

CS 101 - Streaming TV

Spring 2017

Algorithm Due : **Nov 5th, 2017**

Program Due : **Nov 19th, 2017**

All work submitted must be your own.

Deliverables : You only need to submit your solution. You must use functions to modularize your work. You should use exception handling where necessary as well. Dictionaries, sets, and lists will come in helpful here.

Streaming TV Services

Streaming TV has the potential to give customers choices in the television market. Instead of having only a single choice of cable and a couple of satellite offerings users can choose from many more internet tv streaming services. However, not all services are equal. They all offer different channels and different packages for different amounts of money. Getting tv for cheap isn't a value if there is nothing that you want to watch. Python students unite to solve this problem and help tv watchers everywhere.

We've got some files to help with that. Many of these providers have changed channel line ups slightly. Most of this data is from late June of 2017.

We're going to deal with a few files. One file lists all the providers, the file that contains the channels they carry, and the price of the service. Each of these services has a separate file with all the networks they carry. There is also a shows_channel.csv file that contains the name of a tv show, followed by the network that carries that show. (this is so when a user lists The Simpsons as being a show they want to watch we are able to find the network that carries new episodes of the show). Finally, there are user files that contain all the shows a user wants to watch, and a weight for how important the show is to them. These are all comma separated value files. Using the csv module should make it easier to deal with.

NOTE : The test data that is used by the graders may be different than the ones you are given. Do not hard code any of the information in this file. There may not be a Direct TV Now Just Right package. Providers may have different prices, or have different networks that they carry.

Providers csv

This file contains all the tv providers, the file that contains the networks they carry and their price. Some will be the same providers but will have different packages. We will treat each like a separate provider. Each row of the providers.csv file contains 3 fields all separated by a comma. The first value is the name of the provider; Sling Blue, YouTube TV, etc. You will use this proper name when outputting the data. The next value is the name of the csv file that contains the networks this provider carries. The last value is the amount this service costs per month. (Taxes may not be included)

```
Hulu with Live TV, hulu.csv, 40.00
YouTube TV, youtube.csv, 35.00
Sling Orange, slingorange.csv, 20.00
Sling Blue, slingblue.csv, 25.00
Direct TV Now Live a little, dtvlal.csv, 35.00
Direct TV Now Just Right, dtvjr.csv, 50.00
Direct TV Now Go Big, dtvgb.csv, 60.00
Direct TV Now Gotta Have It, dtvgbi.csv, 70.00
PS Vue Access, psvueaccess.csv, 40.00
PS Vue Core, psvuecore.csv, 45.00
PS Vue Elite, psvueelite.csv, 55.00
PS Vue Ultra, psvueultra.csv, 75.00
```

For instance, if you want to now see what networks Hulu with Live TV carries, you can view that in the hulu.csv file that is given in the providers.csv.

sampleprovider.csv

This is a sample provider. These csv files will be named from the providers.csv file. They will all have the same information in them. They all simply contain the networks that this provider carries. There is only one value in each line and that is the network. Below is a sample from dtvjr.csv file which is the file of networks that Direct TV Now Just Right provides.

```
A&E
ABC
AMC
...
...
Viceland
WE tv
WeatherNation
```

shows_channel.csv

This is a csv file of TV shows, and the network they are on. The first value is simply the show name, the second is the Network.

```
My 600 Pound Life,TLC
Hoarders,A&E
Saturday Night Live,NBC
..
..
```

Given a particular show you can find the network they are on. Then you can find the providers that have that network.

User csv files

There are files that users have created with all the shows they like to watch. User_jlb.csv is one such file that user Jerry L Brown created. Each row in the file has 2 values. The first value is the name of the TV show they like to watch. The second value is how the weight of how much they like a given show. For these examples the values chosen are 1, 3, and 5. However, they are integer weights and anything could be used. The higher the value, the more they like to watch the show.

```
My 600 Pound Life,1
Hoarders,1
Saturday Night Live,5
The Simpsons,5
```

You can see that Jerry Brown likes My 600 pound life, but weights it very low. So if they can't get it in a provider it probably isn't a deal breaker. However, they rated the Simpsons a 5, roughly meaning they would rather have the Simpsons on a provider than 5 shows that they rated a 1.

There are 2 main functions your program will provide. The user will be given a choice of the two and then allowed to choose again. The first choice is to get the price per channel for all the services. The price per channel is how much it costs for each channel it offers. If I create a new streaming service and I offer 3 channels for \$10, then my price per channel is \$3.33/channel. The output should be sorted by cost per channel from lowest to highest.

The second service that your program will provide is to allow the user to enter a users csv file. Since the users csv file has shows and weights of those shows we can total all the points for each provider. For instance, if the user wants to watch 2 shows and rates one a 5, and one a 1, and provider A carries both shows then the total points for that provider is 6. We calculate the cost per point for those providers and sort them from low to high. So we can see which are the best deals. Take note of all the output, since we expect all those columns to be provided.

Sample Program

```
>>> ===== RESTART =====
>>>
```

```

                                Streaming Service Comparison
1. Get Price per channel for all services
2. Get Weighted comparison for user file.
Q. Quit
==> e
You must choose a value from 1,2,Q
```

```

                                Streaming Service Comparison
1. Get Price per channel for all services
```

2. Get Weighted comparison for user file.

Q. Quit

==> 8

You must choose a value from 1,2,Q

Streaming Service Comparison

1. Get Price per channel for all services

2. Get Weighted comparison for user file.

Q. Quit

==> 1

Cost per Channel Summary

Service	CPC	Channels	TTL Price
=====	=====	=====	=====
Sling Orange	0.4762	42	20.00
Sling Blue	0.4902	51	25.00
Direct TV Now Live a little	0.5303	66	35.00
Direct TV Now Go Big	0.5455	110	60.00
Direct TV Now Just Right	0.5814	86	50.00
Direct TV Now Gotta Have It	0.6034	116	70.00
PS Vue Elite	0.6548	84	55.00
Hulu with Live TV	0.7143	56	40.00
PS Vue Core	0.7627	59	45.00
YouTube TV	0.7955	44	35.00
PS Vue Access	0.8511	47	40.00
PS Vue Ultra	0.8824	85	75.00

Hit enter to continue

Streaming Service Comparison

1. Get Price per channel for all services

2. Get Weighted comparison for user file.

Q. Quit

==> 2

Enter the name of the users csv ==> fakefile.csv

Could not open fakefile.csv File was not found

Enter the name of the users csv ==> uses_jlb.csv

Could not open uses_jlb.csv File was not found

Enter the name of the users csv ==> user_jlb.csv

Could not find show Angie Trebeca

User Cost per Point Summary

Service	CPP	Points	TTL Price
=====	=====	=====	=====
Sling Blue	0.2660	94	25.00
Direct TV Now Live a little	0.3182	110	35.00
YouTube TV	0.3241	108	35.00
PS Vue Access	0.3333	120	40.00
Hulu with Live TV	0.3571	112	40.00
PS Vue Core	0.3659	123	45.00
Direct TV Now Just Right	0.4425	113	50.00
PS Vue Elite	0.4472	123	55.00
Direct TV Now Go Big	0.5310	113	60.00

PS Vue Ultra	0.6098	123	75.00
Direct TV Now Gotta Have It	0.6195	113	70.00
Sling Orange	0.6250	32	20.00

Hit enter to continue

Streaming Service Comparison

1. Get Price per channel for all services
2. Get Weighted comparison for user file.

Q. Quit

==> 2

Enter the name of the users csv ==> user_simple.csv

Service	CPP	Points	TTL Price
Sling Blue	3.1250	8	25.00
Direct TV Now Live a little	4.3750	8	35.00
Direct TV Now Just Right	6.2500	8	50.00
Sling Orange	6.6667	3	20.00
YouTube TV	7.0000	5	35.00
Direct TV Now Go Big	7.5000	8	60.00
PS Vue Access	8.0000	5	40.00
Hulu with Live TV	8.0000	5	40.00
Direct TV Now Gotta Have It	8.7500	8	70.00
PS Vue Core	9.0000	5	45.00
PS Vue Elite	11.0000	5	55.00
PS Vue Ultra	15.0000	5	75.00

Hit enter to continue

Streaming Service Comparison

1. Get Price per channel for all services
2. Get Weighted comparison for user file.

Q. Quit

==> 2

Enter the name of the users csv ==> user_simple2.csv

Service	CPP	Points	TTL Price
Direct TV Now Live a little	4.3750	8	35.00
PS Vue Access	5.0000	8	40.00
PS Vue Core	5.6250	8	45.00
Direct TV Now Just Right	6.2500	8	50.00
Sling Orange	6.6667	3	20.00
PS Vue Elite	6.8750	8	55.00
Direct TV Now Go Big	7.5000	8	60.00
Sling Blue	8.3333	3	25.00
Direct TV Now Gotta Have It	8.7500	8	70.00
PS Vue Ultra	9.3750	8	75.00
YouTube TV	11.6667	3	35.00
Hulu with Live TV	10000.0000	0	40.00

Hit enter to continue

```
Streaming Service Comparison
1. Get Price per channel for all services
2. Get Weighted comparison for user file.
Q. Quit
==> 2

Enter the name of the users csv ==> user_show_not_found.csv
Could not find show python stories
```

Service	CPP	Points	TTL Price
Direct TV Now Live a little	10000.0000	0	35.00
PS Vue Core	10000.0000	0	45.00
Sling Orange	10000.0000	0	20.00
PS Vue Access	10000.0000	0	40.00
Direct TV Now Go Big	10000.0000	0	60.00
Direct TV Now Gotta Have It	10000.0000	0	70.00
PS Vue Elite	10000.0000	0	55.00
PS Vue Ultra	10000.0000	0	75.00
Direct TV Now Just Right	10000.0000	0	50.00
YouTube TV	10000.0000	0	35.00
Sling Blue	10000.0000	0	25.00
Hulu with Live TV	10000.0000	0	40.00

Hit enter to continue

```
Streaming Service Comparison
1. Get Price per channel for all services
2. Get Weighted comparison for user file.
Q. Quit
==> q
Thanks for using Stream Finder
>>>
```

Specification

- The user must choose a valid menu item.
- If the user chooses quit from the menu the program ends
- If the user chooses 1,
 - The program will output the network, cost per network for all the providers sorted from low to high, the total # of networks they have, and the price.
- If the user chooses 2
 - The program will ask for a file to open of the users favorite tv shows. If they give an invalid file then it will prompt again until they give a valid file.
 - The program will output the network, the total points for the users tv shows for that provider, the cost per point sorted from low to high, and the price

Point Breakdown - May be modified as needed

Points	Requirement
5	Header
20	Readability, variable naming, comments, structure
5	Data Structures
5	Proper functions
2	Show Menu and get only valid choice
1	If the user chooses Q then they quit the program.
5	If choice is 1, output summary table. Table should be sorted by cost per channel
4	If choice is 2, ask for a valid file from the user. Validate the file can be opened.
7	After the user enters a file output the summary table of providers, cost per point, points, and cost. It should be sorted by the cost per point
3	If a tv show isn't found, then the program should output a line that the show wasn't located. Notice Angie Trebecca in the first example
3	If a provider has no shows that a user wants to see, then their points will be zero. You can't divide by zero. So if that is the case, assume the cost per point is 10,000.

30 points off for programs that crash on expected input.

References

1. Csv Module <https://docs.python.org/3/library/csv.html>