

```
In [3]: import matplotlib.pyplot as plt
```

```
In [4]: import pandas as pd
```

```
In [5]: df = pd.read_csv(r"C:\Users\LENOVO\Desktop\EQ1234.csv")
```

```
In [6]: # IN Severe Level of Earthquakes Europe Have suffered Most Economic Loss
        # -- Bcz of Lack in Rescue time
        # -- IN Europe Italy have suffered most in 2016 (and) Russia is 2nd
        # -- Tsunami is only occur (Rarely) in Severe Level of Earthquake

        # In Medium Level of Earthquakes Asia have suffered Most Economic Loss
        # -- Bcz of Lack in Rescue time
        # -- in Asia Most economic Loss is suffered by Afghanistan

        # Afghanistan have poor Infra, Rescue team

        # **** (1) Severe Level of Earthquakes are Responsible Most Casualties , and Economic
        # **** (2) Long Duration of Earthquakes have caused Lot More Damage
        # **** (3) Australia Have suffered alot in medium level earthquake and in low duration
        # **** (4) Europe and Asia Region have faced Longer Low Level earthquake
        # **** (5) Tsunami is only occur (Rarely) in Severe Level of Earthquake
        # ---- Europe have suffered 6 tsunam
        # ---- Asia have suffered 4 Tsunami
        # ---- 1 by south America
        # ---- Australia and North America have not suffered any Tsunami

        # *****Region          Building.collapsed    No.of.EarthQuakes    Casualties

        # Asia                    1244                49                37315
        # Australia                201                 6                 5146
        # Europe                   1116               49                27165
        # North America            196                 6                 4030
        # South America            375                12                10107

        # (2016 ----Data) 1) IN Asia and Europe most People died bcz of Rescue(time)
        #                  2) Australia And North america have Lost Most building despite j
        #                  3) No of earthquakes faced by asia And Europe bcz of their positi
        #                  4) In
```

Out[6]:

	index	Country	Magnitude	Casualties	No of People Effected	Infra Damage	Releif Aid Money(2016)	City	DOQ	I
0	1	Japan	6.2	1118	10640	Severe	13442541	Tokyo	2016-08-19	8/1
1	2	Japan	1.9	23	2067	Low	263800	Osaka	2016-08-19	8/1
2	3	Japan	7.4	1592	12811	Severe	16227890	Kyoto	2016-08-19	8/1
3	4	Japan	7.8	1255	18924	Severe	27257853	Yokohama	2017-02-14	2/1
4	5	Japan	4.8	616	1900	Medium	349192	Sapporo	2017-06-10	6/1
...
295	296	Spain	5.7	594	2659	Medium	303091	Alicante	2018-05-01	5/
296	297	Spain	3.2	147	1920	Low	229527	Córdoba	2016-08-06	8/
297	298	Spain	5.6	332	1281	Medium	377328	Valladolid	2018-04-21	4/2
298	299	Spain	3.2	68	624	Low	358708	Vigo	2017-09-08	9/
299	300	Spain	6.1	1047	17835	Severe	18460553	Gijón	2017-12-29	12/2

300 rows × 16 columns

```

In [7]: df.set_index('index', inplace = True)

In [ ]:

In [8]: m = df.query(" DOQ>='2016-01-01' & DOQ<='2016-12-31' ")

In [ ]:

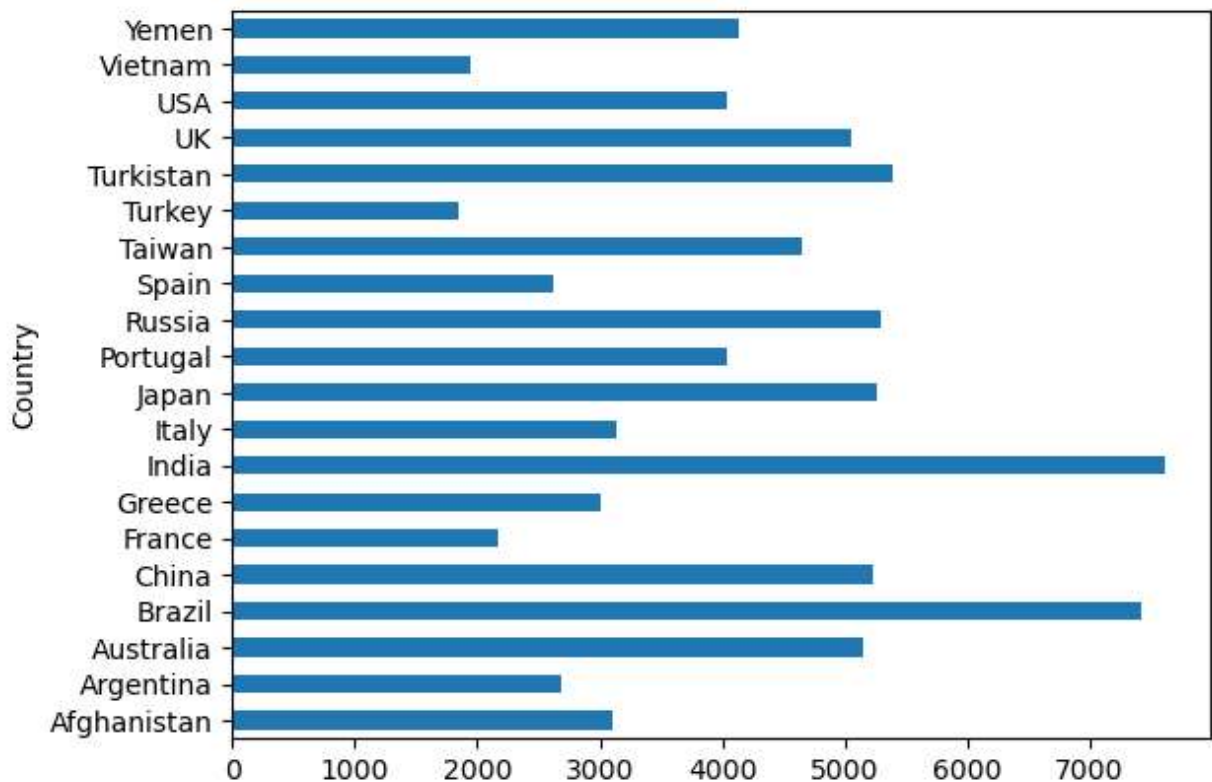
In [9]: f = m.groupby('Country')['Casualties'].sum()

In [10]: f

```

```
Out[10]: Country
Afghanistan    3107
Argentina      2685
Australia      5146
Brazil         7422
China          5232
France         2170
Greece         3001
India          7604
Italy          3132
Japan          5261
Portugal       4035
Russia         5299
Spain          2628
Taiwan         4643
Turkey         1848
Turkistan      5387
UK             5052
USA            4030
Vietnam        1939
Yemen          4142
Name: Casualties, dtype: int64
```

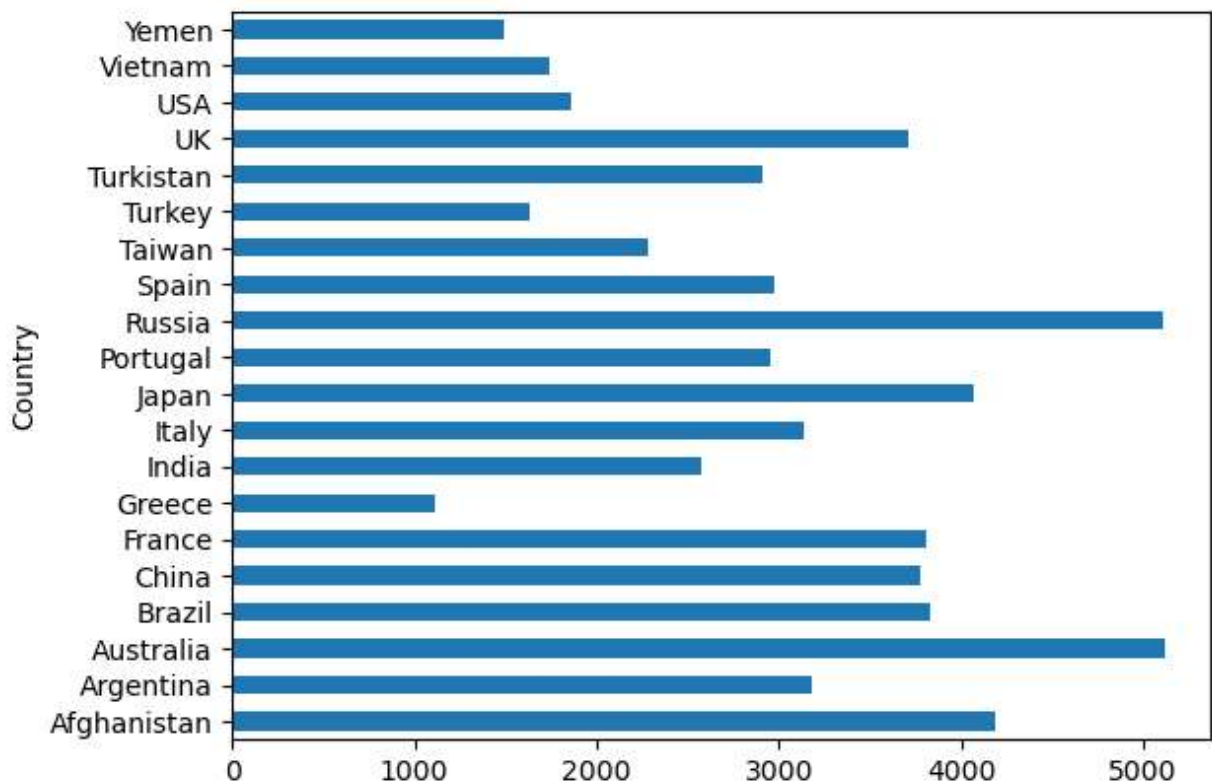
```
In [11]: f.plot.barh()
plt.show()
# In 2016 Most Casulties are faced by Italy
```



```
In [12]: Y2017 = df.query("DOQ>='2017-01-01' & DOQ<='2017-12-31'")
Y17 = Y2017.groupby('Country')['Casualties'].sum()
```

```
In [13]: Y17.plot.barh()
plt.show()
```

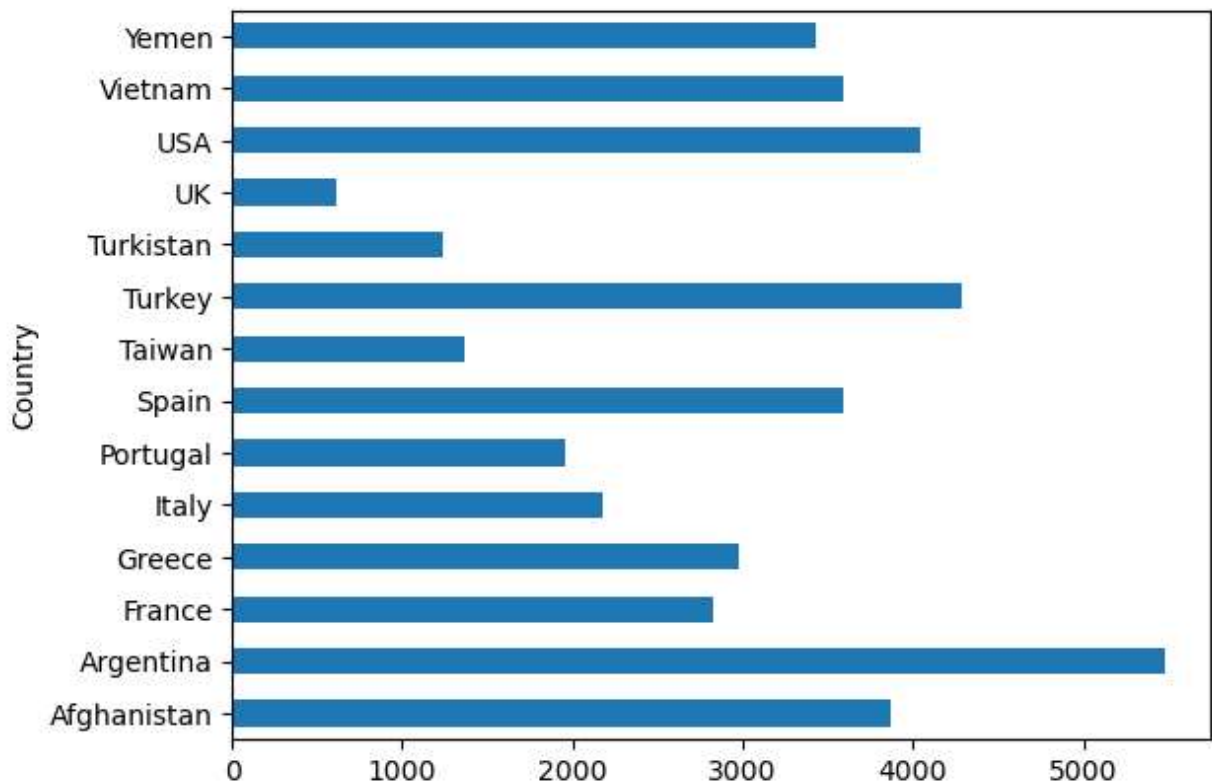
in 2017 most Casualties are faced by Russia and Australia



```
In [14]: Y2018 = df.query("DOQ>='2018-01-01' & DOQ<='2018-12-31'")
Y18 = Y2018.groupby('Country')['Casualties'].sum()
```

```
In [15]: Y18.plot.barh()
plt.show()
```

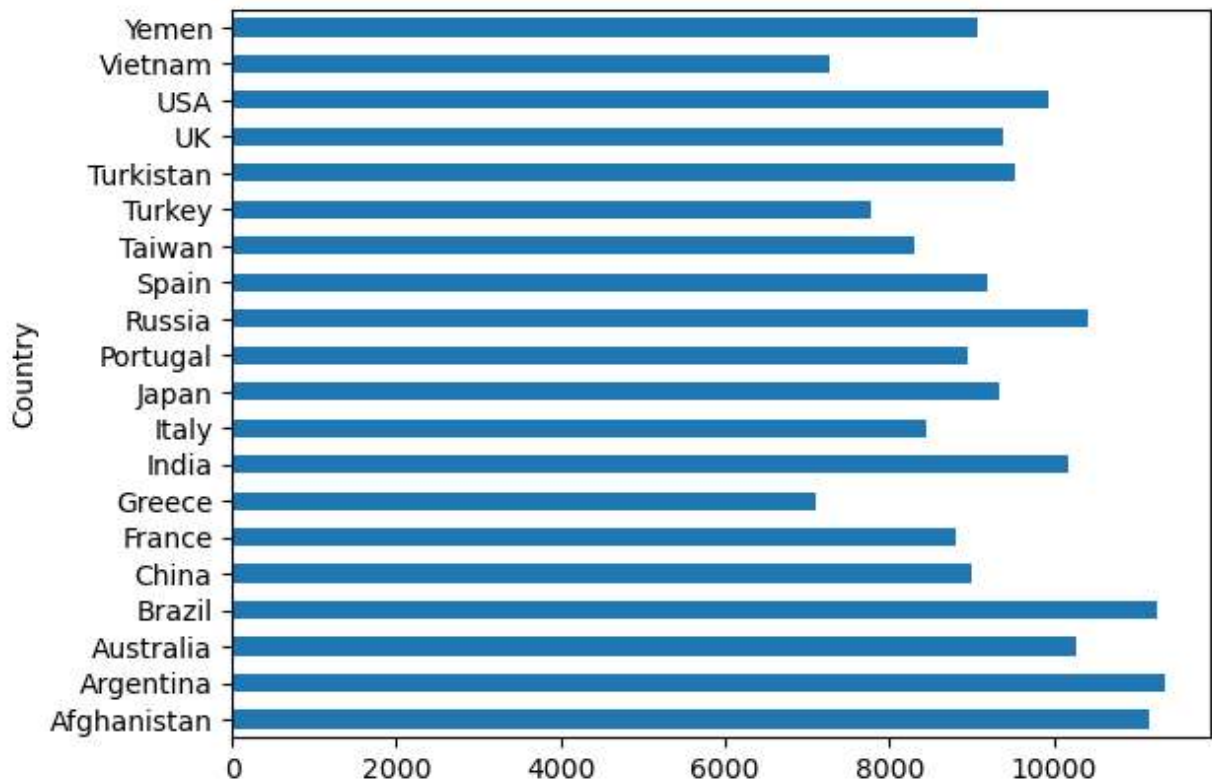
in 2018 most Casulties are faced by Argentina



```
In [16]: All = df.groupby('Country')['Casualties'].sum()
```

```
In [17]: All.plot.barh()
plt.show()
```

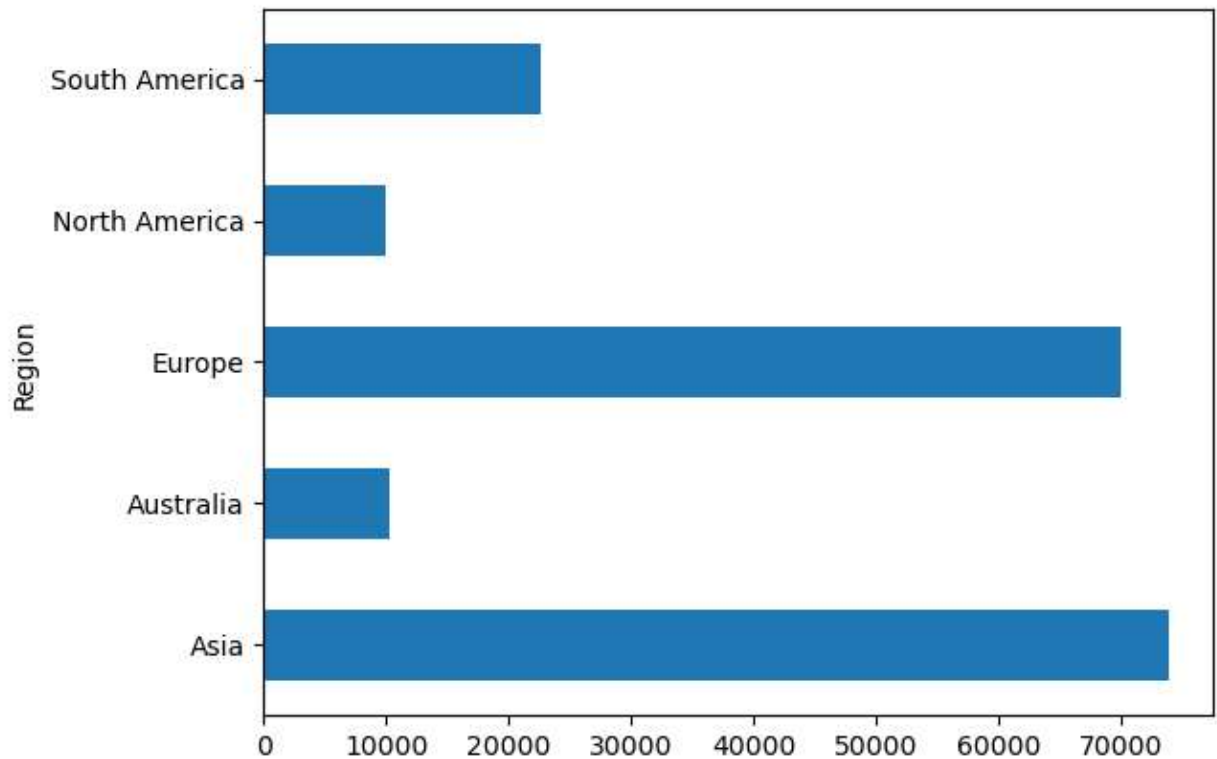
collectivley Casualties are most faced by Argentina followed by brazil and Afghanistan



```
In [18]: # TOTAL CASUALTIES FACED BY EACH REGION
```

```
In [19]: DF = df.groupby('Region')['Casualties'].sum()
```

```
In [20]: DF.plot.barh()  
plt.show()
```



```
In [ ]:
```

```
In [21]: df
```

Out[21]:

	Country	Magnitude	Casualties	No of People Effected	Infra Damage	Releif Aid Money(2016)	City	DOQ	Date c Quak
index									
1	Japan	6.2	1118	10640	Severe	13442541	Tokyo	2016-08-19	8/19/201
2	Japan	1.9	23	2067	Low	263800	Osaka	2016-08-19	8/19/201
3	Japan	7.4	1592	12811	Severe	16227890	Kyoto	2016-08-19	8/19/201
4	Japan	7.8	1255	18924	Severe	27257853	Yokohama	2017-02-14	2/14/201
5	Japan	4.8	616	1900	Medium	349192	Sapporo	2017-06-10	6/10/201
...
296	Spain	5.7	594	2659	Medium	303091	Alicante	2018-05-01	5/1/201
297	Spain	3.2	147	1920	Low	229527	Córdoba	2016-08-06	8/6/201
298	Spain	5.6	332	1281	Medium	377328	Valladolid	2018-04-21	4/21/201
299	Spain	3.2	68	624	Low	358708	Vigo	2017-09-08	9/8/201
300	Spain	6.1	1047	17835	Severe	18460553	Gijón	2017-12-29	12/29/201

300 rows × 15 columns



```
In [22]: J =df[df['Country']=='Japan']
```

```
In [23]: JP = J.groupby(['City','Magnitude'])['Economic Loss($)'].sum()
```

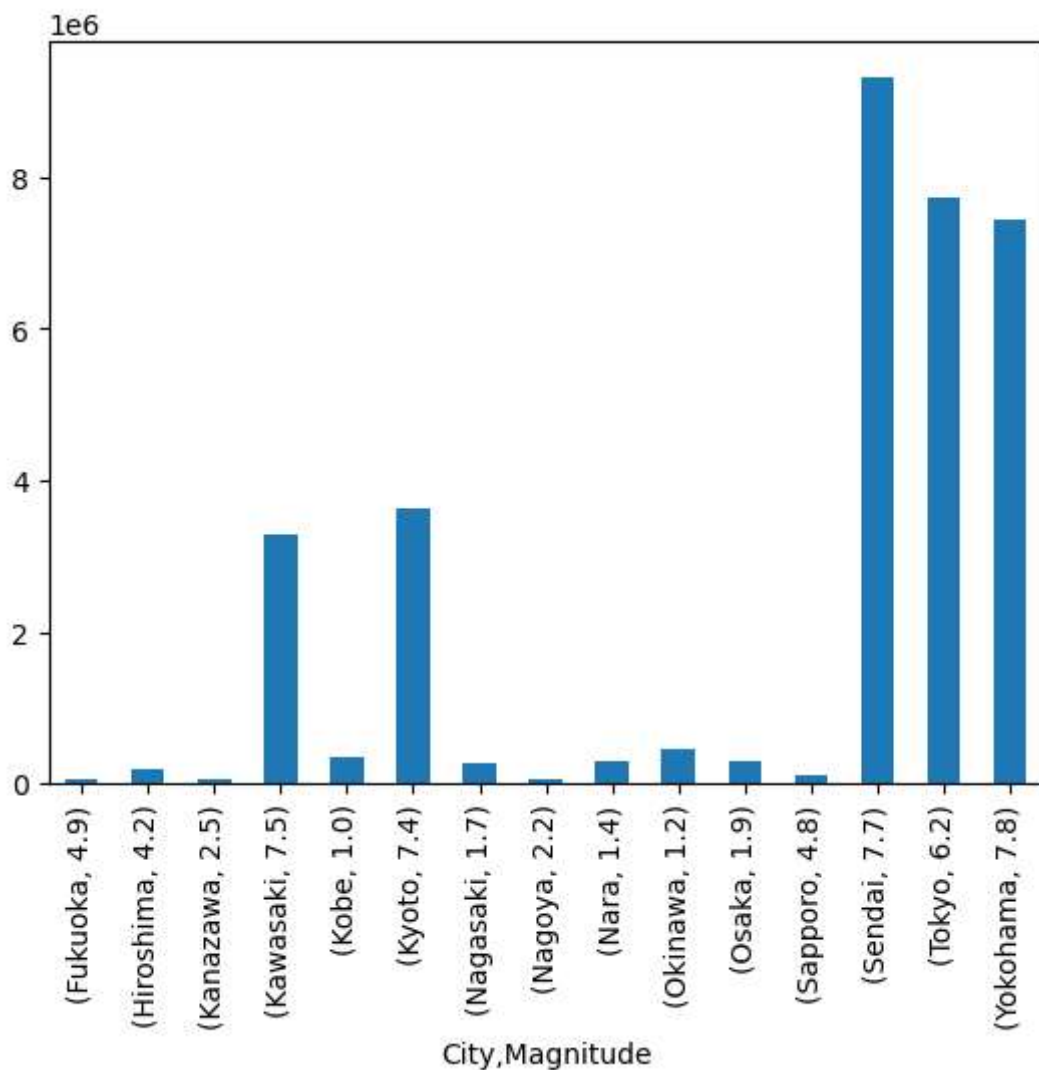
```
In [24]: JP
# most Economic Loss is faced by Sendai bcz of Highest magnitude Earthquake
```

```
Out[24]:
```

City	Magnitude	
Fukuoka	4.9	55305
Hiroshima	4.2	185736
Kanazawa	2.5	65937
Kawasaki	7.5	3284619
Kobe	1.0	338644
Kyoto	7.4	3628175
Nagasaki	1.7	264832
Nagoya	2.2	63347
Nara	1.4	290744
Okinawa	1.2	442167
Osaka	1.9	288856
Sapporo	4.8	118389
Sendai	7.7	9314575
Tokyo	6.2	7723833
Yokohama	7.8	7435904

Name: Economic Loss(\$), dtype: int64

```
In [25]: JP.plot.bar()
plt.show()
```



```
In [26]: import seaborn as sb
```

```
In [ ]:
```



```
In [27]: M= J[J['Infra Damage']=='Severe']
```

```
In [28]: M
```

```
Out[28]:
```

	Country	Magnitude	Casualties	No of People Effected	Infra Damage	Releif Aid Money(2016)	City	DOQ	Date of Quake
index									
1	Japan	6.2	1118	10640	Severe	13442541	Tokyo	2016-08-19	8/19/2016
3	Japan	7.4	1592	12811	Severe	16227890	Kyoto	2016-08-19	8/19/2016
4	Japan	7.8	1255	18924	Severe	27257853	Yokohama	2017-02-14	2/14/2017
10	Japan	7.7	1505	16467	Severe	15298548	Sendai	2016-01-30	1/30/2016
12	Japan	7.5	709	20604	Severe	33191486	Kawasaki	2017-06-10	6/10/2017

```
In [29]: M.groupby(['Magnitude','Casualties','No of People Effected','Infra Damage'])['Economic Loss($).sum()
```

```
Out[29]:
```

Magnitude	Casualties	No of People Effected	Infra Damage	Economic Loss(\$)
6.2	1118	10640	Severe	7723833
7.4	1592	12811	Severe	3628175
7.5	709	20604	Severe	3284619
7.7	1505	16467	Severe	9314575
7.8	1255	18924	Severe	7435904

Name: Economic Loss(\$), dtype: int64

```
In [30]: # most Casualties and Most No of people are effected from High Magnitude earthquake
```

```
In [ ]:
```

```
In [31]: Cou = df[df['Infra Damage']=='Severe']
```

```
In [54]: f = Cou.groupby('Region')['Economic Loss($)'].sum()
f
```

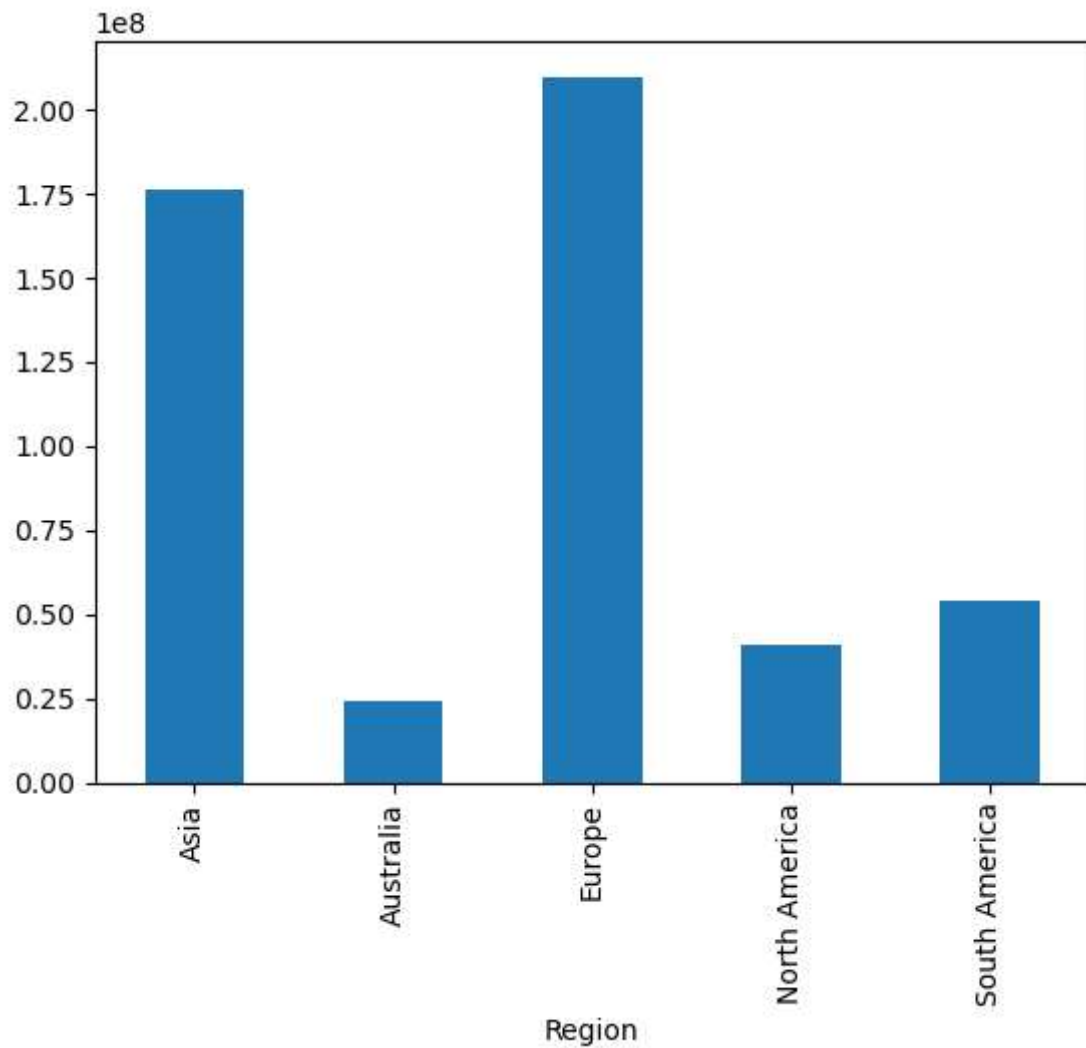
```
Out[54]:
```

Region	Economic Loss(\$)
Asia	176234496
Australia	24557867
Europe	209728395
North America	40800004
South America	54341034

Name: Economic Loss(\$), dtype: int64

```
In [36]: f.plot.bar()
plt.show()

# due to Severe Magnitude Earthquake , Europe have Bear Most Economic Loss in Compare
```

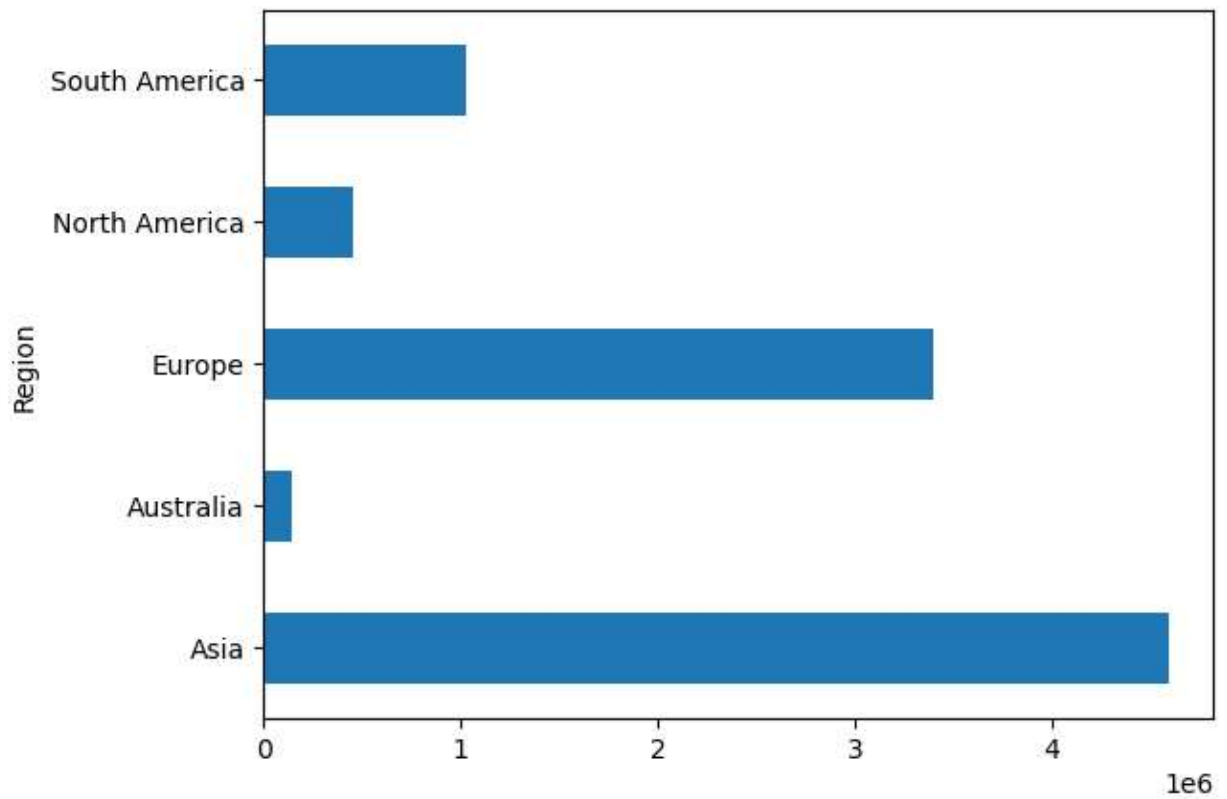


```
In [38]: Cas = df[df['Infra Damage']=='Medium']
```

```
In [43]: k =Cas.groupby('Region')['Economic Loss($)'].sum()
```

```
In [44]: k.plot.barh()  
plt.show()
```

in Medium Level of Earthquake Most Damage is suffered by Asia



In []:

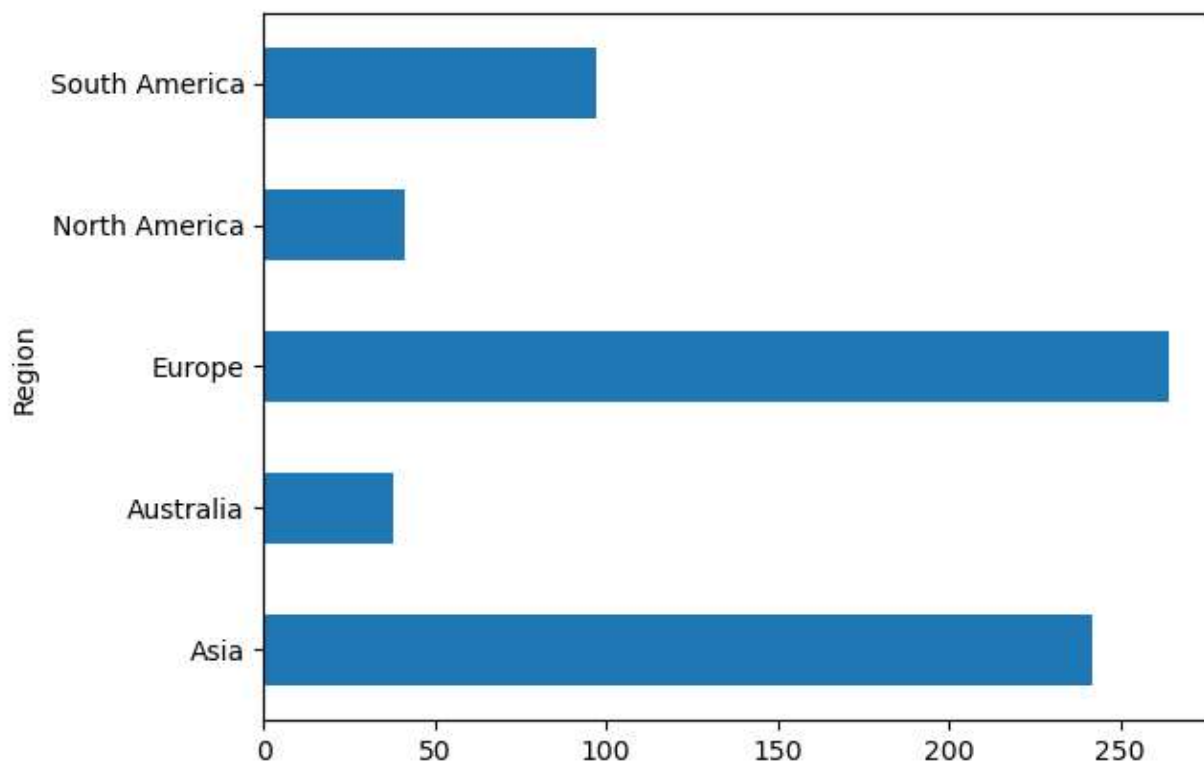
In [46]: `Save = df[df['Infra Damage']=='Severe']`

In [52]: `j = Save.groupby('Region')['Relief_time(Rescue)'].sum()`

In [53]: `j.plot.barh()
plt.plot()`

Bcz of Most time Taken in Relief , Europe have suffered Most

Out[53]: `[]`

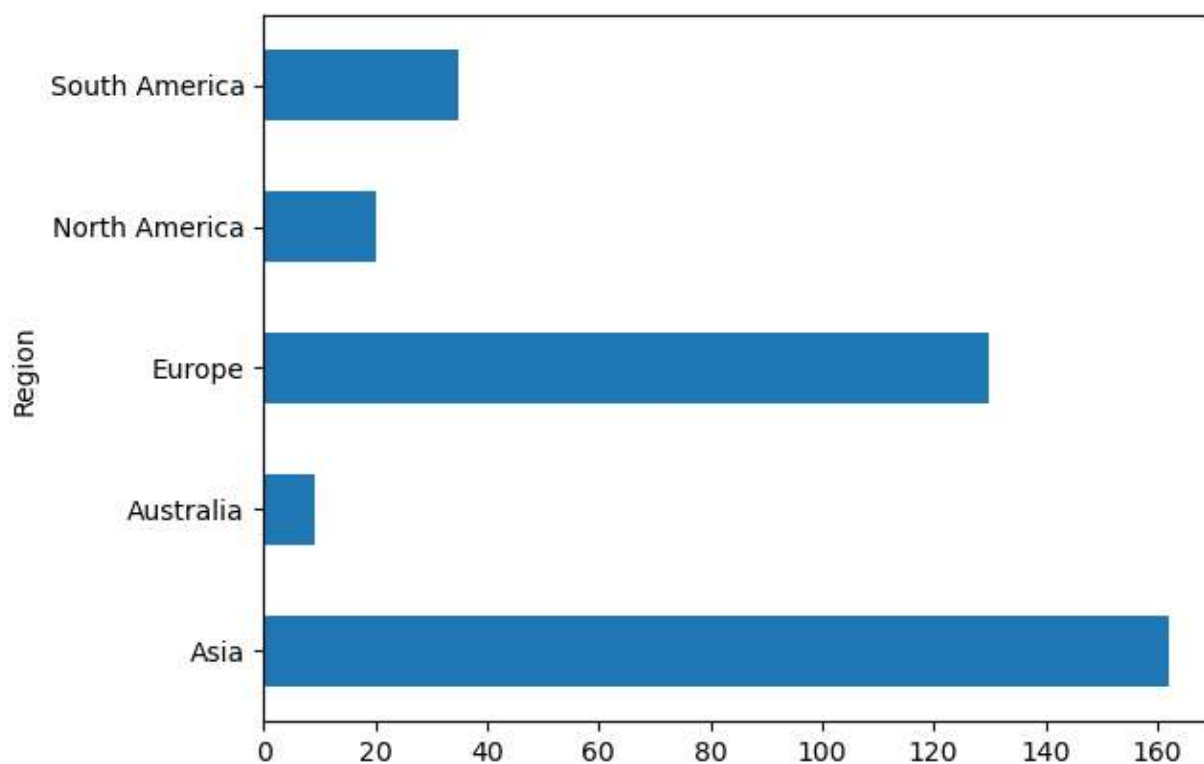


In []:

```
In [57]: m1 = Cas.groupby('Region')['Relief_time(Rescue)'].sum()
```

```
In [58]: m1.plot.barh()  
plt.show()
```

Due to lack in releif Asia have Lost most in Medium Level Earthquakes



In []:

In [60]: `df.groupby(['Region', 'Infra Damage'])['Casualties', 'Duration(Seconds)'].sum()`

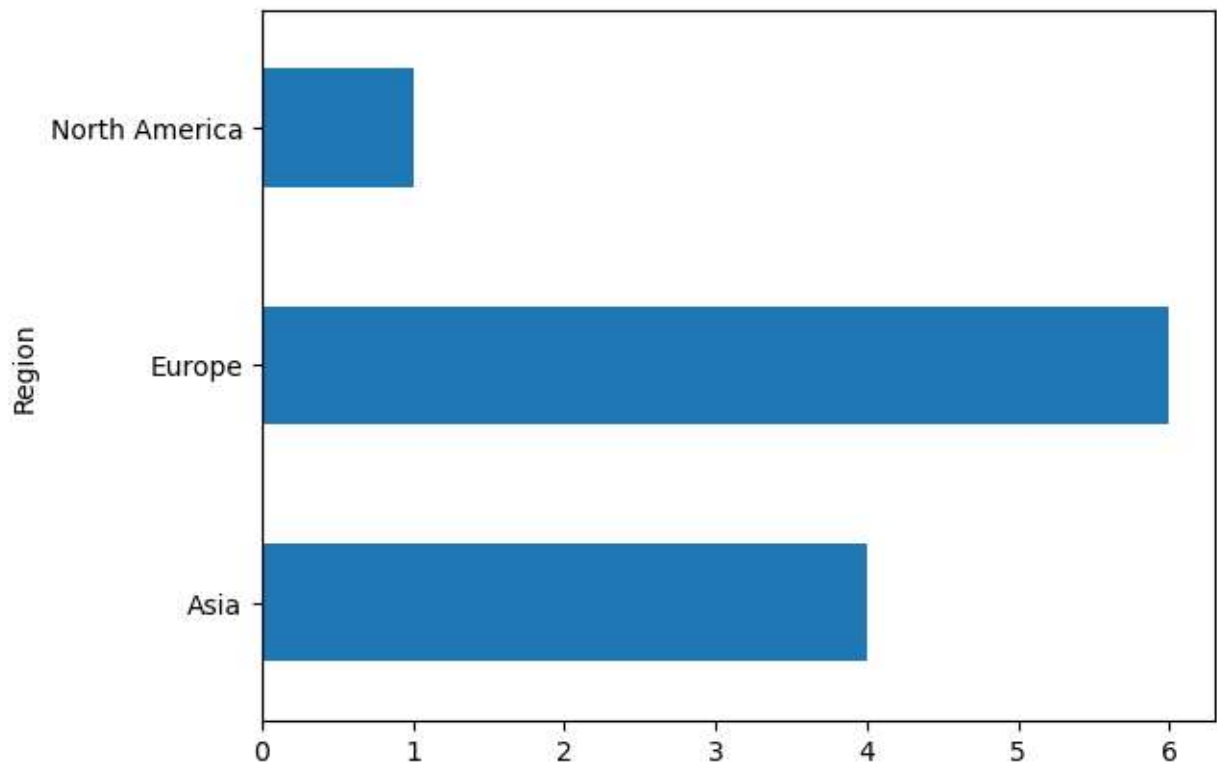
C:\Users\LENOVO\AppData\Local\Temp\ipykernel_9592\2768178028.py:1: FutureWarning: Indexing with multiple keys (implicitly converted to a tuple of keys) will be deprecated, use a list instead.

```
df.groupby(['Region', 'Infra Damage'])['Casualties', 'Duration(Seconds)'].sum()
```

Out[60]:

		Casualties	Duration(Seconds)
Region	Infra Damage		
Asia	Low	13661	3297
	Medium	20677	2305
	Severe	39512	1772
Australia	Low	2013	480
	Medium	1279	83
	Severe	6966	323
Europe	Low	14547	3460
	Medium	17514	1632
	Severe	37971	1909
North America	Low	1351	282
	Medium	2539	342
	Severe	6048	317
South America	Low	1558	702
	Medium	6279	500
	Severe	14748	640

In [64]: `j = df[df['Tsunami']=='Yes']`In [68]: `l = j.groupby('Region')['Tsunami'].count()`In [69]: `l.plot.barh()
plt.show()`



```
In [76]: m = df.query("DOQ>='2016-01-01' & DOQ <='2016-12-31' ")
```

```
In [80]: GDP = m.groupby('Region')['Building collapsed'].sum()
```

```
In [81]: GDP
```

```
Out[81]: Region
Asia          1244
Australia      201
Europe         1116
North America   196
South America   375
Name: Building collapsed, dtype: int64
```

```
In [83]: MDP = m.groupby('Region')['City'].count()
```

```
In [84]: MDP
```

```
Out[84]: Region
Asia          49
Australia      6
Europe         49
North America   6
South America  12
Name: City, dtype: int64
```

```
In [85]: CDP = m.groupby('Region')['Casualties'].sum()
```

```
In [86]: CDP
```

```
Out[86]: Region
        Asia          37315
        Australia     5146
        Europe        27165
        North America  4030
        South America 10107
        Name: Casualties, dtype: int64
```

```
In [90]: JDP = m.groupby(['Region', 'Infra Damage'])['City'].count()
```

```
In [91]: JDP
```

```
Out[91]: Region      Infra Damage
        Asia      Low          20
           Medium         12
           Severe         17
        Australia Low           3
           Medium           1
           Severe           2
        Europe   Low          27
           Medium         10
           Severe         12
        North America Low           2
           Medium           1
           Severe           3
        South America Low           3
           Medium           3
           Severe           6
        Name: City, dtype: int64
```

```
In [93]: df
```

Out[93]:

	Country	Magnitude	Casualties	No of People Effected	Infra Damage	Releif Aid Money(2016)	City	DOQ	Date c Quak
index									
1	Japan	6.2	1118	10640	Severe	13442541	Tokyo	2016-08-19	8/19/201
2	Japan	1.9	23	2067	Low	263800	Osaka	2016-08-19	8/19/201
3	Japan	7.4	1592	12811	Severe	16227890	Kyoto	2016-08-19	8/19/201
4	Japan	7.8	1255	18924	Severe	27257853	Yokohama	2017-02-14	2/14/201
5	Japan	4.8	616	1900	Medium	349192	Sapporo	2017-06-10	6/10/201
...
296	Spain	5.7	594	2659	Medium	303091	Alicante	2018-05-01	5/1/201
297	Spain	3.2	147	1920	Low	229527	Córdoba	2016-08-06	8/6/201
298	Spain	5.6	332	1281	Medium	377328	Valladolid	2018-04-21	4/21/201
299	Spain	3.2	68	624	Low	358708	Vigo	2017-09-08	9/8/201
300	Spain	6.1	1047	17835	Severe	18460553	Gijón	2017-12-29	12/29/201

300 rows × 15 columns



```
In [92]: m = df[df['Region']=='Asia']
```

```
In [112...]: d = m.groupby(["Country", "Infra Damage"])['Country'].count()
```

```
In [97]: F = m.sort_values('Economic Loss($)', ascending = False)
```

```
In [113...]: d
```



```
Out[113]:
```

Country	Infra Damage	
Afghanistan	Low	6
	Medium	4
	Severe	5
China	Low	4
	Medium	7
	Severe	4
India	Low	7
	Medium	3
	Severe	5
Japan	Low	7
	Medium	3
	Severe	5
Taiwan	Low	7
	Medium	6
	Severe	2
Turkistan	Low	6
	Medium	5
	Severe	4
Vietnam	Low	10
	Medium	2
	Severe	3
Yemen	Low	6
	Medium	7
	Severe	2

Name: Country, dtype: int64

```
In [118... m = df.query("DOQ>='2016-01-01' & DOQ <='2016-12-31' ")
```

```
In [123... j = m[m['Region']=='Asia']
```

```
In [130... k =j.groupby(['Country','Infra Damage'])['Building collapsed'].sum()
```

```
In [134... k
```

Out[134]:

Country	Infra	Damage
Afghanistan	Low	12
	Medium	11
	Severe	55
China	Low	13
	Medium	81
	Severe	104
India	Low	20
	Medium	22
	Severe	212
Japan	Low	13
	Medium	28
	Severe	136
Taiwan	Low	42
	Medium	42
	Severe	66
Turkistan	Low	3
	Medium	10
	Severe	156
Vietnam	Low	18
	Severe	50
Yemen	Low	12
	Medium	35
	Severe	103

Name: Building collapsed, dtype: int64

In []: