

```
import pandas as pd
df = pd.read_csv('https://raw.githubusercontent.com/psabhay2003/BCGX-GenAI/refs/heads/main/10K.csv')
df
```

	Company	Year	Total Revenue	Net Income	Total Assets	Total Liabilities	Cash Flow
0	Microsoft	2024	2.451220e+11	8.813600e+10	5.121630e+11	2.436860e+11	1.185480e+11
1	Microsoft	2023	2.119150e+11	7.231600e+10	4.119760e+11	2.057530e+11	8.758200e+10
2	Microsoft	2022	1.982700e+11	7.273800e+10	3.648400e+11	1.982980e+11	8.903500e+10
3	Tesla	2024	9.769000e+10	7.153000e+09	1.220700e+11	4.839000e+10	1.492300e+10
4	Tesla	2023	9.677300e+10	1.497400e+10	1.066180e+11	4.300900e+10	1.325600e+10
5	Tesla	2022	8.146200e+10	1.258700e+10	8.233800e+10	3.644000e+10	1.472400e+10
6	Apple	2024	3.910350e+11	9.373600e+10	3.649800e+11	3.080300e+11	1.182540e+11
7	Apple	2023	3.832850e+11	9.699500e+10	3.525830e+11	2.904370e+11	1.105430e+11
8	Apple	2022	3.943280e+11	9.980300e+10	3.527550e+11	3.020830e+11	1.221510e+11

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```
# Convert all numerical columns to standard number format (removing scientific notation)
pd.options.display.float_format = '{:,.0f}'.format
df
```

	Company	Year	Total Revenue	Net Income	Total Assets	Total Liabilities	Cash Flow
0	Microsoft	2024	245122000000	88136000000	512163000000	243686000000	118548000000
1	Microsoft	2023	211915000000	72316000000	411976000000	205753000000	87582000000
2	Microsoft	2022	198270000000	72738000000	364840000000	198298000000	89035000000
3	Tesla	2024	97690000000	7153000000	122070000000	48390000000	14923000000
4	Tesla	2023	96773000000	14974000000	106618000000	43009000000	13256000000
5	Tesla	2022	81462000000	12587000000	82338000000	36440000000	14724000000
6	Apple	2024	391035000000	93736000000	364980000000	308030000000	118254000000
7	Apple	2023	383285000000	96995000000	352583000000	290437000000	110543000000
8	Apple	2022	394328000000	99803000000	352755000000	302083000000	122151000000

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```
df.describe()
```

	Year	Total Revenue	Net Income	Total Assets	Total Liabilities	Cash Flow
count	9	9	9	9	9	9
mean	2023	233320000000	62048666667	296702555556	186236222222	76557333333
std	1	130006968331	39094383970	153240424606	114506220759	48272769855
min	2022	81462000000	7153000000	82338000000	36440000000	13256000000
25%	2022	97690000000	14974000000	122070000000	48390000000	14923000000
50%	2023	211915000000	72738000000	352755000000	205753000000	89035000000
75%	2024	383285000000	93736000000	364980000000	290437000000	118254000000
max	2024	394328000000	99803000000	512163000000	308030000000	122151000000

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9 entries, 0 to 8
Data columns (total 7 columns):
#   Column              Non-Null Count  Dtype
---  -
0   Company              9 non-null      object
1   Year                 9 non-null      int64
2   Total Revenue        9 non-null      float64
3   Net Income           9 non-null      float64
4   Total Assets         9 non-null      float64
5   Total Liabilities    9 non-null      float64
6   Cash Flow            9 non-null      float64
```

dtypes: float64(5), int64(1), object(1)
memory usage: 636.0+ bytes

```
df = df.sort_values(['Company', 'Year'], ascending=True).groupby('Company').head()  
df
```

	Company	Year	Total Revenue	Net Income	Total Assets	Total Liabilities	Cash Flow	
8	Apple	2022	394328000000	99803000000	352755000000	302083000000	122151000000	
7	Apple	2023	383285000000	96995000000	352583000000	290437000000	110543000000	
6	Apple	2024	391035000000	93736000000	364980000000	308030000000	118254000000	
2	Microsoft	2022	198270000000	72738000000	364840000000	198298000000	89035000000	
1	Microsoft	2023	211915000000	72316000000	411976000000	205753000000	87582000000	
0	Microsoft	2024	245122000000	88136000000	512163000000	243686000000	118548000000	
5	Tesla	2022	81462000000	12587000000	82338000000	36440000000	14724000000	
4	Tesla	2023	96773000000	14974000000	106618000000	43009000000	13256000000	
3	Tesla	2024	97690000000	7153000000	122070000000	48390000000	14923000000	

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```
revenue = pd.DataFrame(columns=['Company', 'Year', 'Total Revenue'])  
revenue['Company'] = df['Company']  
revenue['Year'] = df['Year']  
revenue['Total Revenue'] = df['Total Revenue']  
revenue['Revenue Growth (%)'] = df.groupby(['Company'])['Total Revenue'].pct_change() * 100  
revenue  
#Microsoft and Tesla reported a net positive revenue growth whereas Apple reported a dip of 1% in revenue in the three fiscal years.  
#Microsoft reported more than double revenue growth from 2023-24 whereas Tesla reported a massive revenue growth of 19% in 2023.
```

	Company	Year	Total Revenue	Revenue Growth (%)	
8	Apple	2022	394328000000	NaN	
7	Apple	2023	383285000000	-3	
6	Apple	2024	391035000000	2	
2	Microsoft	2022	198270000000	NaN	
1	Microsoft	2023	211915000000	7	
0	Microsoft	2024	245122000000	16	
5	Tesla	2022	81462000000	NaN	
4	Tesla	2023	96773000000	19	
3	Tesla	2024	97690000000	1	

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```
income = pd.DataFrame(columns=['Company', 'Year', 'Net Income', 'Net Income Growth (%)'])  
income['Company'] = df['Company']  
income['Year'] = df['Year']  
income['Net Income'] = df['Net Income']  
income['Net Income Growth (%)'] = df.groupby(['Company'])['Net Income'].pct_change() * 100  
income  
#Apple reported a net decrease of 6% in net income from 2022-24, Microsoft reported a net increase of 21% in net income from 2022-24 sh  
#Tesla reported a massive dip of a net 33% decrease in income from 2022-24.
```

	Company	Year	Net Income	Net Income Growth (%)	
8	Apple	2022	99803000000	NaN	
7	Apple	2023	96995000000	-3	
6	Apple	2024	93736000000	-3	
2	Microsoft	2022	72738000000	NaN	
1	Microsoft	2023	72316000000	-1	
0	Microsoft	2024	88136000000	22	
5	Tesla	2022	12587000000	NaN	
4	Tesla	2023	14974000000	19	
3	Tesla	2024	7153000000	-52	

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```
assets = pd.DataFrame(columns=['Company','Year','Total Assets','Total Assets Growth (%)'])
assets['Company'] = df['Company']
assets['Year'] = df['Year']
assets['Total Assets'] = df['Total Assets']
assets['Total Assets Growth (%)'] = df.groupby(['Company'])['Total Assets'].pct_change() * 100
assets
#Apple, Microsoft, and Tesla reported a net increase of 4%, 37%, 43% respectively in Total Assets Growth from 2022-2024.
```



	Company	Year	Total Assets	Total Assets Growth (%)	
8	Apple	2022	352755000000	NaN	
7	Apple	2023	352583000000	-0	
6	Apple	2024	364980000000	4	
2	Microsoft	2022	364840000000	NaN	
1	Microsoft	2023	411976000000	13	
0	Microsoft	2024	512163000000	24	
5	Tesla	2022	82338000000	NaN	
4	Tesla	2023	106618000000	29	
3	Tesla	2024	122070000000	14	

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```
liability = pd.DataFrame(columns=['Company','Year','Total Liabilities','Total Liabilities Growth (%)'])
liability['Company'] = df['Company']
liability['Year'] = df['Year']
liability['Total Liabilities'] = df['Total Liabilities']
liability['Total Liabilities Growth (%)'] = df.groupby(['Company'])['Total Liabilities'].pct_change() * 100
liability
#The total Liabilities Growth showed an increasing trend for all three companies from 2022 to 2024.
#The growth percentage reports a massive increase of 18% in Total Liabilities of Microsoft for the fiscal year 2024, whereas a decrease
```







	Company	Year	Total Liabilities	Total Liabilities Growth (%)	
8	Apple	2022	302083000000	NaN	
7	Apple	2023	290437000000	-4	
6	Apple	2024	308030000000	6	
2	Microsoft	2022	198298000000	NaN	
1	Microsoft	2023	205753000000	4	
0	Microsoft	2024	243686000000	18	
5	Tesla	2022	36440000000	NaN	
4	Tesla	2023	43009000000	18	
3	Tesla	2024	48390000000	13	

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```
cashflow = pd.DataFrame(columns=['Company','Year','Cash Flow','Cash Flow Growth (%)'])
cashflow['Company'] = df['Company']
cashflow['Year'] = df['Year']
cashflow['Cash Flow'] = df['Cash Flow']
cashflow['Cash Flow Growth (%)'] = df.groupby(['Company'])['Cash Flow'].pct_change() * 100
cashflow
#The operational cashflow rate shows a decreasing trend for all three companies during the fiscal year 2022-23, with Microsoft reporting
#Although it also shows an increasing trend for all three companies during the fiscal year 2023-24, with Microsoft reporting the highest
```



	Company	Year	Cash Flow	Cash Flow Growth (%)	
8	Apple	2022	122151000000	NaN	
7	Apple	2023	110543000000	-10	
6	Apple	2024	118254000000	7	
2	Microsoft	2022	89035000000	NaN	
1	Microsoft	2023	87582000000	-2	
0	Microsoft	2024	118548000000	35	
5	Tesla	2022	14724000000	NaN	
4	Tesla	2023	13256000000	-10	
3	Tesla	2024	14923000000	13	

Next steps:

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