ONUR CAN   22.11.2022

CENG 707 – Section 1

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Assignment 1

Linked List Console Output

Linked List Test Case 1
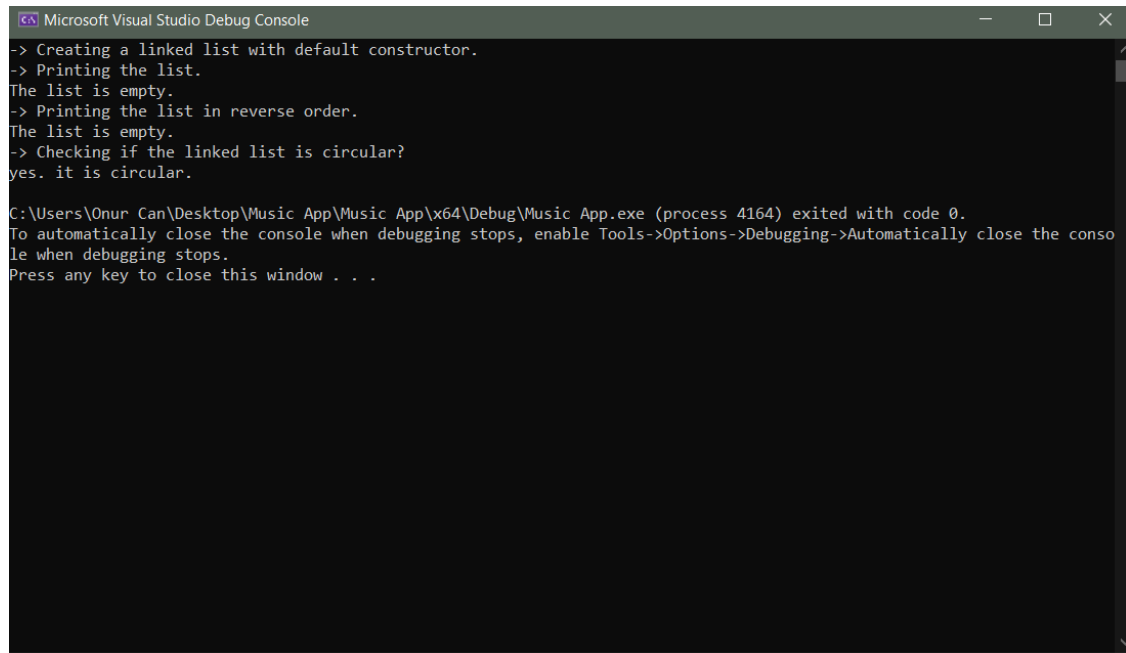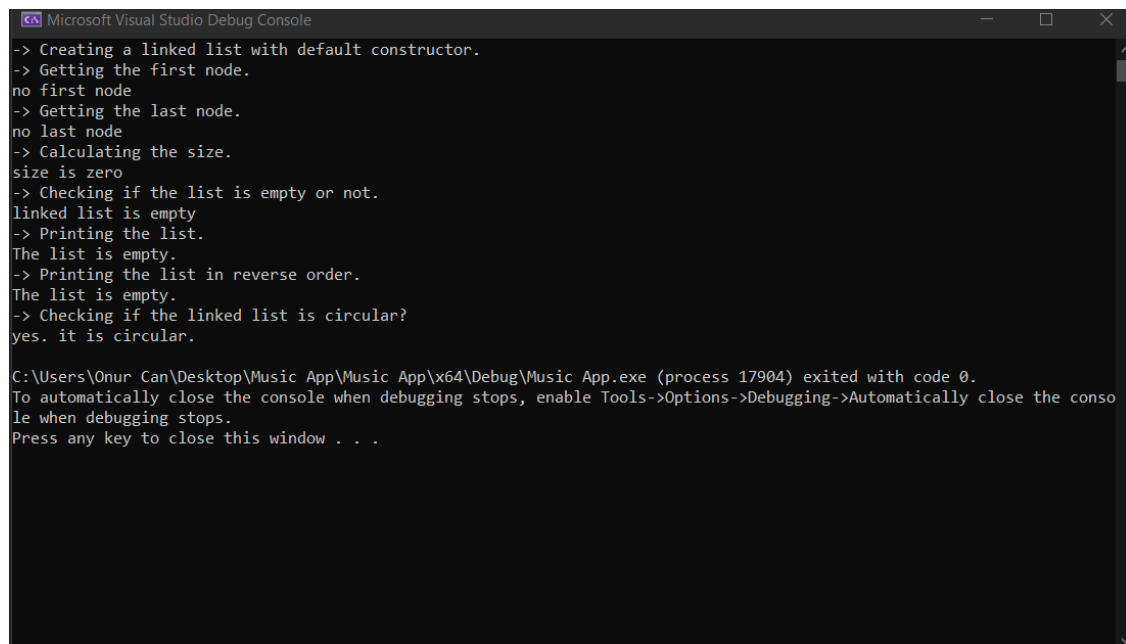

Linked List Test Case 2

Linked List Test Case 3


```
Microsoft Visual Studio Debug Console                                    —    □    ×
-> Creating a linked list with default constructor.
-> Creating a node with data 63. Node is not in the list.
-> Trying to remove that node from the list and then printing the list.
The list is empty.
-> Trying to remove a node with data 63 from the list and then printing the list.
The list is empty.
-> Trying to remove all nodes from the list and then printing the list.
The list is empty.
-> Trying to get a node with data 63 from the list.
no node with data 63 exists
-> Checking if the list contains the previously created node or not.
linked list does not contain that node
-> Printing the list.
The list is empty.
-> Printing the list in reverse order.
The list is empty.
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 14892) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 4


```
Microsoft Visual Studio Debug Console                                    —    □    ×
-> Creating a linked list with default constructor.
-> Inserting a node with data 64 to the front of the list.
-> Printing the list.
64
-> Printing the list in reverse order.
64
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 10532) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 5


```
-> Creating a linked list with default constructor.
-> Inserting a node with data 65 to the end of the list.
-> Printing the list.
65
-> Printing the list in reverse order.
65
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 8960) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 6


```
-> Creating a linked list with default constructor.
-> Creating a node with data 65. Node is not in the list.
-> Inserting a node with data 66 to the list after that node.
-> Printing the list.
The list is empty.
-> Printing the list in reverse order.
The list is empty.
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 18408) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```
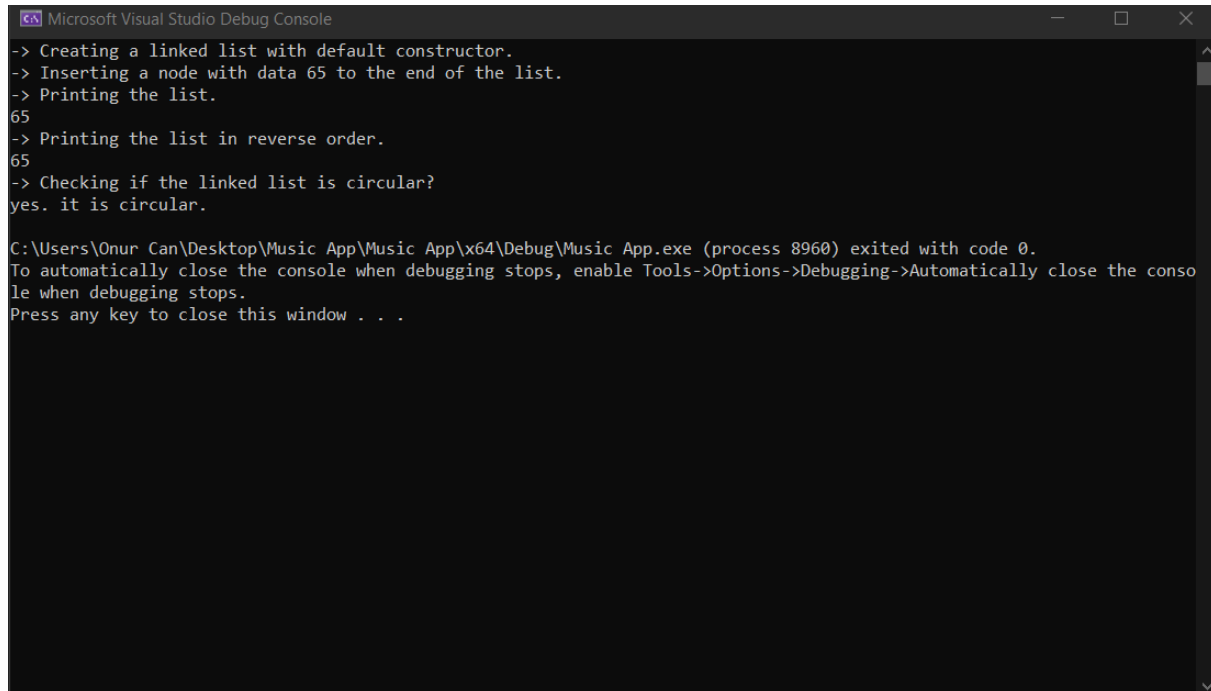
Linked List Test Case 7

```
Microsoft Visual Studio Debug Console                                    —    □    ✕
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Calculating the size.
size is 5
-> Checking if the list is empty or not.
linked list is not empty

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 13120) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```
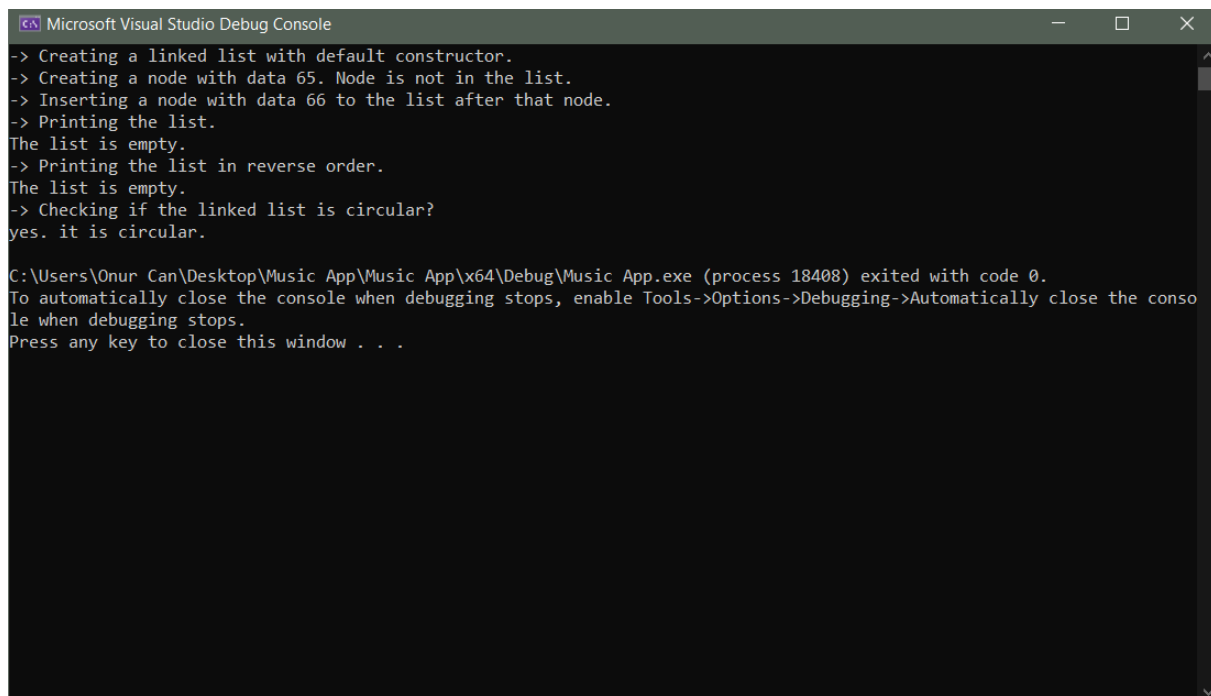
Linked List Test Case 8

```
Microsoft Visual Studio Debug Console                                    —    □    ✕
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Inserting nodes with data 60 as the every 2nd node of the list.
-> Printing the list.
61
60
62
60
63
60
64
60
65
60
-> Printing the list in reverse order.
60
65
60
64
60
63
60
62
60
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Calculating the size.
size is 10
-> Checking if the list is empty or not.
linked list is not empty

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 12584) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 9

```
Microsoft Visual Studio Debug Console                                    —    □    ✕
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Removing the first node from the list.
-> Printing the list.
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
-> Checking if the linked list is circular?
yes. it is circular.
-> Calculating the size.
size is 4
-> Checking if the list is empty or not.
linked list is not empty

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 10112) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 10

```
Microsoft Visual Studio Debug Console                                    —    □    ✕
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Removing the last node from the list.
-> Printing the list.
61
62
63
64
-> Printing the list in reverse order.
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Calculating the size.
size is 4
-> Checking if the list is empty or not.
linked list is not empty

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 10352) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 11


```
Microsoft Visual Studio Debug Console                                    —   □   X
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Removing the middle node from the list.
-> Printing the list.
61
62
64
65
-> Printing the list in reverse order.
65
64
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Calculating the size.
size is 4
-> Checking if the list is empty or not.
linked list is not empty

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 6168) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 12


```
Microsoft Visual Studio Debug Console                                    —   □   X
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Making some removals from the list and printing it after each removal.
-> remove first node ...
62
63
64
65
-> remove first node ...
63
64
65
-> remove node with data 64 ...
63
65
-> remove node with data 65 ...
63
-> remove all nodes ...
The list is empty.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 12204) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 13

```
Microsoft Visual Studio Debug Console                                    —    □    ×
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Removing every 3rd node of the list.
-> Printing the list.
61
62
64
65
-> Printing the list in reverse order.
65
64
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Calculating the size.
size is 4
-> Checking if the list is empty or not.
linked list is not empty

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 17288) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 14

```
Microsoft Visual Studio Debug Console                                    —    □    ×
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Calling some functions on the list.
data of first data node is 61
data of last data node is 65
size is 5
linked list is not empty
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 14984) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 15


```
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Making some removals from the list and printing it after each removal.
-> remove node with data 65 ...
61
62
63
64
-> remove first node ...
62
63
64
-> remove node with data 63 ...
62
64
-> remove all nodes ...
The list is empty.
-> Making some more insertions to the list.
-> Printing the list.
68
67
66
-> Printing the list in reverse order.
66
67
68
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 6516) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 16


```
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Getting node with data 60.
no node with data 60 exists.
-> Getting node with data 61.
exists. data must be 61. it is 61.
-> Getting node with data 62.
exists. data must be 62. it is 62.
-> Getting node with data 63.
exists. data must be 63. it is 63.
-> Getting node with data 64.
exists. data must be 64. it is 64.
-> Getting node with data 65.
exists. data must be 65. it is 65.
-> Getting node with data 66.
no node with data 66 exists.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 4160) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 17

```
Microsoft Visual Studio Debug Console                          —    □    ✕
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Getting node at index -1.
no node at index -1 exists.
-> Getting node at index 0.
exists. data must be 1. it is 61.
-> Getting node at index 1.
exists. data must be 2. it is 62.
-> Getting node at index 2.
exists. data must be 3. it is 63.
-> Getting node at index 3.
exists. data must be 4. it is 64.
-> Getting node at index 4.
exists. data must be 5. it is 65.
-> Getting node at index 5.
no node at index 5 exists.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 2380) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 18

```
Microsoft Visual Studio Debug Console                          —    □    ✕
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Creating a duplicate linked list with copy constructor.
-> Printing the duplicate list.
61
62
63
64
65
-> Printing the duplicate list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Printing the original list.
61
62
63
64
65
-> Printing the original list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Removing the middle node from the original list.
-> Printing the duplicate list.
61
```

Continue...

```
-> Checking if the linked list is circular?
yes. it is circular.
-> Removing the middle node from the original list.
-> Printing the duplicate list.
61
62
63
64
65
-> Printing the duplicate list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Printing the original list.
61
62
64
65
-> Printing the original list in reverse order.
65
64
62
61
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 14076) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the conso
le when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 19

```
CN Microsoft Visual Studio Debug Console                                           —    □    ✕
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Creating a duplicate linked list with assignment constructor.
-> Printing the duplicate list.
61
62
63
64
65
-> Printing the duplicate list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Printing the original list.
61
62
63
64
65
-> Printing the original list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Removing the middle node from the original list.
-> Printing the duplicate list.
61
62
```

```
-> Checking if the linked list is circular?
yes. it is circular.
-> Removing the middle node from the original list.
-> Printing the duplicate list.
61
62
63
64
65
-> Printing the duplicate list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Printing the original list.
61
62
64
65
-> Printing the original list in reverse order.
65
64
62
61
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 3604) exited with cod
e 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatic
ally close the console when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 20

```
Microsoft Visual Studio Debug Console                                    —    □    ×
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Making some removals from the list and printing it after each removal.
-> remove node with data 61 ...
62
63
64
65
-> remove node with data 62 ...
63
64
65
-> remove node with data 64 ...
63
65
-> remove node with data 65 ...
63
-> remove all nodes ...
The list is empty.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 10512) exited with co
de 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatic
ally close the console when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 21

```
Microsoft Visual Studio Debug Console                    —    □    ×
-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Swapping nodes at index 0 and index 1.
-> Printing the list.
62
61
63
64
65
-> Printing the list in reverse order.
65
64
63
61
62
-> Checking if the linked list is circular?
yes. it is circular.
-> Swapping nodes at index 1 and index 2.
-> Printing the list.
62
63
61
64
65
-> Printing the list in reverse order.
65
64
61
63
62
-> Checking if the linked list is circular?
yes. it is circular.
-> Swapping nodes at index 2 and index 3.
-> Printing the list.
```

```
-> Swapping nodes at index 2 and index 3.
-> Printing the list.
62
63
64
61
65
-> Printing the list in reverse order.
65
61
64
63
62
-> Checking if the linked list is circular?
yes. it is circular.
-> Swapping nodes at index 3 and index 4.
-> Printing the list.
62
63
64
65
61
-> Printing the list in reverse order.
61
65
64
63
62
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 19216) exited with co
de 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatic
ally close the console when debugging stops.
Press any key to close this window . . .
```

Linked List Test Case 22

```
Microsoft Visual Studio Debug Console

-> Creating a linked list with default constructor.
-> Making some insertions to the list.
-> Printing the list.
61
62
63
64
65
-> Printing the list in reverse order.
65
64
63
62
61
-> Checking if the linked list is circular?
yes. it is circular.
-> Shuffling with seed 2.
-> Printing the list.
63
62
64
65
61
-> Printing the list in reverse order.
61
65
64
62
63
-> Checking if the linked list is circular?
yes. it is circular.
-> Shuffling with seed 3.
-> Printing the list.
65
61
63
64
62
-> Printing the list in reverse order.
62
64
63
61
65
-> Checking if the linked list is circular?
yes. it is circular.
-> Shuffling with seed 4.
-> Printing the list.
```

```
-> Checking if the linked list is circular?
yes. it is circular.
-> Shuffling with seed 4.
-> Printing the list.
65
62
64
63
61
-> Printing the list in reverse order.
61
63
64
62
65
-> Checking if the linked list is circular?
yes. it is circular.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 4404) exited with cod
e 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatic
ally close the console when debugging stops.
Press any key to close this window . . .
```

Music Stream Console Output

Music Stream Test Case 1

Music Stream Test Case 2

Music Stream Test Case 3


```
-> Adding artists to the music stream.
-> Adding albums to the music stream.
-> Adding songs to the music stream.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 0:
The list is empty.
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do
You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You C
an't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 21204) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Music Stream Test Case 4


```
-> Creating a music stream with default constructor.
-> Adding profiles to the music stream.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [] | followers: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 0:
The list is empty.
# Number of albums is 0:
The list is empty.
# Number of songs is 0:
The list is empty.
# Printing is done.
-> Making some profiles follow other profiles.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [harry@isabella.com] | followers: []

email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [oscar@lily.com, harry@isabella.com] | fo
llowers: [oscar@lily.com]
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.c
om, archie@rosie.com]
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [archie@rosie.com] | followers: [archie@rosie
.com]
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 0:
The list is empty.
# Number of albums is 0:
The list is empty.
# Number of songs is 0:
The list is empty.
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 3052) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debuggi
ng stops.
Press any key to close this window . . .
```

Music Stream Test Case 5

```
Microsoft Visual Studio Debug Console

-> Creating a music stream with default constructor.
-> Adding profiles to the music stream.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [] | followers: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 0:
The list is empty.
# Number of albums is 0:
The list is empty.
# Number of songs is 0:
The list is empty.
# Printing is done.
-> Making some profiles follow other profiles.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [harry@isabella.com] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [oscar@lily.com, harry@isabella.com] | fo
llowers: [oscar@lily.com]
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.c
om, archie@rosie.com]
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [archie@rosie.com] | followers: [archie@rosie
.com]
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 0:
The list is empty.
# Number of albums is 0:
The list is empty.
# Number of songs is 0:
The list is empty.
# Printing is done.
-> Making some profiles unfollow other profiles.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [oscar@lily.com, harry@isabella.com] | fo
llowers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [archie@rosie.
com]
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [] | followers: [archie@rosie.com]
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 0:
The list is empty.
# Number of albums is 0:
The list is empty.
# Number of songs is 0:
The list is empty.
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 20460) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debuggi
```

Music Stream Test Case 6

```
Microsoft Visual Studio Debug Console

-> Creating a music stream with default constructor.
-> Adding profiles to the music stream.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [] | followers: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 0:
The list is empty.
# Number of albums is 0:
The list is empty.
# Number of songs is 0:
The list is empty.
# Printing is done.
-> Making some profiles follow other profiles.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [harry@isabella.com] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [oscar@lily.com, harry@isabella.com] | fo
llowers: [oscar@lily.com]
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.c
om, archie@rosie.com]
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [archie@rosie.com] | followers: [archie@rosie
.com]
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 0:
The list is empty.
# Number of albums is 0:
The list is empty.
# Number of songs is 0:
The list is empty.
# Printing is done.
-> Deleting some profiles from the music stream.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 3:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [harry@isabella.com] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.c
om]
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [] | followers: []
# Number of artists is 0:
The list is empty.
# Number of albums is 0:
The list is empty.
# Number of songs is 0:
The list is empty.
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 9452) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debuggi
ng stops.
Press any key to close this window . . .
```

Music Stream Test Case 7

```
Microsoft Visual Studio Debug Console

-> Creating a music stream with default constructor.
-> Adding profiles to the music stream.
-> Adding artists to the music stream.
-> Adding albums to the music stream.
-> Adding songs to the music stream.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [] | followers: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songId:
4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wan
t to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Creating some playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
songs: []] | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [],
playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: []] | following: [] | followers: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songId:
4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wan
t to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Adding some songs to some playlists.
-> Printing the music stream.
# Printing the music stream ...
```

Continue...

```
# Printing is done.
-> Adding some songs to some playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]] |
following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [so
ngId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songId:
2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followers:
[]
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songId:
4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wan
t to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 15804) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debuggi
ng stops.
Press any key to close this window . . .
```

Music Stream Test Case 8

```
-> Creating a music stream with default constructor.
-> Adding profiles to the music stream.
-> Adding artists to the music stream.
-> Adding albums to the music stream.
-> Adding songs to the music stream.
-> Creating some playlists.
-> Adding some songs to some playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]] |
following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [so
ngId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songId:
2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followers:
[]
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songId:
 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wan
t to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Deleting some playlists.
-> Printing the music stream.
# Printing the music stream ...
```

Continue...

```
-> Deleting some playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]] |
following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 3 | name: oscar's throwback playlist | shared: n
o | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | follow
ing: [] | followers: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songId:
 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wan
t to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Deleting some songs from some playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
songs: [songId: 3 | name: Do You Want to Know a Secret | duration: 116]] | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 3 | name: oscar's throwback playlist | shared: n
o | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175]] | following: [] | followers: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songId:
 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wan
t to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 19668) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debuggi
```

Music Stream Test Case 9

```
Microsoft Visual Studio Debug Console                                    —    □    X

-> Creating a music stream with default constructor.
-> Adding profiles to the music stream.
-> Adding artists to the music stream.
-> Adding albums to the music stream.
-> Adding songs to the music stream.
-> Creating some playlists.
-> Adding some songs to some playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
 songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]]
 | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [s
ongId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songId
: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followe
rs: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
 duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songI
d: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
 That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Getting a playlist.
id must be 1. it is 1.
name must be archie's favorites. it is archie's favorites.
-> Playing the playlist.
```

Continue...

```
-> Getting a playlist.
id must be 1. it is 1.
name must be archie's favorites. it is archie's favorites.
-> Playing the playlist.
list of songs in the playlist is [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a
 Secret | duration: 116].
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
 songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]]
 | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [s
ongId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songId
: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followe
rs: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
 duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songI
d: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
 That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 21192) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugg
ing stops.
Press any key to close this window . . .
```

Music Stream Test Case 10

```
-> Creating a music stream with default constructor.
-> Adding profiles to the music stream.
-> Adding artists to the music stream.
-> Adding albums to the music stream.
-> Adding songs to the music stream.
-> Creating some playlists.
-> Adding some songs to some playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
 songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]]
 | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [s
ongId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songId
: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followe
rs: []
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
 duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songI
d: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
 That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Toggling subscription plans of some profiles (free_of_charge -> premium, premium -> free_of_charge).
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
```

```
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: premium | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: free_of_charge | playlists: [playlistId: 1 | name: archie's favorites | share
d: no | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration
: 116]] | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: premium | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [s
ongId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songId
: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followe
rs: []
email: leo@ivy.com | username: leo_ivy | plan: premium | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
 duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songI
d: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
 That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Getting a playlist.
id must be 1. it is 1.
name must be archie's favorites. it is archie's favorites.
-> Playing the playlist.
list of songs in the playlist is [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 1 | name: advertisement | durat
ion: 30, songId: 3 | name: Do You Want to Know a Secret | duration: 116, songId: 1 | name: advertisement | duration: 30]
-> Getting another playlist.
THE TEST STATEMENT IS WRONG HERE - ID SHOULD BE 3
id must be 2. it is 3.
name must be oscar's throwback playlist. it is oscar's throwback playlist.
```

```
-> Getting another playlist.
THE TEST STATEMENT IS WRONG HERE - ID SHOULD BE 3
id must be 2. it is 3.
name must be oscar's throwback playlist. it is oscar's throwback playlist.
-> Playing the playlist.
list of songs in the playlist is [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | d
uration: 155]
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: premium | playlists: [] | following: [] | followers: []
email: archie@rosie.com | username: archie_rosie | plan: free_of_charge | playlists: [playlistId: 1 | name: archie's favorites | share
d: no | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration
: 116]] | following: [] | followers: []
email: harry@isabella.com | username: harry_isabella | plan: premium | playlists: [] | following: [] | followers: []
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [s
ongId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songId
: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followe
rs: []
email: leo@ivy.com | username: leo_ivy | plan: premium | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
 duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songI
d: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
 That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 1488) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugg
ing stops.
Press any key to close this window . . .
```

Music Stream Test Case 11

```
-> Creating a music stream with default constructor.
-> Adding a profile to the music stream.
-> Adding an artist to the music stream.
-> Adding albums to the music stream.
-> Adding songs to the music stream.
-> Creating a playlist.
-> Adding some songs to the playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 1:
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
 songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116,
songId: 4 | name: Twist and Shout | duration: 152, songId: 5 | name: Things We Said Today | duration: 155, songId: 6 | name: You Can't
 Do That | duration: 155, songId: 7 | name: I Should Have Known Better | duration: 166]] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There
 | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116, songId: 4 | name: Twist and Shout | duration: 152], al
dumId: 2 | name: A Hard Day's Night | songs: [songId: 5 | name: Things We Said Today | duration: 155, songId: 6 | name: You Can't Do T
hat | duration: 155, songId: 7 | name: I Should Have Known Better | duration: 166]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116, songId: 4 | name: Twist and Shout | duration: 152]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 5 | name: Things We Said Today | duration: 155, songId: 6 | name: You Can't Do
 That | duration: 155, songId: 7 | name: I Should Have Known Better | duration: 166]
# Number of songs is 6:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Twist and Shout | duration: 152
songId: 5 | name: Things We Said Today | duration: 155
songId: 6 | name: You Can't Do That | duration: 155
songId: 7 | name: I Should Have Known Better | duration: 166
# Printing is done.
-> Shuffling the playlist with id 1 with seed 2.
-> Getting and playing the playlist.
list of songs in the playlist is [songId: 6 | name: You Can't Do That | duration: 155, songId: 5 | name: Things We Said Today | durati
on: 155, songId: 4 | name: Twist and Shout | duration: 152, songId: 3 | name: Do You Want to Know a Secret | duration: 116, songId: 2
| name: I Saw Here Standing There | duration: 175, songId: 7 | name: I Should Have Known Better | duration: 166].
-> Shuffling the playlist with id 1 with seed 3.
-> Getting and playing the playlist.
list of songs in the playlist is [songId: 6 | name: You Can't Do That | duration: 155, songId: 5 | name: Things We Said Today | durati
on: 155, songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116,
songId: 7 | name: I Should Have Known Better | duration: 166, songId: 4 | name: Twist and Shout | duration: 152].
-> Shuffling the playlist with id 1 with seed 4.
```

```
songId: 7 | name: I Should Have Known Better | duration: 166, songId: 4 | name: Twist and Shout | duration: 152].
-> Shuffling the playlist with id 1 with seed 4.
-> Getting and playing the playlist.
list of songs in the playlist is [songId: 7 | name: I Should Have Known Better | duration: 166, songId: 3 | name: Do You Want to Know
a Secret | duration: 116, songId: 6 | name: You Can't Do That | duration: 155, songId: 4 | name: Twist and Shout | duration: 152, song
Id: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: Things We Said Today | duration: 155].
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 1:
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
 songs: [songId: 7 | name: I Should Have Known Better | duration: 166, songId: 3 | name: Do You Want to Know a Secret | duration: 116,
 songId: 6 | name: You Can't Do That | duration: 155, songId: 4 | name: Twist and Shout | duration: 152, songId: 2 | name: I Saw Here
Standing There | duration: 175, songId: 5 | name: Things We Said Today | duration: 155]] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
 duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116, songId: 4 | name: Twist and Shout | duration: 152], al
dumId: 2 | name: A Hard Day's Night | songs: [songId: 5 | name: Things We Said Today | duration: 155, songId: 6 | name: You Can't Do T
hat | duration: 155, songId: 7 | name: I Should Have Known Better | duration: 166]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116, songId: 4 | name: Twist and Shout | duration: 152]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 5 | name: Things We Said Today | duration: 155, songId: 6 | name: You Can't Do
 That | duration: 155, songId: 7 | name: I Should Have Known Better | duration: 166]
# Number of songs is 6:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Twist and Shout | duration: 152
songId: 5 | name: Things We Said Today | duration: 155
songId: 6 | name: You Can't Do That | duration: 155
songId: 7 | name: I Should Have Known Better | duration: 166
# Printing is done.

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 19128) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugg
ing stops.
Press any key to close this window . . .
```

Music Stream Test Case 12

```
-> Creating a music stream with default constructor.
-> Adding profiles to the music stream.
-> Making some profiles follow other profiles.
-> Adding artists to the music stream.
-> Adding albums to the music stream.
-> Adding songs to the music stream.
-> Creating some playlists.
-> Adding some songs to some playlists.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [harry@isabella.com] | followers: [
]
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
 songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]]
 | following: [oscar@lily.com, harry@isabella.com] | followers: [oscar@lily.com]
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.
com, archie@rosie.com]
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [s
ongId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songId
: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [archie@rosi
e.com] | followers: [archie@rosie.com]
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
 duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116, aldumId: 2 | name: A Hard Day's Night | songs: [songI
d: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
 That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Marking some playlists as shared.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
```

```
 Printing the music stream ...
 Number of profiles is 5:
mail: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [harry@isabella.com] | followers: [

mail: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: yes
 songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]
 | following: [oscar@lily.com, harry@isabella.com] | followers: [oscar@lily.com]
mail: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.
om, archie@rosie.com]
mail: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: yes | songs: [
ongId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: yes | songs: [song
d: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [archie@ro
ie.com] | followers: [archie@rosie.com]
mail: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
 Number of artists is 1:
rtistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116, aldumId: 2 | name: A Hard Day's Night | songs: [songI
: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
 Number of albums is 2:
ldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
t to Know a Secret | duration: 116]
ldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
That | duration: 155]
 Number of songs is 4:
ongId: 2 | name: I Saw Here Standing There | duration: 175
ongId: 3 | name: Do You Want to Know a Secret | duration: 116
ongId: 4 | name: Things We Said Today | duration: 155
ongId: 5 | name: You Can't Do That | duration: 155
 Printing is done.
 Marking some playlists as unshared.
 Printing the music stream.
 Printing the music stream ...
 Number of profiles is 5:
```

```
-> Marking some playlists as unshared.
-> Printing the music stream.
# Printing the music stream ...
# Number of profiles is 5:
email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [harry@isabella.com] | followers: [
]
email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
 songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]]
 | following: [oscar@lily.com, harry@isabella.com] | followers: [oscar@lily.com]
email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.
com, archie@rosie.com]
email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: yes | songs: [
songId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: yes | songs: [song
Id: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [archie@ro
sie.com] | followers: [archie@rosie.com]
email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
# Number of artists is 1:
artistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
 duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116, aldumId: 2 | name: A Hard Day's Night | songs: [songI
d: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
# Number of albums is 2:
aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
nt to Know a Secret | duration: 116]
aldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
 That | duration: 155]
# Number of songs is 4:
songId: 2 | name: I Saw Here Standing There | duration: 175
songId: 3 | name: Do You Want to Know a Secret | duration: 116
songId: 4 | name: Things We Said Today | duration: 155
songId: 5 | name: You Can't Do That | duration: 155
# Printing is done.
-> Getting list of playlists shared with a profile.
list of playlists is [playlistId: 2 | name: oscar's goat | shared: yes | songs: [songId: 4 | name: Things We Said Today | duration: 15
5], playlistId: 3 | name: oscar's throwback playlist | shared: yes | songs: [songId: 2 | name: I Saw Here Standing There | duration: 1
75, songId: 5 | name: You Can't Do That | duration: 155]].
-> Printing the music stream.
# Printing the music stream ...
```

Continue...

```
> Getting list of playlists shared with a profile.
ist of playlists is [playlistId: 2 | name: oscar's goat | shared: yes | songs: [songId: 4 | name: Things We Said Today | duration: 15
], playlistId: 3 | name: oscar's throwback playlist | shared: yes | songs: [songId: 2 | name: I Saw Here Standing There | duration: 1
5, songId: 5 | name: You Can't Do That | duration: 155]].
> Printing the music stream.
 Printing the music stream ...
 Number of profiles is 5:
mail: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [harry@isabella.com] | followers: [

mail: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no |
songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]]
| following: [oscar@lily.com, harry@isabella.com] | followers: [oscar@lily.com]
mail: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.
om, archie@rosie.com]
mail: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: yes | songs: [
ongId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: yes | songs: [song
d: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [archie@ro
ie.com] | followers: [archie@rosie.com]
mail: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []
 Number of artists is 1:
rtistId: 1 | name: The Beatles | albums: [aldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There |
duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], aldumId: 2 | name: A Hard Day's Night | songs: [songI
: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]]
 Number of albums is 2:
ldumId: 1 | name: Please Please Me | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Wa
t to Know a Secret | duration: 116]
ldumId: 2 | name: A Hard Day's Night | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do
That | duration: 155]
 Number of songs is 4:
ongId: 2 | name: I Saw Here Standing There | duration: 175
ongId: 3 | name: Do You Want to Know a Secret | duration: 116
ongId: 4 | name: Things We Said Today | duration: 155
ongId: 5 | name: You Can't Do That | duration: 155
 Printing is done.

:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 18984) exited with code 0.
o automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugg
ng stops.
ress any key to close this window . . .
```

Music Stream Test Case 13

```
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [] | followers: []]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [] | followers: []]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []]
-> Making some profiles follow other profiles.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, leo@ivy.com] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [] | followers: [jack@sophia.com, harry@isabella.com]]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, oscar@lily.com] | followers
: [oscar@lily.com]]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [harry@isabella.com] | followers: [harry@isabella.com]]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.com]]
-> Making some profiles unfollow other profiles.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [leo@ivy.com] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [] | following: [] | followers: []]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [oscar@lily.com] | followers: []]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [] | following: [] | followers: [harry@isabella.com]]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.com]]

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 16532) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Music Stream Test Case 14

```
-> Creating some profiles.
-> Creating some playlists.
-> Adding some songs to some playlists.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no
 | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]
] | following: [] | followers: []]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [
songId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 | name: oscar's throwback playlist | shared: no | songs: [songI
d: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | follow
ers: []]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []]
-> Deleting some playlists.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no
 | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]
] | following: [] | followers: []]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 3 | name: oscar's throwback playlist | shared:
 no | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | fol
lowing: [] | followers: []]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []]
-> Deleting some songs from some playlists.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no
 | songs: [songId: 3 | name: Do You Want to Know a Secret | duration: 116]] | following: [] | followers: []]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [] | followers: []]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 3 | name: oscar's throwback playlist | shared:
 no | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175]] | following: [] | followers: []]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: []]

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 20884) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugg
ing stops.
Press any key to close this window . . .
```

Music Stream Test Case 15

```
-> Creating some profiles.
-> Making some profiles follow other profiles.
-> Creating some playlists.
-> Adding some songs to some playlists.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, leo@ivy.com] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, so
ngId: 3 | name: Do You Want to Know a Secret | duration: 116, songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followers: [jack@
sophia.com, harry@isabella.com]]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, oscar@lily.com] | followers: [oscar@lily.com]]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [songId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 |
name: oscar's throwback playlist | shared: no | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [harry@isabella.com] |
followers: [harry@isabella.com]]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.com]]
-> Marking some playlists as shared.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, leo@ivy.com] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: yes | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, s
ongId: 3 | name: Do You Want to Know a Secret | duration: 116, songId: 4 | name: Things We Said Today | duration: 155]] | following: [] | followers: [jack
@sophia.com, harry@isabella.com]]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, oscar@lily.com] | followers: [oscar@lily.com]]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [songId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 |
 name: oscar's throwback playlist | shared: yes | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [harry@isabella.com]
 followers: [harry@isabella.com]]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.com]]
-> Marking some playlists as unshared.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, leo@ivy.com] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: no | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, s
ongId: 3 | name: Do You Want to Know a Secret | duration: 116, songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155]] | following: [] | followers: [jack
@sophia.com, harry@isabella.com]]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, oscar@lily.com] | followers: [oscar@lily.com]]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [songId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 |
name: oscar's throwback playlist | shared: yes | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [harry@isabella.com] |
followers: [harry@isabella.com]]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.com]]
-> Shuffling the playlist with id 1 with seed 2.
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, leo@ivy.com] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: yes | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId
: 5 | name: You Can't Do That | duration: 155, songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]] | following: [] | followers: [jack
@sophia.com, harry@isabella.com]]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, oscar@lily.com] | followers: [oscar@lily.com]]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [songId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 |
name: oscar's throwback playlist | shared: yes | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [harry@isabella.com] |
followers: [harry@isabella.com]]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.com]]
-> Getting the playlist with id 1.
```

```
-> Getting the playlist with id 1.
[playlistId: 1 | name: archie's favorites | shared: yes | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155, songId: 2 | name: I Saw Here Sta
nding There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]]
-> Getting list of playlists shared with a profile.
[playlistId: 1 | name: archie's favorites | shared: yes | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId: 5 | name: You Can't Do That | duration: 155, songId: 2 | name: I Saw Here Sta
nding There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116], playlistId: 3 | name: oscar's throwback playlist | shared: yes | songs: [songId: 2 | name: I Saw Here Standing Th
ere | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]]
-> Printing profiles.
[email: jack@sophia.com | username: jack_sophia | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, leo@ivy.com] | followers: []]
[email: archie@rosie.com | username: archie_rosie | plan: premium | playlists: [playlistId: 1 | name: archie's favorites | shared: yes | songs: [songId: 4 | name: Things We Said Today | duration: 155, songId
: 5 | name: You Can't Do That | duration: 155, songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 3 | name: Do You Want to Know a Secret | duration: 116]] | following: [] | followers: [jack
@sophia.com, harry@isabella.com]]
[email: harry@isabella.com | username: harry_isabella | plan: free_of_charge | playlists: [] | following: [archie@rosie.com, oscar@lily.com] | followers: [oscar@lily.com]]
[email: oscar@lily.com | username: oscar_lily | plan: premium | playlists: [playlistId: 2 | name: oscar's goat | shared: no | songs: [songId: 4 | name: Things We Said Today | duration: 155], playlistId: 3 |
name: oscar's throwback playlist | shared: yes | songs: [songId: 2 | name: I Saw Here Standing There | duration: 175, songId: 5 | name: You Can't Do That | duration: 155]] | following: [harry@isabella.com] |
 followers: [harry@isabella.com]]
[email: leo@ivy.com | username: leo_ivy | plan: free_of_charge | playlists: [] | following: [] | followers: [jack@sophia.com]]

C:\Users\Onur Can\Desktop\Music App\Music App\x64\Debug\Music App.exe (process 1640) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```