

```
In [2]: import pandas as pd
```

```
In [59]: a = {
    'country': ['Greece', 'Netherlands', 'Denmark'],
    'population': [10000000, 17000000, 6000000],
}
```

```
In [60]: df2 = pd.DataFrame(a)
```

```
In [65]: df2
```

```
Out[65]:
```

	country	population
0	Greece	10000000
1	Netherlands	17000000
2	Denmark	6000000

```
In [66]: df2.to_excel('mitsos.xls')
```

```
In [67]: !pwd
/Users/alexandroskanterakis/python_lessons
```

```
In [62]: df2.to_dict('record')
```

```
Out[62]: [{'country': 'Greece', 'population': 10000000},
 {'country': 'Netherlands', 'population': 17000000},
 {'country': 'Denmark', 'population': 6000000}]
```

```
In [63]: df2.to_dict('index')
```

```
Out[63]: {0: {'country': 'Greece', 'population': 10000000},
 1: {'country': 'Netherlands', 'population': 17000000},
 2: {'country': 'Denmark', 'population': 6000000}}
```

```
In [ ]:
```

```
In [13]: !ls game-of-thrones-deaths-data.csv
game-of-thrones-deaths-data.csv
```

```
In [74]: df = pd.read_csv('game-of-thrones-deaths-data.csv')
```

In [76]:

```
df
```

Out[76]:

order	season	episode	character_killed	killer	method	method_cat	reason	location
0	1	1	Waymar Royce	White Walker	Ice sword	Blade	Unknown	Beyond the Wall
1	2	1	Gared	White Walker	Ice sword	Blade	Unknown	Beyond the Wall
2	3	1	Will	Ned Stark	Sword (Ice)	Blade	Deserting the Night's Watch	Winterfell
3	4	1	Stag	Direwolf	Direwolf teeth	Animal	Unknown	Winterfell
4	5	1	Direwolf	Stag	Antler	Animal	Unknown	Winterfell
5	6	1	Jon Arryn	Lysa Arryn	Poison	Poison	Petyr Baelish persuaded Lysa to do so for reas...	King's Landing
6	7	1	Dothraki man	Dothraki man	Arakh	Blade	A Dothraki wedding without at least three deat...	Pentos
7	8	1	Catspaw assassin	Summer	Direwolf teeth	Animal	Attempting to kill Bran Stark	Winterfell
8	9	1	Mycah	Sandor "the Hound" Clegane	Unknown (likely a sword)	Unknown	Joffrey has him killed after Arya attacks Joffrey	Kingsroad
9	10	1	Lady	Ned Stark	Knife	Blade	Robert Baratheon orders that Lady be killed to...	Kingsroad
10	11	1	Ser Hugh of the Vale	Gregor "the Mountain" Clegane	Spear	Polearm	Killed during a tournament	King's Landing
11	12	1	Clegane's horse	Gregor "the Mountain" Clegane	Sword	Blade	Gregor was angry at being unhorsed in the tour...	King's Landing
12	13	1	Stark soldier	Tribesman	Bolo	Other	Attacked while helping Catelyn Stark take Tyri...	Eastern Road
13	14	1	Tribesman	Bronn	Sword	Blade	Attacked Catelyn Stark's group that was taking...	Eastern Road
14	15	1	Tribesman	Bronn	Sword	Blade	Attacked Catelyn Stark's group that was	Eastern Road

```
In [82]: (df['importance']>1).value_counts().to_dict()[True]
```

```
Out[82]: 204
```

```
In [85]: df[df['importance']>1].shape[0]
```

```
Out[85]: 204
```

```
In [87]: df[(df['importance']>1) & (df['killer'] == 'Arya Stark') ].shape[0]
```

```
Out[87]: 11
```

```
In [88]: # Σε ποια σεζόν έχει σκοτώσει περισσότερους ο Jon Snow; Πάρτε μόνο όσους έχουν importance μεγαλύτερο από 1.
```

```
In [109]: temp = df[(df['killer'] == 'Jon Snow') & (df['importance']>1) ].groupby('season')[ 'order' ].count()
```

```
In [126]: list(temp[temp == temp.max()].to_dict().keys())[0]
```

```
Out[126]: 6
```

```
In [127]: temp[temp == temp.max()]
```

```
Out[127]: season
6      4
Name: order, dtype: int64
```

```
In [130]: df['method_cat'].unique().size
```

```
Out[130]: 16
```

```
In [143]: # Για κάθε διαφορετική κατηγορία θανάτου, σε ποιά φατρία/οικογένεια/φυλή ανοίκο
υν τα μέλη
# που έχουν σκοτωθεί τις περισσότερες φορές από αυτή τη κατηγορία;
# vΠάρτε μόνο θανάτους με importance>1

df[df['importance']>1].groupby(['method_cat', 'allegiance']).count().sort_value
s("order").groupby(level=0).tail(1)
```

Out[143]:

		order	season	episode	character_killed	killer	method	reason	location	impo
method_cat	allegiance									
Magic	Dothraki	1	1	1	1	1	1	1	1	1
Household item	Dothraki	1	1	1	1	1	1	1	1	1
Falling	House Greyjoy	1	1	1	1	1	1	1	1	1
Bludgeon	House Lannister	1	1	1	1	1	1	1	1	1
Unknown	Dothraki, House Targaryen	2	2	2	2	2	2	2	2	2
Polearm	None	2	2	2	2	2	2	2	2	2
Hands	House Lannister	2	2	2	2	2	2	2	2	2
Axe	Brotherhood Without Banners	2	2	2	2	2	2	2	2	2
Crushing	House Lannister	2	2	2	2	2	2	2	2	2
Poison	House Baratheon of King's Landing, House Lannister	2	2	2	2	2	2	2	2	2
Arrow	Free Folk	3	3	3	3	3	3	3	3	3
Fire/Burning	House Tyrell, House Baratheon of King's Landing	3	3	3	3	3	3	3	3	3
Animal	Smallfolk	4	4	4	4	4	4	4	4	4
Other	Night's Watch	4	4	4	4	4	4	4	4	4
Blade	House Stark	11	11	11	11	11	11	11	11	11

```
In [161]: df[df['importance']>1].groupby(['method_cat', 'allegiance']).count().sort_values("order", ascending=False).groupby(level=0).head(1)
```

Out[161]:

		order	season	episode	character_killed	killer	method	reason	location	impo
method_cat	allegiance									
Blade	House Stark	11	11	11	11	11	11	11	11	
Animal	Smallfolk	4	4	4	4	4	4	4	4	
Other	Night's Watch	4	4	4	4	4	4	4	4	
Arrow	Free Folk	3	3	3	3	3	3	3	3	
Fire/Burning	Dothraki	3	3	3	3	3	3	3	3	
Crushing	House Lannister	2	2	2	2	2	2	2	2	
Hands	House Lannister	2	2	2	2	2	2	2	2	
Poison	House Baratheon of King's Landing, House Lannister	2	2	2	2	2	2	2	2	
Polearm	None	2	2	2	2	2	2	2	2	
Unknown	Dothraki, House Targaryen	2	2	2	2	2	2	2	2	
Axe	Brotherhood Without Banners	2	2	2	2	2	2	2	2	
Magic	None	1	1	1	1	1	1	1	1	
Household item	Dothraki	1	1	1	1	1	1	1	1	
Falling	House Greyjoy	1	1	1	1	1	1	1	1	
Bludgeon	Thenn, Free Folk	1	1	1	1	1	1	1	1	

```
In [162]: # Ποιος έχει κάνει τους 2ους περισσότερους φόνους με importance>1;
```

```
In [168]: df[df['importance']>1]['killer'].value_counts()[1:2]
```

Out[168]: Arya Stark 11
Name: killer, dtype: int64

```
In [169]: # Ποιος είναι ο λόγος (reason) που προκάλεσε τους περισσότερους θανάτους με importance>2;
```

```
In [175]: df[df['importance']>2]['reason'].value_counts()[1]
```

Out[175]: Killed in a coup by Cersei to remove all of her enemies 6
Name: reason, dtype: int64

```
In [194]: # Πόσος είναι ο μέσος όρος θανάτων ανά επεισόδια για κάθε σεζόν; Δηλαδή
# για κάθε σεζόν (8 συνολικά), τυπώστε τον μέσο όρο από
# θανάτους που είχε το κάθε επεισόδιο αυτής της σεζόν.

df.groupby('season')['episode'].aggregate(['sum', 'count', 'mean'])
```

Out[194]:

	sum	count	mean
season			
1	348	59	5.898305
2	970	130	7.461538
3	646	87	7.425287
4	1395	181	7.707182
5	1777	246	7.223577
6	4494	540	8.322222
7	5876	1096	5.361314
8	15674	4548	3.446350

```
In [207]: df.groupby('season')['episode'].aggregate(['count', 'sum'])
```

Out[207]:

	count	sum
season		
1	59	348
2	130	970
3	87	646
4	181	1395
5	246	1777
6	540	4494
7	1096	5876
8	4548	15674

```
In [226]: (7+3+1+17+5+5+11+7+3)/9
```

Out[226]: 6.555555555555555

```
In [224]: df.groupby(['season', 'episode'], as_index=False).aggregate('count').groupby('season')['order'].mean()
```

Out[224]:

season	
1	6.555556
2	14.444444
3	9.666667
4	18.100000
5	24.600000
6	54.000000
7	156.571429
8	909.600000

Name: order, dtype: float64

```
In [206]: df.groupby(['season', 'episode']).aggregate('count')
```


Out[206]:

		order	character_killed	killer	method	method_cat	reason	location	allegiance	important
season	episode									
1	1	7	7	7	7	7	7	7	7	
	2	3	3	3	3	3	3	3	3	
	4	1	1	1	1	1	1	1	1	
	5	17	17	17	17	17	17	17	17	
	6	5	5	5	5	5	5	5	5	
	7	5	5	5	5	5	5	5	5	
	8	11	11	11	11	11	11	11	11	
	9	7	7	7	7	7	7	7	7	
	10	3	3	3	3	3	3	3	3	
	11	3	3	3	3	3	3	3	3	
2	1	7	7	7	7	7	7	7	7	
	2	1	1	1	1	1	1	1	1	
	3	8	8	8	8	8	8	8	8	
	4	3	3	3	3	3	3	3	3	
	5	4	4	4	4	4	4	4	4	
	6	12	12	12	12	12	12	12	12	
	7	15	15	15	15	15	15	15	15	
	8	7	7	7	7	7	7	7	7	
	9	72	72	72	72	72	72	72	72	
	10	8	8	8	8	8	8	8	8	
3	1	2	2	2	2	2	2	2	2	
	2	1	1	1	1	1	1	1	1	
	3	4	4	4	4	4	4	4	4	
	4	10	10	10	10	10	10	10	10	
	5	5	5	5	5	5	5	5	5	
	6	7	7	7	7	7	7	7	7	
	7	6	6	6	6	6	6	6	6	
	8	45	45	45	45	45	45	45	45	
	9	7	7	7	7	7	7	7	7	
	10	7	7	7	7	7	7	7	7	
4	1	5	5	5	5	5	5	5	5	
	2	6	6	6	6	6	6	6	6	
	3	11	11	11	11	11	11	11	11	
...	
5	3	3	3	3	3	3	3	3	3	
	4	49	49	49	49	49	49	49	49	
	5	2	2	2	2	2	2	2	2	
	6	1	1	1	1	1	1	1	1	
	7	5	5	5	5	5	5	5	5	
	8	100	100	100	100	100	100	100	100	
	9	65	65	65	65	65	65	65	65	
	10	12	12	12	12	12	12	12	12	
6	1	9	9	9	9	9	9	9	9	
	2	7	7	7	7	7	7	7	7	

```
In [187]: #{7+1+8+3+4+12+15+72+8}/10  
df.groupby(['season', 'episode']).aggregate('count')
```

```
Out[187]: 13.0
```

```
In [ ]: temp
```

```
In [19]: df[['importance', 'reason']]
```

Out[19]:

	importance	reason
0	2.0	Unknown
1	2.0	Unknown
2	2.0	Deserting the Night's Watch
3	1.0	Unknown
4	1.0	Unknown
5	2.0	Petyr Baelish persuaded Lysa to do so for reas...
6	1.0	A Dothraki wedding without at least three deat...
7	1.0	Attempting to kill Bran Stark
8	3.0	Joffrey has him killed after Arya attacks Joffrey
9	3.0	Robert Baratheon orders that Lady be killed to...
10	2.0	Killed during a tournament
11	1.0	Gregor was angry at being unhorsed in the tour...
12	1.0	Attacked while helping Catelyn Stark take Tyri...
13	1.0	Attacked Catelyn Stark's group that was taking...
14	1.0	Attacked Catelyn Stark's group that was taking...
15	1.0	Attacked Catelyn Stark's group that was taking...
16	1.0	Attacked while helping Catelyn Stark take Tyri...
17	1.0	Attacked Catelyn Stark
18	1.0	Attacked Catelyn Stark's group that was taking...
19	1.0	Attacked Catelyn Stark's group that was taking...
20	1.0	Attacked Catelyn Stark's group that was taking...
21	1.0	Jamie Lannister attacked because Catelyn Stark...
22	1.0	Jamie Lannister attacked because Catelyn Stark...
23	1.0	Attacked Ned Stark on Jamie Lannister's command
24	1.0	Attacked Ned Stark on Jamie Lannister's command
25	1.0	Attacked Ned Stark on Jamie Lannister's command
26	1.0	Attacked Ned Stark on Jamie Lannister's command
27	3.0	Attacked Jaime in defense of Ned Stark
28	2.0	Attacked Bran Stark
29	1.0	Attacked Bran Stark
...
6857	4.0	Killed in a fight with Jaime Lannister during ...
6858	1.0	Killed when Daenerys Targaryen attacked King's...
6859	1.0	Killed when Daenerys Targaryen attacked King's...
6860	1.0	Killed when Daenerys Targaryen attacked King's...
6861	1.0	Killed when Sandor goes after his brother, Gre...
6862	1.0	Killed when Sandor goes after his brother, Gre...
6863	1.0	Killed when Sandor goes after his brother, Gre...
6864	3.0	Killed when trying to command Gregor not to fi...
6865	1.0	Killed when Daenerys Targaryen attacked King's...
6866	1.0	Killed when Daenerys Targaryen attacked King's...
6867	1.0	Killed when Daenerys Targaryen attacked King's...

```
In [20]: df['importance'] > 2
```

```
Out[20]: 0      False
1      False
2      False
3      False
4      False
5      False
6      False
7      False
8       True
9       True
10     False
11     False
12     False
13     False
14     False
15     False
16     False
17     False
18     False
19     False
20     False
21     False
22     False
23     False
24     False
25     False
26     False
27      True
28     False
29     False
...
6857    True
6858    False
6859    False
6860    False
6861    False
6862    False
6863    False
6864     True
6865    False
6866    False
6867    False
6868     True
6869     True
6870    False
6871    False
6872    False
6873    False
6874    False
6875    False
6876    False
6877    False
6878    False
6879    False
6880    False
6881    False
6882    False
6883     True
6884     True
6885    False
6886     True
Name: importance, Length: 6887, dtype: bool
```

```
In [21]: df[df['importance'] > 2]
```

Out[21]:

order	season	episode	character_killed	killer	method	method_cat	reason	location	
8	9	1	2	Mycal	Sandor “the Hound” Clegane	Unknown (likely a sword)	Unknown	Joffrey has him killed after Arya attacks Joffrey	Kingsrow
9	10	1	2	Lady	Ned Stark	Knife	Blade	Robert Baratheon orders that Lady be killed to...	Kingsrow
27	28	1	5	Jory Cassel	Jaime Lannister	Knife	Blade	Attacked Jaime in defense of Ned Stark	King's Landi
32	33	1	6	Viserys Targaryen	Khal Drogo	Molten gold	Fire/Burning	Threatened Daenerys Targaryen and her unborn c...	Va Dothr
33	34	1	7	Robert Baratheon	Boar	Tusk	Animal	Hunted the boar while drunk	King's Landi
43	44	1	8	Septa Mordane	Lannister soldier	Sword	Blade	Cersei Lannister and Joffrey Baratheon attacke...	King's Landi
44	45	1	8	Syrio Forel	Meryn Trant	Sword	Blade	Cersei Lannister and Joffrey Baratheon attacke...	King's Landi
55	56	1	9	Ned Stark	Ilyn Payne	Sword (Ice)	Blade	Executed on Joffrey Baratheon's orders after N...	King's Landi
57	58	1	10	Khal Drogo	Daenerys Targaryen	Pillow	Household item	Killed after being put into a vegetative state...	Red Was
58	59	1	10	Mirri Maz Duur	Daenerys Targaryen	Fire	Fire/Burning	Revenge for her having killed Khal Drogo and R...	Red Was
66	67	2	2	Rakharo	Unknown (possible rival Dothraki men)	Unknown	Unknown	Unknown (possibly as a challenge to Daenerys T...	Red Was
72	73	2	3	Yoren	Amory Lorch	Sword	Blade	Refused to hand over Gendry	Riverlan
78	79	2	5	Renly Baratheon	Melisandre “the Red Woman” of Asshai	Shadow Demon	Magic	Killed so that Stannis Baratheon would have fe...	Storm's Ei

```
In [23]: df[df['importance'] > 2].shape
```

```
Out[23]: (119, 11)
```



```
In [29]: df[(df['importance'] > 2) & (df['season'] < 3)]
```

Out[29]:

order	season	episode	character_killed	killer	method	method_cat	reason	location	
8	9	1	2	Myciah	Sandor “the Hound” Clegane	Unknown (likely a sword)	Unknown	Joffrey has him killed after Arya attacks Joffrey	Kingsroad
9	10	1	2	Lady	Ned Stark	Knife	Blade	Robert Baratheon orders that Lady be killed to...	Kingsroad
27	28	1	5	Jory Cassel	Jaime Lannister	Knife	Blade	Attacked Jaime in defense of Ned Stark	King’s Landing
32	33	1	6	Viserys Targaryen	Khal Drogo	Molten gold	Fire/Burning	Threatened Daenerys Targaryen and her unborn c...	Vaes Dothrak
33	34	1	7	Robert Baratheon	Boar	Tusk	Animal	Hunted the boar while drunk	King’s Landing
43	44	1	8	Septa Mordane	Lannister soldier	Sword	Blade	Cersei Lannister and Joffrey Baratheon attacke...	King’s Landing
44	45	1	8	Syrio Forel	Meryn Trant	Sword	Blade	Cersei Lannister and Joffrey Baratheon attacke...	King’s Landing
55	56	1	9	Ned Stark	Ilyn Payne	Sword (Ice)	Blade	Executed on Joffrey Baratheon’s orders after N...	King’s Landing
57	58	1	10	Khal Drogo	Daenerys Targaryen	Pillow	Household item	Killed after being put into a vegetative state...	Red Waste
58	59	1	10	Mirri Maz Duur	Daenerys Targaryen	Fire	Fire/Burning	Revenge for her having killed Khal Drogo and R...	Red Waste
66	67	2	2	Rakharo	Unknown (possible rival Dothraki men)	Unknown	Unknown	Unknown (possibly as a challenge to Daenerys T...	Red Waste
72	73	2	3	Yoren	Amory Lorch	Sword	Blade	Refused to hand over Gendry	Riverlands
78	79	2	5	Renly Baratheon	Melisandre “the Red Woman” of Asshai	Shadow Demon	Magic	Killed so that Stannis Baratheon would have fe...	Storm’s End

```
In [33]: df['imp2'] = df['importance'].apply(lambda x : x+1)
```

In [35]:

df

Out[35]:

order	season	episode	character_killed	killer	method	method_cat	reason	location
0	1	1	Waymar Royce	White Walker	Ice sword	Blade	Unknown	Beyond the Wall
1	2	1	Gared	White Walker	Ice sword	Blade	Unknown	Beyond the Wall
2	3	1	Will	Ned Stark	Sword (Ice)	Blade	Deserting the Night's Watch	Winterfell
3	4	1	Stag	Direwolf	Direwolf teeth	Animal	Unknown	Winterfell
4	5	1	Direwolf	Stag	Antler	Animal	Unknown	Winterfell
5	6	1	Jon Arryn	Lysa Arryn	Poison	Poison	Petyr Baelish persuaded Lysa to do so for reas...	King's Landing
6	7	1	Dothraki man	Dothraki man	Arakh	Blade	A Dothraki wedding without at least three deat...	Pentos
7	8	1	Catspaw assassin	Summer	Direwolf teeth	Animal	Attempting to kill Bran Stark	Winterfell
8	9	1	Mycah	Sandor "the Hound" Clegane	Unknown (likely a sword)	Unknown	Joffrey has him killed after Arya attacks Joffrey	Kingsroad
9	10	1	Lady	Ned Stark	Knife	Blade	Robert Baratheon orders that Lady be killed to...	Kingsroad
10	11	1	Ser Hugh of the Vale	Gregor "the Mountain" Clegane	Spear	Polearm	Killed during a tournament	King's Landing
11	12	1	Clegane's horse	Gregor "the Mountain" Clegane	Sword	Blade	Gregor was angry at being unhorsed in the tour...	King's Landing
12	13	1	Stark soldier	Tribesman	Bolo	Other	Attacked while helping Catelyn Stark take Tyri...	Eastern Road
13	14	1	Tribesman	Bronn	Sword	Blade	Attacked Catelyn Stark's group that was taking...	Eastern Road
14	15	1	Tribesman	Bronn	Sword	Blade	Attacked Catelyn Stark's group that was	Eastern Road

```
In [42]: df['ep_id'] = df.apply(lambda x: x['season']*100 + x['episode'], axis=1)
```

```
In [48]: df[-1:]
```

Out[48]:

	order	season	episode	character_killed	killer	method	method_cat	reason	location	allegiance
6886	6887	8	6	Daenerys Targaryen	Jon Snow	Knife	Blade	Stabbed in the stomach by Jon Snow after she "...	King's Landing	House Targaryen

```
In [52]: list(df.columns.values)
```

Out[52]: ['order',
'season',
'episode',
'character_killed',
'killer',
'method',
'method_cat',
'reason',
'location',
'allegiance',
'importance',
'imp2',
'ep_id']

```
In [54]: df[1234:1236]
```

Out[54]:

	order	season	episode	character_killed	killer	method	method_cat	reason	location	allegiance
1234	1235	6	10	Peasant	Cersei Lannister	Wildfire	Fire/Burning	Killed in a coup by Cersei to remove all of he...	King's Landing	Smallfolk
1235	1236	6	10	Peasant	Cersei Lannister	Wildfire	Fire/Burning	Killed in a coup by Cersei to remove all of he...	King's Landing	Smallfolk

```
In [68]: df[1234:1236].to_dict('record')
```

```
Out[68]: [{ 'order': 1235,
  'season': 6,
  'episode': 10,
  'character_killed': 'Peasant',
  'killer': 'Cersei Lannister',
  'method': 'Wildfire',
  'method_cat': 'Fire/Burning',
  'reason': 'Killed in a coup by Cersei to remove all of her enemies',
  'location': 'King's Landing',
  'allegiance': 'Smallfolk',
  'importance': 1.0,
  'imp2': 2.0,
  'ep_id': 610},
 { 'order': 1236,
  'season': 6,
  'episode': 10,
  'character_killed': 'Peasant',
  'killer': 'Cersei Lannister',
  'method': 'Wildfire',
  'method_cat': 'Fire/Burning',
  'reason': 'Killed in a coup by Cersei to remove all of her enemies',
  'location': 'King's Landing',
  'allegiance': 'Smallfolk',
  'importance': 1.0,
  'imp2': 2.0,
  'ep_id': 610}]
```

```
In [73]: df[4:5]['method'].values[0]
```

```
Out[73]: 'Antler'
```

```
In [78]: len(df['character_killed'].unique())
```

```
Out[78]: 291
```

```
In [81]: df['character_killed'].value_counts()
```

```
Out[81]: Wight                2901
Horse                755
Dothraki rider      743
Golden Company soldier 567
Lannister soldier    290
Peasant             209
King's Landing nobility 166
Stark soldier        160
Greyjoy (Euron-aligned) soldier 111
Wildling            109
Bolton soldier       86
Unsullied            80
Son of the Harpy     71
Baratheon of Dragonstone soldier 59
Frey soldier         52
Night's Watch brother 35
Yunkai soldier       28
Meereen citizen      25
Greyjoy (Yara-aligned) soldier 21
Baratheon of King's Landing soldier 18
Faith Militant brother 16
Wildling/Night's Watch brother 13
White Walker         12
Northern woman       9
Night's Watch mutineer 9
Member of the Thirteen 8
Dothraki Khal        8
Tribesman            7
Mormont soldier       7
Wight hunt party member 6
...
Rhaegal              1
Drogo's horse        1
Amory Lorch          1
Ygritte              1
Tywin Lannister      1
Harald Karstark      1
Pypar                1
Rakharo              1
Dothraki pit fighter 1
Joyeuse Frey         1
Tansy                1
Tyene Sand           1
Three-Eyed Raven     1
Direwolf              1
White Rat            1
Aerys II Targaryen   1
Olly's mom           1
Viserion             1
Syrio Forel          1
Rodrik Cassel        1
Khal Drogo           1
Biter                1
Gatins               1
Eddison Tollett      1
Catpaw assassin      1
Karl Tanner          1
The Silver           1
Axell Florent        1
Khal Forzho          1
Giant wight          1
Name: character_killed, Length: 291, dtype: int64
```



```
In [86]: df[df['location'].str.contains('Wall')]['location'].value_counts()
```

```
Out[86]: Beyond the Wall    993
The Wall                  31
Name: location, dtype: int64
```

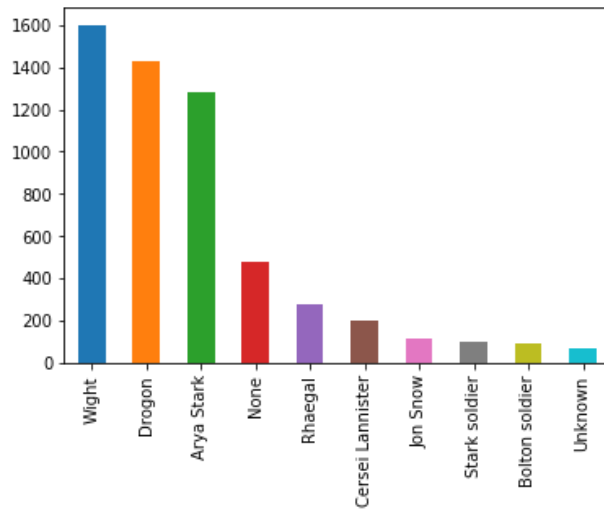
```
In [89]: df[df['location'].str.contains('Wall', case=False)]['location'].value_counts()
```

```
Out[89]: Beyond the Wall    993
The Wall                  31
Name: location, dtype: int64
```

```
In [90]: import matplotlib.pyplot as plt
```

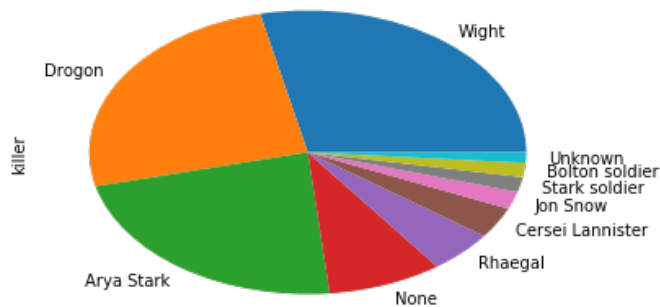
```
In [8]: df['killer'].value_counts()[:10].plot(kind='bar')
```

```
Out[8]: <matplotlib.axes._subplots.AxesSubplot at 0x119e21160>
```



```
In [11]: df['killer'].value_counts()[:10].plot(kind='pie')
```

```
Out[11]: <matplotlib.axes._subplots.AxesSubplot at 0x11a1a8588>
```



```
In [14]: df.sort_values('method')
```

Out[14]:

	order	season	episode	character_killed	killer	method	method_cat	reason	location	all
	4	5	1	1	Direwolf	Stag	Antler	Animal	Unknown	Winterfell
6299	6300	8	5	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen attacked King's...	King's Landing	L
6291	6292	8	5	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen attacked King's...	King's Landing	L
6290	6291	8	5	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen attacked King's...	King's Landing	L
6289	6290	8	5	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen attacked King's...	King's Landing	L
6288	6289	8	5	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen attacked King's...	King's Landing	L
465	466	5	2	Mossador	Daario Naharis	Arakh	Blade	Executed for killing a Son of the Harpy against...	Meereen	Ti
6287	6288	8	5	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen attacked King's...	King's Landing	L
850	851	6	9	Son of the Harpy	Daario Naharis	Arakh	Blade	Killed during attack on Meereen by slave trade...	Meereen	Son Harpy
235	236	3	9	Yunkai soldier	Daario Naharis	Arakh	Blade	Killed during sacking of Yunkai	Yunkai	
297	298	4	3	Champion of Meereen	Daario Naharis	Arakh	Blade	Killed representing Meereen as its champion	Meereen	
1452	1453	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	L
1449	1450	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	L
1446	1447	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	L

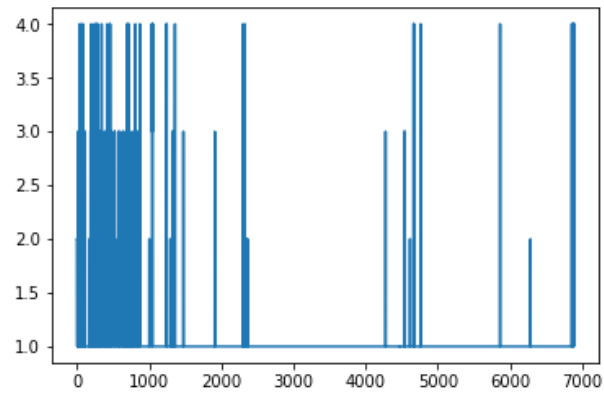
```
In [15]: df.sort_values(['method', 'episode'])
```

Out[15]:

	order	season	episode	character_killed	killer	method	method_cat	reason	location	alleg
	4	5	1	1	Direwolf	Stag	Antler	Animal	Unknown	Winterfell
	6	7	1	1	Dothraki man	Dothraki man	Arakh	Blade	A Dothraki wedding without at least three deat...	Pentos
465	466	5	2	Mossador	Daario Naharis	Arakh	Blade	Executed for killing a Son of the Harpy agains...	Meereen	Targ
297	298	4	3	Champion of Meereen	Daario Naharis	Arakh	Blade	Killed representing Meereen as its champion	Meereen	M
1378	1379	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1379	1380	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1382	1383	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1383	1384	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1384	1385	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1385	1386	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1386	1387	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1428	1429	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1429	1430	7	4	Lannister soldier	Dothraki rider	Arakh	Blade	Killed when Daenerys Targaryen and her Dothrak...	Goldroad	Lar
1432	1433	7	4	Lannister soldier	Dothraki	Arakh	Blade	Killed when Daenerys Targaryen	Goldroad	.

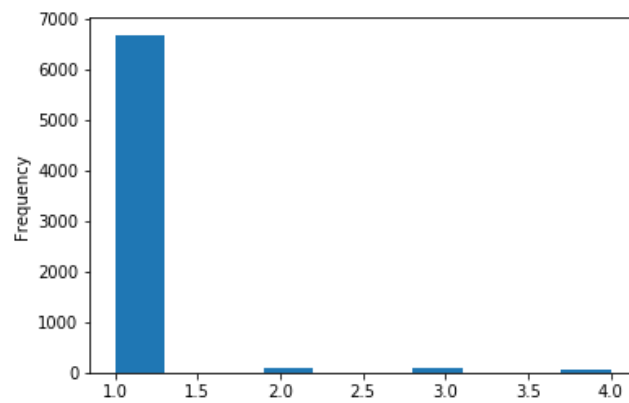
```
In [17]: df['importance'].plot()
```

```
Out[17]: <matplotlib.axes._subplots.AxesSubplot at 0x119f14048>
```



```
In [19]: df['importance'].plot(kind='hist')
```

```
Out[19]: <matplotlib.axes._subplots.AxesSubplot at 0x11a739cf8>
```



In [24]:

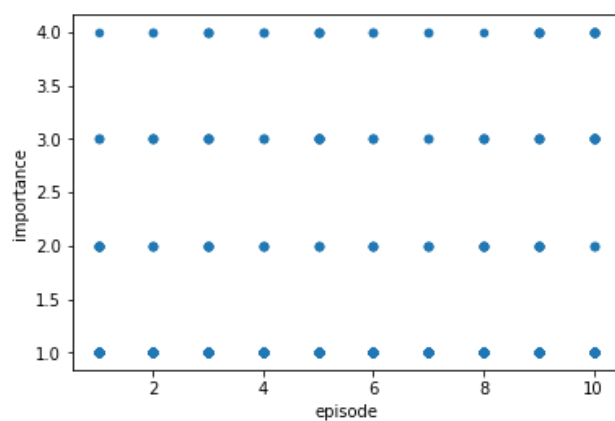
df

Out[24]:

order	season	episode	character_killed	killer	method	method_cat	reason	location
0	1	1	Waymar Royce	White Walker	Ice sword	Blade	Unknown	Beyond the Wall
1	2	1	Gared	White Walker	Ice sword	Blade	Unknown	Beyond the Wall
2	3	1	Will	Ned Stark	Sword (Ice)	Blade	Deserting the Night's Watch	Winterfell
3	4	1	Stag	Direwolf	Direwolf teeth	Animal	Unknown	Winterfell
4	5	1	Direwolf	Stag	Antler	Animal	Unknown	Winterfell
5	6	1	Jon Arryn	Lysa Arryn	Poison	Poison	Petyr Baelish persuaded Lysa to do so for reas...	King's Landing
6	7	1	Dothraki man	Dothraki man	Arakh	Blade	A Dothraki wedding without at least three deat...	Pentos
7	8	1	Catspaw assassin	Summer	Direwolf teeth	Animal	Attempting to kill Bran Stark	Winterfell
8	9	1	Myciah	Sandor "the Hound" Clegane	Unknown (likely a sword)	Unknown	Joffrey has him killed after Arya attacks Joffrey	Kingsroad
9	10	1	Lady	Ned Stark	Knife	Blade	Robert Baratheon orders that Lady be killed to...	Kingsroad
10	11	1	Ser Hugh of the Vale	Gregor "the Mountain" Clegane	Spear	Polearm	Killed during a tournament	King's Landing
11	12	1	Clegane's horse	Gregor "the Mountain" Clegane	Sword	Blade	Gregor was angry at being unhorsed in the tour...	King's Landing
12	13	1	Stark soldier	Tribesman	Bolo	Other	Attacked while helping Catelyn Stark take Tyri...	Eastern Road
13	14	1	Tribesman	Bronn	Sword	Blade	Attacked Catelyn Stark's group that was taking...	Eastern Road
14	15	1	Tribesman	Bronn	Sword	Blade	Attacked Catelyn Stark's group that was	Eastern Road


```
In [28]: df.plot.scatter(x='episode', y='importance')
```

```
Out[28]: <matplotlib.axes._subplots.AxesSubplot at 0x11ad2d160>
```



In [30]:

df

Out[30]:

order	season	episode	character_killed	killer	method	method_cat	reason	location	
0	1	1	1	Waymar Royce	White Walker	Ice sword	Blade	Unknown	Beyond the Wall
1	2	1	1	Gared	White Walker	Ice sword	Blade	Unknown	Beyond the Wall
2	3	1	1	Will	Ned Stark	Sword (Ice)	Blade	Deserting the Night's Watch	Winterfell
3	4	1	1	Stag	Direwolf	Direwolf teeth	Animal	Unknown	Winterfell
4	5	1	1	Direwolf	Stag	Antler	Animal	Unknown	Winterfell
5	6	1	1	Jon Arryn	Lysa Arryn	Poison	Poison	Petyr Baelish persuaded Lysa to do so for reas...	King's Landing
6	7	1	1	Dothraki man	Dothraki man	Arakh	Blade	A Dothraki wedding without at least three deat...	Pentos
7	8	1	2	Catspaw assassin	Summer	Direwolf teeth	Animal	Attempting to kill Bran Stark	Winterfell
8	9	1	2	Mycah	Sandor "the Hound" Clegane	Unknown (likely a sword)	Unknown	Joffrey has him killed after Arya attacks Joffrey	Kingsroad
9	10	1	2	Lady	Ned Stark	Knife	Blade	Robert Baratheon orders that Lady be killed to...	Kingsroad
10	11	1	4	Ser Hugh of the Vale	Gregor "the Mountain" Clegane	Spear	Polearm	Killed during a tournament	King's Landing
11	12	1	5	Clegane's horse	Gregor "the Mountain" Clegane	Sword	Blade	Gregor was angry at being unhorsed in the tour...	King's Landing
12	13	1	5	Stark soldier	Tribesman	Bolo	Other	Attacked while helping Catelyn Stark take Tyri...	Eastern Road
13	14	1	5	Tribesman	Bronn	Sword	Blade	Attacked Catelyn Stark's group that was taking...	Eastern Road
14	15	1	5	Tribesman	Bronn	Sword	Blade	Attacked Catelyn Stark's group that was	Eastern Road

```
In [37]: df.groupby('killer').count()
```

Out[37]:

	order	season	episode	character_killed	method	method_cat	reason	location	allegiance
killer									
Accident	1	1	1	1	1	1	1	1	1
Allister Thorne	3	3	3	3	3	3	3	3	3
Amory Lorch	1	1	1	1	1	1	1	1	1
Arryn soldier	12	12	12	12	12	12	12	12	12
Arthur Dayne	3	3	3	3	3	3	3	3	3
Arya Stark	1278	1278	1278	1278	1278	1278	1278	1278	1278
Baelish soldier	1	1	1	1	1	1	1	1	1
Baratheon of Dragonstone soldier	24	24	24	24	24	24	24	24	24
Baratheon of King's Landing soldier	32	32	32	32	32	32	32	32	32
Barristan Selmy	16	16	16	16	16	16	16	16	16
Benjen Stark	23	23	23	23	23	23	23	23	23
Beric Dondarrion	30	30	30	30	30	30	30	30	30
Black Walder Rivers	1	1	1	1	1	1	1	1	1
Boar	1	1	1	1	1	1	1	1	1
Bolton soldier	91	91	91	91	91	91	91	91	91
Bounty hunter	1	1	1	1	1	1	1	1	1
Brienne of Tarth	28	28	28	28	28	28	28	28	28
Bronn	27	27	27	27	27	27	27	27	27
Brotherhood Without Banners rogue	1	1	1	1	1	1	1	1	1
Catelyn Stark	1	1	1	1	1	1	1	1	1
Cersei Lannister	199	199	199	199	199	199	199	199	199
Child of the Forest	17	17	17	17	17	17	17	17	17
City watch guard	6	6	6	6	6	6	6	6	6
Daario Naharis	25	25	25	25	25	25	25	25	25
Daenerys Targaryen	24	24	24	24	24	24	24	24	24
Dickon Tarly	1	1	1	1	1	1	1	1	1
Direwolf	1	1	1	1	1	1	1	1	1

```
In [39]: df.groupby('killer').max()
```

Out[39]:

killer	order	season	episode	character_killed	method	method_cat	reason	location
Accident	121	2	9	Baratheon of Dragonstone soldier	Blunt object	Bludgeon	Killed during the Battle of the Blackwater	King's Landing
Allister Thorne	387	4	9	Wildling	Sword	Blade	Killed during the Battle of Castle Black	Castle Black
Amory Lorch	73	2	3	Yoren	Sword	Blade	Refused to hand over Gendry	Riverlands
Arryn soldier	1014	6	9	Bolton soldier	Spear	Polearm	Killed during the Battle of the Bastards	Winterfell
Arthur Dayne	724	6	3	Stark soldier	Sword	Blade	Killed when Ned Stark tried to rescue Lyanna f...	Tower of Joy
Arya Stark	5860	8	10	Wight	Valyrian steel dagger	Unknown	Tried to kill Arya after she refused to assass...	Winterfell
Baelish soldier	288	4	3	Dontos Hollard	Arrow	Arrow	To prevent Dontos from talking about Sansa Sta...	King's Landing
Baratheon of Dragonstone soldier	441	4	10	Wildling	Sword	Polearm	Killed in Stannis Baratheon's attack on the wi...	King's Landing
Baratheon of King's Landing soldier	181	2	9	Baratheon of Dragonstone soldier	Unknown	Unknown	Killed during the Battle of the Blackwater	King's Landing
Barristan Selmy	516	5	4	Son of the Harpy	Sword	Blade	Attacked during the Sons of the Harpy's revolt...	Meereen
Benjen Stark	2323	7	6	Wight	Tree	Fire/Burning	Killed when Benjen rescued Bran and Meera	Beyond the Wall
Beric Dondarrion	4539	8	8	Wight	Hanging	Other	Was reanimated as a wight and then pinned to a...	Winterfell
Black Walder Rivers	269	3	9	Catelyn Stark	Knife	Blade	Killed during the Red Wedding	The Twins
Boar	34	1	7	Robert Baratheon	Tusk	Animal	Hunted the boar while drunk	King's Landing
Bolton soldier	1028	6	10	Stark soldier	Sword	Polearm	Killed during the Battle of the Bastards	Winterfell
Bounty Hunter	463	5	2	Unknown dwarf	Unknown	Unknown	Cersei offered a lordship to	King's Landing

```
In [54]: df3 = df.groupby('killer').mean()
```

```
In [57]: df3['importance'].max()
```

```
Out[57]: 4.0
```

```
In [61]: df3[df3['importance'] == 4.0]
```

```
Out[61]:
```

	order	season	episode	importance
killer				
Black Walder Rivers	269.0	3.0	9.0	4.0
Boar	34.0	1.0	7.0	4.0
Ilyn Payne	56.0	1.0	9.0	4.0
Night's Watch brothers (final blow: Olly)	703.0	5.0	10.0	4.0
Olenna Tyrell	287.0	4.0	2.0	4.0
Olly	417.0	4.0	9.0	4.0
Rast	199.0	3.0	4.0	4.0
Roose Bolton	267.0	3.0	9.0	4.0
Sansa Stark	1040.0	6.0	9.0	4.0
Tommen Baratheon	1240.0	6.0	10.0	4.0

```
In [64]: df3[[False] * df3.shape[0]]
```

```
Out[64]:
```

	order	season	episode	importance
killer				

```
In [65]: df3[df3['importance'] == df3['importance'].max()]
```

```
Out[65]:
```

	order	season	episode	importance
killer				
Black Walder Rivers	269.0	3.0	9.0	4.0
Boar	34.0	1.0	7.0	4.0
Ilyn Payne	56.0	1.0	9.0	4.0
Night's Watch brothers (final blow: Olly)	703.0	5.0	10.0	4.0
Olenna Tyrell	287.0	4.0	2.0	4.0
Olly	417.0	4.0	9.0	4.0
Rast	199.0	3.0	4.0	4.0
Roose Bolton	267.0	3.0	9.0	4.0
Sansa Stark	1040.0	6.0	9.0	4.0
Tommen Baratheon	1240.0	6.0	10.0	4.0


```
In [66]: import pandas as pd

df = pd.read_excel('ESC-2016-grand_final-full_results.xls') # Αγνοήστε τα warni
ngs..

data = []

for k,v in df.to_dict('index').items():
    if k==0:
        continue

    d = {
        'from_country': v['Eurovision Song Contest 2016 Grand Final'],
        'to_country': v['Unnamed: 1'],
        'jury_points': 0 if v['Unnamed: 9']=='\n' else int(v['Unnamed: 9']),
        'televote_points': 0 if v['Unnamed: 10']=='\n' else int(v['Unnamed: 10
    ']),
    }

    data.append(d)
```

WARNING *** OLE2 inconsistency: SSCS size is 0 but SSAT size is non-zero

In [68]: data

```
Out[68]: [{'from_country': 'Albania',
          'to_country': 'Belgium',
          'jury_points': 0,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'Czech Republic',
          'jury_points': 0,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'The Netherlands',
          'jury_points': 0,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'Azerbaijan',
          'jury_points': 0,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'Hungary',
          'jury_points': 1,
          'televote_points': 1},
          {'from_country': 'Albania',
          'to_country': 'Italy',
          'jury_points': 8,
          'televote_points': 10},
          {'from_country': 'Albania',
          'to_country': 'Israel',
          'jury_points': 3,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'Bulgaria',
          'jury_points': 4,
          'televote_points': 8},
          {'from_country': 'Albania',
          'to_country': 'Sweden',
          'jury_points': 0,
          'televote_points': 3},
          {'from_country': 'Albania',
          'to_country': 'Germany',
          'jury_points': 0,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'France',
          'jury_points': 10,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'Poland',
          'jury_points': 0,
          'televote_points': 5},
          {'from_country': 'Albania',
          'to_country': 'Australia',
          'jury_points': 12,
          'televote_points': 12},
          {'from_country': 'Albania',
          'to_country': 'Cyprus',
          'jury_points': 0,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'Serbia',
          'jury_points': 0,
          'televote_points': 0},
          {'from_country': 'Albania',
          'to_country': 'Lithuania',
          'jury_points': 0,
          'televote_points': 4},
          {'from_country': 'Albania',
          'to_country': 'Croatia',
          'jury_points': 0,
          'televote_points': 0},
          ...]
```

```
In [70]: s = [(abs(v['jury_points'])-v['televote_points']), v] for v in data]
```

```
In [73]: sorted(s, reverse=True, key=lambda x:x[0])[ :10]
```

```
Out[73]: [(12,
           {'from_country': 'Austria',
            'to_country': 'Poland',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Belgium',
            'to_country': 'Poland',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Cyprus',
            'to_country': 'Bulgaria',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Czech Republic',
            'to_country': 'Ukraine',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Estonia',
            'to_country': 'Russia',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Finland',
            'to_country': 'Ukraine',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'France',
            'to_country': 'Italy',
            'jury_points': 12,
            'televote_points': 0}),
          (12,
           {'from_country': 'Georgia',
            'to_country': 'Armenia',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Germany',
            'to_country': 'Israel',
            'jury_points': 12,
            'televote_points': 0}),
          (12,
           {'from_country': 'Germany',
            'to_country': 'Russia',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Hungary',
            'to_country': 'Ukraine',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Ireland',
            'to_country': 'Belgium',
            'jury_points': 12,
            'televote_points': 0}),
          (12,
           {'from_country': 'Ireland',
            'to_country': 'Lithuania',
            'jury_points': 0,
            'televote_points': 12}),
          (12,
           {'from_country': 'Italy',
            'to_country': 'Spain',
```

