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```
In [1]:  
  
import pandas as pd  
import numpy as np  
import matplotlib.pyplot as plt
```

Load csv file

```
In [13]:  
  
movies=pd.read_csv("tmdb-movies .csv")
```

```
In [14]:  
  
movies
```

Out[14]:

	ID	IMDB_ID	POPULARITY	BUDGET	REVENUE	ORIGINAL_TITLE	CAST	
0	135397	tt0369610	32.985763	150000000	1513528810	Jurassic World	Chris Pratt Bryce Dallas Howard Irrfan Khan Vi...	http://
1	76341	tt1392190	28.419936	150000000	378436354	Mad Max: Fury Road	Tom Hardy Charlize Theron Hugh Keays-Byrne Nic...	http://
2	262500	tt2908446	13.112507	110000000	295238201	Insurgent	Shailene Woodley Theo James Kate Winslet Ansel...	http://www.thediverge
3	140607	tt2488496	11.173104	200000000	2068178225	Star Wars: The Force Awakens	Harrison Ford Mark Hamill Carrie Fisher Adam D...	http://www.stan
4	168259	tt2820852	9.335014	190000000	1506249360	Furious 7	Vin Diesel Paul Walker Jason Statham Michelle ...	
...	
10861	21	tt0060371	0.080598	0	0	The Endless Summer	Michael Hynson Robert August Lord 'Tally Ho' B...	
10862	20270	tt0060472	0.065542	0	0	Grand Prix	James Garner Eva Marie Saint Yves	

10862	20379	tt0000472	0.003343	0	0	Grand Prix	Marie Saint Ves
	ID	IMDB_ID	POPULARITY	BUDGET	REVENUE	ORIGINAL_TITLE	Montand Tos...
10863	39768	tt0060161	0.065141	0	0	Beregis Avtomobilya	Innokentiy Smoktunovskiy Oleg Efremov Georgi Z...
10864	21449	tt0061177	0.064317	0	0	What's Up, Tiger Lily?	Tatsuya Mihashi Akiko Wakabayashi Mie Hamal Joh...
10865	22293	tt0060666	0.035919	19000	0	Manos: The Hands of Fate	Harold P. Warren Tom Neyman John Reynolds Dian...

10866 rows x 21 columns

Q.no.1]Which are the movies with the third lowest and third highest budget?

Q.no.2]Which are the movies with most and least earned revenue?

Q.no.3]What is the average runtime of movies in the year 2006?

Q.no.4]Name any 3 production companies which have invested money in worse revenue movies?

As we need the data frames of -:

- 1]BUDGET 2]ORIGINAL_TITLE 3]RELEASE_YEAR 4]REVENUE
- 5]RUNTIME
- 6]PRODUCTION_COMPANIES

Hence we drop rest of the data frames and proceed ahead

In [23]:

```
drop_cols=['IMDB_ID', 'POPULARITY', 'CAST', 'DIRECTOR', 'GENRES', 'RELEASE_DATE', 'VOTE_COUNT',
'VOTE_AVERAGE', 'BUDGET_ADJ', 'REVENUE_ADJ', 'HOME_PAGE', 'TAGLINE', 'KEYWORDS', 'OVERVIEW']
new_movies=movies.drop(drop_cols,axis=1)
```

In [9]:

```
new_movies
```

Out[9]:

ID		BUDGET	REVENUE	ORIGINAL_TITLE	HOME_PAGE	TAGLINE
0	19995	237000000	2781505847	Avatar	http://www.avatarmovie.com/	Enter the World of Pandora.

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	HOME_PAGE	TAGLINE	
1	11	11000000	775398007	Star Wars	http://www.starwars.com/films/starwars-episod...	A long time ago in a galaxy far, far away...	androi
2	597	200000000	1845034188	Titanic	http://www.titanicmovie.com/menu.html	Nothing on Earth could come between them.	shipwrecklicel
3	9552	8000000	441306145	The Exorcist	http://theexorcist.warnerbros.com/	Something almost beyond comprehension is happe...	exorcismlh
4	578	7000000	470654000	Jaws	http://www.jaws25.com/	Don't go in the water.	oceanbatf

...
9323	35280	50000000	0	The Other	NaN	Niles and Holland are as close as twin brother...	
9324	19252	50000000	0	Carry On Abroad	NaN	The holiday of a laughter!	
9325	38761	50000000	0	Night of the Lepus	NaN	How many eyes does horror have?	ra an
9326	24571	50000000	0	Carry On Matron	NaN	The Carry On team serve up another 'prescripti...	1970slgang of
9327	15242	50000000	0	Snoopy, Come Home	NaN	Snoopy travels to see his sick former owner an...	

9328 rows x 11 columns



In [32]:

```
new_movies.replace(0,48964.887)
```

Out[32]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	1.500000e+08	1.513529e+09	Jurassic World	124.0	Universal Studios Amblin Entertainment Legenda...	2015
1	76341	1.500000e+08	3.784364e+08	Mad Max: Fury Road	120.0	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	1.100000e+08	2.952382e+08	Insurgent	119.0	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	2.000000e+08	2.068178e+09	Star Wars: The Force Awakens	136.0	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	1.900000e+08	1.506249e+09	Furious 7	137.0	Universal Pictures Original Film Media Rights ...	2015
...
10861	21	4.896489e+04	4.896489e+04	The Endless	95.0	Bruce Brown Films	1966

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
10862	20379	4.896489e+04	4.896489e+04	Grand Prix	176.0	Cherokee Productions Joel Productions Douglas ...	1966
10863	39768	4.896489e+04	4.896489e+04	Beregis Avtomobilya	94.0	Mosfilm	1966
10864	21449	4.896489e+04	4.896489e+04	What's Up, Tiger Lily?	80.0	Benedict Pictures Corp.	1966
10865	22293	1.900000e+04	4.896489e+04	Manos: The Hands of Fate	74.0	Norm-Iris	1966

10866 rows x 7 columns

In [33]:

```
new_movies.isnull().sum()
```

Out[33]:

```
ID          0
BUDGET      0
REVENUE     0
ORIGINAL_TITLE  0
RUNTIME     0
PRODUCTION_COMPANIES  1030
RELEASE_YEAR  0
dtype: int64
```

In [126]:

```
new_movies.isnull().any()
```

Out[126]:

```
ID          False
BUDGET      False
REVENUE     False
ORIGINAL_TITLE  False
RUNTIME     False
PRODUCTION_COMPANIES   True
RELEASE_YEAR  False
dtype: bool
```

In [127]:

```
new_movies.dropna()
```

Out[127]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	150000000	1513528810	Jurassic World	124	Universal Studios Amblin Entertainment Legenda...	2015
1	76341	150000000	378436354	Mad Max: Fury Road	120	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	110000000	295238201	Insurgent	119	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	200000000	2068178225	Star Wars: The Force Awakens	136	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	190000000	1506249360	Furious 7	137	Universal Pictures Original Film Media Rights ...	2015
...
10861	21	0	0	The Endless Summer	95	Bruce Brown Films	1966
10862	20379	0	0	Grand Prix	176	Cherokee Productions Joel Productions Douglas ...	1966
10863	39768	0	0	Beregis Avtomobilya	94	Mosfilm	1966

What's Up, Tiger

10864	21449	BUDGET	REVENUE	What's Up, Tiger Lily?	80	Benedict Pictures Corp.	1966
ID				ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
10865	22293	19000	0	Manos: The Hands of Fate	74	Norm-Iris	1966

9836 rows x 7 columns

In [128]:

```
new_1=new_movies.dropna(how="all")
```

In [129]:

```
new_1
```

Out[129]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	150000000	1513528810	Jurassic World	124	Universal Studios Amblin Entertainment Legenda...	2015
1	76341	150000000	378436354	Mad Max: Fury Road	120	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	110000000	295238201	Insurgent	119	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	200000000	2068178225	Star Wars: The Force Awakens	136	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	190000000	1506249360	Furious 7	137	Universal Pictures Original Film Media Rights ...	2015
...
10861	21	0	0	The Endless Summer	95	Bruce Brown Films	1966
10862	20379	0	0	Grand Prix	176	Cherokee Productions Joel Productions Douglas ...	1966
10863	39768	0	0	Beregis Avtomobilya	94	Mosfilm	1966
10864	21449	0	0	What's Up, Tiger Lily?	80	Benedict Pictures Corp.	1966
10865	22293	19000	0	Manos: The Hands of Fate	74	Norm-Iris	1966

10866 rows x 7 columns

In [130]:

```
sum(new_1.duplicated())
```

Out[130]:

1

In [131]:

```
new_1.drop_duplicates(inplace = True)
```

In [132]:

```
print("After Removing Duplicate Values (Rows,Columns) : ",new_1.shape)
```

After Removing Duplicate Values (Rows,Columns) : (10865, 7)

In [133]:

```
print("Rows With Zero Values In The BUDGET Column:",new_1[(new_1['BUDGET']==0)].shape[0])
print("Rows With Zero Values In The REVENUE Column:",new_1[(new_1['REVENUE']==0)].shape[0])
```

```
print("Rows With Zero Values In The RUNTIME Column:",new_1[(new_1['RUNTIME']==0)].shape[0])
```

Rows With Zero Values In The BUDGET Column: 5696
Rows With Zero Values In The REVENUE Column: 6016
Rows With Zero Values In The RUNTIME Column: 31

In [135]:

```
n1 = (new_1 != 0).any(axis=1)
```

In [139]:

```
n1
```

In [140]:

```
new_1
```

Out[140]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	150000000	1513528810	Jurassic World	124	Universal Studios Amblin Entertainment Legenda...	2015
1	76341	150000000	378436354	Mad Max: Fury Road	120	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	110000000	295238201	Insurgent	119	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	200000000	2068178225	Star Wars: The Force Awakens	136	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	190000000	1506249360	Furious 7	137	Universal Pictures Original Film Media Rights ...	2015
...
10861	21	0	0	The Endless Summer	95	Bruce Brown Films	1966
10862	20379	0	0	Grand Prix	176	Cherokee Productions Joel Productions Douglas ...	1966
10863	39768	0	0	Beregis Avtomobilya	94	Mosfilm	1966
10864	21449	0	0	What's Up, Tiger Lily?	80	Benedict Pictures Corp.	1966
10865	22293	19000	0	Manos: The Hands of Fate	74	Norm-Iris	1966

10865 rows x 7 columns

In [251]:

```
new_1[new_1["BUDGET"]!=0]
```

Out[251]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	150000000.0	1.513529e+09	Jurassic World	124.0	Universal Studios Amblin Entertainment Legenda...	2015
1	76341	150000000.0	3.784364e+08	Mad Max: Fury Road	120.0	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	110000000.0	2.952382e+08	Insurgent	119.0	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	200000000.0	2.068178e+09	Star Wars: The Force Awakens	136.0	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	190000000.0	1.506249e+09	Furious 7	137.0	Universal Pictures Original Film Media Righths	2015

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
10835	5923	12000000.0	2.000000e+07	The Sand Pebbles	182.0	Twentieth Century Fox Film Corporation\Solar P...	1966
10841	42701	75000.0	0.000000e+00	The Shooting	82.0	Proteus Films	1966
10848	2161	5115000.0	1.200000e+07	Fantastic Voyage	100.0	Twentieth Century Fox Film Corporation	1966
10855	13343	700000.0	0.000000e+00	The Ghost & Mr. Chicken	90.0	Universal Pictures	1966
10865	22293	19000.0	0.000000e+00	Manos: The Hands of Fate	74.0	Norm-Iris	1966

5169 rows x 7 columns

In [252]:

```
new_1=new_1[new_1["BUDGET"]!=0]
```

In [253]:

```
new_1[new_1["REVENUE"]!=0]
```

Out[253]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	150000000.0	1.513529e+09	Jurassic World	124.0	Universal Studios\Amblin Entertainment\Legenda...	2015
1	76341	150000000.0	3.784364e+08	Mad Max: Fury Road	120.0	Village Roadshow Pictures\Kennedy Miller Produ...	2015
2	262500	110000000.0	2.952382e+08	Insurgent	119.0	Summit Entertainment\Mandeville Films\Red Wago...	2015
3	140607	200000000.0	2.068178e+09	Star Wars: The Force Awakens	136.0	Lucasfilm\Truenorth Productions\Bad Robot	2015
4	168259	190000000.0	1.506249e+09	Furious 7	137.0	Universal Pictures\Original Film\Media Rights ...	2015
...
10822	396	7500000.0	3.373669e+07	Who's Afraid of Virginia Woolf?	131.0	Chenault Productions	1966
10828	5780	3000000.0	1.300000e+07	Torn Curtain	128.0	Universal Pictures	1966
10829	6644	4653000.0	6.000000e+06	El Dorado	120.0	Paramount Pictures\Laurel Productions	1966
10835	5923	12000000.0	2.000000e+07	The Sand Pebbles	182.0	Twentieth Century Fox Film Corporation\Solar P...	1966
10848	2161	5115000.0	1.200000e+07	Fantastic Voyage	100.0	Twentieth Century Fox Film Corporation	1966

3854 rows x 7 columns

In [254]:

```
new_1=new_1[new_1["REVENUE"]!=0]
```

In [255]:

```
new_1
```

Out[255]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
						Universal Studios\Amhlin	

0	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
1	76341	150000000.0	3.784364e+08	Mad Max: Fury Road	120.0	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	110000000.0	2.952382e+08	Insurgent	119.0	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	200000000.0	2.068178e+09	Star Wars: The Force Awakens	136.0	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	190000000.0	1.506249e+09	Furious 7	137.0	Universal Pictures Original Film Media Rights ...	2015
...
10822	396	7500000.0	3.373669e+07	Who's Afraid of Virginia Woolf?	131.0	Chenault Productions	1966
10828	5780	3000000.0	1.300000e+07	Torn Curtain	128.0	Universal Pictures	1966
10829	6644	4653000.0	6.000000e+06	El Dorado	120.0	Paramount Pictures Laurel Productions	1966
10835	5923	12000000.0	2.000000e+07	The Sand Pebbles	182.0	Twentieth Century Fox Film Corporation Solar P...	1966
10848	2161	5115000.0	1.200000e+07	Fantastic Voyage	100.0	Twentieth Century Fox Film Corporation	1966

3854 rows x 7 columns

In [256]:

```
new_1[new_1["RUNTIME"]!=0]
```

Out[256]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	150000000.0	1.513529e+09	Jurassic World	124.0	Universal Studios Amblin Entertainment Legenda...	2015
1	76341	150000000.0	3.784364e+08	Mad Max: Fury Road	120.0	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	110000000.0	2.952382e+08	Insurgent	119.0	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	200000000.0	2.068178e+09	Star Wars: The Force Awakens	136.0	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	190000000.0	1.506249e+09	Furious 7	137.0	Universal Pictures Original Film Media Rights ...	2015
...
10822	396	7500000.0	3.373669e+07	Who's Afraid of Virginia Woolf?	131.0	Chenault Productions	1966
10828	5780	3000000.0	1.300000e+07	Torn Curtain	128.0	Universal Pictures	1966
10829	6644	4653000.0	6.000000e+06	El Dorado	120.0	Paramount Pictures Laurel Productions	1966
10835	5923	12000000.0	2.000000e+07	The Sand Pebbles	182.0	Twentieth Century Fox Film Corporation Solar P...	1966
10848	2161	5115000.0	1.200000e+07	Fantastic Voyage	100.0	Twentieth Century Fox Film Corporation	1966

3854 rows x 7 columns

In [258]:

```
new_1=new_1[new_1["RUNTIME"]!=0]
```

In [260]:

In [260]:

new_1

Out[260]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	150000000.0	1.513529e+09	Jurassic World	124.0	Universal Studios Amblin Entertainment Legenda...	2015
1	76341	150000000.0	3.784364e+08	Mad Max: Fury Road	120.0	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	110000000.0	2.952382e+08	Insurgent	119.0	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	200000000.0	2.068178e+09	Star Wars: The Force Awakens	136.0	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	190000000.0	1.506249e+09	Furious 7	137.0	Universal Pictures Original Film Media Rights ...	2015
...
10822	396	7500000.0	3.373669e+07	Who's Afraid of Virginia Woolf?	131.0	Chenault Productions	1966
10828	5780	3000000.0	1.300000e+07	Torn Curtain	128.0	Universal Pictures	1966
10829	6644	4653000.0	6.000000e+06	El Dorado	120.0	Paramount Pictures Laurel Productions	1966
10835	5923	12000000.0	2.000000e+07	The Sand Pebbles	182.0	Twentieth Century Fox Film Corporation Solar P...	1966
10848	2161	5115000.0	1.200000e+07	Fantastic Voyage	100.0	Twentieth Century Fox Film Corporation	1966

3854 rows x 7 columns

Q.no.1) which are the movies with the third lowest and third highest budget?

In [261]:

new_1

Out[261]:

	ID	BUDGET	REVENUE	ORIGINAL_TITLE	RUNTIME	PRODUCTION_COMPANIES	RELEASE_YEAR
0	135397	150000000.0	1.513529e+09	Jurassic World	124.0	Universal Studios Amblin Entertainment Legenda...	2015
1	76341	150000000.0	3.784364e+08	Mad Max: Fury Road	120.0	Village Roadshow Pictures Kennedy Miller Produ...	2015
2	262500	110000000.0	2.952382e+08	Insurgent	119.0	Summit Entertainment Mandeville Films Red Wago...	2015
3	140607	200000000.0	2.068178e+09	Star Wars: The Force Awakens	136.0	Lucasfilm Truenorth Productions Bad Robot	2015
4	168259	190000000.0	1.506249e+09	Furious 7	137.0	Universal Pictures Original Film Media Rights ...	2015
...
10822	396	7500000.0	3.373669e+07	Who's Afraid of Virginia Woolf?	131.0	Chenault Productions	1966
10828	5780	3000000.0	1.300000e+07	Torn Curtain	128.0	Universal Pictures	1966
10829	6644	4653000.0	6.000000e+06	El Dorado	120.0	Paramount Pictures Laurel Productions	1966

10835	5923	12000000.0	2.000000e+07	The Sand Pebbles	182.0	Twentieth Century Fox Film Corporation	1966
10848	2161	5115000.0	1.200000e+07	Fantastic Voyage	100.0	Twentieth Century Fox Film Corporation	1966

3854 rows x 7 columns

In [262]:

```
drop_cols=['ID', 'REVENUE', 'RUNTIME', 'PRODUCTION_COMPANIES', 'RELEASE_YEAR']
m1=new_1.drop(drop_cols,axis=1)
```

In [263]:

```
m1
```

Out[263]:

	BUDGET	ORIGINAL_TITLE
0	150000000.0	Jurassic World
1	150000000.0	Mad Max: Fury Road
2	110000000.0	Insurgent
3	200000000.0	Star Wars: The Force Awakens
4	190000000.0	Furious 7
...
10822	7500000.0	Who's Afraid of Virginia Woolf?
10828	3000000.0	Torn Curtain
10829	4653000.0	El Dorado
10835	12000000.0	The Sand Pebbles
10848	5115000.0	Fantastic Voyage

3854 rows x 2 columns

In [264]:

```
m1.BUDGET.sort_values()
```

Out[264]:

3581	1.0
2618	1.0
8944	2.0
10050	3.0
2398	3.0
...	
6570	270000000.0
14	280000000.0
7387	300000000.0
3375	380000000.0
2244	425000000.0

Name: BUDGET, Length: 3854, dtype: float64

In [265]:

```
m1_1=m1.BUDGET.sort_values()
```

In [266]:

```
m1_1
```

Out[266]:

3581	1.0
2618	1.0

```
8944      2.0
10050     3.0
2398      3.0
...
6570     270000000.0
14       280000000.0
7387     300000000.0
3375     380000000.0
2244     425000000.0
Name: BUDGET, Length: 3854, dtype: float64
```

In [267]:

```
m1.sort_values('BUDGET', ascending=True).head()
```

Out[267]:

BUDGET		ORIGINAL_TITLE
3581	1.0	Love, Wedding, Marriage
2618	1.0	Lost & Found
8944	2.0	Death Wish 2
10050	3.0	Tales from the Darkside: The Movie
2398	3.0	Boy

In [268]:

```
m1.sort_values('BUDGET', ascending=False).head()
```

Out[268]:

BUDGET		ORIGINAL_TITLE
2244	425000000.0	The Warrior's Way
3375	380000000.0	Pirates of the Caribbean: On Stranger Tides
7387	300000000.0	Pirates of the Caribbean: At World's End
14	280000000.0	Avengers: Age of Ultron
6570	270000000.0	Superman Returns

In [269]:

```
m1_1=m1.sort_values('BUDGET', ascending=True).head()
```

In [270]:

```
m1_2=m1.sort_values('BUDGET', ascending=False).head()
```

In [271]:

```
m1_1
```

Out[271]:

BUDGET		ORIGINAL_TITLE
3581	1.0	Love, Wedding, Marriage
2618	1.0	Lost & Found
8944	2.0	Death Wish 2
10050	3.0	Tales from the Darkside: The Movie
2398	3.0	Boy

In [272]:

```
m1_2
```

```
Out[272]:
```

	BUDGET	ORIGINAL_TITLE
2244	425000000.0	The Warrior's Way
3375	380000000.0	Pirates of the Caribbean: On Stranger Tides
7387	300000000.0	Pirates of the Caribbean: At World's End
14	280000000.0	Avengers: Age of Ultron
6570	270000000.0	Superman Returns

MOVIE WITH THE THIRD LOWEST BUDGET IS AS FOLLOWS

```
In [273]:
```

```
print(m1_1.iloc[[2]])
```

```
      BUDGET ORIGINAL_TITLE
8944      2.0    Death Wish 2
```

MOVIE WITH THE THIRD HIGHEST BUDGET IS AS FOLLOWS

```
In [274]:
```

```
print(m1_2.iloc[[2]])
```

```
      BUDGET ORIGINAL_TITLE
7387 300000000.0 Pirates of the Caribbean: At World's End
```

Movies with the third lowest and third highest budget

```
In [275]:
```

```
MOVIE_WITH_THE_THIRD_LOWEST_BUDGET_IS_AS_FOLLOWS=print(m1_1.iloc[[2]])
```

```
      BUDGET ORIGINAL_TITLE
8944      2.0    Death Wish 2
```

```
In [276]:
```

```
MOVIE_WITH_THE_THIRD_HIGHEST_BUDGET_IS_AS_FOLLOWS=print(m1_2.iloc[[2]])
```

```
      BUDGET ORIGINAL_TITLE
7387 300000000.0 Pirates of the Caribbean: At World's End
```

Q.no.2)Which are the movies with most and least earned revenue?

```
In [277]:
```

```
drop_cols=['ID','BUDGET','RUNTIME','PRODUCTION_COMPANIES','RELEASE_YEAR']
m2=new_1.drop(drop_cols,axis=1)
```

```
In [278]:
```

m2

Out[278]:

	REVENUE	ORIGINAL_TITLE
0	1.513529e+09	Jurassic World
1	3.784364e+08	Mad Max: Fury Road
2	2.952382e+08	Insurgent
3	2.068178e+09	Star Wars: The Force Awakens
4	1.506249e+09	Furious 7
...
10822	3.373669e+07	Who's Afraid of Virginia Woolf?
10828	1.300000e+07	Torn Curtain
10829	6.000000e+06	El Dorado
10835	2.000000e+07	The Sand Pebbles
10848	1.200000e+07	Fantastic Voyage

3854 rows x 2 columns

In [279]:

```
m2.sort_values('REVENUE',ascending=True).head()
```

Out[279]:

	REVENUE	ORIGINAL_TITLE
8142	2.0	Mallrats
5067	2.0	Shattered Glass
3239	3.0	Dr. Horrible's Sing-Along Blog
8523	5.0	Bordello of Blood
5162	5.0	Kid's Story

In [280]:

```
m2.sort_values('REVENUE',ascending=False).head()
```

Out[280]:

	REVENUE	ORIGINAL_TITLE
1386	2.781506e+09	Avatar
3	2.068178e+09	Star Wars: The Force Awakens
5231	1.845034e+09	Titanic
4361	1.519558e+09	The Avengers
0	1.513529e+09	Jurassic World

In [281]:

```
m2_1=m2.sort_values('REVENUE',ascending=True).head()
```

In [282]:

```
m2_2=m2.sort_values('REVENUE',ascending=False).head()
```

In [283]:

m2_1

Out [283]:

REVENUE		ORIGINAL_TITLE
8142	2.0	Mallrats
5067	2.0	Shattered Glass
3239	3.0	Dr. Horrible's Sing-Along Blog
8523	5.0	Bordello of Blood
5162	5.0	Kid's Story

In [284]:

```
m2_2
```

Out [284]:

REVENUE		ORIGINAL_TITLE
1386	2.781506e+09	Avatar
3	2.068178e+09	Star Wars: The Force Awakens
5231	1.845034e+09	Titanic
4361	1.519558e+09	The Avengers
0	1.513529e+09	Jurassic World

MOVIE WITH LEAST EARNED REVENUE IS AS FOLLOWS

In [285]:

```
print(m2_1.iloc[[0]])
```

	REVENUE	ORIGINAL_TITLE
8142	2.0	Mallrats

MOVIE WITH MOST EARNED REVENUE IS AS FOLLOWS

In [286]:

```
print(m2_2.iloc[[0]])
```

	REVENUE	ORIGINAL_TITLE
1386	2.781506e+09	Avatar

Movies with most and least earned revenue

In [287]:

```
MOVIE_WITH_LEAST_EARNED_REVENUE_IS_AS_FOLLOWS=print(m2_1.iloc[[0]])
```

	REVENUE	ORIGINAL_TITLE
8142	2.0	Mallrats

In [288]:

```
MOVIE_WITH_MOST_EARNED_REVENUE_IS_AS_FOLLOWS=print(m2_2.iloc[[0]])
```

	REVENUE	ORIGINAL_TITLE
1386	2.781506e+09	Avatar

Q.no.3)What is the average runtime of movies in the year

question, what is the average runtime of movies in the year 2006?

In [289]:

```
drop_cols=['ID', 'REVENUE', 'BUDGET', 'PRODUCTION_COMPANIES']
m3=new_1.drop(drop_cols,axis=1)
```

In [290]:

m3

Out[290]:

	ORIGINAL_TITLE	RUNTIME	RELEASE_YEAR
0	Jurassic World	124.0	2015
1	Mad Max: Fury Road	120.0	2015
2	Insurgent	119.0	2015
3	Star Wars: The Force Awakens	136.0	2015
4	Furious 7	137.0	2015
...
10822	Who's Afraid of Virginia Woolf?	131.0	1966
10828	Torn Curtain	128.0	1966
10829	El Dorado	120.0	1966
10835	The Sand Pebbles	182.0	1966
10848	Fantastic Voyage	100.0	1966

3854 rows x 3 columns

In [291]:

```
filtered_data = m3[m3["RELEASE_YEAR"]==2006]
```

In [292]:

filtered_data

Out[292]:

	ORIGINAL_TITLE	RUNTIME	RELEASE_YEAR
6554	Underworld: Evolution	106.0	2006
6555	Pirates of the Caribbean: Dead Man's Chest	151.0	2006
6556	Cars	117.0	2006
6557	Casino Royale	144.0	2006
6558	The Da Vinci Code	149.0	2006
...
6914	Trailer Park Boys: The Movie	95.0	2006
6922	First Snow	101.0	2006
6925	For Your Consideration	86.0	2006
6945	The Foot Fist Way	85.0	2006
6948	Special	81.0	2006

169 rows x 3 columns

In [293]:

```
AVERAGE_RUNTIME_OF_MOVIES_RELEASED_IN_2006=filtered_data.groupby('RELEASE_YEAR').mean()
```

In [294]:

```
AVERAGE_RUNTIME_OF_MOVIES_RELEASED_IN_2006
```

Out[294]:

RUNTIME	
RELEASE_YEAR	
2006	108.189349

Average runtime of movies in the year 2006 is as follows

In [295]:

```
AVERAGE_RUNTIME_OF_MOVIES_RELEASED_IN_2006
```

Out[295]:

RUNTIME	
RELEASE_YEAR	
2006	108.189349

Q.no.4)Name any 3 production companies which have invested money in worse revenue movies?

In [296]:

```
drop_cols=['ID','BUDGET','RUNTIME','RELEASE_YEAR']
m4=new_1.drop(drop_cols,axis=1)
```

In [297]:

```
m4
```

Out[297]:

	REVENUE	ORIGINAL_TITLE	PRODUCTION_COMPANIES
0	1.513529e+09	Jurassic World	Universal Studios Amblin Entertainment Legenda...
1	3.784364e+08	Mad Max: Fury Road	Village Roadshow Pictures Kennedy Miller Produ...
2	2.952382e+08	Insurgent	Summit Entertainment Mandeville Films Red Wago...
3	2.068178e+09	Star Wars: The Force Awakens	Lucasfilm Truenorth Productions Bad Robot
4	1.506249e+09	Furious 7	Universal Pictures Original Film Media Rights ...
...
10822	3.373669e+07	Who's Afraid of Virginia Woolf?	Chenault Productions
10828	1.300000e+07	Torn Curtain	Universal Pictures
10829	6.000000e+06	El Dorado	Paramount Pictures Laurel Productions
10835	2.000000e+07	The Sand Pebbles	Twentieth Century Fox Film Corporation Solar P...
10848	1.200000e+07	Fantastic Voyage	Twentieth Century Fox Film Corporation

3854 rows x 3 columns

In [298]:

```
a series = (m4 != 0).any(axis=1)
```


In [299]:

```
a_series
```

Out[299]:

```
0      True
1      True
2      True
3      True
4      True
...
10822   True
10828   True
10829   True
10835   True
10848   True
Length: 3854, dtype: bool
```

In [300]:

```
m4.sort_values('REVENUE',ascending=True).head(4)
```

Out[300]:

REVENUE		ORIGINAL_TITLE	PRODUCTION_COMPANIES
8142	2.0	Mallrats	Gramercy Pictures Alphaville Films View Askew ...
5067	2.0	Shattered Glass	Lions Gate Films Cruise/Wagner Productions Bau...
3239	3.0	Dr. Horrible's Sing-Along Blog	0
8523	5.0	Bordello of Blood	Tales From The Crypt Holdings Universal City S...

In [301]:

```
m4_1=m4.sort_values('REVENUE',ascending=True).head(4)
```

In [302]:

```
m4_1
```

Out[302]:

REVENUE		ORIGINAL_TITLE	PRODUCTION_COMPANIES
8142	2.0	Mallrats	Gramercy Pictures Alphaville Films View Askew ...
5067	2.0	Shattered Glass	Lions Gate Films Cruise/Wagner Productions Bau...
3239	3.0	Dr. Horrible's Sing-Along Blog	0
8523	5.0	Bordello of Blood	Tales From The Crypt Holdings Universal City S...

In [303]:

```
m4_1
```

Out[303]:

REVENUE		ORIGINAL_TITLE	PRODUCTION_COMPANIES
8142	2.0	Mallrats	Gramercy Pictures Alphaville Films View Askew ...
5067	2.0	Shattered Glass	Lions Gate Films Cruise/Wagner Productions Bau...
3239	3.0	Dr. Horrible's Sing-Along Blog	0
8523	5.0	Bordello of Blood	Tales From The Crypt Holdings Universal City S...

In [304]:

```
print(m4_1.PRODUCTION_COMPANIES.to_string(index=False))
```

```
Gramercy Pictures|Alphaville Films|View Askew ...  
Lions Gate Films|Cruise/Wagner Productions|Bau...  
0  
Tales From The Crypt Holdings|Universal City S...
```

3 production companies which have invested money in worse revenue movies are as follows-

In [305]:

```
print(m4_1.PRODUCTION_COMPANIES.to_string(index=False))
```

```
Gramercy Pictures|Alphaville Films|View Askew ...  
Lions Gate Films|Cruise/Wagner Productions|Bau...  
0  
Tales From The Crypt Holdings|Universal City S...
```