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Basic Analysis using Numpy and Pandas

Import Libraries

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

Importing Dataset

In [2]:
```
df=pd.read_csv("6_Salesworkload1.csv")
df
```

Out[2]:

	MonthYear	Time index	Country	StoreID	City	Dept_ID	Dept. Name	HoursOwn	HoursLea
0	10.2016	1.0	United Kingdom	88253.0	London (I)	1.0	Dry	3184.764	
1	10.2016	1.0	United Kingdom	88253.0	London (I)	2.0	Frozen	1582.941	
2	10.2016	1.0	United Kingdom	88253.0	London (I)	3.0	other	47.205	
3	10.2016	1.0	United Kingdom	88253.0	London (I)	4.0	Fish	1623.852	
4	10.2016	1.0	United Kingdom	88253.0	London (I)	5.0	Fruits & Vegetables	1759.173	
...	...	...	...	...	...	...	...	...	
7653	06.2017	9.0	Sweden	29650.0	Gothenburg	12.0	Checkout	6322.323	
7654	06.2017	9.0	Sweden	29650.0	Gothenburg	16.0	Customer Services	4270.479	
7655	06.2017	9.0	Sweden	29650.0	Gothenburg	11.0	Delivery	0	
7656	06.2017	9.0	Sweden	29650.0	Gothenburg	17.0	others	2224.929	
7657	06.2017	9.0	Sweden	29650.0	Gothenburg	18.0	all	39652.2	

7658 rows × 14 columns

To display first 10 rows

In [3]:
```
df.head(10)
```

Out[3]:

	MonthYear	Time index	Country	StoreID	City	Dept_ID	Dept. Name	HoursOwn	HoursLease	
0	10.2016	1.0	United Kingdom	88253.0	London (I)	1.0	Dry	3184.764	0.0	3
1	10.2016	1.0	United Kingdom	88253.0	London (I)	2.0	Frozen	1582.941	0.0	
2	10.2016	1.0	United Kingdom	88253.0	London (I)	3.0	other	47.205	0.0	4
3	10.2016	1.0	United Kingdom	88253.0	London (I)	4.0	Fish	1623.852	0.0	3
4	10.2016	1.0	United Kingdom	88253.0	London (I)	5.0	Fruits & Vegetables	1759.173	0.0	1
5	10.2016	1.0	United Kingdom	88253.0	London (I)	6.0	Meat	8270.316	0.0	17
6	10.2016	1.0	United Kingdom	88253.0	London (I)	13.0	Food	16468.251	0.0	31
7	10.2016	1.0	United Kingdom	88253.0	London (I)	7.0	Clothing	4698.471	0.0	2
8	10.2016	1.0	United Kingdom	88253.0	London (I)	8.0	Household	1183.272	0.0	
9	10.2016	1.0	United Kingdom	88253.0	London (I)	9.0	Hardware	2029.815	0.0	

To display last 5 rows

In [4]:
```
df.tail(5)
```

Out[4]:

	MonthYear	Time index	Country	StoreID	City	Dept_ID	Dept. Name	HoursOwn	HoursLeas
7653	06.2017	9.0	Sweden	29650.0	Gothenburg	12.0	Checkout	6322.323	0.
7654	06.2017	9.0	Sweden	29650.0	Gothenburg	16.0	Customer Services	4270.479	0.
7655	06.2017	9.0	Sweden	29650.0	Gothenburg	11.0	Delivery	0	0.
7656	06.2017	9.0	Sweden	29650.0	Gothenburg	17.0	others	2224.929	0.
7657	06.2017	9.0	Sweden	29650.0	Gothenburg	18.0	all	39652.2	0.

Satistical Summary

In [5]:
```
df.describe()
```

Out[5]:

	Time index	StoreID	Dept_ID	HoursLease	Sales units	Turnover	Custom
count	7650.000000	7650.000000	7650.000000	7650.000000	7.650000e+03	7.650000e+03	
mean	5.000000	61995.220000	9.470588	22.036078	1.076471e+06	3.721393e+06	N
std	2.582158	29924.581631	5.337429	133.299513	1.728113e+06	6.003380e+06	N
min	1.000000	12227.000000	1.000000	0.000000	0.000000e+00	0.000000e+00	N
25%	3.000000	29650.000000	5.000000	0.000000	5.457125e+04	2.726798e+05	N
50%	5.000000	75400.500000	9.000000	0.000000	2.932300e+05	9.319575e+05	N
75%	7.000000	87703.000000	14.000000	0.000000	9.175075e+05	3.264432e+06	N
max	9.000000	98422.000000	18.000000	3984.000000	1.124296e+07	4.271739e+07	N

To find shape and size

In [6]:
```
df.shape
```

Out[6]:
```
(7658, 14)
```

In [7]:
```
df.size
```

Out[7]:
```
107212
```

To fill the null values

In [8]:
```
df.isna()
```

Out[8]:

	MonthYear	Time index	Country	StoreID	City	Dept_ID	Dept. Name	HoursOwn	HoursLease	Sales units
0	False	False	False	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False
...	...	...	...	...	...	...	...	...	...	...
7653	False	False	False	False	False	False	False	False	False	False
7654	False	False	False	False	False	False	False	False	False	False
7655	False	False	False	False	False	False	False	False	False	False
7656	False	False	False	False	False	False	False	False	False	False
7657	False	False	False	False	False	False	False	False	False	False

7658 rows × 14 columns

To fill missing values

In [9]:
```
df.dropna()
```

Out[9]:

	MonthYear	Time index	Country	StoreID	City	Dept_ID	Dept. Name	HoursOwn	HoursLease	Sales units	Turn

coloumns

In [10]:
```
df.columns
```

Out[10]:
```
Index(['MonthYear', 'Time index', 'Country', 'StoreID', 'City', 'Dept_ID',
       'Dept. Name', 'HoursOwn', 'HoursLease', 'Sales units', 'Turnover',
       'Customer', 'Area (m2)', 'Opening hours'],
      dtype='object')
```

to print a particular coloumn

In [11]:
```
data=df[['MonthYear', 'Time index']]
data
```

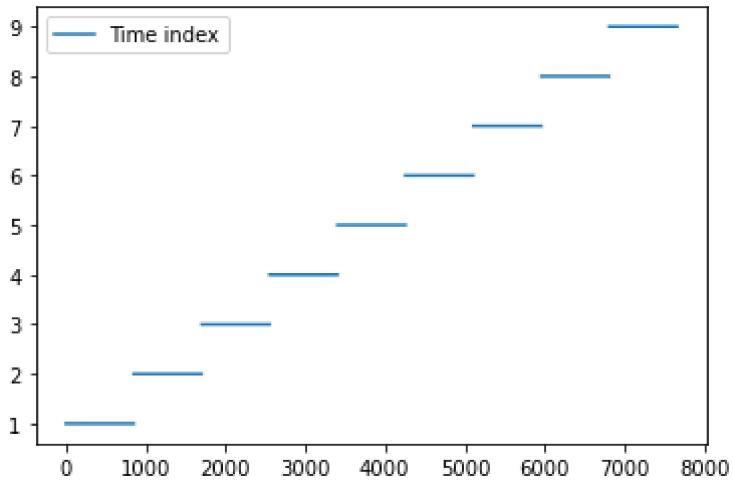
Out[11]:

	MonthYear	Time index
0	10.2016	1.0
1	10.2016	1.0
2	10.2016	1.0
3	10.2016	1.0
4	10.2016	1.0
...	...	...
7653	06.2017	9.0
7654	06.2017	9.0
7655	06.2017	9.0
7656	06.2017	9.0
7657	06.2017	9.0

line plot

In [12]:
```
data.plot.line()
```

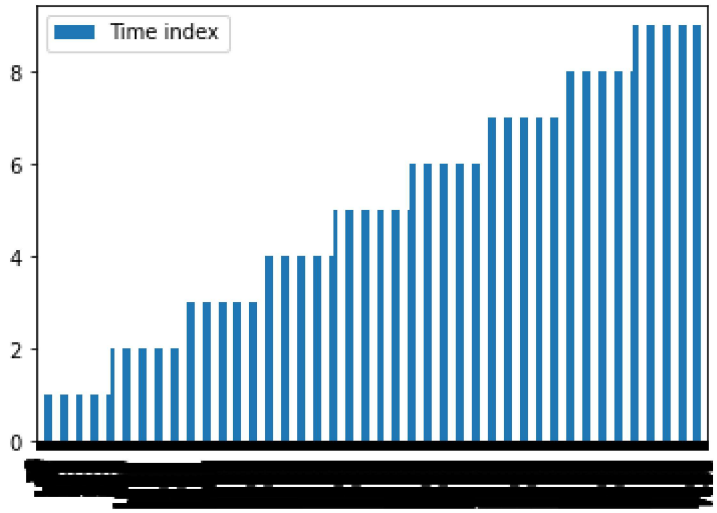
Out[12]: <AxesSubplot:>



bar plot

In [13]:
```
data.plot.bar()
```

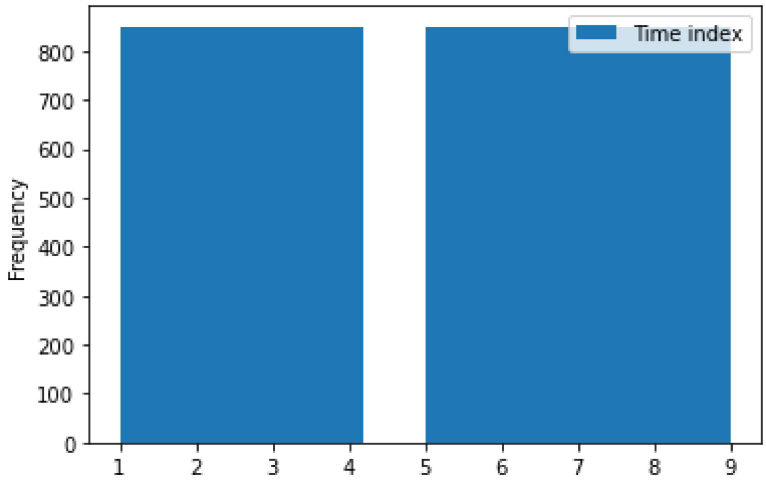
Out[13]: <AxesSubplot:>



hist plot

In [14]:
```
data.plot.hist()
```

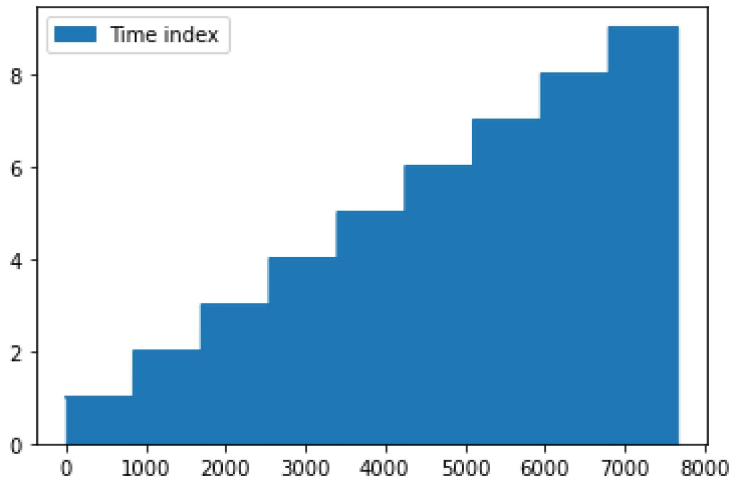
Out[14]: <AxesSubplot:ylabel='Frequency'>



Area plot

In [15]:
```
data.plot.area()
```

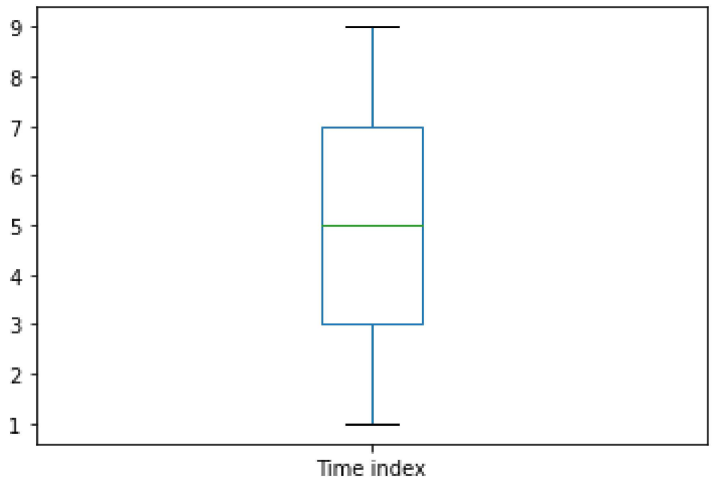
Out[15]: <AxesSubplot:>



Box plot

In [16]:
```
data.plot.box()
```

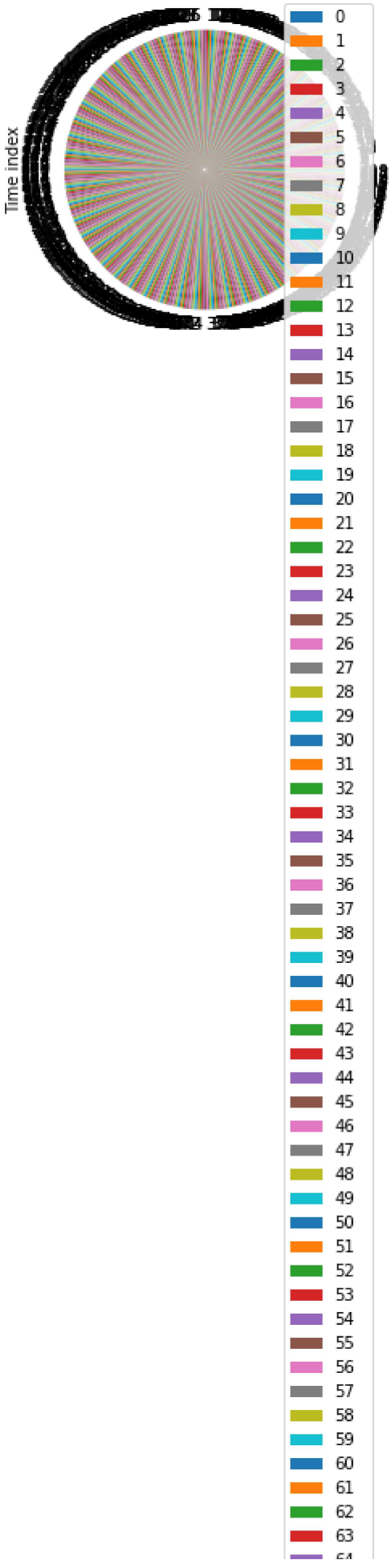
Out[16]: <AxesSubplot:>



pie plot

In [22]:
```
a=data[0:500]
a.plot.pie(y='Time index')
```

Out[22]:
```
<AxesSubplot:ylabel='Time index'>
```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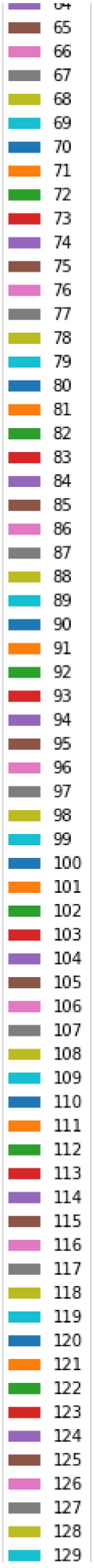
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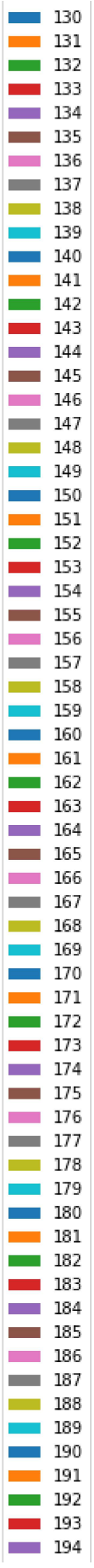
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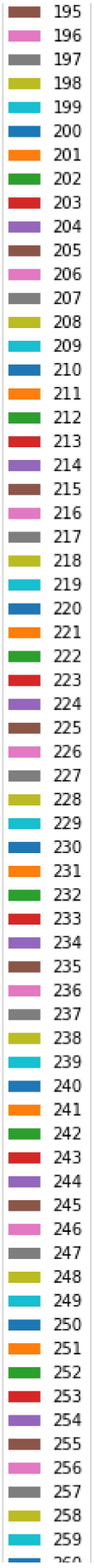
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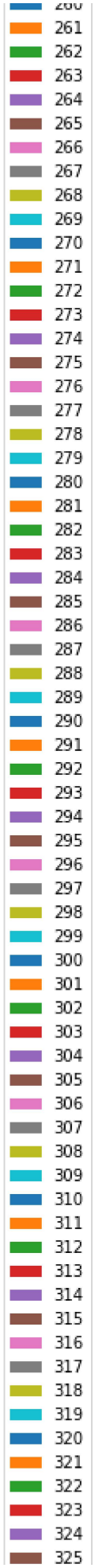
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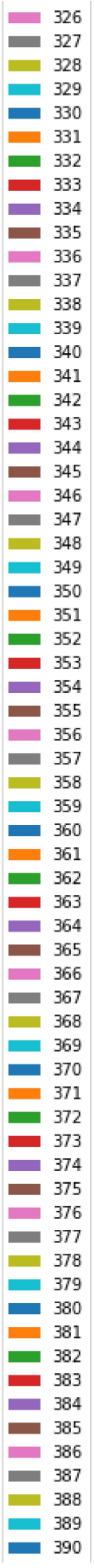
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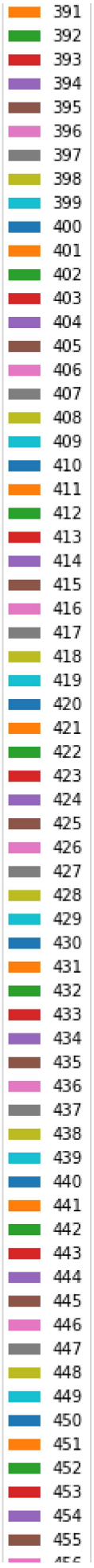
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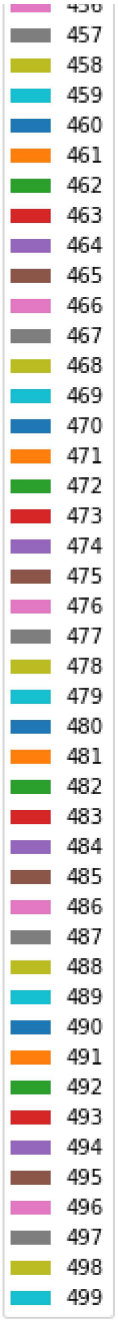
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In [23]:
```
data.plot.scatter(x='MonthYear',y= 'Time index')
```

Out[23]:
```
<AxesSubplot:xlabel='MonthYear', ylabel='Time index'>
```