

## #Normal Case

### Input

```
friends_watched = {"Friend-0": ["Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-6",  
"Movie-8"],  
"Friend-1": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-8"],  
"Friend-2": ["Movie-2", "Movie-3", "Movie-5", "Movie-6", "Movie-8"],  
"Friend-3": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5",  
"Movie-8"],  
"Friend-4": ["Movie-8"]}
```

```
movies_list = ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5", "Movie-  
6", "Movie-7", "Movie-8"]
```

```
friends_list = ["Friend-0", "Friend-1", "Friend-2", "Friend-3", "Friend-4"]
```

```
movies_similarity = {"Movie-0": ["Movie-3", "Movie-4"],  
"Movie-1": ["Movie-6"],  
"Movie-2": ["Movie-5"],  
"Movie-3": ["Movie-0", "Movie-4"],  
"Movie-4": ["Movie-0", "Movie-3"],  
"Movie-5": ["Movie-2"],  
"Movie-6": ["Movie-1"],  
"Movie-7": ["Movie-8"],  
"Movie-8": ["Movie-7"]}
```

### Output

	Movie-0	Movie-1	Movie-2	Movie-3	Movie-4	Movie-5	Movie-6	\
Friend-0	0	1	1	1	1	0	1	
Friend-1	1	1	1	1	0	0	0	
Friend-2	0	0	1	1	0	1	1	
Friend-3	1	1	1	1	1	1	0	
Friend-4	0	0	0	0	0	0	0	

	Movie-7	Movie-8
Friend-0	0	1
Friend-1	0	1
Friend-2	0	1
Friend-3	0	1
Friend-4	0	1

	F	S	F/S
Movie-0	2	1.2	1.666667
Movie-1	3	0.4	7.500000
Movie-2	4	0.4	10.000000
Movie-3	4	0.8	5.000000
Movie-4	2	1.2	1.666667

```
Movie-5  2  0.8  2.500000
Movie-6  2  0.6  3.333333
Movie-7  0  1.0  0.000000
Movie-8  5  1.0  5.000000
```

Out[191]:

```
'Movie-2'
```

## #No movies similar

### Input

```
friends_watched = {"Friend-0": ["Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-6",  
                                "Movie-8"],  
                  "Friend-1": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-8"],  
                  "Friend-2": ["Movie-2", "Movie-3", "Movie-5", "Movie-6", "Movie-8"],  
                  "Friend-3": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5",  
                                "Movie-8"],  
                  "Friend-4": ["Movie-8"]}
```

```
movies_list = ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5", "Movie-  
6", "Movie-7", "Movie-8"]  
friends_list = ["Friend-0", "Friend-1", "Friend-2", "Friend-3", "Friend-4"]
```

```
movies_similarity = {"Movie-0": [],  
                    "Movie-1": [],  
                    "Movie-2": [],  
                    "Movie-3": [],  
                    "Movie-4": [],  
                    "Movie-5": [],  
                    "Movie-6": [],  
                    "Movie-7": [],  
                    "Movie-8": []}
```

### Output

	Movie-0	Movie-1	Movie-2	Movie-3	Movie-4	Movie-5	Movie-6	\
Friend-0	0	1	1	1	1	0	1	
Friend-1	1	1	1	1	0	0	0	
Friend-2	0	0	1	1	0	1	1	
Friend-3	1	1	1	1	1	1	0	
Friend-4	0	0	0	0	0	0	0	

	Movie-7	Movie-8
Friend-0	0	1
Friend-1	0	1
Friend-2	0	1
Friend-3	0	1
Friend-4	0	1

	F	S	F/S
Movie-0	2	1	2.0

```
Movie-1  3  1  3.0
Movie-2  4  1  4.0
Movie-3  4  1  4.0
Movie-4  2  1  2.0
Movie-5  2  1  2.0
Movie-6  2  1  2.0
Movie-7  0  1  0.0
Movie-8  5  1  5.0
```

```
'Movie-8'
```

Out[193]:

## #All movies similar

### Input

```
friends_watched = {"Friend-0": ["Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-6",  
                                "Movie-8"],  
                  "Friend-1": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-8"],  
                  "Friend-2": ["Movie-2", "Movie-3", "Movie-5", "Movie-6", "Movie-8"],  
                  "Friend-3": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5",  
                                "Movie-8"],  
                  "Friend-4": ["Movie-8"]}
```

```
movies_list = ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5", "Movie-  
6", "Movie-7", "Movie-8"]  
friends_list = ["Friend-0", "Friend-1", "Friend-2", "Friend-3", "Friend-4"]
```

```
movies_similarity = {"Movie-0": ["Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5",  
                                "Movie-6", "Movie-7", "Movie-8"],  
                   "Movie-1": ["Movie-0", "Movie-2", "Movie-3", "Movie-4", "Movie-5", "Movie-6",  
                                "Movie-7", "Movie-8"],  
                   "Movie-2": ["Movie-0", "Movie-1", "Movie-3", "Movie-4", "Movie-5", "Movie-6",  
                                "Movie-7", "Movie-8"],  
                   "Movie-3": ["Movie-0", "Movie-1", "Movie-2", "Movie-4", "Movie-5", "Movie-6",  
                                "Movie-7", "Movie-8"],  
                   "Movie-4": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-5", "Movie-6",  
                                "Movie-7", "Movie-8"],  
                   "Movie-5": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-6",  
                                "Movie-7", "Movie-8"],  
                   "Movie-6": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5",  
                                "Movie-7", "Movie-8"],  
                   "Movie-7": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5",  
                                "Movie-6", "Movie-8"],  
                   "Movie-8": ["Movie-0", "Movie-1", "Movie-2", "Movie-3", "Movie-4", "Movie-5",  
                                "Movie-6", "Movie-7"]}
```

## Output

	Movie-0	Movie-1	Movie-2	Movie-3	Movie-4	Movie-5	Movie-6	\
Friend-0	0	1	1	1	1	0	1	
Friend-1	1	1	1	1	0	0	0	
Friend-2	0	0	1	1	0	1	1	
Friend-3	1	1	1	1	1	1	0	
Friend-4	0	0	0	0	0	0	0	

	Movie-7	Movie-8
Friend-0	0	1
Friend-1	0	1
Friend-2	0	1
Friend-3	0	1
Friend-4	0	1

	F	S	F/S
Movie-0	2	4.4	0.454545
Movie-1	3	4.2	0.714286
Movie-2	4	4.0	1.000000
Movie-3	4	4.0	1.000000
Movie-4	2	4.4	0.454545
Movie-5	2	4.4	0.454545
Movie-6	2	4.4	0.454545
Movie-7	0	4.8	0.000000
Movie-8	5	3.8	1.315789

'Movie-8'

Out[195]:

In [ ]:

## #Friends more than movies

### Input

```
friends_watched = {"Friend-0": ["Movie-1", "Movie-2", "Movie-3"],
                   "Friend-1": ["Movie-0", "Movie-1", "Movie-2", "Movie-3"],
                   "Friend-2": ["Movie-2", "Movie-3"],
                   "Friend-3": ["Movie-0", "Movie-1", "Movie-2", "Movie-3"],
                   "Friend-4": []}

movies_list = ["Movie-0", "Movie-1", "Movie-2", "Movie-3"]
friends_list = ["Friend-0", "Friend-1", "Friend-2", "Friend-3", "Friend-4"]

movies_similarity = {"Movie-0": ["Movie-2", "Movie-3"],
                    "Movie-1": [],
                    "Movie-2": ["Movie-2", "Movie-3"],
                    "Movie-3": ["Movie-0", "Movie-2"]}
```

### Output

	Movie-0	Movie-1	Movie-2	Movie-3
Friend-0	0	1	1	1
Friend-1	1	1	1	1
Friend-2	0	0	1	1
Friend-3	1	1	1	1
Friend-4	0	0	0	0

  

	F	S	F/S
Movie-0	2	1.6	1.250000
Movie-1	3	1.0	3.000000
Movie-2	4	1.6	2.500000
Movie-3	4	1.2	3.333333

'Movie-3'

Out[197]: