lab1

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• TODO部分补充的代码

```
    def recv_callback(self, data: bytes):
        #解析数据
        server = DNSPacket(data)
        #判断是否为query
        if(server.QR==0):
            #查询
            result = self.url_ip.get(server.name)
            #在字典中
            if(result is not None):
                if result=="0.0.0.0":
                    self.send(server.generate_response(result,True))
                else:
                    self.send(server.generate_response(result,False))
            #不在字典中
            else:
                # # 发送查询消息到公共 DNS 服务器
                self.server_socket.sendto(data, self.name_server)
                response, server_address = self.server_socket.recvfrom(1024)
                self.send(response)
        else:
            pass
```

• 对补充代码的解释

实例化DNSPacket类 `server = DNSPacket(data)`
QR标记位为0则为DNS查询 `if(server.QR==0):`
通过词典得到IP `result = self.url_ip.get(server.name)`
如果在字典中，分为两种情况

```
            #在字典中
            if(result is not None):
                if result=="0.0.0.0":
                    self.send(server.generate_response(result,True))
                else:
                    self.send(server.generate_response(result,False))
```

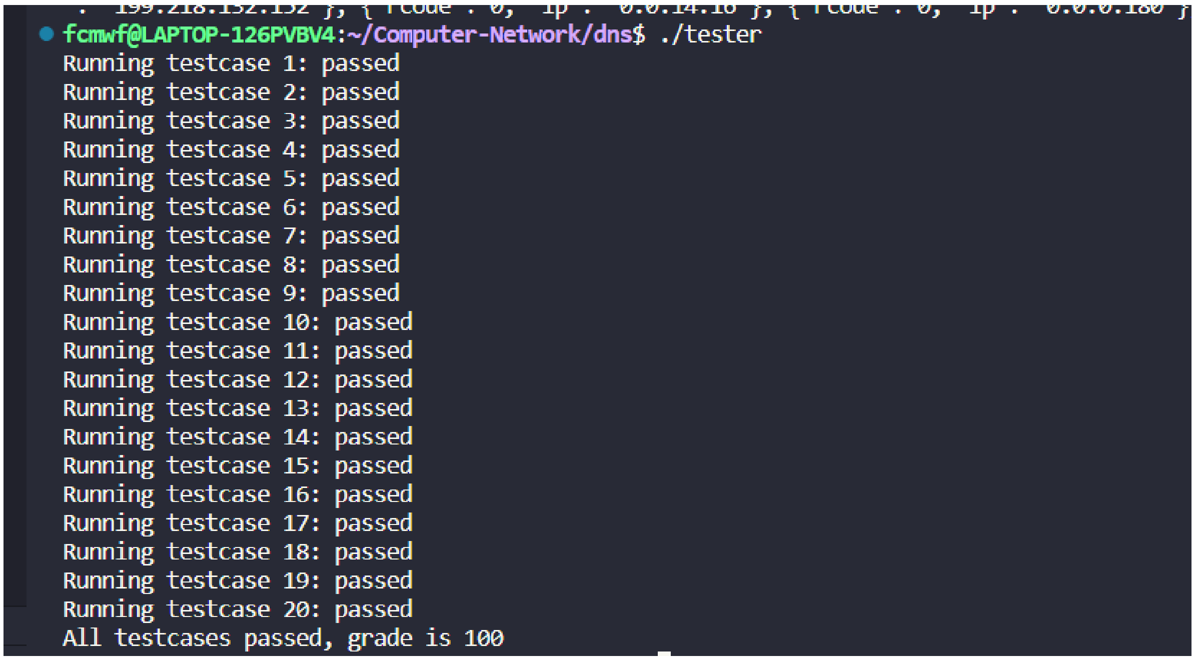
不在字典中时，将对应的DNS请求转发给公网上的DNS服务器

```
                # # 发送查询消息到公共 DNS 服务器
                self.server_socket.sendto(data, self.name_server)
                response, server_address = self.server_socket.recvfrom(1024)
                self.send(response)
```

• 对未通过的远程测试用例的解释（通过率100%则不需要写）

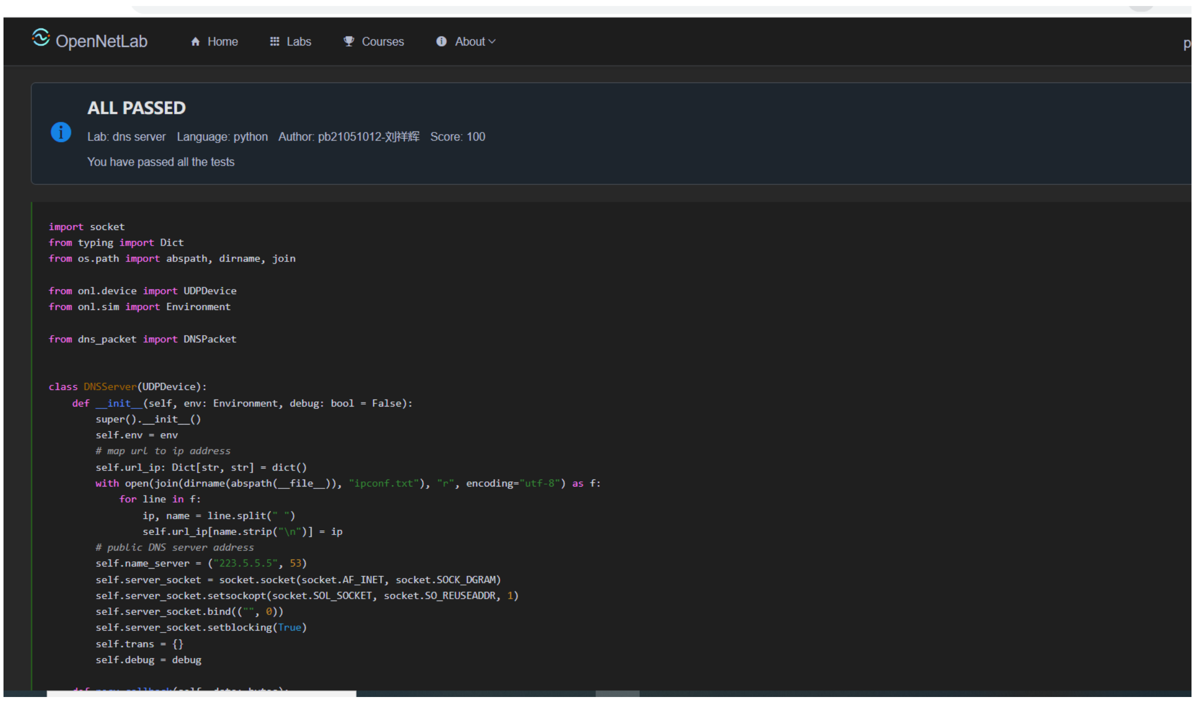
无

• tester程序在本地执行的输出结果，以截图方式呈现



```
fcmwf@LAPTOP-126PVBV4:~/Computer-Network/dns$ ./tester
Running testcase 1: passed
Running testcase 2: passed
Running testcase 3: passed
Running testcase 4: passed
Running testcase 5: passed
Running testcase 6: passed
Running testcase 7: passed
Running testcase 8: passed
Running testcase 9: passed
Running testcase 10: passed
Running testcase 11: passed
Running testcase 12: passed
Running testcase 13: passed
Running testcase 14: passed
Running testcase 15: passed
Running testcase 16: passed
Running testcase 17: passed
Running testcase 18: passed
Running testcase 19: passed
Running testcase 20: passed
All testcases passed, grade is 100
```

• 代码在OpenNetLab上的最终评估结果，以截图方式呈现



ALL PASSED

Lab: dns server Language: python Author: pb21051012-刘祥辉 Score: 100

You have passed all the tests

```python
import socket
from typing import Dict
from os.path import abspath, dirname, join

from onl.device import UDPDevice
from onl.sim import Environment

from dns_packet import DNSPacket


class DNSServer(UDPDevice):
    def __init__(self, env: Environment, debug: bool = False):
        super().__init__()
        self.env = env
        # map url to ip address
        self.url_ip: Dict[str, str] = dict()
        with open(join(dirname(abspath(__file__)), "ipconf.txt"), "r", encoding="utf-8") as f:
            for line in f:
                ip, name = line.split(" ")
                self.url_ip[name.strip("\n")] = ip
        # public DNS server address
        self.name_server = ("223.5.5.5", 53)
        self.server_socket = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
        self.server_socket.setsockopt(socket.SOL_SOCKET, socket.SO_REUSEADDR, 1)
        self.server_socket.bind(("", 0))
        self.server_socket.setblocking(True)
        self.trans = {}
        self.debug = debug
```