

```
1 import java.util.HashMap;
2 import java.util.LinkedList;
3 import java.util.List;
4
5 public class ProxyServer implements SongService {
6     private static ProxyServer proxyServer;
7     private static HashMap<String, List<Song>> titleHashmap;
8     private static HashMap<String, List<Song>> albumHashmap;
9     private static HashMap<String, Song> idHashmap;
10    private Song songResult;
11    private List<Song> listSongResult;
12
13    private ProxyServer() {
14        titleHashmap = new HashMap<String, List<Song>>();
15        albumHashmap = new HashMap<String, List<Song>>();
16        idHashmap = new HashMap<String, Song>();
17    }
18
19    public Song searchById(Integer songID) {
20        this.songResult = idHashmap.get(Integer.toString(songID));
21
22        if (songResult == null) {
23            System.out.println("Song not cached, fetching from server...");
24            Song retrievedSong = Server.getInstance().searchById(songID);
25            idHashmap.put(Integer.toString(songID), retrievedSong);
26        }
27
28        return idHashmap.get(Integer.toString(songID));
29    }
30
31    public List<Song> searchByTitle(String title) {
32        this.listSongResult = titleHashmap.get(title);
33
34        if (listSongResult == null) {
35            System.out.println("Song not cached, fetching from server...");
36            List<Song> retrievedSong = Server.getInstance().searchByTitle(title);
37            titleHashmap.put(title, retrievedSong);
38        }
39
40        return titleHashmap.get(title);
41    }
42
43    public List<Song> searchByAlbum(String album) {
44        this.listSongResult = albumHashmap.get(album);
45
46        if (listSongResult == null) {
47            System.out.println("Song not cached, fetching from server...");
48            List<Song> retrievedSong = Server.getInstance().searchByAlbum(album);
49            albumHashmap.put(album, retrievedSong);
50        }
51
52        return albumHashmap.get(album);
53    }
54 }
```

```
54 |
55 |     public static ProxyServer getInstance() {
56 |         if (proxyServer == null) {
57 |             proxyServer = new ProxyServer();
58 |         }
59 |
60 |         return proxyServer;
61 |     }
62 |
63 | }
```