

```
1 import java.util.ArrayList;
2 import java.util.HashMap;
3 import java.util.LinkedList;
4 import java.util.List;
5
6 public class Server implements SongService {
7     private static Server instance;
8     private static HashMap<String, List<Song>> titleHashmap;
9     private static HashMap<String, List<Song>> albumHashmap;
10    private static HashMap<String, Song> idHashmap;
11
12    private final int waitTime = 3000;
13
14    private Server() {
15        titleHashmap = new HashMap<String, List<Song>>();
16        albumHashmap = new HashMap<String, List<Song>>();
17        idHashmap = new HashMap<String, Song>();
18    }
19
20    public void addSong(String title, String artist, String album, int id, int Duration) {
21        if (titleHashmap == null) {
22            titleHashmap = new HashMap<String, List<Song>>();
23        }
24        if (albumHashmap == null) {
25            albumHashmap = new HashMap<String, List<Song>>();
26        }
27        if (idHashmap == null) {
28            idHashmap = new HashMap<String, Song>();
29        }
30
31        Song songToAdd = new Song(title, artist, album, id, Duration);
32
33        if (titleHashmap.get(title) == null) {
34            titleHashmap.put(title, new LinkedList<Song>());
35        }
36        titleHashmap.get(title).addFirst(songToAdd);
37
38        if (albumHashmap.get(album) == null) {
39            albumHashmap.put(album, new LinkedList<Song>());
40        }
41        albumHashmap.get(album).addFirst(songToAdd);
42
43        if (idHashmap.get(Integer.toString(id)) == null) {
44            idHashmap.put(Integer.toString(id), songToAdd);
45        }
46    }
47
48    public Song searchById(Integer songID) {
49        try {
50            Thread.sleep(waitTime);
51        } catch (Exception e) {
52            e.printStackTrace();
53        }
54    }
55}
```

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54
55     return idHashMap.get(Integer.toString(songID));
56 }
57
58 public List<Song> searchByTitle(String title) {
59     try {
60         Thread.sleep(waitTime);
61     } catch (Exception e) {
62         e.printStackTrace();
63     }
64
65     return titleHashMap.get(title);
66 }
67
68 public List<Song> searchByAlbum(String album) {
69     try {
70         Thread.sleep(waitTime);
71     } catch (Exception e) {
72         e.printStackTrace();
73     }
74
75     return albumHashMap.get(album);
76 }
77
78 public static Server getInstance() {
79     if (instance == null) {
80         instance = new Server();
81     }
82
83     return instance;
84 }
85 }
```