Part F Explanation:

###Logic behind the program:

For this part of the assignment, I used the Ip addresses that I was able to find in part D of the assignment. I also used the network counter information provided in part E of the assignment.

The paper had stated that upstream packets with a payload greater than 0 marked a request, others were simply acks. Once a request was sent, the packets that followed downstream were the responses. If the payload was greater than 0, this marked a video segment, otherwise it was another ack.

###How to run the program:

The program can be run through the command: python partDEF.py in the terminal. The program relies on a file called generalFile.py, which was taken from the previous assignment (written by me), with minor alterations, in order to make the input packets into a human readable form.
The file partDEF.py contains code for all three parts, since information from one part is used in another. The functions used for this part include: findIPAddresses(), youtubeNetworkCounter(listOfUsedIpAddr), videoSegmentDownloads(listOfUsedIpAddr, ipDic), and printVideoSegments(ipVideoSegDic).

When the command python partDEF.py is written into the terminal, the terminal will prompt the user to provide the name of the file and then which information the user would like. In this example, the answer to the later should be "3", representing "Retrieve Video Segment Time and Size for Youtube."

Doing all of this provided the output:

```
Youtube Video Segments:
IP Address 172.217.21.238:
TIME: 1605660360.230694 SIZE: 1559
TIME: 1605660363.121431 SIZE: 1619
TIME: 1605660382.270284 SIZE: 927
TIME: 1605660391.921779 SIZE: 1521
TIME: 1605660395.009873 SIZE: 1874
TIME: 1605660415.370656 SIZE: 621
TIME: 1605660428.251739 SIZE: 1389
TIME: 1605660436.44355  SIZE: 1420
TIME: 1605660438.399147 SIZE: 1973
TIME: 1605660442.43388  SIZE: 824
TIME: 1605660468.495333 SIZE: 1546
TIME: 1605660468.941409 SIZE: 1893
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TIME: 1605660475.55148 SIZE: 966
TIME: 1605660502.803579 SIZE: 716
TIME: 1605660509.054485 SIZE: 1360
TIME: 1605660511.558133 SIZE: 1661
TIME: 1605660535.885683 SIZE: 666
TIME: 1605660551.656399 SIZE: 3831
TIME: 1605660551.865358 SIZE: 3830
TIME: 1605660552.34135 SIZE: 4585
TIME: 1605660573.76979 SIZE: 641
IP Address 213.202.89.141:
TIME: 1605660361.219043 SIZE: 6644
TIME: 1605660361.25735 SIZE: 673
TIME: 1605660361.268643 SIZE: 673
IP Address 172.217.21.206:
TIME: 1605660362.220122 SIZE: 212
TIME: 1605660362.268256 SIZE: 580
TIME: 1605660362.297445 SIZE: 31
TIME: 1605660362.299864 SIZE: 29075
TIME: 1605660369.957291 SIZE: 2638
TIME: 1605660370.017422 SIZE: 611
TIME: 1605660370.06839 SIZE: 1303
TIME: 1605660421.193282 SIZE: 39
TIME: 1605660428.131481 SIZE: 39
TIME: 1605660479.47766 SIZE: 39
TIME: 1605660486.529761 SIZE: 39
IP Address 172.217.22.14:
TIME: 1605660367.922355 SIZE: 3825
TIME: 1605660367.962715 SIZE: 611
TIME: 1605660368.035141 SIZE: 77120
TIME: 1605660368.610445 SIZE: 617
TIME: 1605660369.657253 SIZE: 793
TIME: 1605660428.131872 SIZE: 39
TIME: 1605660486.530479 SIZE: 39
IP Address 213.202.89.144:
TIME: 1605660370.770505 SIZE: 6644
TIME: 1605660370.813236 SIZE: 12672
TIME: 1605660370.815382 SIZE: 210188
TIME: 1605660370.947903 SIZE: 155562
TIME: 1605660371.20518 SIZE: 44941
TIME: 1605660371.252731 SIZE: 107960
TIME: 1605660371.457536 SIZE: 47962

```
IP Address 172.217.22.46:
TIME: 1605660385.056994 SIZE: 1053
TIME: 1605660430.732221 SIZE: 880
TIME: 1605660452.54801  SIZE: 982
IP Address 216.58.207.86:
TIME: 1605660579.896175 SIZE: 10714
TIME: 1605660579.921975 SIZE: 7898
TIME: 1605660579.959996 SIZE: 572
TIME: 1605660580.062234 SIZE: 39467
TIME: 1605660580.091107 SIZE: 7519
TIME: 1605660580.101779 SIZE: 57388
```

From this data, we can see that the ip address: 172.217.21.238 had the greatest quantity of video segments, and the ip address 213.202.89.144 had video segments with the greatest amount of data. Knowing this, my prediction is that the first ip address is used for smaller aspects, possibly moving thumbnails, while the latter ip address is responsible for the main video.