基于网络API的音乐下载器的实现

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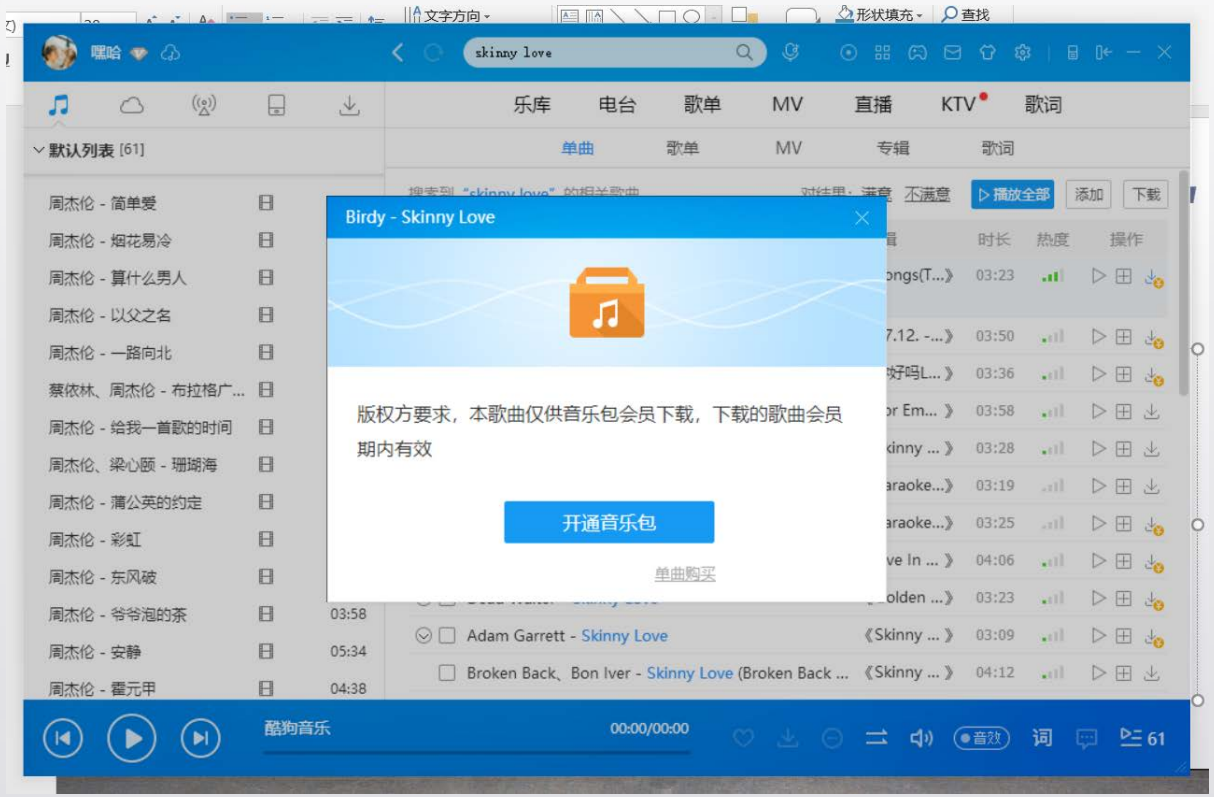
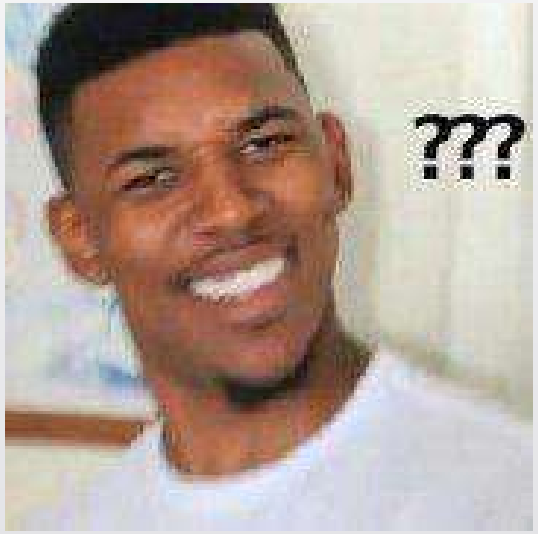
遇到的问题：


skinny love
乐库
电台
歌单
MV
直播
KTV
歌词
默认列表 [61]
周杰伦 - 简单爱
周杰伦 - 烟花易冷
周杰伦 - 算什么男人
周杰伦 - 以父之名
周杰伦 - 一路向北
蔡依林、周杰伦 - 布拉格广...
周杰伦 - 给我一首歌的时间
周杰伦、梁心颐 - 珊瑚海
周杰伦 - 蒲公英的约定
周杰伦 - 彩虹
周杰伦 - 东风破
周杰伦 - 爷爷泡的茶 03:58
周杰伦 - 安静 05:34
周杰伦 - 霍元甲 04:38
Birdy - Skinny Love
版权方要求，本歌曲仅供音乐包会员下载，下载的歌曲会员期内有效
开通音乐包
单曲购买
播放全部
添加
下载
Adam Garrett - Skinny Love 03:09
Broken Back、Bon Iver - Skinny Love (Broken Back ... 04:12
酷狗音乐
00:00/00:00


???

实现流程：

1、客户端向服务器发送关键字

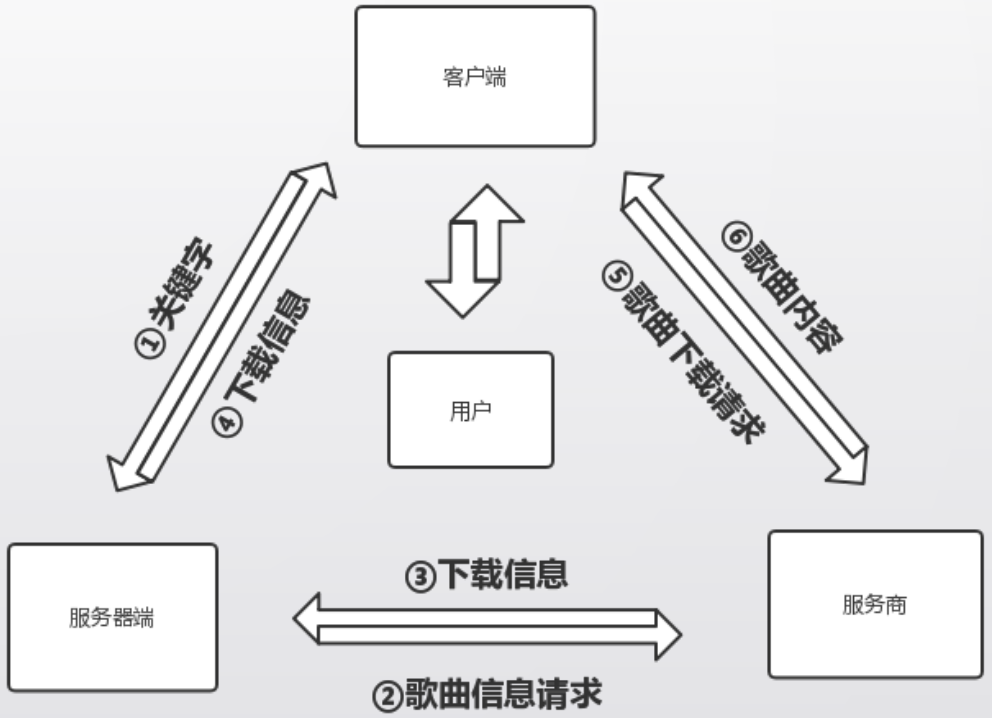
2、服务器向API接口请求歌曲信息

3、服务商向服务器发送下载信息

4、服务器向客户端回传下载信息

5、客户端收到数据并向用户展示结果

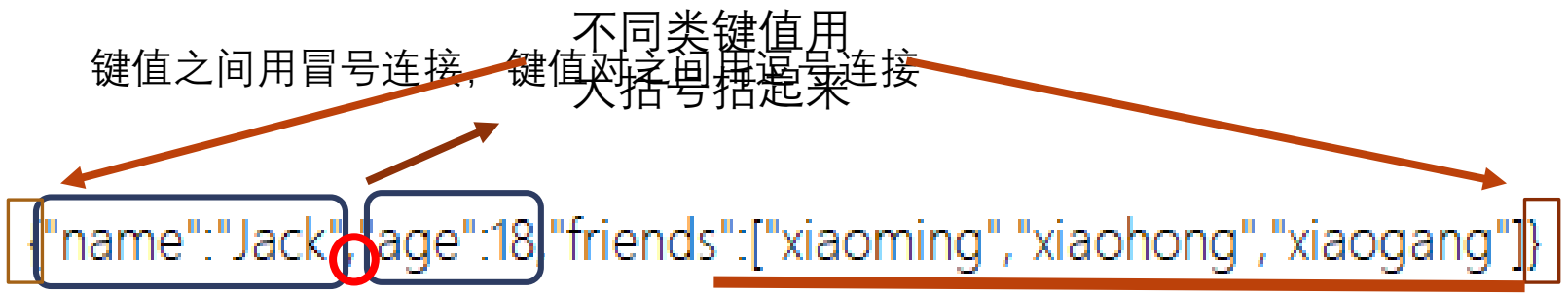
6、用户将结果进行筛选并下载



- 基础知识:
- JSON格式简介
- 网络API简介
- 云服务器简介

- 代码实现:
- 服务器的功能
- 客户端的功能
- 最终结果展示

JSON格式简介（客户端、服务器端、服务商之间的桥）



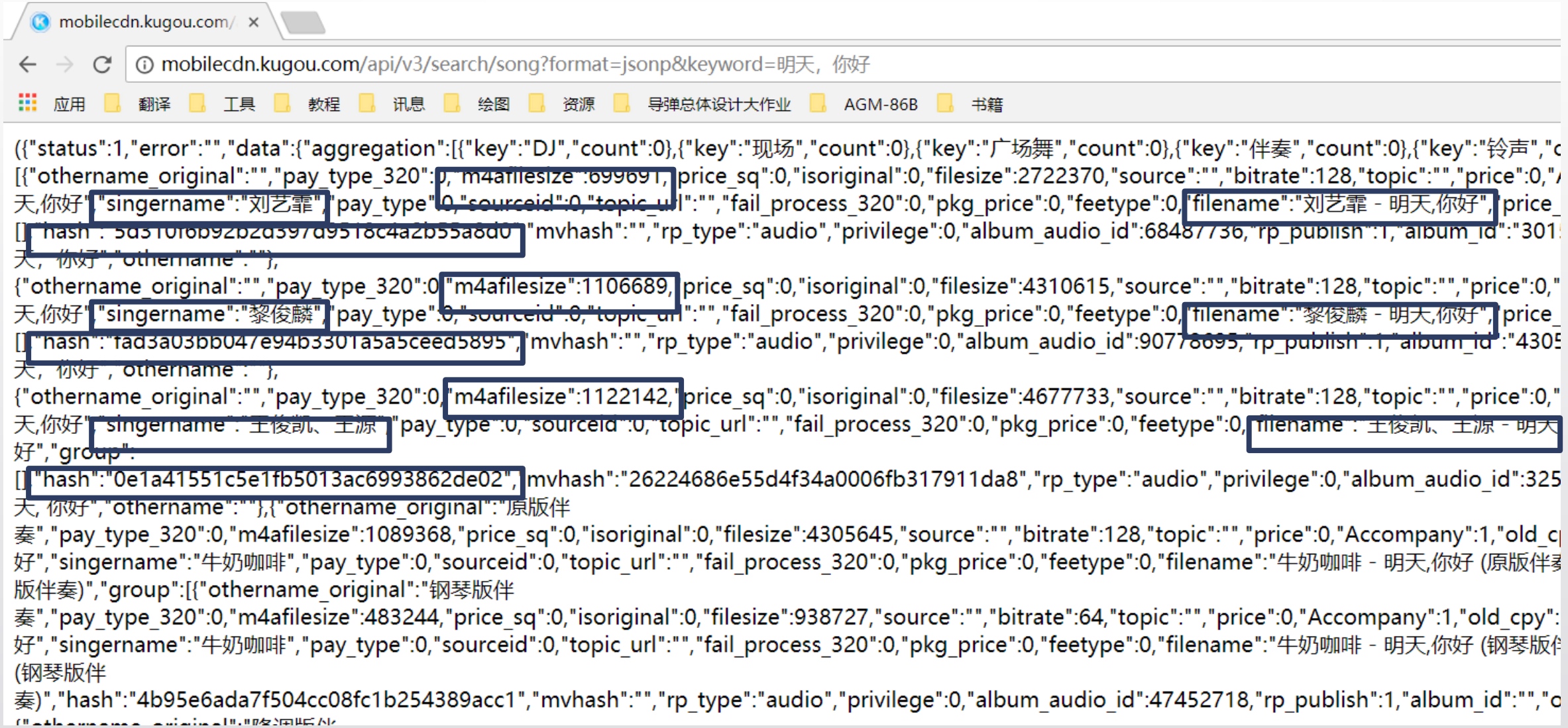
同类型的值用中括号括起来

{"name":"Jack","friends":[{"name":"xiaohong","age":17},{"name":"xiaoming","age":18}]}

将以上基本规则组合就能够得到复杂的数据包

API接口简介（服务器与服务商之间的桥）

以链接形式调用API，根据参数不同返回不同的结果


mobilecdn.kugou.com/
mobilecdn.kugou.com/api/v3/search/song?format=jsonp&keyword=明天，你好
应用
翻译
工具
教程
讯息
绘图
资源
导弹总体设计大作业
AGM-86B
书籍
({"status":1,"error":"","data":{"aggregation":[{"key":"DJ","count":0},{"key":"现场","count":0},{"key":"广场舞","count":0},{"key":"伴奏","count":0},{"key":"铃声","c
[{"othername_original":"","pay_type_320":0,"m4afilesize":699691,"price_sq":0,"isoriginal":0,"filesize":2722370,"source":"","bitrate":128,"topic":"","price":0,"A
天,你好","singername":"刘艺霏","pay_type":0,"sourceid":0,"topic_url":"","fail_process_320":0,"pkg_price":0,"feetype":0,"filename":"刘艺霏 - 明天,你好","price_
[{"hash":"5d310f6b92b2d397d9518c4a2b55a8d0","mvhash":"","rp_type":"audio","privilege":0,"album_audio_id":68487736,"rp_publish":1,"album_id":"301
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{"othername_original":"","pay_type_320":0,"m4afilesize":1106689,"price_sq":0,"isoriginal":0,"filesize":4310615,"source":"","bitrate":128,"topic":"","price":0,"
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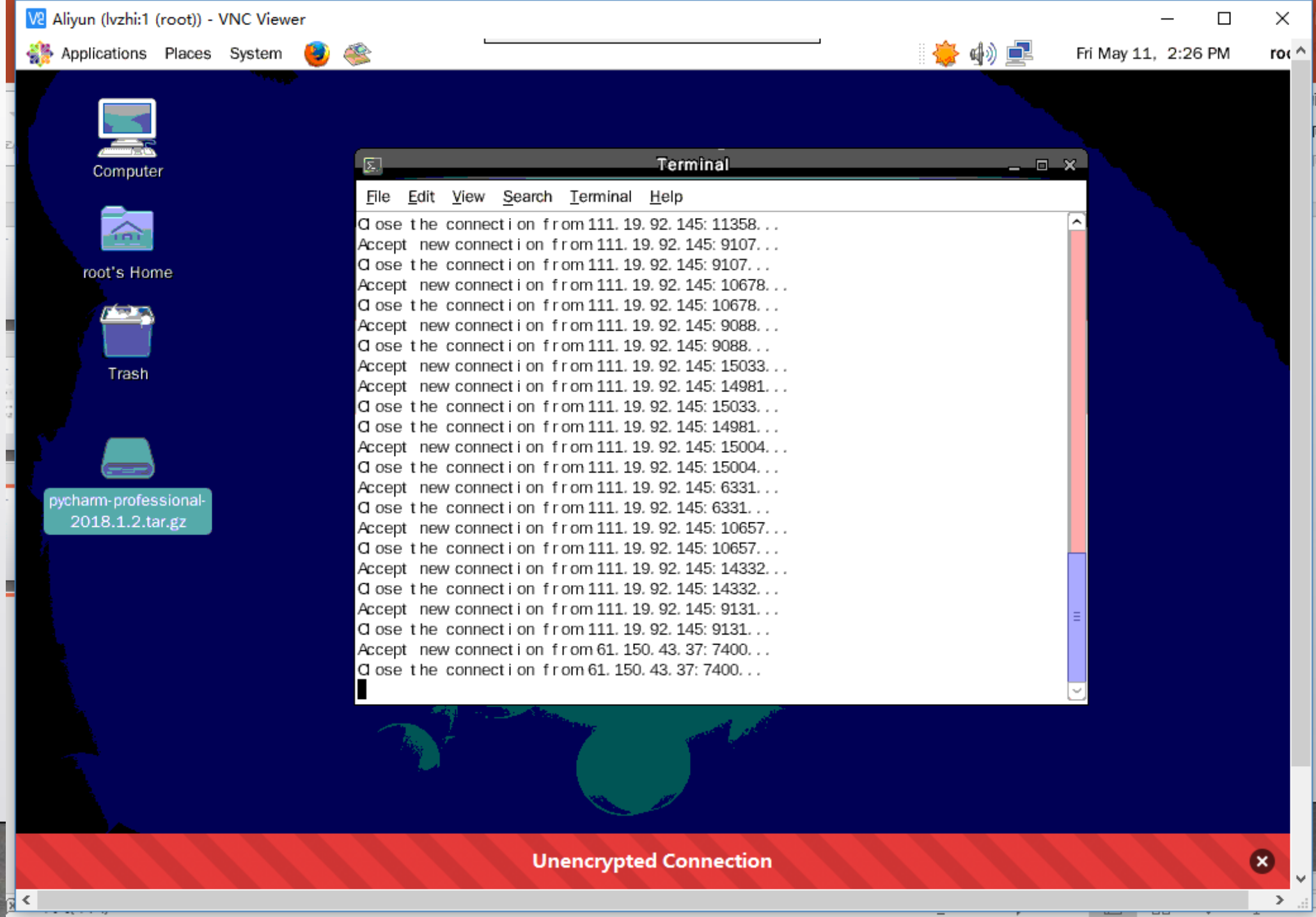
天，你好","othername":""},
{"othername_original":"","pay_type_320":0,"m4afilesize":1122142,"price_sq":0,"isoriginal":0,"filesize":4677733,"source":"","bitrate":128,"topic":"","price":0,"
天,你好","singername":"王俊凯、王源","pay_type":0,"sourceid":0,"topic_url":"","fail_process_320":0,"pkg_price":0,"feetype":0,"filename":"王俊凯、王源 - 明天
好","group":
[{"hash":"0e1a41551c5e1fb5013ac6993862de02","mvhash":"26224686e55d4f34a0006fb317911da8","rp_type":"audio","privilege":0,"album_audio_id":325
天,你好","othername":""},{"othername_original":"原版伴
奏","pay_type_320":0,"m4afilesize":1089368,"price_sq":0,"isoriginal":0,"filesize":4305645,"source":"","bitrate":128,"topic":"","price":0,"Accompany":1,"old_c
好","singername":"牛奶咖啡","pay_type":0,"sourceid":0,"topic_url":"","fail_process_320":0,"pkg_price":0,"feetype":0,"filename":"牛奶咖啡 - 明天,你好 (原版伴奏
版伴奏)","group":[{"othername_original":"钢琴版伴
奏","pay_type_320":0,"m4afilesize":483244,"price_sq":0,"isoriginal":0,"filesize":938727,"source":"","bitrate":64,"topic":"","price":0,"Accompany":1,"old_cpy":
好","singername":"牛奶咖啡","pay_type":0,"sourceid":0,"topic_url":"","fail_process_320":0,"pkg_price":0,"feetype":0,"filename":"牛奶咖啡 - 明天,你好 (钢琴版伴
(钢琴版伴
奏)","hash":"4b95e6ada7f504cc08fc1b254389acc1","mvhash":"","rp_type":"audio","privilege":0,"album_audio_id":47452718,"rp_publish":1,"album_id":"","o

IP地址与端口简介（客户端与云服务器之间的桥）

- IP地址，即对因特网上的每台计算机和其它设备都规定的一种唯一的地址，叫做“IP地址”，它保证了用户在连网的计算机上操作时，能够高效而且方便地从千千万万台计算机中选出自己所需的对象。
- TCP/IP协议集成到操作系统的内核中，这就相当于在操作系统中引入了一种新的输入/输出接口技术，因为在TCP/IP协议中引入了一种称之为“Socket（套接字）”应用程序接口，即端口。


Aliyun (lvzhi:1 (root)) - VNC Viewer
Applications
Places
System
Fri May 11, 2:26 PM
Computer
root's Home
Trash
pycharm-professional-2018.1.2.tar.gz
Terminal
File Edit View Search Terminal Help
Close the connection from 111.19.92.145:11358...
Accept new connection from 111.19.92.145:9107...
Close the connection from 111.19.92.145:9107...
Accept new connection from 111.19.92.145:10678...
Close the connection from 111.19.92.145:10678...
Accept new connection from 111.19.92.145:9088...
Close the connection from 111.19.92.145:9088...
Accept new connection from 111.19.92.145:15033...
Accept new connection from 111.19.92.145:14981...
Close the connection from 111.19.92.145:15033...
Close the connection from 111.19.92.145:14981...
Accept new connection from 111.19.92.145:15004...
Close the connection from 111.19.92.145:15004...
Accept new connection from 111.19.92.145:6331...
Close the connection from 111.19.92.145:6331...
Accept new connection from 111.19.92.145:10657...
Close the connection from 111.19.92.145:10657...
Accept new connection from 111.19.92.145:14332...
Close the connection from 111.19.92.145:14332...
Accept new connection from 111.19.92.145:9131...
Close the connection from 111.19.92.145:9131...
Accept new connection from 61.150.43.37:7400...
Close the connection from 61.150.43.37:7400...
Unencrypted Connection

```
try:
    data_kugou = requests.get(
        "http://songsearch.kugou.com/song_search_v2?callback=jQuery112402944359877152716_1525743328685&keyword=" +
        songName + "&page=1&pagesize=30&userid=-1&clientver=&platform=WebFilter&tag"
                   "=em&filter=2&iscorrection=1&privilege_filte=0&_=1525743328690",
        headers=headers)
    data_kugou.close()
    content_kugou = json.loads(data_kugou.text[data_kugou.text.find('(') + 1:-2])
    songs_kugou = content_kugou['data']['lists']
    for song_kugou in songs_kugou:
        data_kugou_song = requests.get(
            "http://m.kugou.com/app/i/getSongInfo.php?hash=" + song_kugou['FileHash'] + "&cmd=playInfo",
            headers=headers)
        data_kugou_song.close()
        content_kugou_song = json.loads(data_kugou_song.text)
        songList['kugou'].append(
            {'name': content_kugou_song['songName'], 'singer': content_kugou_song['singerName'],
             'url': content_kugou_song['url']})
```

向服务商api发送请求并解析获取到的json格式，从中提取歌曲名、歌手、下载地址等信息。

将获得的信息以定义好的json格式添加到数据集中

客户端的实现：

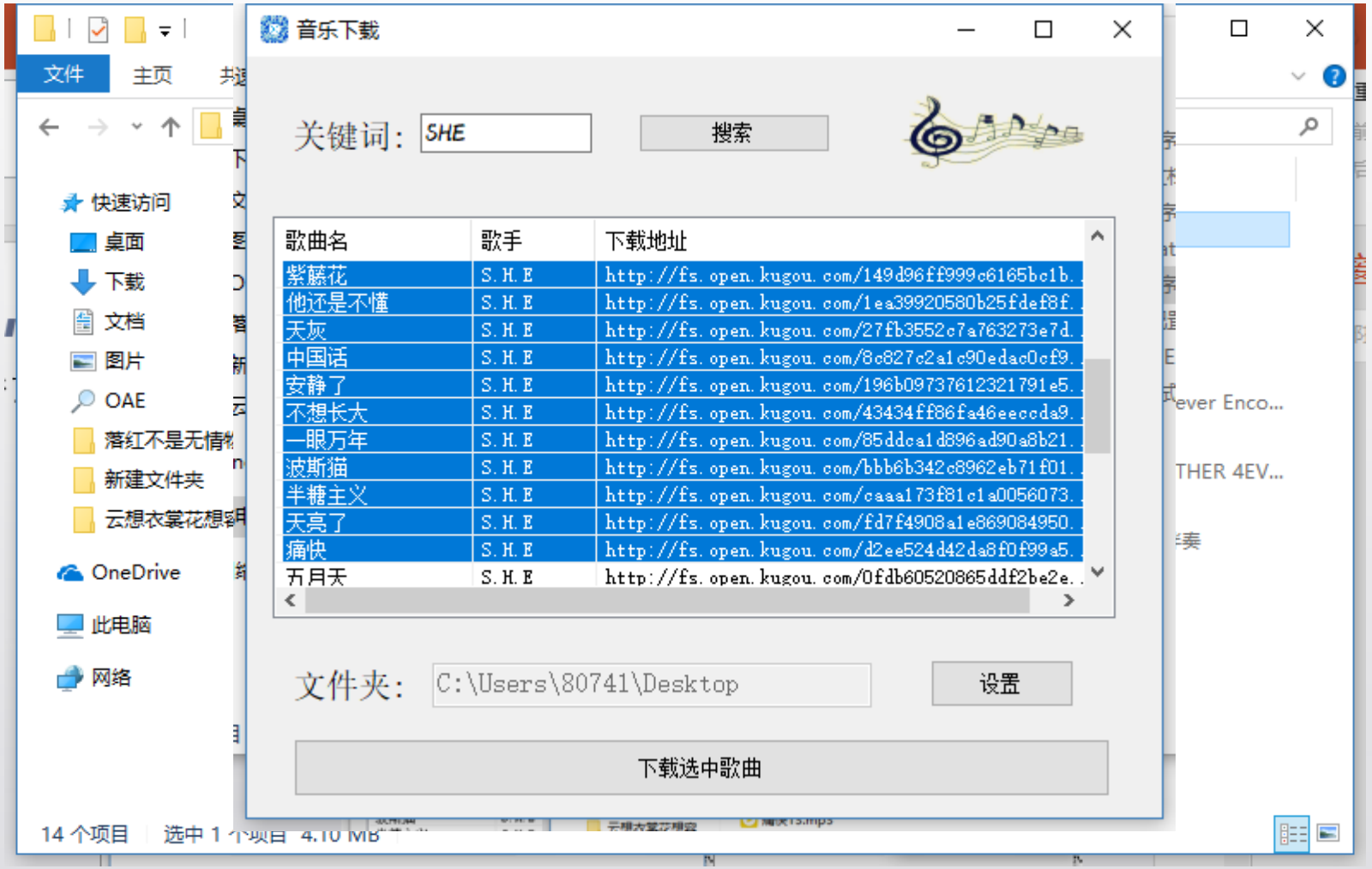
- 向用户提供良好的交互界面
- 针对服务器提供的API协议，实现与服务器之间的交互
- 根据获取的歌曲下载信息对相应的歌曲进行下载

```
public void search()
{
    IPAddress ip = IPAddress.Parse("47.95.202.222");
    IPEndPoint point = new IPEndPoint(ip, int.Parse("10251"));
    Socket client = new Socket(AddressFamily.InterNetwork, SocketType.Stream, ProtocolType.Tcp);
    try
    {
        client.Connect(point);
    }
    catch
    {
        MessageBox.Show("链接出错！");
        Application.Exit();
    }
    byte[] buffer_send = Encoding.UTF8.GetBytes(textBox1.Text);
    client.Send(buffer_send);
    byte[] buffer_recv = new byte[1024 * 1024];
    int n = client.Receive(buffer_recv);
    String abc = Encoding.UTF8.GetString(buffer_recv, 0, n);
    Class1 package = JsonConvert.DeserializeObject<Class1>(abc);
    MyInvoke mi = new MyInvoke(display);
    this.BeginInvoke(mi, package);
}
public void download(Object group)
{
    Class3 GR = (Class3)group;
    WebClient myWebClient = new WebClient();
    myWebClient.DownloadFile(GR.url, path_ + @"\" + GR.name + GR.i + ".mp3");
}
```

根据已知的IP以及定义好的端口实现与服务器端的socket连接。

与服务器端进行通讯获取信息并对获取的信息进行解析。

根据获得的歌曲链接进行下载操作


音乐下载
关键词：
SHE
搜索
歌曲名
歌手
下载地址
紫藤花 S.H.E http://fs.open.kugou.com/149d96ff999c6165bc1b.
他还是不懂 S.H.E http://fs.open.kugou.com/1ea39920580b25fdef8f.
天灰 S.H.E http://fs.open.kugou.com/27fb3552c7a763273e7d.
中国话 S.H.E http://fs.open.kugou.com/8c827c2a1c90edac0cf9.
安静了 S.H.E http://fs.open.kugou.com/196b09737612321791e5.
不想长大 S.H.E http://fs.open.kugou.com/43434ff86fa46eeccda9.
一眼万年 S.H.E http://fs.open.kugou.com/85ddca1d896ad90a8b21.
波斯猫 S.H.E http://fs.open.kugou.com/bbb6b342c8962eb71f01.
半糖主义 S.H.E http://fs.open.kugou.com/caaa173f81c1a0056073.
天亮了 S.H.E http://fs.open.kugou.com/fd7f4908a1e869084950.
痛快 S.H.E http://fs.open.kugou.com/d2ee524d42da8f0f99a5.
五月天 S.H.E http://fs.open.kugou.com/0fdb60520865ddf2be2e.
文件夹：
C:\Users\80741\Desktop
设置
下载选中歌曲
文件
主页
快速访问
桌面
下载
文档
图片
OAE
落红不是无情物
新建文件夹
云想衣裳花想容
OneDrive
此电脑
网络
14 个项目
选中 1 个项目 4.10 MB

谢谢大家！

Q&A