

interface_test_tools

接口测试工具：类似postman

01需求分析

- 需求：实现接口测试工具，带GUI页面样式
- 功能描述
 - 实现接口测试
 - 为特别场景解决特定问题，提交测试团队效率

The diagram illustrates the layout of the interface testing tool's GUI. It consists of the following components:

- Top Row:** A dropdown menu for '请求方法' (Request Method), an input field for 'url', and a '发送按钮' (Send Button).
- Request Fields:** Two large text areas for '请求头' (Request Header) and '请求体' (Request Body).
- Response Field:** A large text area for '响应体数据' (Response Body Data) with a '清除' (Clear) button below it.

- 实现方案：
 - gui编程
 - requests函数封装

02GUI编程概述

2.1 图形库接口用户接口

- 软件提供给用户一个图形化界面
- 用户只需要使用鼠标点点点
- 可以得到图形化的反馈
- 完成与软件的交互过程

03GUI实现方案

3.1 GUI模块

- **Tkinter** : python中最简单的图形化模块，总共只有14种组件
- **Pyqt** : python中最复杂也是使用最广泛的图形化
- **Wx** : 是python居中的一个图形化，学习结构清晰
- **Pywin** :是python windows下的模块，摄像头控制(opencv),常用于外挂制作

3.2 PyQt

- PyQt是GPLv3协议，大意是你的程序中用了它，你的程序就要开源，如果闭源商用就会违反协议，(除非你搞封装动态加载那一套来强行规避)
- 使用自由软件时违反了GPL的授权。如果是个人或不正规的公司倒也无所谓，但如果是有规模的公司，恐怕会有被起诉的风险

3.3 PySide2

- PySide是LGPL协议，如果只是作为库用用它，你的程序还是可以闭源商用。
- 所以很多人喜欢PySide。如果不做商业项目，强烈建议使用PyQt,资料多，稳定。需要开发闭源商用软件的就用PySide

04 GUI开发环境搭建

4.1 安装PySide2

```
pip install PySide2 -i https://pypi.douban.com/simple --trusted-host pypi.douban.com
```

```
C:\Users\J...>pip install PySide2 -i https://pypi.douban.com/simple --trusted-host pypi.douban.com

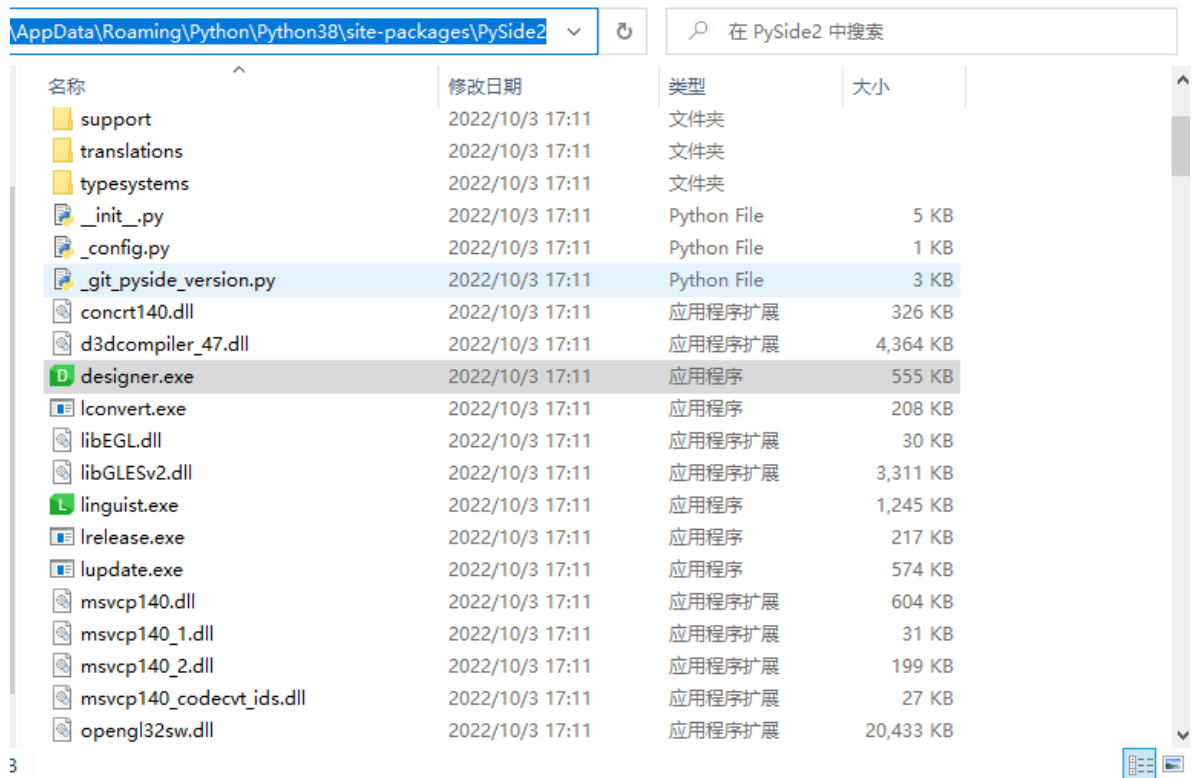
Usage:
  pip install [options] <requirement specifier> [package-index-options] ...
  pip install [options] -r <requirements file> [package-index-options] ...
  pip install [options] [-e] <vcs project url> ...
  pip install [options] [-e] <local project path> ...
  pip install [options] <archive url/path> ...

no such option: --trustedhost

C:\Users\J...>pip install PySide2 -i https://pypi.douban.com/simple --trusted-host pypi.douban.com
Defaulting to user installation because normal site-packages is not writeable
Looking in indexes: https://pypi.douban.com/simple
Collecting PySide2
  Downloading https://pypi.douban.com/packages/ed/5e/d0d540385dcc5eeda877a4288a9a4970e0e7b2282e840c2b08ce5442542e/PySide2-5.15.2-1-5.15.2-cp35.cp36.cp37.cp38.cp39.cp310-none-win_amd64.whl (137.4 MB)
    ----- 137.4/137.4 MB 7.4 MB/s eta 0:00:00
Collecting shiboken2==5.15.2.1
  Downloading https://pypi.douban.com/packages/26/bd/a1b31f49eb35888eae318c27327732b1036f0d921e5c8ec2e7a4276e7445/shiboken2-5.15.2.1-5.15.2-cp35.cp36.cp37.cp38.cp39.cp310-none-win_amd64.whl (2.3 MB)
    ----- 2.3/2.3 MB 4.1 MB/s eta 0:00:00
Installing collected packages: shiboken2, PySide2
  WARNING: The scripts pyside2-designer.exe, pyside2-lupdate.exe, pyside2-rcc.exe and pyside2-uic.exe are installed in 'C:\Users\J...AppData\Roaming\Python\Python38\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed PySide2-5.15.2.1 shiboken2-5.15.2.1

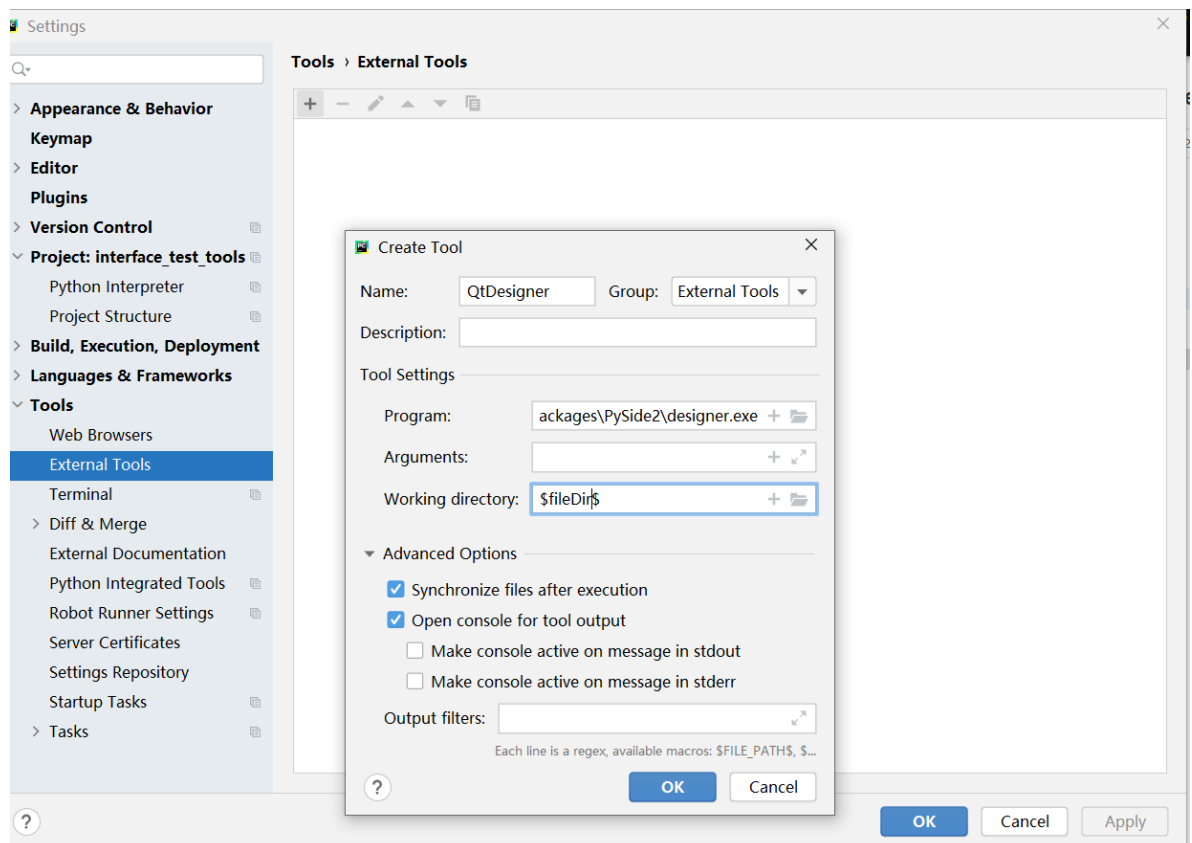
[notice] A new release of pip available: 22.1.2 -> 22.2.2
```

4.2 进入python目录找到PySide2目录双击designer.exe



4.3 pycharm关联Designer

- File->Settings->Tools->External Tools, 打开页面
 - Program 填写: PySide2安装路径下的 designer.exe 路径
 - Working directory 填写: 项目路径 \$FileDir\$
- 目的: 用于快速设计、修改 ui 并生成 .ui 文件



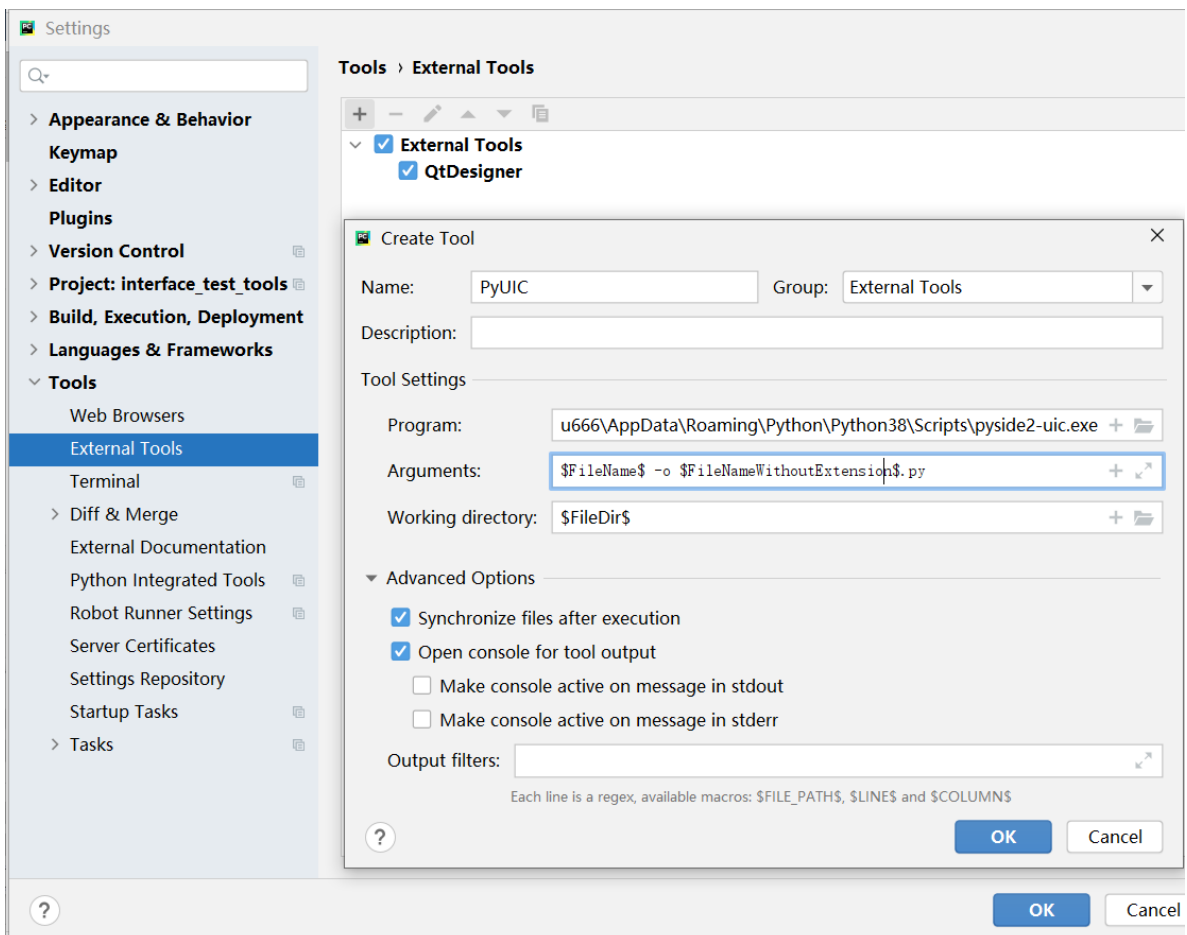
4.4 安装pyqt5

```
pip install -U pyqt5 -i https://pypi.douban.com/simple --trusted-host pypi.douban.com
```

```
C:\Users\... pip install pyqt5 -i https://pypi.douban.com/simple --trusted-host pypi.douban.com
Defaulting to user installation because normal site-packages is not writeable
Looking in indexes: https://pypi.douban.com/simple
Collecting pyqt5
  Downloading https://pypi.douban.com/packages/bd/85/31a12415765acb48fddac3e207cfffcbbae826fe194cf1d92179d8872f59/PyQt5-5.15.7-cp37-abi3-win_amd64.whl (6.8 MB)
----- 6.8/6.8 MB 9.7 MB/s eta 0:00:00
Collecting PyQt5-Qt5>=5.15.0
  Downloading https://pypi.douban.com/packages/37/97/5d3b222b924fa2ed4c2488925155cd0b03fd5d09eefcfc7c553c11c9f66/PyQt5-5.15.2-py3-none-win_amd64.whl (50.1 MB)
----- 50.1/50.1 MB 10.4 MB/s eta 0:00:00
Collecting PyQt5-sip<13,>=12.11
  Downloading https://pypi.douban.com/packages/29/f9/aed0c4194cfe8840f658719efad248d10ee797278fecb23dcf236c52f3/PyQt5-sip-12.11.0-cp38-cp38-win_amd64.whl (78 kB)
----- 78.1/78.1 kB ? eta 0:00:00
Installing collected packages: PyQt5-Qt5, PyQt5-sip, pyqt5
WARNING: The scripts pyupdate5.exe, pyrcc5.exe and pyuic5.exe are installed in 'C:\Users\...\AppData\Roaming\Python\Python38\Scripts' which is not on PATH.
Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed PyQt5-Qt5-5.15.2 PyQt5-sip-12.11.0 pyqt5-5.15.7

[notice] A new release of pip available: 22.1.2 -> 22.2.2
[notice] To update, run: python.exe -m pip install --upgrade pip
```

4.5 pycharm关联pyside2-uic



05 接口工具ui界面设计

5.1 Qt Designer使用File->Settings->Tools->External Tools, 打开页面。

- 目的:用于快速设计、修改ui并生成.ui文件。
- Program 填写: PySide2安装路径下的designer.exe 路径
- Working directory填写:项目路径 \$FileDir\$

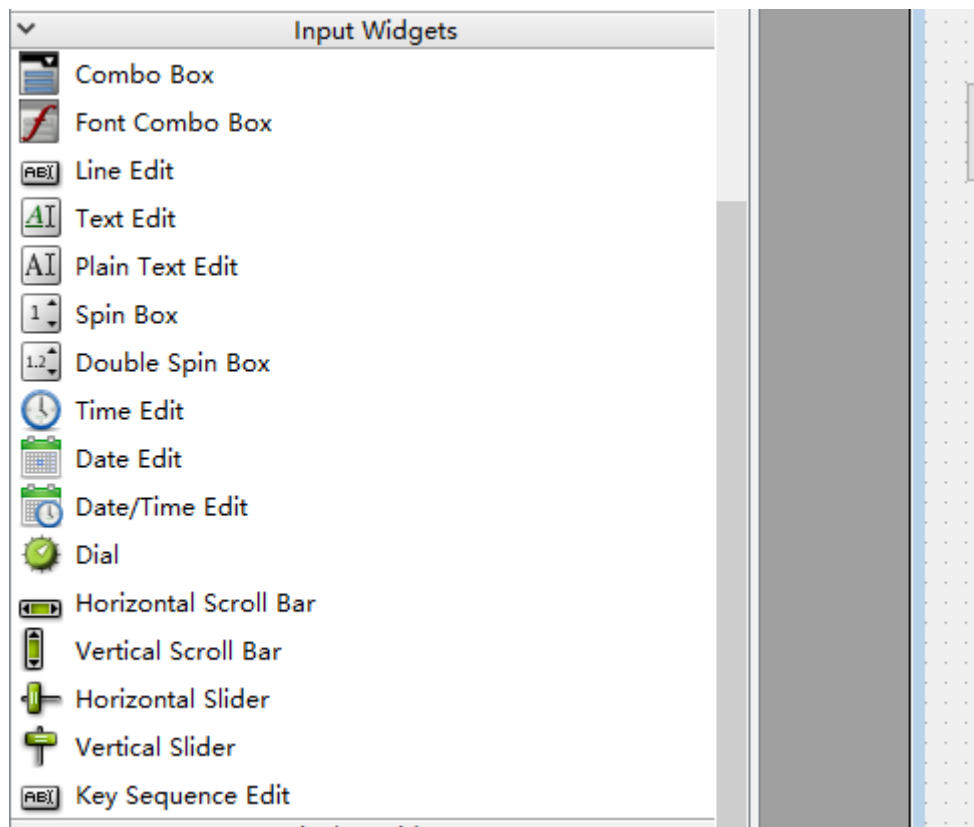
5.2 工具主界面

- **工具箱区域**: 提供GUI界面开发使用的各种基本控件, 如单选框、文本框等。可以拖动到新创建的主程序界面。
- **主界面区域**: 用户放置各种从工具箱拖过来的各种控件。模板选项中最常用的就是Widget(通用窗口)和MainWindow(主窗口)。二者区别主要是Widget窗口不包含菜单栏、工具栏等
- **对象查看器区域**: 查看主窗口放置的对象列表
- **属性编辑器区域**: 提供对窗口、控件、布局的属性编辑功能。比如修改控件的显示文本、对象名、大小等。
- **信号/槽编辑器区域**: 编辑控件的信号和槽函数, 也可以添加自定义的信号和槽函数。

5.3 常用基本控件介绍

1. 输入控件

- **Line Edit**: 单行文本框, 输入单行字符串。控件对象常用函数为Text() 返回文本框内容, 用于获取输入。
- **setText()** 用于设置文本框显示。
- **Text Edit**: 多行文本框, 输入多行字符串。控件对象常用函数同Line Edit控件。
- **Combo Box**: 下拉框列表。用于输入指定枚举值。



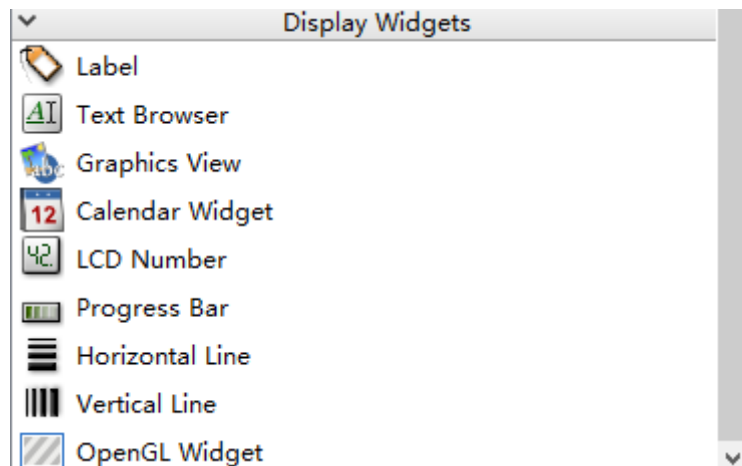
2. 按钮控件

- **Push Button**: 命令按钮, 信号就是指鼠标左键按下然后释放时会发送信号, 从而触发相应操作
- **Radio Button**: 单选框按钮
- **Check Box**: 多选框按钮



3. 显示控件

- **Label**: 文本标签, 显示文本, 可以用来标记控件。
- **Text Browser**: 显示文本控件。用于后台命令执行结果显示。



5.4 基本控件常用方法

1. QPushButton按钮

- 点击事件: `button.clicked.connect(函数)`
- 改变按钮文本: `button.setText(text)`
- 按钮禁用: `button.setEnabled(False)`
- 按钮启用: `button.setEnabled(True)`

2. QLineEdit单行文本框

- 文本获取: `text = lineEdit.text()`
- 设置提示文本: `lineEdit.setPlaceholderText('请输入')`
- 设置编辑框文本: `lineEdit.setText('zhangsan')`

3. QTextBrowser 文本浏览器

- 末尾追加文本: `textBrowser().append('hello world')`
- 末尾添加文本: `textBrowser.insertPlainText('hello world')`

4. QComboBox组合选择框

- 设置一个选项: `boxMethod.addItem('get')`
- 设置多个选项: `boxMethod.addItems(['GET','POST','PUT','DELETE'])`
- 清空选项: `boxMethod.clear()`
- 获取当前选中选项文本: `method = boxMethod.currentText()`

5. QPlainTextEdit 多行文本框

- 文本编辑事件: edit.textChanged.connect(函数)
- 获取编辑框文本: text = edit.toPlainText()
- 设置提示文本: edit.setPlaceholderText('请在这里输入请求体')
- 设置编辑框文本: edit.setPlainText('hello world')
- 编辑框末尾追加文本: edit.appendPlainText('hello world')
- 编辑框末尾添加文本: edit.insertPlainText('内容')
- 清除编辑框文本: edit.clear()
- 复制编辑框文本: edit.copy()
- 粘贴编辑框文本: edit.paste()

5.4 小工具源码

```
import requests
import json
from requests import exceptions
import threading
# 导入对应的库
# 1.应用对象
from PySide2.QtWidgets import QApplication
# 1.2界面ui 文件需要导入代码里去
from PySide2.QtUiTools import QUiLoader
# 1.3导入读取ui文件的库
from PySide2.QtCore import QFile

class HttpClient():
    def __init__(self, ui_name='接口工具.ui'):
        # 1.4获取ui文件
        self.q_file = QFile(ui_name)
        # 1.5 打开ui文件
        self.q_file.open(QFile.ReadOnly)
        # 1.6 加载ui对象
        self.ui = QUiLoader().load(self.q_file)

        # 1.7 动作关联
        self.ui.send_button.clicked.connect(self.send_request)
        self.ui.clearButton.clicked.connect(self.clear_action)

    def clear_action(self):
        self.ui.textBrowser.clear()

# 2. 发送请求后端逻辑
def send_request(self):
    # 2.1 获取请求方法
    global res
    method = self.ui.comboBox.currentText()
    # 2.2 获取url
    url = self.ui.urlEdit.text()
    # 2.3 获取请求头
    header = self.ui.headTextEdit.toPlainText()
    if header.strip() != "":
        try:
            # 2.4将字符串转字典
            header = json.loads(header)
        except:
            self.ui.textBrowser.append('请求头参数格式错误! ')
    else:
        self.ui.textBrowser.append('请求头参数格式错误! ')
    # 发送请求
    res = requests.request(method, url, headers=header)
```

```

        header = None
    else:
        header = None
    # 2.5 获取请求体
    body = self.ui.bodyTextEdit.toPlainText()
    if body.strip() != "":
        try:
            # 2.6将字符串转字典
            body = json.loads(body)
        except:
            self.ui.textBrowser.append('请求体参数格式错误! ')
            body = None
    else:
        body = None
    print(method, url, header, body)
    if header:
        try:
            res = requests.Request(method, url, headers=header, data=body)
        except exceptions as e:
            print(e)
            self.ui.textBrowser.append(e)
    else:
        try:
            res = requests.Request(method, url, data=body)
        except exceptions as e:
            self.ui.textBrowser.append(e)
    # 2.7获取请求数据
    prepare = res.prepare()
    # 2.8创建会话
    s = requests.Session()

    # 2.9 启动线程
    t1 = threading.Thread(target=self.thread_send, args=(s, prepare))
    t1.start()

# 3.线程发送请求
def thread_send(self, s, prepare):
    resp = s.send(prepare)
    self.show_response(resp)

# 4. 响应数据处理返回
def show_response(self, resp):
    resp.encoding = 'utf-8'
    self.ui.textBrowser.append(
        "HTTP/1.1 {} \n{} \n\n{}".format(
            resp.status_code, # 4.1状态码
            '\n'.join('{}:{}'.format(k, v) for k, v in
resp.headers.items()), # 4.2响应头
            resp.text # 4.3响应体
        )
    )

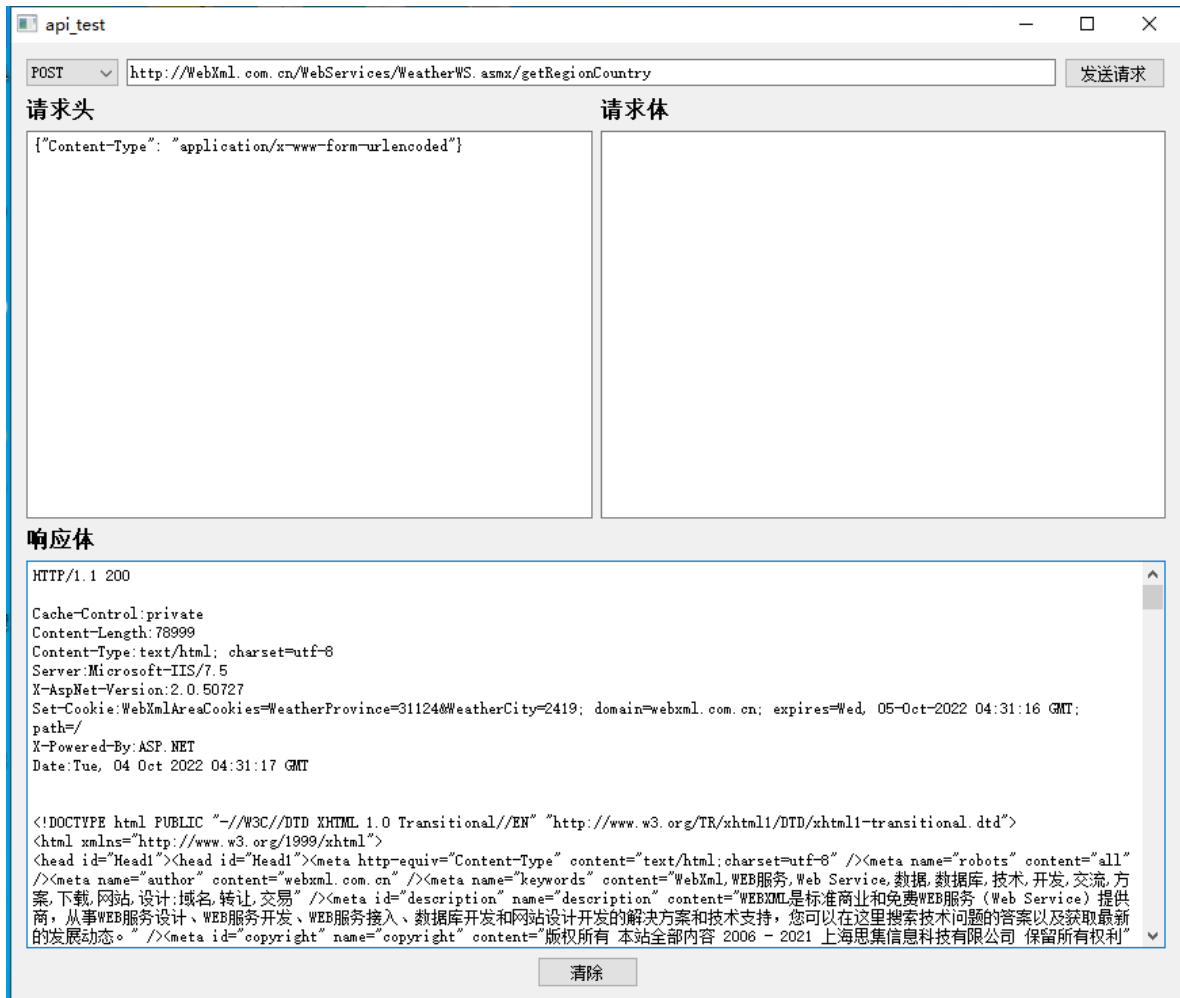
# 5.1创建应用程序对象
app = QApplication([]) # sys.argv
httpClient = HttpClient()
# 5.2显示ui
httpClient.ui.show()

```



```
# 5.3运行应用对象
app.exec_()
# url:http://webXml.com.cn/WebServices/WeatherWS.asmx/getRegionCountry
method:post,data:{"a": "b"},header:{"Content-Type": "application/x-www-form-
urlencoded"}
```

5.5 ui界面



06 windoiws平台打包可执行文件

6.1 安装pyinstaller库

```
pip install pyinstaller -i https://pypi.douban.com/simple --trusted-host
pypi.douban.com
```

```
C:\Windows\System32>if defined _OLD_VIRTUAL_PYTHONPATH (set "PYTHONPATH=")

C:\Windows\System32>pip install pyinstaller -i https://pypi.douban.com/simple --trusted-host pypi.douban.com
Looking in indexes: https://pypi.douban.com/simple
Collecting pyinstaller
  Downloading https://pypi.douban.com/packages/20/e2/f03f375babdd2964db4d99a4952b421ec457a2f800eb04b040db395d7894/pyin
  staller-5.4.1-py3-none-win_amd64.whl (1.2 MB)
  ----- 1.2/1.2 MB 8.5 MB/s eta 0:00:00
Collecting altgraph
  Downloading https://pypi.douban.com/packages/cc/ff/88d277ba936d226b0f6dbd671145f90fcfeed3aa9455c1c2f62c8ffec5b/altg
  raph-0.17.3-py2.py3-none-any.whl (21 kB)
Collecting pyinstaller-hooks-contrib>=2021.4
  Downloading https://pypi.douban.com/packages/33/39/803aed3f31826e308cd6391902b78d1f3375a4191d1a5d9c84a315e5f55e/pyin
  staller_hooks_contrib-2022.10-py2.py3-none-any.whl (244 kB)
  ----- 244.7/244.7 kB 14.7 MB/s eta 0:00:00
Collecting pywin32-ctypes>=0.2.0
  Downloading https://pypi.douban.com/packages/9e/4b/3ab2720f1fa4b4bc924ef1932b842edf10007e4547ea8157b0b9fc78599a/pywi
  n32_ctypes-0.2.0-py2.py3-none-any.whl (28 kB)
Collecting pefile>=2022.5.30
  Downloading https://pypi.douban.com/packages/48/30/4559d06bad5bb627733dac1ef28c34f5e35f1461247ba63e5f8366901277/pefi
  le-2022.5.30.tar.gz (72 kB)
  ----- 72.9/72.9 kB 4.2 MB/s eta 0:00:00
Preparing metadata (setup.py) ... done
Requirement already satisfied: setuptools in c:\users\...\appdata\local\programs\python\python38\lib\site-packages
 (from pyinstaller) (49.2.1)
Collecting future
  Downloading https://pypi.douban.com/packages/45/0b/38b06fd9b92dc2b68d58b75f900e97884c45bedd2ff83203d933cf5851c9/futu
  re-0.18.2.tar.gz (829 kB)
  ----- 829.2/829.2 kB 13.0 MB/s eta 0:00:00
Preparing metadata (setup.py) ... done
```

6.2 找到python工程下输入cmd

1. cmd
2. 打包方式1(exe): pyinstaller py文件名 --noconsole --hidden-import PySide2.QtXml # 方式1
- 2.打包方式2(exe+依赖): pyinstaller -F httpclient.py --noconsole --hidden-import PySide2.QtXml

```
C:\Users\...\python3_code\sublime_text03\13demoApplication\interface_test_tools>pyinstaller -F httpclient.py --noconsole --hidden-import PySide2.QtXml

4 个文件      20,288 字节
4 个目录 109,775,265,792 可用字节

C:\Users\...\python3_code\sublime_text03\13demoApplication\interface_test_tools>pyinstaller -F httpclient.py --noconsole --hidden-import PySide2.QtXml
145 INFO: PyInstaller: 5.4.1
145 INFO: Python: 3.8.6
145 INFO: Platform: Windows-10-10.0.19041-SP0
146 INFO: wrote C:\Users\...\python3_code\sublime_text03\13demoApplication\interface_test_tools\httpclient.spec
143 INFO: UPX is not available.
153 INFO: Extending PYTHONPATH with paths
['C:\\Users\\...\\python3_code\\sublime_text03\\13demoApplication\\interface_test_tools']
324 INFO: checking Analysis
325 INFO: Building Analysis because Analysis-00.toc is non existent
326 INFO: Initializing module dependency graph...
327 INFO: Caching module graph hooks...
349 INFO: Analyzing base_library.zip ...
1076 INFO: Loading module hook 'hook-heapq.py' from 'c:\\users\\...\\appdata\\local\\programs\\python\\python38\\lib\\site-packages\\PyInstaller\\hooks'...
1299 INFO: Loading module hook 'hook-encodings.py' from 'c:\\users\\...\\appdata\\local\\programs\\python\\python38\\lib\\site-packages\\PyInstaller\\hooks'...
2346 INFO: Loading module hook 'hook-pickle.py' from 'c:\\users\\...\\appdata\\local\\programs\\python\\python38\\lib\\site-packages\\PyInstaller\\hooks'...
3995 INFO: Caching module dependency graph...
4076 INFO: running Analysis Analysis-00.toc
4089 INFO: Adding Microsoft.Windows.Common-Controls to dependent assemblies of final executable
required by c:\\users\\...\\appdata\\local\\programs\\python\\python38\\python.exe
4210 INFO: Analyzing C:\\users\\...\\python3_code\\sublime_text03\\13demoApplication\\interface_test_tools\\httpclient.py
4282 INFO: Processing pre-safe import module hook urllib3.packages.six.moves from 'c:\\users\\...\\appdata\\local\\...
```

```
选择 管理员: 命令提示符
9478 INFO: Building PKG (CArchive) httpclient.pkg
22104 INFO: Building PKG (CArchive) httpclient.pkg completed successfully.
22109 INFO: Bootloader c:\users\j\appdata\local\programs\python\python38\lib\site-packages\PyInstaller\bootloader\
r\Windows-64bit\runw.exe
22111 INFO: checking EXE
22111 INFO: Building EXE because EXE-00.toc is non-existent
22112 INFO: Building EXE from EXE-00.toc
22112 INFO: Copying bootloader EXE to C:\Users\j\python3_code\sublime_text03\13demoApplication\interface_test_tools\dist\httpclient.exe.notanexecutable
22168 INFO: Copying icon to EXE
22176 INFO: Copying icons from ['c:\users\j\appdata\local\programs\python\python38\lib\site-packages\PyInstaller\bootloader\images\icon-windowed.ico']
22225 INFO: Writing RT_GROUP_ICON 0 resource with 104 bytes
22225 INFO: Writing RT_ICON 1 resource with 3752 bytes
22226 INFO: Writing RT_ICON 2 resource with 2216 bytes
22226 INFO: Writing RT_ICON 3 resource with 1384 bytes
22227 INFO: Writing RT_ICON 4 resource with 38188 bytes
22227 INFO: Writing RT_ICON 5 resource with 9640 bytes
22227 INFO: Writing RT_ICON 6 resource with 4264 bytes
22228 INFO: Writing RT_ICON 7 resource with 1128 bytes
22230 INFO: Copying 0 resources to EXE
22230 INFO: Embedding manifest in EXE
22231 INFO: Updating manifest in C:\Users\j\python3_code\sublime_text03\13demoApplication\interface_test_tools\dist\httpclient.exe.notanexecutable
22280 INFO: Updating resource type 24 name 1 language 0
22282 INFO: Appending PKG archive to EXE
22308 INFO: Fixing EXE headers
22739 INFO: Building EXE from EXE-00.toc completed successfully.
C:\Users\j\python3_code\sublime_text03\13demoApplication\interface_test_tools>
```

« 13demoApplication » interface_test_tools » dist					在 dist 中搜索	
	名称	修改日期	类型	大小		
	httpclient.exe	2022/10/4 14:36	应用程序	42,050 KB		

前台

浅