypath3
Do you want to update/edit another song? (Y/N): -

```

Figure 4.1

```

Do you want to update/edit another song? (Y/N): y
-----
UPDATE / EDIT
(1) Song Title
(2) Artist
(3) Album

Please choose one of the above(1 - 3) to search: 2
Enter artist name(Case Sensitive): artist

There are 2 matching result(s).

(1) songtitle3             album3            artist3           composer3          genre3     20/ 9/2000  directorypath3
(2) songtitle2             album2            artist2           composer2          genre2     20/ 9/2000  directorypath2

Please enter the number for your song choice: 2
Enter new song name: songtitle4
Enter new album name: album4
Enter new artist name: artist4
Enter new music composer name: composer4
Enter new song genre: genre4
Enter new release date:
Day (dd): 20
Month (mm): 0
Invalid month. Please enter between 1-12.
Month (mm): 9
Year (yyyy): 2000
Directory path: directorypath4
Do you want to update/edit another song? (Y/N): n

```

Figure 4.2

- Figure 4.2 shows the update of details for songtitle2.

## 2.5 LIST (list)

| Enter 1 - 7 to choose an action: 4 |                                 |                      |                   |                                  |            |              |   |  |
|------------------------------------|---------------------------------|----------------------|-------------------|----------------------------------|------------|--------------|---|--|
| No.                                | Song Title                      | Album                | Artist            | Composer                         | Genre      | Release Date | Directory Path                                |  |
| 1                                  | songtitle5                      | album5               | artist5           | composer5                        | genre5     | 20/ 9/2000   | directorypath5                                |  |
| 2                                  | Blinding Lights                 | After Hours          | the Weeknd        | Abel Tesfaye                     | Electropop | 29/11/2019   | C:\Users\User\Music\BlindingLights            |  |
| 3                                  | Roses                           | Collection One       | Saint Jhn         | Carlos Phillips                  | Dance      | 18/ 9/2019   | C:\Users\User\Music\Roses                     |  |
| 4                                  | Rockstar                        | Blame It on Baby     | Dababy            | Johnathan Kirk                   | Hip Hop    | 17/ 4/2020   | C:\Users\User\Music\Rockstar                  |  |
| 5                                  | Cardigan                        | Folklore             | Taylor Swift      | Taylor Swift                     | Folk       | 27/ 7/2020   | C:\Users\User\Music\Cardigan                  |  |
| 6                                  | Mood                            | El Dorado            | 24kGoldn          | Golden Von Jones                 | Pop Rap    | 24/ 7/2020   | C:\Users\User\Music\Mood                      |  |
| 7                                  | Positions                       | Positions            | Ariana Grande     | Angelina Barrett                 | Pop        | 23/10/2020   | C:\Users\User\Music\Positions                 |  |
| 8                                  | Willow                          | Evermore             | Taylor Swift      | Taylor Swift                     | Folk       | 11/12/2020   | C:\Users\User\Music\Willow                    |  |
| 9                                  | All I Want for Christmas Is You | Merry Christmas      | Mariah Carey      | Mariah Carey                     | Christmas  | 28/10/1994   | C:\Users\User\Music\AllIWantforChristmasIsYou |  |
| 10                                 | Adore You                       | Fine Line            | Harry Styles      | Harry Styles                     | Pop        | 6/12/2019    | C:\Users\User\Music\AdoreYou                  |  |
| 11                                 | Smoke On the Water              | Machine Head         | Deep Purple       | Ian Paice                        | Rock       | 1/ 5/1971    | C:\Users\User\Music\SmokeOntheWater           |  |
| 12                                 | Smells Like Teen Spirit         | Nevermind            | Nirvana           | Nirvana                          | Rock       | 17/ 6/2009   | C:\Users\User\Music\SmellsLikeTeenSpirit      |  |
| 13                                 | Walk This Way                   | Raising Hell         | Run-D.M.C.        | Run-D.M.C.                       | Rock       | 25/10/2009   | C:\Users\User\Music\WalkThisWay               |  |
| 14                                 | More Than a Feeling             | Boston               | Boston            | Boston                           | Rock       | 22/ 5/2011   | C:\Users\User\Music\MoreThanaFeeling          |  |
| 15                                 | Call Me Maybe                   | Kiss                 | Carly Rae Jepsen  | Carly Rae Jepsen                 | Pop        | 2/ 5/2012    | C:\Users\User\Music\CallMeMaybe               |  |
| 16                                 | I Wanna Dance with Somebody     | Whitney              | Whitney Houston   | Whitney Houston                  | Pop        | 25/10/2009   | C:\Users\User\Music\IWannaDanceWithSomebody   |  |
| 17                                 | Rain On Me                      | Chromatica           | Ariana Grande     | Ariana Grande                    | Pop        | 23/ 5/2020   | C:\Users\User\Music\RainOnMe                  |  |
| 18                                 | Uptown Funk                     | Uptown Funk          | Mark Ronson       | Charlie Wilson                   | Pop        | 19/11/2014   | C:\Users\User\Music\UptownFunk                |  |
| 19                                 | Idol                            | Love Yourself:Answer | BTS               | Bang Si-Hyuk                     | EDM        | 24/ 8/2018   | C:\Users\User\Music\FightThePower             |  |
| 20                                 | Juicy                           | Juicy                | The Notorious BIG | Puff Daddy & Jean-Claude Olivier | Hip Hop    | 7/ 9/2011    | C:\Users\User\Music\Juicy                     |  |
| 21                                 | STILL D.R.E.                    | 2001                 | Dr. Dre           | Dr. Dre                          | Hip Hop    | 28/10/2011   | C:\Users\User\Music\STILLD. R. E.             |  |
| 22                                 | Puff The Magic Dragon           | Moving               | Peter             | Peter, Paul and Mary             | Folk       | 11/ 6/2013   | C:\Users\User\Music\PuffTheMagicDragon        |  |
| 23                                 | The Last Thing On My Mind       | Ramblin' Boy         | Tom Paxton        | Tom Paxton                       | Folk       | 15/ 1/2008   | C:\Users\User\Music\TheLastThingOnMyMind      |  |

Figure 5.1

|    |                                 |                   |                 |                                  |          |            |   |  |
|----|---------------------------------|-------------------|-----------------|----------------------------------|----------|------------|---|--|
| 24 | Gentle On My Mind               | Gentle On My Mind | John Hartford   | John Hartford                    | Folk     | 19/ 6/1967 | C:\Users\User\Music\GentleonMyMind              |  |
| 25 | Believer                        | Evolve            | Imagine Dragons | Mattman & Robin                  | Pop Rock | 1/ 2/2017  | C:\Users\User\Music\Believer                    |  |
| 26 | Thunder                         | Evolve            | Imagine Dragons | Alexander Grant & Jayson DeZuzio | Pop Rock | 27/ 4/2017 | C:\Users\User\Music\Thunder                     |  |
| 27 | Whatever It Takes               | Evolve            | Imagine Dragons | Alexander Grant & Jayson DeZuzio | Pop Rock | 8/ 5/2017  | C:\Users\User\Music\WhateverItTakes             |  |
| 28 | Next to Me                      | Evolve            | Imagine Dragons | Imagine Dragons                  | Pop Rock | 21/ 2/2018 | C:\Users\User\Music\NextToMe                    |  |
| 29 | Sucker for Pain                 | Suicide Squad     | Imagine Dragons | Imagine Dragons                  | Rap      | 24/ 6/2016 | C:\Users\User\Music\SuckerforPain               |  |
| 30 | Bleeding Out                    | Night Visions     | Imagine Dragons | Imagine Dragons                  | Indie    | 5/ 6/2012  | C:\Users\User\BleedingOut                       |  |
| 31 | Battle Cry                      | Smoke+Mirrors     | Imagine Dragons | Michael Bay                      | Indie    | 6/ 2/2014  | C:\Users\User\BattleCry                         |  |
| 32 | Shots                           | Smoke+Mirrors     | Imagine Dragons | Imagine Dragons                  | Pop      | 26/ 2/2015 | C:\Users\User\Music\Shots                       |  |
| 33 | Billie Jean                     | Thriller          | Michael Jackson | Michael Jackson                  | Pop      | 2/ 1/1983  | C:\Users\User\BillieJean                        |  |
| 34 | Smooth Criminal                 | Bad 25            | Michael Jackson | Michael Jackson                  | Pop      | 14/11/1988 | C:\Users\User\SmoothCriminal                    |  |
| 35 | Beat It                         | Thriller          | Michael Jackson | Michael Jackson & Quincy Jones   | Rock     | 14/ 2/1983 | C:\Users\User\BeatIt                            |  |
| 36 | Bad                             | Bad 25            | Michael Jackson | Michael Jackson & Quincy Jones   | Pop      | 7/ 9/1987  | C:\Users\User\Bad                               |  |
| 37 | Jam                             | Dangerous         | Michael Jackson | Michael Jackson                  | Pop      | 13/ 7/1992 | C:\Users\User\Jam                               |  |
| 38 | Man In The Mirror               | Bad 25            | Michael Jackson | Michael Jackson & Quincy Jones   | Pop      | 6/ 2/1988  | C:\Users\User\ManInTheMirror                    |  |
| 39 | Heal The World                  | Dangerous         | Michael Jackson | Bruce Swedien                    | Pop      | 23/11/1992 | C:\Users\User\HealTheWorld                      |  |
| 40 | Rock with You                   | Off the Wall      | Michael Jackson | Rod Temperton                    | Pop      | 3/11/1979  | C:\Users\User\RockwithYou                       |  |
| 41 | Wanna Be Startin Somethin       | Thriller          | Michael Jackson | Michael Jackson                  | Pop      | 8/ 5/1983  | C:\Users\User\WannaBeStartinSomethin            |  |
| 42 | Dont Stop Til You Get Enough    | Off the Wall      | Michael Jackson | Michael Jackson                  | Pop      | 10/ 7/1979 | C:\Users\User\DontStopTilYouGetEnough           |  |
| 43 | Remember the Time               | Dangerous         | Michael Jackson | Michael Jackson                  | Pop      | 14/ 1/1992 | C:\Users\User\RememberTheTime                   |  |
| 44 | The Last Great American Dynasty | Folklore          | Taylor Swift    | Taylor Swift                     | Folk     | 24/ 7/2020 | C:\Users\User\Music\TheLastGreatAmericanDynasty |  |
| 45 | Exile                           | Folklore          | Taylor Swift    | Taylor Swift                     | Folk     | 24/ 8/2020 | C:\Users\User\Music\Exile                       |  |
| 46 | My Tears Ricochet               | Folklore          | Taylor Swift    | Taylor Swift                     | Folk     | 24/ 8/2020 | C:\Users\User\Music\MyTearsRicochet             |  |
| 47 | Mirrorball                      | Folklore          | Taylor Swift    | Taylor Swift                     | Folk     | 24/ 8/2020 | C:\Users\User\Music\Mirrorball                  |  |

Figure 5.2

|    |                          |                   |               |                   |           |            |  |
|----|--------------------------|-------------------|---------------|-------------------|-----------|------------|--|
| 48 | Seven                    | Folklore          | Taylor Swift  | Taylor Swift      | Folk      | 24/ 8/2020 | C:\Users\User\Music\Seven                  |
| 49 | August                   | Folklore          | Taylor Swift  | Taylor Swift      | Folk      | 24/ 8/2020 | C:\Users\User\Music\August                 |
| 50 | This Is Me Trying        | Folklore          | Taylor Swift  | Taylor Swift      | Folk      | 24/ 8/2020 | C:\Users\User\Music\ThisIsMeTrying         |
| 51 | Epiphany                 | Folklore          | Taylor Swift  | Taylor Swift      | Folk      | 24/ 8/2020 | C:\Users\User\Music\Epiphany               |
| 52 | Betty                    | Folklore          | Taylor Swift  | Taylor Swift      | Folk      | 24/ 8/2020 | C:\Users\User\Music\Betty                  |
| 53 | Peace                    | Folklore          | Taylor Swift  | Taylor Swift      | Folk      | 24/ 8/2020 | C:\Users\User\Music\Peace                  |
| 54 | Hoax                     | Folklore          | Taylor Swift  | Taylor Swift      | Folk      | 24/ 8/2020 | C:\Users\User\Music\Hoax                   |
| 55 | Nocturne                 | End Credits       | Eden          | Jonathan Ng       | Indie Pop | 26/ 6/2015 | C:\Users\User\Music\Nocturne               |
| 56 | Gravity                  | End Credits       | Eden          | Jonathan Ng       | Indie Pop | 15/ 7/2015 | C:\Users\User\Music\Gravity                |
| 57 | End Credits              | End Credits       | Eden          | Jonathan Ng       | Indie Pop | 15/ 7/2015 | C:\Users\User\Music\EndCredits             |
| 58 | Gold                     | Vertigo           | Eden          | Jonathan Ng       | Indie Pop | 10/11/2017 | C:\Users\User\Music\Gold                   |
| 59 | Crash                    | Vertigo           | Eden          | Jonathan Ng       | Indie Pop | 8/12/2017  | C:\Users\User\Music\Crash                  |
| 60 | Untitled                 | No Future         | Eden          | Jonathan Ng       | Indie Pop | 8/10/2019  | C:\Users\User\Music\Untitled               |
| 61 | Projector                | No Future         | Eden          | Jonathan Ng       | Indie Pop | 25/10/2019 | C:\Users\User\Music\Projector              |
| 62 | Love, Death, Distraction | No Future         | Eden          | Jonathan Ng       | Indie Pop | 25/10/2019 | C:\Users\User\Music\Love,Death,Distraction |
| 63 | Isohel                   | No Future         | Eden          | Jonathan Ng       | Indie Pop | 25/10/2019 | C:\Users\User\Music\Isohel                 |
| 64 | Comethru                 | Love Is Not Dying | Jeremy Zucker | Jeremy Zucker     | Indie Pop | 7/ 9/2019  | C:\Users\User\Music\Comethru               |
| 65 | Still                    | Love Is Not Dying | Jeremy Zucker | Jeremy Zucker     | Indie Pop | 17/ 4/2020 | C:\Users\User\Music\Still                  |
| 66 | Somebody Loves You       | Love Is Not Dying | Jeremy Zucker | Jeremy Zucker     | Indie Pop | 17/ 4/2020 | C:\Users\User\Music\SomebodyLovesYou       |
| 67 | Orchid                   | Love Is Not Dying | Jeremy Zucker | Jeremy Zucker     | Indie Pop | 17/ 4/2020 | C:\Users\User\Music\Orchid                 |
| 68 | Julia                    | Love Is Not Dying | Jeremy Zucker | Jeremy Zucker     | Indie Pop | 17/ 4/2020 | C:\Users\User\Music\Julia                  |
| 69 | Anyone                   | Justice           | Justin Bieber | Justin Bieber     | Pop       | 1/ 1/2021  | C:\Users\User\Music\Anyone                 |
| 70 | Holy                     | Justice           | Justin Bieber | Chance the Rapper | Pop       | 18/ 9/2020 | C:\Users\User\Music\Holy                   |
| 71 | Lonely                   | Justice           | Justin Bieber | Benny Blanco      | Pop       | 16/10/2020 | C:\Users\User\Music\Lonely                 |

Figure 5.3

|    |                       |                    |                 |                              |     |            |                                       |
|----|-----------------------|--------------------|-----------------|------------------------------|-----|------------|---------------------------------------|
| 72 | Yummy                 | Changes            | Justin Bieber   | Justin Bieber                | Pop | 5/ 1/2020  | C:\Users\User\Music\Yummy             |
| 73 | Peaches               | Justice            | Justin Bieber   | Daniel Caesar & Giveon       | Pop | 19/ 3/2021 | C:\Users\User\Music\Peaches           |
| 74 | As I Am               | Justice            | Justin Bieber   | Khalid                       | Pop | 19/ 3/2021 | C:\Users\User\Music\AsIAm             |
| 75 | Hold On               | Justice            | Justin Bieber   | Justin Bieber                | Pop | 5/ 3/2021  | C:\Users\User\Music\HoldOn            |
| 76 | Intention             | Changes            | Justin Bieber   | Quavo                        | Pop | 7/ 2/2020  | C:\Users\User\Music\Intention         |
| 77 | Despacito             | Vida               | Luis Fonsi      | Luis Fonsi                   | Pop | 13/ 1/2017 | C:\Users\User\Music\Despacito         |
| 78 | Baby                  | My World 2.0       | Justin Bieber   | Ludacris                     | Pop | 25/ 4/2010 | C:\Users\User\Music\Baby              |
| 79 | Cold Water            | Cold Water         | Major Lazer     | Justin Bieber                | Pop | 22/ 7/2016 | C:\Users\User\Music\Cold Water        |
| 80 | Monster               | Wonder             | Shawn Mendes    | Shawn Mendes & Justin Bieber | Pop | 20/11/2020 | C:\Users\User\Music\Monster           |
| 81 | Up                    | My World 2.0       | Justin Bieber   | Nasri Atweh                  | R&B | 19/ 3/2010 | C:\Users\User\Music\Up                |
| 82 | Unstable              | Justice            | Justin Bieber   | The Kid LAROI                | Pop | 19/ 3/2021 | C:\Users\User\Music\Unstable          |
| 83 | U Smile               | My World 2.0       | Justin Bieber   | Justin Bieber                | Pop | 29/ 9/2010 | C:\Users\User\Music\USmile            |
| 84 | Beauty And A Beat     | The Best           | Justin Bieber   | Nicki Minaj                  | Pop | 12/10/2012 | C:\Users\User\Music\BeautyAndABeat    |
| 85 | Perfect               | Divide             | Ed Sheeran      | Ed Sheeran                   | Pop | 26/ 9/2017 | C:\Users\User\Music\Perfect           |
| 86 | One Less Lonely Girl  | My World           | Justin Bieber   | Justin Bieber                | Pop | 1/12/2009  | C:\Users\User\Music\OneLessLonelyGirl |
| 87 | Gas Pedal             | Remember Me        | Sage the Gemini | Justin Bieber & Iamsu!       | Pop | 22/ 3/2013 | C:\Users\User\Music\GasPedal          |
| 88 | Minefields            | Minefields         | Faouzia         | John Legend                  | Pop | 29/ 1/2021 | C:\Users\User\Minefields              |
| 89 | Love Me Now           | Darkness and Light | John Legend     | John Legend                  | Pop | 11/11/2016 | C:\Users\User\LoveMeNow               |
| 90 | You & I               | Love in the Future | John Legend     | John Legend                  | Pop | 10/ 7/2014 | C:\Users\User\You&I                   |
| 91 | Ordinary People       | Get Lifted         | John Legend     | John Legend                  | Pop | 3/10/2009  | C:\Users\User\OrdinaryPeople          |
| 92 | U Move, I Move        | Bigger Love        | John Legend     | Jhené Aiko                   | Pop | 19/ 6/2020 | C:\Users\User\UMove,IMove             |
| 93 | Wild                  | Bigger Love        | John Legend     | Gary Clark Jr.               | Pop | 14/ 8/2020 | C:\Users\User\Wild                    |
| 94 | We Don't Talk Anymore | Nine Track Mind    | Charlie Puth    | Charlie Puth                 | Pop | 3/ 8/2016  | C:\Users\User\WeDon'tTalkAnymore      |
| 95 | Attention             | Voicenotes         | Charlie Puth    | Charlie Puth                 | Pop | 25/ 4/2017 | C:\Users\User\Attention               |

Figure 5.4

|                                  |               |                 |               |               |         |            |                           |
|----------------------------------|---------------|-----------------|---------------|---------------|---------|------------|---------------------------|
| 96                               | One Call Away | Nine Track Mind | Charlie Puth  | Charlie Puth  | Pop     | 15/ 9/2015 | C:\Users\User\OneCallAway |
| 97                               | How Long      | How Long        | Charlie Puth  | Charlie Puth  | Pop     | 19/10/2017 | C:\Users\User\HowLong     |
| 98                               | Done For Me   | Voicenotes      | Charlie Puth  | Kehlani       | Pop     | 21/ 4/2018 | C:\Users\User\DoneForMe   |
| 99                               | The Way I Am  | Voicenotes      | Charlie Puth  | Charlie Puth  | Pop     | 9/ 7/2018  | C:\Users\User\TheWayIAm   |
| 100                              | I Hope        | Goldmine        | Gabby Barrett | Gabby Barrett | Country | 7/ 2/2019  | C:\Users\User\IHope       |
| 101                              | songtitle4    | album4          | artist4       | composer4     | genre4  | 20/ 9/2000 | directorypath4            |
| <hr/>                            |               |                 |               |               |         |            |                           |
| ----- MENU -----                 |               |                 |               |               |         |            |                           |
| (1) Add songs                    |               |                 |               |               |         |            |                           |
| (2) Delete songs                 |               |                 |               |               |         |            |                           |
| (3) Merge/Edit songs             |               |                 |               |               |         |            |                           |
| (4) List                         |               |                 |               |               |         |            |                           |
| (5) Advanced search              |               |                 |               |               |         |            |                           |
| (6) Creating a random playlist   |               |                 |               |               |         |            |                           |
| (7) Exit                         |               |                 |               |               |         |            |                           |
| <hr/>                            |               |                 |               |               |         |            |                           |
| Enter 1 - 7 to choose an action: |               |                 |               |               |         |            |                           |

Figure 5.5

- Figures 5.1 through 5.5 shows the list of songs from the music collection text file.

## 2.6 ADVANCED SEARCH (advancedSearch)

```
Enter 1 - 7 to choose an action: 5
-----
      ADVANCED SEARCH
-----
(1) Song title
(2) Artist
(3) Album

Please choose one of the above(1 - 3) for advanced search: 1

Please enter song title(Case Sensitive): an

(1) Cardigan          |Taylor Swift        |Folklore
(2) All I Want for Christmas Is You |Mariah Carey       |Merry Christmas
(3) More Than a Feeling    |Boston             |Boston
(4) I Wanna Dance with Somebody |Whitney Houston   |Whitney
(5) Billie Jean        |Michael Jackson    |Thriller
(6) Man In The Mirror   |Michael Jackson    |Bad 25
(7) Wanna Be Startin Somethin |Michael Jackson   |Thriller
(8) The Last Great American Dynasty |Taylor Swift      |Folklore
(9) Epiphany           |Taylor Swift        |Folklore

There are 9 matching result(s).

Do you want to do advanced search again? (Y/N): y
```

Figure 6.1

```
Do you want to do advanced search again? (Y/N): y
-----
      ADVANCED SEARCH
-----
(1) Song title
(2) Artist
(3) Album

Please choose one of the above(1 - 3) for advanced search: 2

Please enter artist name(Case Sensitive): Michael

(1) Billie Jean        |Michael Jackson    |Thriller
(2) Smooth Criminal    |Michael Jackson    |Bad 25
(3) Beat It            |Michael Jackson    |Thriller
(4) Bad                |Michael Jackson    |Bad 25
(5) Jam                |Michael Jackson    |Dangerous
(6) Man In The Mirror   |Michael Jackson    |Bad 25
(7) Heal The World     |Michael Jackson    |Dangerous
(8) Rock with You      |Michael Jackson    |Off the Wall
(9) Wanna Be Startin Somethin |Michael Jackson   |Thriller
(10) Dont Stop Til You Get Enough |Michael Jackson   |Off the Wall
(11) Remember the Time   |Michael Jackson    |Dangerous

There are 11 matching result(s).

Do you want to do advanced search again? (Y/N): n
```

Figure 6.2

- Figure 6.1 through 6.2 shows the functionality of the advanced search function.

## 2.7 CREATE PLAYLIST (createPlaylist)

```
Enter 1 - 7 to choose an action: 6
-----
CREATE PLAYLIST
-----
Enter in full, GENRE or ARTIST name(Case Sensitive): Michael Jackson
Number of song(s) found: 11
PLAYLIST(Michael Jackson)
(1) Wanna Be Startin Somethin
(2) Rock with You
(3) Beat It
(4) Bad
(5) Billie Jean
(6) Jam
(7) Remember the Time
(8) Heal The World
(9) Man In The Mirror
(10) Smooth Criminal
Do you want to create random playlist again? (Y/N): y
-----
CREATE PLAYLIST
-----
Enter in full, GENRE or ARTIST name(Case Sensitive): Pop
Number of song(s) found: 47
PLAYLIST(Pop)
(1) Remember the Time
(2) Call Me Maybe
(3) Intention
(4) Wanna Be Startin Somethin
(5) Positions
(6) Uptown Funk
(7) Peaches
(8) Wild
(9) Minefields
(10) Bad
Do you want to create random playlist again? (Y/N): ■
```

Figure 7.1

- Figure 7.1 demonstrates how a random playlist is created based on either genre or artist name entered by user.

### 3. TEST CASES

#### 3.1 TEST CASE 1 – Invalid input to choose action in Main Menu

ACTION:

- 1) Data validation test. Program will loop until valid input (1-7).

```
C:\Users\12son\Desktop\y1s2\UECS1104 programming and problem solving\prog
-----
        MENU
-----
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action: 8
Invalid Data. Please enter again.
-----
        MENU
-----
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action: fd
Invalid Data. Please enter again.
-----
        MENU
-----
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action:
```

### 3.2 TEST CASE 2 – Adding songs

#### ACTION:

- 1) Input 1 in Main Menu to enter Add Songs function (addSong).
- 2) Adding Song (Title 1).
- 3) Input relevant data.
- 4) Data validation test on release date (day, month, year). Program will loop until valid input.

```
C:\Users\12son\Desktop\y1s2\UECS1104 programming and problem solving\program files\group assignment-delete\Debug\group assignment-delete.exe
-----
MENU
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action: 1
-----
ADD SONGS
-----
Enter song title: Title 1
Enter song album: Album 1
Enter artist name: Artist 1
Enter music composer: Composer 1
Enter song genre: Genre 1
Enter release date:
Day (dd): d
Invalid day. Please enter between 1-31.
Day (dd): 32
Invalid day. Please enter between 1-31.
Day (dd): 30
Month (mm): s
Invalid month. Please enter between 1-12.Month (mm): 24
Invalid month. Please enter between 1-12.Month (mm): 3
Year (yyyy): h
Invalid year. Please enter between 1000-10000.Year (yyyy): 32
Invalid year. Please enter between 1000-10000.Year (yyyy): 2001
Enter the directory path : User\Docs\Directory Path 1
-----
Activate Windows
Go to Settings to activate Windows.
```

- 5) Input Y to add another song (Title 2) into MUSIC collection.
- 6) Input relevant data.
- 7) Input N to stop Add Songs function (addSong).
- 8) Program will loop back to the Main Menu.

```
C:\Users\12son\Desktop\y1s2\UECS1104 programming and problem solving\program files\group assignment-delete\Debug\group assignment-delete.exe
Do you want to add another song? (Y/N): Y
Enter song title: Title 2
Enter song album: Album 2
Enter artist name: Artist 2
Enter music composer: Composer 2
Enter song genre: Genre 2
Enter release date:
Day (dd): 30
Month (mm): 12
Year (yyyy): 2001
Enter the directory path : User\Docs\Directory Path
Do you want to add another song? (Y/N): N
-----
MENU
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action: ■
```

- 9) Input 4 in Main Menu to enter List function (listSong).

10) There are originally 100 songs in MUSIC collection. song No. 101 and 102 are the songs that we added.

```
C:\Users\12son\Desktop\y1s2\UECS1104 programming and problem solving\program files\group assignment-delete\Debug\group assignment-delete.exe
-----
MENU
-----
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action: 4

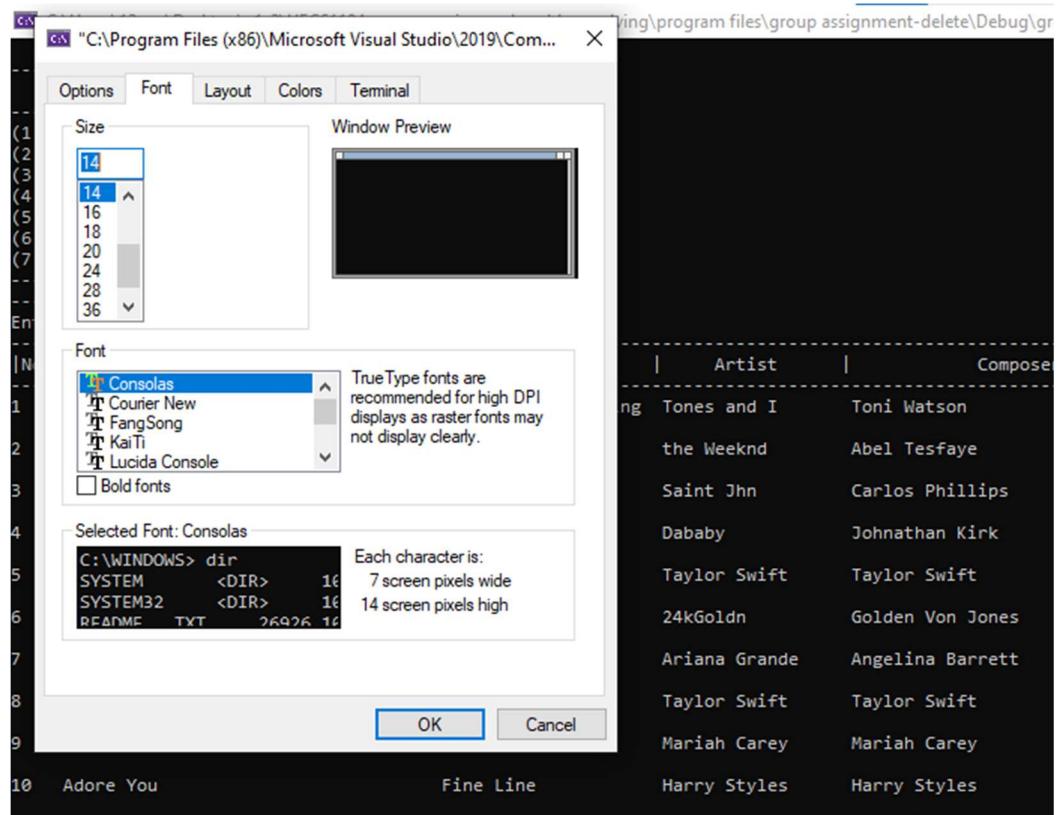
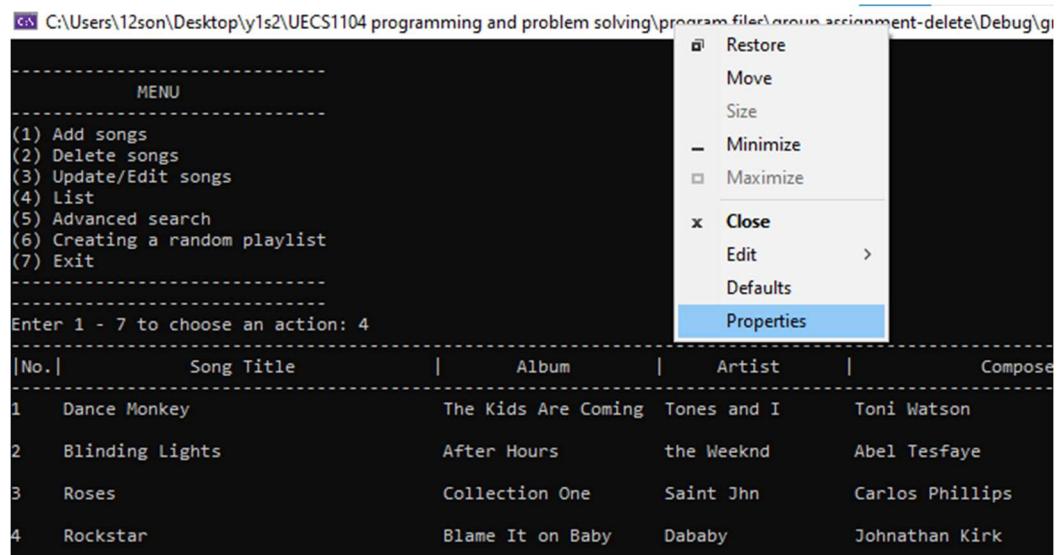
|No.| Song Title | Album | Artist | Composer | Genre | Release Date | Directory Path |
|1 | Dance Monkey | The Kids Are Coming | Tones and I | Toni Watson | Electropop | 10/ 5/2019 | C:\Users\User\Music\ DanceMonkey |
|2 | Blinding Lights | After Hours | the Weeknd | Abel Tesfaye | Electropop | 29/11/2019 | C:\Users\User\Music\ BlindingLights |
|3 | Roses | Collection One | Saint Jhn | Carlos Phillips | Dance | 18/ 9/2019 | C:\Users\User\Music\ Roses |
|4 | Rockstar | Blame It on Baby | Dababy | Johnathan Kirk | Hip Hop | 17/ 4/2020 | C:\Users\User\Music\ Rockstar |
|5 | Cardigan | Folklore | Taylor Swift | Taylor Swift | Folk | 27/ 7/2020 | C:\Users\User\Music\ Cardigan |
|6 | Mood | El Dorado | 24kGoldn | Golden Von Jones | Pop Rap | 24/ 7/2020 | C:\Users\User\Music\ Mood |
|7 | Positions | Positions | Ariana Grande | Angelina Barrett | Pop | 23/10/2020 | C:\Users\User\Music\ Positions |
|8 | Willow | Evermore | Taylor Swift | Taylor Swift | Folk | 11/12/2020 | C:\Users\User\Music\ Willow |
|9 | All I Want for Christmas Is You | Merry Christmas | Mariah Carey | Mariah Carey | Christmas | 28/10/1994 | C:\Users\User\Music\ AllIWantforChristmasIsYou |
|10 | Adore You | Fine Line | Harry Styles | Harry Styles | Pop | 6/12/2019 | C:\Users\User\Music\ AdoreYou |
|11 | Smoke On the Water | Machine Head | Deep Purple | Ian Paice | Rock | 1/ 5/1971 | C:\Users\User\Music\ SmokeOntheWater |
|12 | Smells Like Teen Spirit | Nevermind | Nirvana | Nirvana | Rock | 17/ 6/2009 | C:\Users\User\Music\ SmellsLikeTeenSpirit |
|13 | Walk This Way | Raising Hell | Run-D.M.C. | Run-D.M.C. | Rock | 25/10/2009 | C:\Users\User\Music\ WalkThisWay |
|14 | More Than a Feeling | Boston | Boston | Boston | Rock | 22/ 5/2011 | C:\Users\User\Music\ MoreThanAFeeling |
|15 | Call Me Maybe | Kiss | Carly Rae Jepsen | Carly Rae Jepsen | Pop | 2/ 5/2012 | C:\Users\User\Music\ CallMeMaybe |
|16 | I Wanna Dance with Somebody | Whitney | Whitney Houston | Whitney Houston | Pop | 25/10/2009 | C:\Users\User\Music\ I Wanna Dance with Somebody |
|17 | Rain On Me | Chromatica | Ariana Grande | Ariana Grande | Pop | 23/ 5/2020 | C:\Users\User\Music\ RainOnMe |

C:\Users\12son\Desktop\y1s2\UECS1104 programming and problem solving\program files\group assignment-delete\Debug\group assignment-delete.exe
-----
98 | Done For Me | Voicenotes | Charlie Puth | Kehlani | Pop | 21/ 4/2018 | C:\Users\User\ DoneForMe |
99 | The Way I Am | Voicenotes | Charlie Puth | Charlie Puth | Pop | 9/ 7/2018 | C:\Users\User\ TheWayIAm |
100 | I Hope | Goldmine | Gabby Barrett | Gabby Barrett | Country | 7/ 2/2019 | C:\Users\User\ IHope |
101 | Title 1 | Album 1 | Artist 1 | Composer 1 | Genre 1 | 30/ 3/2001 | User\Docs\Directory Path 1 |
102 | Title 2 | Album 2 | Artist 2 | Composer 2 | Genre 2 | 30/12/2001 | User\Docs\Directory Path |

-----
MENU
-----
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action:
```

## To see better on List function (listSong).

You can do the following actions as shown in the print screens below.



### 3.3 TEST CASE 3 – Deleting songs

#### ACTION:

- 1) Input 2 in Main Menu to enter Delete Songs function (deleteSong).
- 2) Delete Songs Function (deleteSong) will display the list of songs for user to decide which song to delete.
- 3) Input 100 to delete Song No. 100 (I Hope).

```
C:\Users\12zon\Desktop\y1s2\UECS1104 programming and problem solving\program files\group assignment-delete\Debug\group assignment-delete.exe
-----
MENU
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action: 2
-----
DELETE SONGS
(1) Dance Monkey
(2) Blinding Lights
(3) Shape of You
(4) Rockstar
(5) Cardigan
(6) Mood
(7) Diamonds
(8) Willow
(9) All I Want for Christmas Is You
(10) Adore You
(11) Don't Start Now
(12) Smells Like Teen Spirit
(13) Walk This Way
(14) Money Money Feeling
(15) God's Plan
(16) I Wanna Dance with Somebody
(17) Rain On Me
(18) Uptown Funk
(19) Twerk
(20) Juicy
(21) STILL D.R.E.
(22) Party at the World
(23) The Last Thing On My Mind
(24) Gentle On My Mind
(25) Believer
(26) Hallelujah
(27) Whatever It Takes
(28) Next to Me
(29) Sucker for Pain
(30) I'm Gonna Be (500 Miles)
(31) Battle Cry
(32) Shots
(33) Billie Jean
(34) Smooth Criminal
-----
(95) Attention
(96) One Call Away
(97) How Long
(98) Done For Me
(99) The Way I Am
(100) I Hope
(101) Title 1
(102) Title 2

Choose the song that you want to delete: 100

The deleted song is I Hope by Gabby Barrett.

Do you want to delete another song? (Y/N):
```

- 4) Input Y to continue deleting song.
- 5) Input 99 to delete song No. 99 (The Way I Am).
- 6) Input N to exit Delete Songs function (deleteSong).

```
(102) Title 2
Choose the song that you want to delete: 100
The deleted song is I Hope by Gabby Barrett.
Do you want to delete another song? (Y/N): Y

-----
          DELETE SONGS
-----
(1) Dance Monkey
(2) Blinding Lights
(3) Roses
(4) Rockstar
(5) Cardigan
(6) Mood
(7) Positions
(8) Willow
(9) All I Want for Christmas Is You
(10) Adore You
(11) Smoke On the Water
(12) Smells Like Teen Spirit
(13) Walk This Way
(14) More Than a Feeling
(15) Call Me Maybe
(16) I Wanna Dance with Somebody
(17) Rain On Me
(18) Uptown Funk
(19) Idol
(20) Juicy
(21) STILL D.R.E.
(22) Puff The Magic Dragon
(23) The Last Thing On My Mind
(24) Gentle On My Mind
(25) Believer
(26) Thunder
(27) Whatever It Takes

(93) Wild
(94) We Don't Talk Anymore
(95) Attention
(96) One Call Away
(97) How Long
(98) Done For Me
(99) The Way I Am
(100) Title 1
(101) Title 2

Choose the song that you want to delete: 99
The deleted song is The Way I Am by Charlie Puth.
Do you want to delete another song? (Y/N): -
```

### 3.4 TEST CASE 4 – Editing songs

#### ACTION:

- 1) Input 3 in Main Menu to enter Update/Edit Songs function (updateSearch).
- 2) Input 1 to choose to search matching songs by using song title.
- 3) Input Ti to show all song titles that have “Ti” in it.
- 4) Input 3 to edit song No.3 (Title 1).
- 5) Input relevant data.

```
C:\Users\12zon\Desktop\yls2\UECS1104 programming and problem solving\program files\group assignment-delete\Debug\group assignment-delete.exe
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Generating a random playlist
(7) Exit
-----
Enter 1 - 7 to choose an action: 3
UPDATE / EDIT
-----
(1) Song Title
(2) Artist
(3) Album
Please choose one of the above(1 - 3) to search: 1
Enter song title(Case Sensitive): Ti
There are 4 matching result(s).
(1) Dont Stop Till You Get Enough      Off the Wall      Michael Jackson    Michael Jackson      Pop      10/ 7/1979    C:\Users\User\Music\DontStopTillYouGetEnough
(2) Remember the Time                 Dangerous        Michael Jackson    Michael Jackson      Pop      14/ 1/1992    C:\Users\User\Music\RememberTheTime
(3) Title 1                          Album 1          Artist 1          Composer 1       Genre 1    30/ 3/2001    User\Docs\Directory Path 1
(4) Title 2                          Album 2          Artist 2          Composer 2       Genre 2    30/12/2001   User\Docs\Directory Path 2
Please enter the number for your song choice: 3
Enter new song name: Title 3
Enter new album name: Album 3
Enter new artist name: Artist 3
Enter new music composer name: Composer 3
Enter new song genre: Genre 3
Enter new release date:
Day (dd): 5
Month (mm): 5
Year (yyyy): 2015
Directory path: User\Docs\Directory Path
Activate Windows
Go to Settings to activate Windows.
Do you want to update/edit another song? (Y/N): ■
```

- 6) Input Y to continue editing songs.
- 7) Input 2 to choose to search matching songs by using artist name.
- 8) Input Ar to show all artist names that have “Ar” in it.
- 9) Input 4 to edit Song No. 4 (Title 2).
- 10) Input relevant data.

```
directory path: User\Docs\Directory Path
Do you want to update/edit another song? (Y/N): Y
-----
UPDATE / EDIT
-----
(1) Song Title
(2) Artist
(3) Album
Please choose one of the above(1 - 3) to search: 2
Enter artist name(Case Sensitive): Ar
There are 4 matching result(s).
(1) Positions                      Positions        Ariana Grande    Angelina Barrett      Pop      23/10/2020    C:\Users\User\Music\Positions
(2) Rain On Me                     Chromatica     Ariana Grande    Ariana Grande      Pop      23/ 5/2020    C:\Users\User\Music\RainOnMe
(3) Title 3                        Album 3         Artist 3         Composer 3       Genre 3    5/ 5/2015    User\Docs\Directory Path
(4) Title 2                        Album 2         Artist 2         Composer 2       Genre 2    30/12/2001   User\Docs\Directory Path 2
Please enter the number for your song choice: 4
Enter new song name: Title 4
Enter new album name: Album 4
Enter new artist name: Artist 4
Enter new music composer name: Composer 4
Enter new song genre: Genre 4
Enter new release date:
Day (dd): 6
Month (mm): 8
Year (yyyy): 2011
Directory path: User\Docs\Directory Path
Activate Windows
Go to Settings to activate W
```

- 11) Input Y to continue editing song.
- 12) Input 4 to test data validation. Program will loop until valid input (1 – 3).
- 13) Input 3 to choose to search matching songs by using Album.
- 14) Data validation test by inserting 3 then “dsa”.
- 15) Input 1 to edit Song No. 1 (Title 3).
- 16) Input relevant data.
- 17) Input 4 to exit Update/Edit Songs function (updateSearch).

```

C:\Users\12son\Desktop\y1s2\UECS1104 programming and problem solving\program files\group assignment-delete\Debug\group assignment-delete.exe
(7) Exit
-----
Enter 1 - 7 to choose an action: 3
----- UPDATE / EDIT -----
(1) Song Title
(2) Artist
(3) Album

Please choose one of the above(1 - 3) to search: 4
Please only enter 1, 2 or 3: ds
Please only enter 1, 2 or 3: 3
Enter album name(Case Sensitive): A1

There are 2 matching result(s):
(1) Title 3           Album 3          Artist 3        Composer 3      Genre 3      5/ 5/2015    User\Docs\Directory Path
(2) Title 4           Album 4          Artist 4        Composer 4      Genre 4      6/ 8/2011    User\Docs\Directory Path

Please enter the number for your song choice: 3
Please enter a valid number for your song choice.
Please enter the number for your song choice: dsa
Please enter a valid number for your song choice.
Please enter the number for your song choice: 1

Enter new song name: Title 5
Enter new album name: Album 5
Enter new artist name: Artist 5
Enter new music composer name: Composer 5
Enter new song genre: Genre 5
Enter new release date:
Day (dd): 7
Month (mm): 7
Year (yyyy): 2006
Directory path: User\Docs\Directory Path
Do you want to update/edit another song? (Y/N): _
```

Activate Window  
Go to Settings to ac

### 3.5 TEST CASE 5 – Advanced search

#### ACTION:

- 1) Input 5 in Main Menu to enter Advanced Search function (advancedSearch).
- 2) Data validation test by entering 4 then f. Program will loop until valid input (1 – 3).
- 3) Input 1 to choose to search matching songs by using Song title.
- 4) Input G to search all song titles that have ‘G’ in it.

```
C:\Users\12son\Desktop\y1s2\UECS1104 programming and problem solving\program files\group assignment-delete\Debug\group assignment-  
-----  
 MENU  
-----  
(1) Add songs  
(2) Delete songs  
(3) Update/Edit songs  
(4) List  
(5) Advanced search  
(6) Creating a random playlist  
(7) Exit  
-----  
Enter 1 - 7 to choose an action: 5  
-----  
 ADVANCED SEARCH  
-----  
(1) Song title  
(2) Artist  
(3) Album  
  
Please choose one of the above(1 - 3) for advanced search: 4  
Please only enter 1, 2 or 3: f  
Please only enter 1, 2 or 3: 1  
  
Please enter song title(Case Sensitive): G  


|                                     |                 |                   |
|-------------------------------------|-----------------|-------------------|
| (1) Gentle On My Mind               | John Hartford   | Gentle On My Mind |
| (2) Dont Stop Til You Get Enough    | Michael Jackson | Off the Wall      |
| (3) The Last Great American Dynasty | Taylor Swift    | Folklore          |
| (4) Gravity                         | Eden            | End Credits       |
| (5) Gold                            | Eden            | Vertigo           |
| (6) One Less Lonely Girl            | Justin Bieber   | My World          |
| (7) Gas Pedal                       | Sage the Gemini | Remember Me       |

  
There are 7 matching result(s).  
Do you want to do advanced search again? (Y/N): ■
```

- 5) Input Y to continue doing advanced search.
- 6) Input 2 to choose to search matching songs by using Artist.
- 7) Input P to search all songs with Artist name that have ‘P’ in it.

```

There are 7 matching result(s).
Do you want to do advanced search again? (Y/N): Y
-----
ADVANCED SEARCH
-----
(1) Song title
(2) Artist
(3) Album

Please choose one of the above(1 - 3) for advanced search: 2

Please enter artist name(Case Sensitive): P

(1) Smoke On the Water |Deep Purple |Machine Head
(2) Puff The Magic Dragon |Peter |Moving
(3) The Last Thing On My Mind |Tom Paxton |Ramblin' Boy
(4) We Don't Talk Anymore |Charlie Puth |Nine Track Mind
(5) Attention |Charlie Puth |Voicenotes
(6) One Call Away |Charlie Puth |Nine Track Mind
(7) How Long |Charlie Puth |How Long
(8) Done For Me |Charlie Puth |Voicenotes
(9) The Way I Am |Charlie Puth |Voicenotes

There are 9 matching result(s).
Do you want to do advanced search again? (Y/N):

```

- 8) Input Y to continue doing advanced search.
- 9) Input 3 to choose to search matching songs by using Album.
- 10) Input y to search all songs with album name that have 'y' in it.
- 11) Input N to exit Advanced Search function (advancedSearch) and return to Main Menu.

```

(9) The Way I Am |Charlie Puth |Voicenotes

There are 9 matching result(s).

Do you want to do advanced search again? (Y/N): Y
-----
ADVANCED SEARCH
-----
(1) Song title
(2) Artist
(3) Album

Please choose one of the above(1 - 3) for advanced search: 3

Please enter album name(Case Sensitive): y

(1) Rockstar |Dababy |Blame It on Baby
(2) All I Want for Christmas Is You |Mariah Carey |Merry Christmas
(3) I Wanna Dance with Somebody |Whitney Houston |Whitney
(4) Juicy |The Notorious BIG |Juicy
(5) The Last Thing On My Mind |Tom Paxton |Ramblin' Boy
(6) Gentle On My Mind |John Hartford |Gentle On My Mind
(7) Comethru |Jeremy Zucker |Love Is Not Dying
(8) Still |Jeremy Zucker |Love Is Not Dying
(9) Somebody Loves You |Jeremy Zucker |Love Is Not Dying
(10) Orchid |Jeremy Zucker |Love Is Not Dying
(11) Julia |Jeremy Zucker |Love Is Not Dying
(12) Baby |Justin Bieber |My World 2.0
(13) Up |Justin Bieber |My World 2.0
(14) U Smile |Justin Bieber |My World 2.0
(15) One Less Lonely Girl |Justin Bieber |My World

There are 15 matching result(s).

Do you want to do advanced search again? (Y/N):

```

### 3.6 TEST CASE 6 – Creating Playlist

#### ACTION:

- 1) Input 6 to enter Creating a Random Playlist function (createPlaylist).
- 2) Input Justin Bieber to create a playlist of 10 songs with Justin Bieber as the artist.

```
MENU
-----
(1) Add songs
(2) Delete songs
(3) Update/Edit songs
(4) List
(5) Advanced search
(6) Creating a random playlist
(7) Exit

-----
Enter 1 - 7 to choose an action: 6

-----
CREATE PLAYLIST
-----
Enter in full, GENRE or ARTIST name(Case Sensitive): Justin Bieber
Number of song(s) found: 14

PLAYLIST(Justin Bieber)
(1) One Less Lonely Girl
(2) Hold On
(3) Holy
(4) U Smile
(5) Up
(6) Peaches
(7) Intention
(8) Yummy
(9) Beauty And A Beat
(10) Lonely

Do you want to create random playlist again? (Y/N): ■
```

- 3) Input Y to continue creating a random playlist.
- 4) Input Pop to create a playlist of 10 songs with genre Pop.
- 5) Input N to exit Creating a Random Playlist function (createPlaylist) and back to Main Menu.

```
(9) Beauty And A Beat
(10) Lonely

Do you want to create random playlist again? (Y/N): Y

-----
CREATE PLAYLIST
-----
Enter in full, GENRE or ARTIST name(Case Sensitive): dsa
No songs found.
Please enter valid input: Pop
Number of song(s) found: 47

PLAYLIST(Pop)
(1) Shots
(2) Billie Jean
(3) Heal The World
(4) Lonely
(5) The Way I Am
(6) Despacito
(7) Hold On
(8) Unstable
(9) Done For Me
(10) Peaches

Do you want to create random playlist again? (Y/N):
```

### 3.7 TEST CASE 7 – Exit program and output data into text file

#### ACTION THAT HAD BEEN DONE PREVIOUSLY:

- 1) Add Title 1 – song 101
- 2) Add Title 2 – song 101
- 3) Delete I Hope - song No. 100 (Title 1 become song No. 100 and Title 2 become song No. 101)
- 4) Delete The Way I Am – song No. 99 (Title 1 become song No. 99 and Title 2 become song No. 100)
- 5) Update/edit Title 1 to Title 3 when using search by song title – song No. 99
- 6) Update/edit Title 2 to Title 4 when using search by artist – song No. 100
- 7) Update/edit Title 3 to Title 5 when using search by album – song No. 99
- 8) So the latest data after edit is
  - a. Song No. 1 – 98 are not affected.
  - b. Song No. 99 is Title 5.
  - c. Song No. 100 is Title 4.

#### ACTION:

- 1) Proving the above actions by using List function (listSong).
- 2) Input 4 to enter List function (listSong).

|                          |                 |              |                |         |            |                                  |
|--------------------------|-----------------|--------------|----------------|---------|------------|----------------------------------|
| 93 Wild                  | Bigger Love     | John Legend  | Gary Clark Jr. | Pop     | 14/ 8/2020 | C:\Users\User\Wild               |
| 94 We Don't Talk Anymore | Nine Track Mind | Charlie Puth | Charlie Puth   | Pop     | 3/ 8/2016  | C:\Users\User\WeDon'tTalkAnymore |
| 95 Attention             | Voicenotes      | Charlie Puth | Charlie Puth   | Pop     | 25/ 4/2017 | C:\Users\User\Attention          |
| 96 One Call Away         | Nine Track Mind | Charlie Puth | Charlie Puth   | Pop     | 15/ 9/2015 | C:\Users\User\OneCallAway        |
| 97 How Long              | How Long        | Charlie Puth | Charlie Puth   | Pop     | 19/10/2017 | C:\Users\User\HowLong            |
| 98 Done For Me           | Voicenotes      | Charlie Puth | Kehlani        | Pop     | 21/ 4/2018 | C:\Users\User\DoneForMe          |
| 99 Title 5               | Album 5         | Artist 5     | Composer 5     | Genre 5 | 7/ 7/2006  | User\Docs\Directory Path         |
| 100 Title 4              | Album 4         | Artist 4     | Composer 4     | Genre 4 | 6/ 8/2011  | User\Docs\Directory Path         |

- 3) Input 7 to exit the program and store MUSIC collection into output text file.

|   |            |              |            |         |            |                          |
|---|------------|--------------|------------|---------|------------|--------------------------|
| 98 Done For Me  | Voicenotes | Charlie Puth | Kehlani    | Pop     | 21/ 4/2018 | C:\Users\User\DoneForMe  |
| 99 Title 5  | Album 5    | Artist 5     | Composer 5 | Genre 5 | 7/ 7/2006  | User\Docs\Directory Path |
| 100 Title 4   | Album 4    | Artist 4     | Composer 4 | Genre 4 | 6/ 8/2011  | User\Docs\Directory Path |
| -----   |            |              |            |         |            |                          |
| MENU  |            |              |            |         |            |                          |
| (1) Add songs<br>(2) Delete songs<br>(3) Update/Edit songs<br>(4) List<br>(5) Advanced search<br>(6) Creating a random playlist<br>(7) Exit   |            |              |            |         |            |                          |
| -----   |            |              |            |         |            |                          |
| Enter 1 - 7 to choose an action: 7  |            |              |            |         |            |                          |
| C:\Users\12son\Desktop\1s2\UECS1104\programming and problem solving\program files\group assignment-delete\Debug\group assignment-delete.exe (process 12704) exited with code 0.<br>To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.<br>Press any key to close this window . . . |            |              |            |         |            |                          |

- 4) Output text file content showing that ‘I Hope’ and ‘The Way I Am’ are deleted and last 2 title is Title 5 and Title 4.

Music Collection - Notepad  
File Edit Format View Help

```

Orchid|Love Is Not Dying|Jeremy Zucker|Jeremy Zucker|Indie Pop|17|4|2020|C:\Users\User\Music\Orchid
Julia|Love Is Not Dying|Jeremy Zucker|Jeremy Zucker|Indie Pop|17|4|2020|C:\Users\User\Music\Julia
Anyone|Justice|Justin Bieber|Justin Bieber|Pop|1|1|2021|C:\Users\User\Music\Anyone
Holy|Justice|Justin Bieber|Chance the Rapper|Pop|18|9|2020|C:\Users\User\Music\Holy
Lonely|Justice|Justin Bieber|Benny Blanco|Pop|16|10|2020|C:\Users\User\Music\Lonely
Yummy|Changes|Justin Bieber|Justin Bieber|Pop|5|1|2020|C:\Users\User\Music\Yummy
Peaches|Justice|Justin Bieber|Daniel Caesar & Giveon|Pop|19|3|2021|C:\Users\User\Music\Peaches
As I Am|Justice|Justin Bieber|Khalid|Pop|19|3|2021|C:\Users\User\Music\AsIAm
Hold On|Justice|Justin Bieber|Justin Bieber|Pop|5|3|2021|C:\Users\User\Music\HoldOn
Intention|Changes|Justin Bieber|Quavo|Pop|7|2|2020|C:\Users\User\Music\Intention
Despacito|Vida|Luis Fonsi|Luis Fonsi|Pop|13|1|2017|C:\Users\User\Music\Despacito
Baby|My World 2.0|Justin Bieber|Ludacris|Pop|25|4|2010|C:\Users\User\Music\Baby
Cold Water|Cold Water|Major Lazer|Justin Bieber|Pop|22|7|2016|C:\Users\User\Music\Cold Water
Monster|Wonder|Shawn Mendes|Shawn Mendes & Justin Bieber|Pop|20|11|2020|C:\Users\User\Music\Monster
Up|My World 2.0|Justin Bieber|Nasri Atweh|R&B|19|3|2010|C:\Users\User\Music\Up
Unstable|Justice|Justin Bieber|The Kid LAROI|Pop|19|3|2021|C:\Users\User\Music\Unstable
U Smile|My World 2.0|Justin Bieber|Justin Bieber|Pop|29|9|2010|C:\Users\User\Music\USmile
Beauty And A Beat|The Best|Justin Bieber|Nicki Minaj|Pop|12|10|2012|C:\Users\User\Music\BeautyAndABeat
Perfect|Divide|Ed Sheeran|Ed Sheeran|Pop|26|9|2017|C:\Users\User\Music\Perfect
One Less Lonely Girl|My World|Justin Bieber|Justin Bieber|Pop|1|12|2009|C:\Users\User\Music\OneLessLonelyGirl
Gas Pedal|Remember Me|Sage the Gemini|Justin Bieber & Iamsu!|Pop|22|3|2013|C:\Users\User\Music\GasPedal
Minefields|Minefields|Faouzia|John Legend|Pop|29|1|2021|C:\Users\User\Minefields
Love Me Now|Darkness and Light|John Legend|John Legend|Pop|11|11|2016|C:\Users\User\LoveMeNow
You & I|Love in the Future|John Legend|John Legend|Pop|10|7|2014|C:\Users\User>You&I
Ordinary People|Get Lifted|John Legend|John Legend|Pop|3|10|2009|C:\Users\User\OrdinaryPeople
U Move, I Move|Bigger Love|John Legend|Jhené Aiko|Pop|19|6|2020|C:\Users\User\UMove,IMove
Wild|Bigger Love|John Legend|Gary Clark Jr.|Pop|14|8|2020|C:\Users\User\Wild
We Don't Talk Anymore|Nine Track Mind|Charlie Puth|Charlie Puth|Pop|3|8|2016|C:\Users\User\WeDon'tTalkAnymore
Attention|Voicenotes|Charlie Puth|Charlie Puth|Pop|25|4|2017|C:\Users\User\Attention
One Call Away|Nine Track Mind|Charlie Puth|Charlie Puth|Pop|15|9|2015|C:\Users\User\OneCallAway
How Long|How Long|Charlie Puth|Charlie Puth|Pop|19|10|2017|C:\Users\User\HowLong
Done For Me|Voicenotes|Charlie Puth|Kehlani|Pop|21|4|2018|C:\Users\User\DoneForMe
Title 5|Album 5|Artist 5|Composer 5|Genre 5|7|7|2006>User\Docs\Directory Path
Title 4|Album 4|Artist 4|Composer 4|Genre 4|6|8|2011>User\Docs\Directory Path

```

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#### 4. Complete C++ Program

```
// Preprocessor directives

#define _CRT_SECURE_NO_WARNINGS

#include <cstdlib>
#include <cctype>
#include <cstring>
#include <cmath>
#include <ctime>
#include <iostream>
#include <iomanip>
#include <fstream>

using namespace std;

// Define global constant for the size of arrays
#define ARRAY_SIZE 50

// Structure definition

typedef struct
{
    int day;
    int month;
    int year;
} DATE;

typedef struct
{
    char song_title[ARRAY_SIZE];
    char album[ARRAY_SIZE];
    char artist[ARRAY_SIZE];
    char composer[ARRAY_SIZE];
```

```

char genre[ARRAY_SIZE];
DATE release_date;
char directory_path[100];
} MUSIC;

// Function prototype to read data
int readSong(MUSIC music[]);

// Function prototype to add songs
void addSong(MUSIC music[], int* num_songPtr);

// Function prototype to delete songs
void deleteSong(MUSIC music[], int* num_songPtr);

// Function prototype to search for a song to update/edit
void updateSearch(MUSIC music[], int num_song);
void updateEdit(MUSIC music[], int match, int indexNo[]);

// Function prototype to list songs
void listSong(MUSIC music[], int num_song);

// Function prototype to advances search
void advancedSearch(MUSIC music[], int num_song);

// Function prototype to create a random playlist
void createPlaylist(MUSIC music[], int num_song);

// Function prototype to exit
void exitFunction(MUSIC music[], int num_song);

```

```

// Main function
int main(void)
{
    // Declare array of structures to store maximum of 120 songs
    MUSIC music[120] = {};

    // Read data from text file into array and get total number of songs in collection
    int num_song = readSong(music);

    // Declare choice for user to input to choose action from main menu (1-7)
    int choice = 0;

    // Display Menu
    do
    {
        cout << endl;
        for (int i = 0; i < 30;i++)
            cout << "-";
        cout << endl;
        cout << setw(16) << "MENU" << endl;
        for (int i = 0; i < 30;i++)
            cout << "-";
        cout << endl;

        cout << "(1) Add songs" << endl;
        cout << "(2) Delete songs" << endl;
        cout << "(3) Update/Edit songs" << endl;
        cout << "(4) List" << endl;
        cout << "(5) Advanced search" << endl;
        cout << "(6) Creating a random playlist" << endl;
    }
}
```

```

cout << "(7) Exit" << endl;
for (int i = 0; i < 30;i++)
    cout << "-";
cout << endl;
for (int i = 0; i < 30;i++)
    cout << "-";
cout << endl;

// Ask for choice for action (1-7)
cout << "Enter 1 - 7 to choose an action: ";
cin >> choice;

// Action choose by user (1-7)
switch (choice)
{
    case 1: addSong(music, &num_song);
        break;
    case 2: deleteSong(music, &num_song);
        break;
    case 3: updateSearch(music, num_song);
        break;
    case 4: listSong(music, num_song);
        break;
    case 5: advancedSearch(music, num_song);
        break;
    case 6: createPlaylist(music, num_song);
        break;
    case 7: exitFunction(music, num_song);
        break;
}

// If user enter the choice which not included between 1 and 7, show
invalid input

```

```

        default: cout << "Invalid Data. Please enter again.";

        cin.clear();

        while (getchar() != '\n');

        break;

    }

    // Loop until user enters 7 to exit the program

} while (choice != 7);

return 0;
}

// Read data from the text file and store into MUSIC collection

int readSong(MUSIC music[])
{
    // Array that can read up to 199 characters to temporary store one line of data
    // from input text file

    char dataRead[200];

    // Initialize index number to 0

    int i = 0;

    // Link to the input text file

    ifstream in_file("Music Collection.txt");

    if (!in_file)
    {
        // Display error and exit program if error opening input text file

        cout << "Error opening data file. The Program will now exit!";

        exit(EXIT_FAILURE);
    }

    else

```

```

{

char delim[] = "|";

// Read in first row of data from input text file
in_file.getline(dataRead, 200);

// Store data from dataRead into the MUSIC collection
while (in_file)
{
    char* token = strtok(dataRead, delim);
    strcpy(music[i].song_title, token);

    token = strtok(NULL, delim);
    strcpy(music[i].album, token);

    token = strtok(NULL, delim);
    strcpy(music[i].artist, token);

    token = strtok(NULL, delim);
    strcpy(music[i].composer, token);

    token = strtok(NULL, delim);
    strcpy(music[i].genre, token);

    token = strtok(NULL, delim);
    int token_day = atoi(token);
    music[i].release_date.day = token_day;

    token = strtok(NULL, delim);
    int token_month = atoi(token);
}

```

```

music[i].release_date.month = token_month;

token = strtok(NULL, delim);
int token_year = atoi(token);
music[i].release_date.year = token_year;

token = strtok(NULL, delim);
strcpy(music[i].directory_path, token);
token = strtok(NULL, delim);

// i + 1 after 1 song is added
i++;
in_file.getline(dataRead, 200);
}

// Close input text file after finished reading data
in_file.close();
}

// Return the number of songs to main function
return i;
}

// Add songs into MUSIC collection
void addSong(MUSIC music[], int* num_songPtr)
{
    // Display header
    cout << endl;
    for (int i = 0; i < 30;i++)
        cout << "-";
}

```

```

cout << endl;
cout << setw(19) << "ADD SONGS" << endl;
for (int i = 0; i < 30;i++)
    cout << "-";
cout << endl;

// Number of songs
int i = *num_songPtr;

char ans = ' ';

do
{
    // To clear input buffer from main
    while (getchar() != '\n');

    // Get song title from user
    cout << "Enter song title: ";
    cin.getline(music[i].song_title, ARRAY_SIZE);
    cout << endl;

    // Get song album from user
    cout << "Enter song album: ";
    cin.getline(music[i].album, ARRAY_SIZE);
    cout << endl;

    // Get the artist name from user
    cout << "Enter artist name: ";
    cin.getline(music[i].artist, ARRAY_SIZE);
    cout << endl;

```

```

// Get the music composer from user
cout << "Enter music composer: ";
cin.getline(music[i].composer, ARRAY_SIZE);
cout << endl;

// Get song genre from user
cout << "Enter song genre: ";
cin.getline(music[i].genre, ARRAY_SIZE);
cout << endl;

//Get the release date (day) of the song from user
cout << "Enter release date:" << endl;
do
{
    cout << "Day (dd): ";
    cin >> music[i].release_date.day;
    cout << endl;
    if (music[i].release_date.day < 1 || music[i].release_date.day > 31)
    {
        cout << "Invalid day. Please enter between 1-31." << endl;
        cin.clear();
        while (getchar() != '\n');
    }
} while (music[i].release_date.day < 1 || music[i].release_date.day > 31);

// Get the release date (month) of the song from user
do
{

```

```

cout << "Month (mm): ";
cin >> music[i].release_date.month;
cout << endl;
if (music[i].release_date.month < 1 || music[i].release_date.month >
12)
{
    cout << "Invalid month. Please enter between 1-12.";
    cin.clear();
    while (getchar() != '\n');
}

} while (music[i].release_date.month < 1 || music[i].release_date.month >
12);
```

// Get the release date (year) of the song from user

```

do
{
    cout << "Year (yyyy): ";
    cin >> music[i].release_date.year;
    cout << endl;
    if (music[i].release_date.year < 1000 || music[i].release_date.year >
10000)
    {
        cout << "Invalid year. Please enter between 1000-10000.";
        cin.clear();
        while (getchar() != '\n');
    }

} while (music[i].release_date.year < 1000 || music[i].release_date.year >
10000);
```

//Get the directory path from the user

```

while (getchar() != '\n');
cout << "Enter the directory path : ";
```

```

    cin.getline(music[i].directory_path, 100);
    cout << endl;

    i++;

    // Ask if user wants to add another song
    do {
        cout << "Do you want to add another song? (Y/N): ";
        cin >> ans;
        if (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n')
        {
            cout << "Invalid answer. Please enter Y/N." << endl << endl;
            cin.clear();
            while (getchar() != '\n');
        }
    } while (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n');
    cout << endl;

    // Loop if user wants to add another song
} while (ans == 'Y' || ans == 'y');

*num_songPtr = i;

return;
}

// Delete songs from MUSIC collection
void deleteSong(MUSIC music[], int* num_songPtr)
{
    int delnum = 0;

```

```

char ans = ' ';

do
{
    // Display the list number and song title
    for (int i = 0; i < 40;i++)
        cout << "-";
    cout << endl;
    cout << setw(26) << "DELETE SONGS" << endl;
    for (int i = 0; i < 40;i++)
        cout << "-";
    cout << endl;

    // Display the list of song titles
    for (int count = 0; count < *num_songPtr; count++)
    {
        cout << "(" << count + 1 << ") ";
        cout << music[count].song_title << endl;
    }

    cout << endl;

    // Prompt to let user input which song to delete
    cout << "Choose the song that you want to delete: ";

    do
    {
        // Data validation to make sure user key in existing index number in
MUSIC collection
        cin >> delnum;
        if (delnum < 1 || delnum > *num_songPtr)

```

```

    {
        cout << "Please enter valid number: ";
        cin.clear();
        while (getchar() != '\n');
    }

} while (delnum < 1 || delnum > *num_songPtr);

// Output deleted song by user
cout << "\nThe deleted song is " << music[delnum - 1].song_title <<
" by " << music[delnum - 1].artist << "." << endl << endl;

if (delnum != *num_songPtr)
{
    // Replace the list that need to delete using the list in loop
    for (int i = delnum - 1; i < *num_songPtr; i++)
    {
        strcpy(music[i].song_title, music[i + 1].song_title);
        strcpy(music[i].album, music[i + 1].album);
        strcpy(music[i].artist, music[i + 1].artist);
        strcpy(music[i].composer, music[i + 1].composer);
        strcpy(music[i].genre, music[i + 1].genre);
        music[i].release_date.day = music[i + 1].release_date.day;
        music[i].release_date.month      =      music[i]      +
1].release_date.month;
        music[i].release_date.year = music[i + 1].release_date.year;
        strcpy(music[i].directory_path, music[i + 1].directory_path);
    }
}
else
{

```

```

// Delete the last row of data
strcpy(music[delnum].song_title, "");
strcpy(music[delnum].album, "");
strcpy(music[delnum].artist, "");
strcpy(music[delnum].composer, "");
strcpy(music[delnum].genre, "");
music[delnum].release_date.day = NULL;
music[delnum].release_date.month = NULL;
music[delnum].release_date.year = NULL;
strcpy(music[delnum].directory_path, "");

}

--* num_songPtr;

// Ask if user wants to delete another song
do {
    cout << "Do you want to delete another song? (Y/N): ";
    cin >> ans;
    if (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n')
    {
        cout << "Invalid answer. Please enter Y/N." << endl << endl;
        cin.ignore();
        while (getchar() != '\n');
    }
} while (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n');

cout << endl;
// Loop if user wants to delete another song
} while (ans == 'Y' || ans == 'y');

```

```

return;
}

// Update and Edit songs from MUSIC collection
void updateSearch(MUSIC music[], const int num_song)
{
    char ans = ' ';
    do
    {
        // Array of integers to store index numbers of matching songs
        int indexNo[100] = {};

        // Starting index number of count of matches
        int countMatch = 0;

        // The index number of exact match
        int match = 0;

        // To decide whether to repeat the loop
        bool repeat = false;

        int choice = 0;

        // Prompt user for input type
        for (int i = 0; i < 25;i++)
            cout << "-" ;
        cout << endl;
        cout << setw(19) << "UPDATE / EDIT" << endl;
        for (int i = 0; i < 25;i++)

```

```

cout << "-";
cout << "\n(1) Song Title\n(2) Artist\n(3) Album" << endl << endl;
cout << "Please choose one of the above(1 - 3) to search: ";
do
{
    cin >> choice;
    if (choice != 1 && choice != 2 && choice != 3)
    {
        cout << "Please only enter 1, 2 or 3: ";
        cin.clear();
        while (getchar() != '\n');

    }
}

} while (choice != 1 && choice != 2 && choice != 3);

// Clear input buffer
while (getchar() != '\n');

switch (choice)
{
    case 1: // Song title
        char title[ARRAY_SIZE];
        do
        {
            cout << "Enter song title(Case Sensitive): ";
            cin.getline(title, 50);
            cout << endl;

            // Find matching entry in collection
            for (int i = 0; i < num_song; i++) // Loop to compare user
input with existing collection
        {
}

```

```

        if (strstr(music[i].song_title, title) != NULL) // If not
NULL, means that there is a match
    {
        indexNo[countMatch] = i; // Get the index
number(s) of the entry with a match
        countMatch++; // Count the number of
matches
    }
}

cout << "There are " << countMatch << " matching
result(s)." << endl << endl;

// Find the exact match of song
if (countMatch > 1) // If there is more than 1 match
{
    // Display matching songs
    for (int k = 0; k < countMatch; k++)
    {
        cout << left << "(" << k + 1 << ")" << setw(36)
<< music[indexNo[k]].song_title
                << setw(21) <<
music[indexNo[k]].album << setw(18) << music[indexNo[k]].artist
                << setw(34) <<
music[indexNo[k]].composer << setw(12) << music[indexNo[k]].genre << setw(3) <<
right
                << music[indexNo[k]].release_date.day
<< "/" << setw(2) << music[indexNo[k]].release_date.month << "/"
                << setw(8) << left <<
music[indexNo[k]].release_date.year << music[indexNo[k]].directory_path << endl <<
endl;
    }
}

do
{

```

```

cout << "Please enter the number for your
song choice: ";
cin >> match;
cout << endl;
if (match < 1 || match > countMatch)
{
    cout << "Please enter a valid number
for your song choice." << endl;
    cin.clear();
    while (getchar() != '\n');

}

// Else exits loop
else repeat = true;
} while (match < 1 || match > countMatch);
}

// No matches
else if (countMatch == 0)
    cout << "Please try again." << endl << endl;
else if (countMatch == 1)
{
    cout << left << "(1) " << setw(36) <<
music[indexNo[0]].song_title
        << setw(21) << music[indexNo[0]].album <<
setw(18) << music[indexNo[0]].artist
        << setw(34) << music[indexNo[0]].composer
<< setw(12)
        << setw(3) <<
right << music[indexNo[0]].release_date.day << "/"
        << setw(2) <<
music[indexNo[0]].release_date.month << "/"

```

```

        <<      setw(8)      <<      left      <<
music[indexNo[0]].release_date.year << music[indexNo[0]].directory_path
        << endl << endl;

match = 1;
repeat = true;
}

} while (!repeat);

// Take the music collection structure index number
(indexNo[match - 1]), point to it and edit its contents
updateEdit(music, match, indexNo);
break;

case 2: // Artist

char artist[ARRAY_SIZE];
do {

    cout << "Enter artist name(Case Sensitive): ";
    cin.getline(artist, 50);
    cout << endl;

    // Find matching entry in collection

    for (int i = 0; i < num_song; i++) // Loop to compare user
input with existing collection
    {
        if (strstr(music[i].artist, artist) != NULL) // If not
NULL, means that there is a match
        {

```

```

indexNo[countMatch] = i; // Get the index
number(s) of the entry with a match

countMatch++; // Count the number of
matches

}

}

cout << "There are " << countMatch << " matching
result(s)." << endl << endl;

// Find the exact match of song

if (countMatch > 1) // If there is more than 1 match

{

    for (int k = 0; k < countMatch; k++) // Display
matching songs

    {

        cout << left << "(" << k + 1 << ")" << setw(36)
<< music[indexNo[k]].song_title
                           << setw(21)           <<
music[indexNo[k]].album << setw(18) << music[indexNo[k]].artist
                           << setw(34)           <<
music[indexNo[k]].composer << setw(12) << music[indexNo[k]].genre << setw(3) <<
right
                           << music[indexNo[k]].release_date.day
<< "/" << setw(2) << music[indexNo[k]].release_date.month << "/"
                           << setw(8)      << left     <<
music[indexNo[k]].release_date.year << music[indexNo[k]].directory_path << endl <<
endl;

}

do

{

    cout << "Please enter the number for your
song choice: ";

    cin >> match;

    cout << endl;

```

```

        if (match < 1 || match > countMatch)
    {
        cout << "Please enter a valid number
for your song choice." << endl;

        cin.clear();
        while (getchar() != '\n');

    }

    // Else exits loop
    else repeat = true;
}

} while (match < 1 || match > countMatch);

}

// No matches

else if (countMatch == 0)

    cout << "Please try again." << endl << endl;

else if (countMatch == 1)

{
    cout << left << "(1) " << setw(36) <<
music[indexNo[0]].song_title
    << setw(21) << music[indexNo[0]].album <<
setw(18) << music[indexNo[0]].artist
    << setw(34) << music[indexNo[0]].composer
<< setw(12)
    << music[indexNo[0]].genre << setw(3) <<
right << music[indexNo[0]].release_date.day << "/"
    << setw(2) <<
music[indexNo[0]].release_date.month << "/"
    << setw(8) << left <<
music[indexNo[0]].release_date.year << music[indexNo[0]].directory_path
    << endl << endl;

}

match = 1;
repeat = true;
}

```

```

} while (!repeat);

// Take the music collection structure index number
(indexNo[match - 1]), point to it and edit its contents

updateEdit(music, match, indexNo);

break;

case 3: // Album

char album[ARRAY_SIZE];

do

{

cout << "Enter album name(Case Sensitive): ";

cin.getline(album, 50);

cout << endl;

// Find matching entry in collection

for (int i = 0; i < num_song; i++) // Loop to compare user
input with existing collection

{

if (strstr(music[i].album, album) != NULL) // If not
NULL, means that there is a match

{

indexNo[countMatch] = i; // Get the index
number(s) of the entry with a match

countMatch++; // Count the number of
matches

}

}

cout << "There are " << countMatch << " matching
result(s):" << endl << endl;

```

```

// Find the exact match of song
if (countMatch > 1) // If there is more than 1 match
{
    // Display matching songs
    for (int k = 0; k < countMatch; k++)
    {
        cout << left << "(" << k + 1 << ")" " << setw(36)
<< music[indexNo[k]].song_title
                                <<           setw(21)           <<
music[indexNo[k]].album << setw(18) << music[indexNo[k]].artist
                                <<           setw(34)           <<
music[indexNo[k]].composer << setw(12) << music[indexNo[k]].genre << setw(3) <<
right
                                << music[indexNo[k]].release_date.day
<< "/" << setw(2) << music[indexNo[k]].release_date.month << "/"
                                <<           setw(8)           <<     left     <<
music[indexNo[k]].release_date.year << music[indexNo[k]].directory_path << endl <<
endl;
}

do
{
    cout << "Please enter the number for your
song choice: ";
    cin >> match;
    cout << endl;
    if (match < 1 || match > countMatch)
    {
        cout << "Please enter a valid number
for your song choice." << endl;
        cin.clear();
        while (getchar() != '\n');

    }
    // Else exits loop
}

```

```

        else repeat = true;
    } while (match < 1 || match > countMatch);
}

// No matches

else if (countMatch == 0)
    cout << "Please try again." << endl << endl;
else if (countMatch == 1)
{
    cout << left << "(1) " << setw(36) <<
music[indexNo[0]].song_title
                << setw(21) << music[indexNo[0]].album <<
setw(18) << music[indexNo[0]].artist
                << setw(34) << music[indexNo[0]].composer
<< setw(12)
                << music[indexNo[0]].genre << setw(3) <<
right << music[indexNo[0]].release_date.day << "/"
                << setw(2) <<
music[indexNo[0]].release_date.month << "/"
                << setw(8) << left <<
music[indexNo[0]].release_date.year << music[indexNo[0]].directory_path
                << endl;

match = 1;
repeat = true;
}

} while (!repeat);

// Take the music collection structure index number
(indexNo[match - 1]), point to it and edit its contents
updateEdit(music, match, indexNo);

default:break;
}

// Ask if user if wants to update/edit another song

```

```

do {
    cin.clear();
    cout << "\nDo you want to update/edit another song? (Y/N): ";
    cin >> ans;
    cout << endl;
    if (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n')
        cout << "Invalid answer. Please enter Y/N." << endl;
    } while (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n');

    // Set back header to right-aligned
    cout << right;

    // Loop if user wants to update/edit another song
} while (ans == 'y' || ans == 'Y');

return;
}

// Update and Edit songs from MUSIC collection
void updateEdit(MUSIC music[], int match, int indexNo[])
{
    // Clear input buffer
    while (getchar() != '\n');

    // Get new song name
    cout << "Enter new song name: ";
    cin.getline(music[indexNo[match - 1]].song_title, ARRAY_SIZE);
    cout << endl;

    // Get new album name
}

```

```

cout << "Enter new album name: ";
cin.getline(music[indexNo[match - 1]].album, ARRAY_SIZE);
cout << endl;

// Get new artist name
cout << "Enter new artist name: ";
cin.getline(music[indexNo[match - 1]].artist, ARRAY_SIZE);
cout << endl;

// Get new music composer name
cout << "Enter new music composer name: ";
cin.getline(music[indexNo[match - 1]].composer, ARRAY_SIZE);
cout << endl;

// Get new song genre name
cout << "Enter new song genre: ";
cin.getline(music[indexNo[match - 1]].genre, ARRAY_SIZE);
cout << endl;

// Get new song release date
cout << "Enter new release date: " << endl;
do
{
    cout << "Day (dd): ";
    cin >> (music[indexNo[match - 1]].release_date.day);
    cout << endl;
    if ((music[indexNo[match - 1]].release_date.day) < 1 ||
(music[indexNo[match - 1]].release_date.day) > 31)
    {
        cout << "Invalid day. Please enter between 1-31." << endl << endl;
        cin.clear();
    
```

```

        while (getchar() != '\n');

    }

}   while ((music[indexNo[match - 1]].release_date.day) < 1 ||

(music[indexNo[match - 1]].release_date.day) > 31);

do

{

    cout << "Month (mm): ";

    cin >> music[indexNo[match - 1]].release_date.month;

    cout << endl;

    if ((music[indexNo[match - 1]].release_date.month) < 1 ||

(music[indexNo[match - 1]].release_date.month) > 12)

    {

        cout << "Invalid month. Please enter between 1-12." << endl <<

endl;

        cin.clear();

        while (getchar() != '\n');

    }

}   while ((music[indexNo[match - 1]].release_date.month) < 1 ||

(music[indexNo[match - 1]].release_date.month) > 12);

do

{

    cout << "Year (yyyy): ";

    cin >> music[indexNo[match - 1]].release_date.year;

    cout << endl;

    if (music[indexNo[match - 1]].release_date.year < 1000 ||

music[indexNo[match - 1]].release_date.year > 10000)

    {

        cout << "Invalid year. Please enter between 1000-10000." << endl

<< endl;

        cin.clear();

        while (getchar() != '\n');

    }

}

```

```

        } while (music[indexNo[match - 1]].release_date.year < 1000 ||
music[indexNo[match - 1]].release_date.year > 10000);

// Clear input buffer

while (getchar() != '\n');

// Get new directory path of the song
cout << "Directory path: ";
cin.getline(music[indexNo[match - 1]].directory_path, 100);

return;
}

// List of all the songs in MUSIC collection
void listSong(MUSIC music[], int num_song)
{
    // Output table header
    for (int i = 0; i < 188; i++)
        cout << "-";
    cout << endl;
    cout << setw(5) << "|No.|" << setw(22) << "Song Title" << setw(14) << "|"
        << setw(12) << "Album" << setw(9) << "|" << setw(11) << "Artist" <<
setw(7) << "|"
        << setw(20) << "Composer" << setw(14) << "|" << setw(8) << "Genre" <<
setw(4) << "|"
        << setw(13) << "Release Date" << setw(2) << "|" << setw(30) << "Directory
Path"
        << setw(17) << "|" << endl;
    for (int i = 0; i < 188; i++)
        cout << "-";
    cout << endl;
}

```

```

// Output table content
for (int i = 0; i < num_song;i++)
{
    cout << setw(5) << left << i + 1 << setw(36)
        << music[i].song_title << setw(21) << music[i].album << setw(18) <<
music[i].artist
        << setw(34) << music[i].composer << setw(12)
        << music[i].genre << setw(3) << right
        <<     music[i].release_date.day    <<     "/"    <<     setw(2)    <<
music[i].release_date.month << "/"
        <<     setw(8)    <<     left    <<     music[i].release_date.year    <<
music[i].directory_path << endl;
    cout << endl;
}

// Set back the output of MENU header in main menu to right-aligned
cout << right << endl;

return;
}

// Advanced search for songs in MUSIC collection
void advancedSearch(MUSIC music[], int num_song)
{
    int choice = 0;
    char ans = ' ';

    do
    {
        // Initialize the number of matching results to 0
        int count = 0;

```

```

// Prompt user to choose song title / artist / album

for (int i = 0; i < 25;i++)
    cout << "-";
    cout << endl;
    cout << setw(20) << "ADVANCED SEARCH" << endl;
    for (int i = 0; i < 25;i++)
        cout << "-";
        cout << "\n(1) Song title\n(2) Artist\n(3) Album" << endl << endl;
        cout << "Please choose one of the above(1 - 3) for advanced search: ";

// Data validation for choice by user

do {
    cin >> choice;
    if (choice != 1 && choice != 2 && choice != 3)
    {
        cout << "Please only enter 1, 2 or 3: ";
        cin.clear();
        while (getchar() != '\n');
    }
} while (choice != 1 && choice != 2 && choice != 3);

// To clear input buffer

while (getchar() != '\n');

// User choose to search by song title (option 1)

if (choice == 1)
{
    // Array to store input from user to search for matching song title
    char title[ARRAY_SIZE];
}

```

```

// Get input from user
cout << endl << "Please enter song title(Case Sensitive): ";
cin.getline(title, ARRAY_SIZE);
cout << endl;

for (int i = 0; i < num_song; i++)
{
    // Output matching results
    if (strstr(music[i].song_title, title) != NULL)
    {
        cout << setw(1) << "(" << (count + 1) << ")" " <<
setw(35) << left << music[i].song_title << "|" << setw(25)
                << left << music[i].artist << "|" << setw(35) <<
music[i].album << endl << endl;
        count++;
    }
}

// No matching result
if (count == 0)
    cout << "No matching results." << endl;
// Show number of matching results
else
    cout << "There are " << count << " matching result(s)." <<
endl << endl;
}

// User choose to search by artist (option 2)
else if (choice == 2)
{
    // Array to store input from user to search for matching artist name
}

```

```

char artist[ARRAY_SIZE];

// Get input from user
cout << endl << "Please enter artist name(Case Sensitive): ";
cin.getline(artist, ARRAY_SIZE);
cout << endl;

for (int i = 0; i < num_song; i++)
{
    // Output matching results
    if (strstr(music[i].artist, artist) != NULL)
    {
        cout << setw(1) << "(" << (count + 1) << ")" " <<
setw(35) << left << music[i].song_title << "|" << setw(25)
            << left << music[i].artist << "|" << setw(35) <<
music[i].album << endl << endl;
        count++;
    }
}

// No matching result
if (count == 0)
    cout << "No matching result(s)." << endl;
// Show number of matching results
else
    cout << "There are " << count << " matching result(s)." <<
endl << endl;
}

// User choose to search by album (option 3)
else
{
}

```

```

// Array to store input from user to search for matching album name
char album[ARRAY_SIZE];

// Get input from user
cout << endl << "Please enter album name(Case Sensitive): ";
cin.getline(album, ARRAY_SIZE);
cout << endl;

for (int i = 0; i < num_song; i++)
{
    // Output matching results
    if (strstr(music[i].album, album) != NULL)
    {
        cout << setw(1) << "(" << (count + 1) << ")" " <<
setw(35) << left << music[i].song_title << "|" << setw(25)
                << left << music[i].artist << "|" << setw(35) <<
music[i].album << endl << endl;
        count++;
    }
}

// No matching result
if (count == 0)
    cout << "No matching result(s)." << endl;
// Show number of matching results
else
    cout << "There are " << count << " matching result(s)." <<
endl << endl;
}

// Ask if user wants to do another advanced search
do {

```

```

cout << "Do you want to do advanced search again? (Y/N): ";
cin >> ans;
if (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n')
{
    cout << "Invalid answer. Please enter Y/N." << endl << endl;
    cin.ignore();
    while (getchar() != '\n');

}

} while (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n');

// Set back header of MAIN to right-aligned
cout << right;

// Loop if user wants to do advanced search again
} while (ans == 'y' || ans == 'Y');

return;
}

// Create a random playlist from the collection
void createPlaylist(MUSIC music[], int num_song)
{
    // Array to store input from user to find matching result
    char artist_genre[100];

    // An empty string
    char emptystring[2] = "";

    // Array to store index number of data in collection
}

```

```

int index_num[100] = {};

char ans = ' ';

do
{
    // Initialize the number of matching results to 0
    int count = 0;

    // Output
    cout << endl;
    for (int i = 0; i < 30;i++)
        cout << "-";
    cout << endl;
    cout << setw(22) << "CREATE PLAYLIST" << endl;
    for (int i = 0; i < 30;i++)
        cout << "-";
    cout << endl << "Enter in full, GENRE or ARTIST name(Case Sensitive):
    ";

    // To clear input buffer
    while (getchar() != '\n');

    do
    {
        // Input from user
        cin.getline(artist_genre, ARRAY_SIZE);

        // To check if the entered string is not an empty string
        if (strcmp(artist_genre, emptystring) != 0)
        {

```

```

for (int i = 0; i < num_song; i++)
{
    // To find matching results in genre
    if (strcmp(artist_genre, music[i].genre) == 0)
    {
        // Stores the index number of valid genre song
        index_num[count] = i;
        count++;
    }

    // To find matching results in artist
    else if (strcmp(artist_genre, music[i].artist) == 0)
    {
        index_num[count] = i;
        count++;
    }

}

// To show number of matching results
if (count != 0)
{
    cout << "Number of song(s) found: " << count <<
endl << endl;
}

else
{
    cout << "No songs found." << endl;
    cout << "Please enter valid input: ";
}

else
{
    cout << "No songs found." << endl;
}

```

```

        cout << "Please enter valid input: ";
    }

} while (count == 0);

// Variable to store random generated index number of matching data
int music_index;

// Variable to store random generated number
int rand_indexes;

// Array of bool data type to act as "checklist" to ensure random generated
number does not repeat
bool have_rand[120] = {};

// Initialize all bool data type to false
for (int r = 0; r < num_song; r++)
    have_rand[r] = false;

// Generate and store first random generated number with matching data
rand_indexes = rand() % count;

// Set first random generated number as true
have_rand[rand_indexes] = true;

// Store generated index number of matching data
music_index = index_num[rand_indexes];

// Display first matching result
cout << "PLAYLIST(" << artist_genre << ") " << endl;
cout << "(1) " << music[music_index].song_title << endl;

```

```

srand(time(NULL));

int q = 2;

// If having less than 10 matching results
if (count < 10)
{
    for (int i = 0; i < count - 1; i++)
    {
        do
        {
            rand_indexes = rand() % count;

            // Loop if the bool type stored is already true
            // indicating that a result is matched with this index number
        } while (have_rand[rand_indexes]];

        // Set generated random index number as true, so it is not
        // generated again
        have_rand[rand_indexes] = true;

        // Store generated index number of matching data
        music_index = index_num[rand_indexes];

        // Output matching results
        cout << "(" << q << ")" " << music[music_index].song_title
<< endl;
        q++;
    }
}
// If having more than 10 matching results

```

```

else
{
    for (int i = 0; i < 9; i++)
    {
        do
        {
            rand_indexes = rand() % count;
            // Loop if the bool type stored is already true
            indicating that a result is matched with this index number
        } while (have_rand[rand_indexes]);

        // Set generated random index number as true, so it is not
        generated again
        have_rand[rand_indexes] = true;

        // Store generated index number of matching data
        music_index = index_num[rand_indexes];

        // Output matching results
        cout << "(" << q << ")" " << music[music_index].song_title
<< endl;
        q++;
    }
}

// Ask if user wants create another random playlist
do {
    cout << endl << "Do you want to create random playlist again?
(Y/N): ";
    cin >> ans;
    if (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n')

```

```

    {
        cout << "Invalid answer. Please enter Y/N." << endl << endl;
        cin.ignore();
        while (getchar() != '\n');
    }

} while (ans != 'Y' && ans != 'y' && ans != 'N' && ans != 'n');

// Loop again if user wants to create another random playlist

} while (ans == 'y' || ans == 'Y');

return;
}

// Exit the program and store data from MUSIC collection into output text file

void exitFunction(MUSIC music[], int num_song)
{
    // Link to output data file
    ofstream out_file("Music Collection.txt");

    if (!out_file)
        // Display error if error opening output text file
        cout << "Error opening output file, records are not updated.\n";
    else
    {
        // Output data from MUSIC collection into output text file
        for (int i = 0; i < num_song; i++)
        {
            out_file << music[i].song_title << "|";
            out_file << music[i].album << "|";
            out_file << music[i].artist << "|";
        }
    }
}

```

```
    out_file << music[i].composer << "|";
    out_file << music[i].genre << "|";
    out_file << music[i].release_date.day << "|";
    out_file << music[i].release_date.month << "|";
    out_file << music[i].release_date.year << "|";
    out_file << music[i].directory_path << endl;
}

// Close the output text file after finished storing data
out_file.close();

}

// Exit function
exit(EXIT_SUCCESS);

return;
}
```

## Individual Assessment

Name: Hannah Tan E-Ling

Student ID: 2005143

|  |   |     |     |
|--|---|-----|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0 | 1   | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0 | 1   | (2) |
| 3. Did his or her fair share of the work   | 0 | (1) | 2   |
| 4. Was always prepared and had his or her part completed on time                             | 0 | 1   | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0 | 1   | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0 | 1   | (2) |

**TOTAL 11**

### Comments:

I was helpful in initiating the assignment, delegating tasks and offering help where help was required.

## Team Assessment

| Name: Yin Kar Kin  | Student ID: 2005657 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

### Comments:

Took lead, was very informative and helpful. Guided all of us well.

| Name: Lim Yen Khai   | Student ID: 2005211 |     |     |
|--|---------------------|-----|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | (1) | 2   |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1   | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1   | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1   | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1   | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1   | (2) |
| <b>TOTAL 11</b>  |                     |     |     |

### Comments:

Put in a lot of effort to perfect his code, and helped out in completing our final stretch of work.

| Name: Ho Jie Kai   | Student ID: 2005840 |     |     |
|--|---------------------|-----|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | (1) | 2   |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1   | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1   | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1   | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1   | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1   | (2) |
| <b>TOTAL 11</b>  |                     |     |     |

Comments:

Very helpful and took initiative to double check our work.

| Name: Wong Ye Syuen  | Student ID: 2006062 |     |     |
|--|---------------------|-----|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | (1) | 2   |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1   | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1   | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1   | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1   | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1   | (2) |
| <b>TOTAL 11</b>  |                     |     |     |

Comments:

Always did more than required. Helpful and asked many questions for the acceleration of our progress.

## Individual Assessment

Name: YIN KAR KIN

Student ID: 2005657

|  |   |   |     |
|--|---|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0 | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0 | 1 | (2) |
| 3. Did his or her fair share of the work   | 0 | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0 | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0 | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0 | 1 | (2) |
| <b>TOTAL 12</b>  |   |   |     |

### Comments:

I thought I was debugging the program but I think the program is debugging me.

I've debug codes more times than I have actually killed bugs in my whole life.

Just kidding. I love my group!

Programming is fun!

## Team Assessment

| Name: HANNAH TAN E-LING  | Student ID:2005143 |   |     |
|--|--------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                  | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                  | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                  | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                  | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                  | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                  | 1 | (2) |
| <b>TOTAL 12</b>  |                    |   |     |

### Comments:

Very good.

| Name: LIM YEN KHAI   | Student ID: 2005211 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

### Comments:

Very good.

| Name: WONG YE SYUEN  | Student ID: 2006062 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:  
Very good.

| Name: HO JIE KAI   | Student ID: 2005840 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:  
Very good.

## Individual Assessment

Name:Ho Jie Kai

Student ID:2005840

|  |   |   |                                      |
|--|---|---|--------------------------------------|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0 | 1 | <input checked="" type="radio"/> (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0 | 1 | <input checked="" type="radio"/> (2) |
| 3. Did his or her fair share of the work   | 0 | 1 | <input checked="" type="radio"/> (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0 | 1 | <input checked="" type="radio"/> (2) |
| 5. Helped others within the group when they are faced with issues                            | 0 | 1 | <input checked="" type="radio"/> (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0 | 1 | <input checked="" type="radio"/> (2) |
| <b>TOTAL 12</b>  |   |   |                                      |

Comments:

## Team Assessment

| Name: Hannah Tan E-Ling  | Student ID: 2005143 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:

| Name: Lim Yen Khai   | Student ID: 2005211 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:

| Name: Yin Kar Kin  | Student ID: 2005657 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:

| Name: Wong Ye Syuen  | Student ID: 2006062 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:

## Individual Assessment

Name: Wong Ye Syuen

Student ID: 2006062

|  |   |   |                         |
|--|---|---|-------------------------|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0 | 1 | <input type="radio"/> 2 |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0 | 1 | <input type="radio"/> 2 |
| 3. Did his or her fair share of the work   | 0 | 1 | <input type="radio"/> 2 |
| 4. Was always prepared and had his or her part completed on time                             | 0 | 1 | <input type="radio"/> 2 |
| 5. Helped others within the group when they are faced with issues                            | 0 | 1 | <input type="radio"/> 2 |
| 6. Contributed to the best of his or her ability in completing the project                   | 0 | 1 | <input type="radio"/> 2 |
| <b>TOTAL 10</b>  |   |   |                         |

### Comments:

I have tried my best to participate in this assignment and work with others and learn knowledge and teamwork from groupmate.

## Team Assessment

| Name: Lim Yen Khai   | Student ID: 2005211 |                                    |                         |
|--|---------------------|------------------------------------|-------------------------|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1                                  | <input type="radio"/> 2 |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1                                  | <input type="radio"/> 2 |
| 3. Did his or her fair share of the work   | 0                   | 1                                  | <input type="radio"/> 2 |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1                                  | <input type="radio"/> 2 |
| 5. Helped others within the group when they are faced with issues                            | 0                   | <input checked="" type="radio"/> 1 | <input type="radio"/> 2 |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1                                  | <input type="radio"/> 2 |
| <b>TOTAL 11</b>  |                     |                                    |                         |

### Comments:

He did his part well and gave advises that are straight to the point.

| Name: Yin Kar Kin  | Student ID: 2005657 |   |                         |
|--|---------------------|---|-------------------------|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | <input type="radio"/> 2 |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | <input type="radio"/> 2 |
| 3. Did his or her fair share of the work   | 0                   | 1 | <input type="radio"/> 2 |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | <input type="radio"/> 2 |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | <input type="radio"/> 2 |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | <input type="radio"/> 2 |
| <b>TOTAL 12</b>  |                     |   |                         |

### Comments:

We always help each other. He done his part well and also participates much in the discussion.

| Name: Hannah Tan E-Ling  | Student ID: 2005143 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:

She done her part well and after she done her part, she will ask others about the progress and help solve problem if have.

| Name: Ho Jie Kai   | Student ID: 2005840 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 11</b>  |                     |   |     |

Comments:

She participate much in discussion, help us to check whether our work got error or mistake or not.

## Individual Assessment

Name: LIM YEN KHAI

Student ID:2005211

|  |   |   |     |
|--|---|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0 | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0 | 1 | (2) |
| 3. Did his or her fair share of the work   | 0 | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0 | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0 | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0 | 1 | (2) |

**TOTAL 12**

Comments:

## Team Assessment

| Name: HANNAH TAN E-LING  | Student ID:2005143 |   |     |
|--|--------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                  | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                  | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                  | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                  | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                  | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                  | 1 | (2) |
| <b>TOTAL 12</b>  |                    |   |     |

Comments:

| Name: YIN KAR KIN  | Student ID: 2005657 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:

| Name: WONG YE SYUEN  | Student ID: 2006062 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments:

| Name: HO JIE KAI   | Student ID: 2005840 |   |     |
|--|---------------------|---|-----|
| 1. Participated in group discussion and contributed ideas without prompting                  | 0                   | 1 | (2) |
| 2. Paid attention, listened to what was being said and done during discussions or group work | 0                   | 1 | (2) |
| 3. Did his or her fair share of the work   | 0                   | 1 | (2) |
| 4. Was always prepared and had his or her part completed on time                             | 0                   | 1 | (2) |
| 5. Helped others within the group when they are faced with issues                            | 0                   | 1 | (2) |
| 6. Contributed to the best of his or her ability in completing the project                   | 0                   | 1 | (2) |
| <b>TOTAL 12</b>  |                     |   |     |

Comments: