

```
In [43]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
In [44]: df = pd.read_csv("FDI data.csv")
```

```
In [45]: df.head()
```

Out[45]:

	Sector	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
0	METALLURGICAL INDUSTRIES	22.69	14.14	36.61	8.11	200.38	149.13	169.94	1175.75	959.94
1	MINING	1.32	6.52	10.06	23.48	9.92	7.40	6.62	444.36	34.16
2	POWER	89.42	757.44	59.11	27.09	43.37	72.69	157.15	988.68	907.66
3	NON-CONVENTIONAL ENERGY	0.00	0.00	1.70	4.14	1.27	1.35	2.44	58.82	125.88
4	COAL PRODUCTION	0.00	0.00	0.00	0.04	0.00	9.14	1.30	14.08	0.22

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```
In [46]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 63 entries, 0 to 62
Data columns (total 18 columns):
 #   Column      Non-Null Count  Dtype  
--- 
 0   Sector       63 non-null    object  
 1   2000-01     63 non-null    float64 
 2   2001-02     63 non-null    float64 
 3   2002-03     63 non-null    float64 
 4   2003-04     63 non-null    float64 
 5   2004-05     63 non-null    float64 
 6   2005-06     63 non-null    float64 
 7   2006-07     63 non-null    float64 
 8   2007-08     63 non-null    float64 
 9   2008-09     63 non-null    float64 
 10  2009-10     63 non-null    float64 
 11  2010-11     63 non-null    float64 
 12  2011-12     63 non-null    float64 
 13  2012-13     63 non-null    float64 
 14  2013-14     63 non-null    float64 
 15  2014-15     63 non-null    float64 
 16  2015-16     63 non-null    float64 
 17  2016-17     63 non-null    float64 
dtypes: float64(17), object(1)
memory usage: 9.0+ KB
```

In [47]: `df.describe()`

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-0
count	63.000000	63.000000	63.000000	63.000000	63.000000	63.000000	63.000000
mean	37.757302	63.931587	42.925714	34.727778	51.090317	87.932540	198.281900
std	112.227860	157.878737	86.606439	67.653735	101.934873	206.436967	686.783110
min	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
25%	0.000000	0.000000	0.200000	0.215000	0.715000	1.230000	4.160000
50%	4.030000	5.070000	11.010000	6.370000	9.090000	22.620000	25.820000
75%	23.510000	44.830000	36.555000	38.660000	43.205000	63.855000	108.325000
max	832.070000	873.230000	419.960000	368.320000	527.900000	1359.970000	4713.780000

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In [48]: `df.columns`

```
Out[48]: Index(['Sector', '2000-01', '2001-02', '2002-03', '2003-04', '2004-05',
               '2005-06', '2006-07', '2007-08', '2008-09', '2009-10', '2010-11',
               '2011-12', '2012-13', '2013-14', '2014-15', '2015-16', '2016-17'],
              dtype='object')
```

In [49]: `df.isnull().sum()`

```
Out[49]: Sector      0
2000-01      0
2001-02      0
2002-03      0
2003-04      0
2004-05      0
2005-06      0
2006-07      0
2007-08      0
2008-09      0
2009-10      0
2010-11      0
2011-12      0
2012-13      0
2013-14      0
2014-15      0
2015-16      0
2016-17      0
dtype: int64
```

```
In [50]: Year = ['2000-01', '2001-02', '2002-03', '2003-04', '2004-05',
               '2005-06', '2006-07', '2007-08', '2008-09', '2009-10', '2010-11',
               '2011-12', '2012-13', '2013-14', '2014-15', '2015-16', '2016-17']
Sectors = ['Sector']
```

```
In [51]: #Creating Average Exchange Rate List :- Reference(Rbi website)
Rates = [45.68,47.69,48.39,45.95,44.93,44.27,45.24,40.26,45.99,
        47.44,45.56,47.92,54.40,60.50,61.14,65.46,67.07]
```

```
In [52]: #Creating a function to Convert FDI's value from USD to INR
def multiply_columns(df, col_list, num):
    for col in col_list:
        df[col] = df[col] * Rates[col_list.index(col)]/10
    return df
```

```
In [53]: FDI_InUSD= df.copy()
FDI_02 = multiply_columns(df, Year, Rates)
```

```
In [54]: #FDI INFLOWS (Amount in ₹ Crores)
FDI_02.style.set_caption("FDI INFLOWS (Amount in ₹ Crores)").format(precision=2)
```

Out[54]:

		Sector	2000-01	2001-02	2002-03	2003-04	2004-05	FDI
0	METALLURGICAL INDUSTRIES		103.65	67.43	177.16	37.27	900.31	€ 1.00
1	MINING		6.03	31.09	48.68	107.89	44.57	
2	POWER		408.47	3612.23	286.03	124.48	194.86	€ 1.00
3	NON-CONVENTIONAL ENERGY		0.00	0.00	8.23	19.02	5.71	
4	COAL PRODUCTION		0.00	0.00	0.00	0.18	0.00	
5	PETROLEUM & NATURAL GAS		42.71	1006.59	274.76	370.54	461.79	
6	BOILERS AND STEAM GENERATING PLANTS		0.00	0.00	0.00	0.18	2.43	
7	PRIME MOVER (OTHER THAN ELECTRICAL GENERATORS)		0.00	0.00	0.00	0.00	11.95	
8	ELECTRICAL EQUIPMENTS		364.34	313.61	167.96	336.35	437.62	€ 1.00
9	COMPUTER SOFTWARE & HARDWARE		1043.29	2000.07	1520.61	1692.43	2371.85	€ 60.00
10	ELECTRONICS		38.10	59.47	1431.76	378.21	395.83	€ 1.00
11	TELECOMMUNICATIONS		811.69	4164.43	927.15	397.42	531.66	€ 27.00
12	INFORMATION & BROADCASTING (INCLUDING PRINT MEDIA)		372.29	21.65	176.62	63.04	44.26	€ 2.00
13	AUTOMOBILE INDUSTRY		892.27	1124.34	2032.19	547.22	548.01	€ 6.00
14	AIR TRANSPORT (INCLUDING AIR FREIGHT)		0.00	0.00	18.39	4.32	18.47	
15	SEA TRANSPORT		11.01	94.47	141.88	100.86	166.02	€ 2.00
16	PORTS		0.00	73.82	9.82	534.67	58.59	
17	RAILWAY RELATED COMPONENTS		0.00	0.00	2.71	13.56	48.30	€ 1.00
18	INDUSTRIAL MACHINERY		25.03	152.80	93.88	14.61	39.94	€ 1.00
19	MACHINE TOOLS		6.49	20.55	68.57	250.47	49.60	€ 1.00
20	AGRICULTURAL MACHINERY		16.63	4.96	65.23	218.45	0.00	€ 4.00
21	EARTH-MOVING MACHINERY		0.00	0.52	66.63	0.05	0.45	€ 2.00
22	MISCELLANEOUS MECHANICAL & ENGINEERING INDUSTRIES		203.28	292.82	218.09	104.44	57.65	€ 2.00
23	COMMERCIAL, OFFICE & HOUSEHOLD EQUIPMENTS		55.73	23.23	11.27	47.83	63.49	€ 1.00
24	MEDICAL AND SURGICAL APPLIANCES		24.76	201.97	104.67	9.05	24.04	
25	INDUSTRIAL INSTRUMENTS		4.61	24.18	6.34	1.38	4.85	

	Sector	2000-01	2001-02	2002-03	2003-04	2004-05	
26	SCIENTIFIC INSTRUMENTS	36.86	11.11	0.92	0.09	0.13	
27	MATHEMATICAL,SURVEYING AND DRAWING INSTRUMENTS	0.00	0.00	0.00	0.00	0.00	
28	FERTILIZERS	0.00	0.00	79.26	99.16	60.48	
29	CHEMICALS (OTHER THAN FERTILIZERS)	507.69	416.00	619.97	93.00	311.77	17
30	PHOTOGRAPHIC RAW FILM AND PAPER	0.00	0.00	2.90	1.10	27.68	
31	DYE-STUFFS	4.80	0.86	0.00	1.98	5.30	
32	DRUGS & PHARMACEUTICALS	164.17	371.70	193.90	500.44	1318.07	7
33	TEXTILES (INCLUDING DYED,PRINTED)	9.41	25.18	262.18	42.92	193.38	2
34	PAPER AND PULP (INCLUDING PAPER PRODUCTS)	274.26	79.64	35.62	32.85	12.13	1
35	SUGAR	0.00	0.00	19.21	0.00	13.21	
36	FERMENTATION INDUSTRIES	73.18	52.65	39.05	7.81	624.53	7
37	FOOD PROCESSING INDUSTRIES	208.99	1046.27	178.46	501.87	197.60	1
38	VEGETABLE OILS AND VANASPATI	0.00	0.00	0.00	7.77	40.84	
39	SOAPS, COSMETICS & TOILET PREPARATIONS	0.00	0.00	0.00	0.00	4.00	3
40	RUBBER GOODS	0.46	221.23	79.46	29.27	179.99	1
41	LEATHER,LEATHER GOODS AND PICKERS	44.54	0.95	0.05	34.69	1.98	
42	GLUE AND GELATIN	0.00	4.48	25.26	0.00	0.00	
43	GLASS	154.72	39.92	217.66	24.08	37.56	
44	CERAMICS	18.41	3.72	1.02	6.75	120.37	
45	CEMENT AND GYPSUM PRODUCTS	309.34	667.18	102.01	44.02	0.72	20
46	TIMBER PRODUCTS	0.00	0.24	0.19	0.51	0.31	
47	DEFENCE INDUSTRIES	0.00	0.00	0.00	0.00	0.22	
48	CONSULTANCY SERVICES	19.41	315.80	124.36	212.29	1134.12	2
49	SERVICES SECTOR (Fin.,Banking,Insurance,Non Fin/Business,Outsourcing,R&D,Courier,Tech. Testing and Analysis, Other)	326.06	896.33	1433.99	1245.93	2049.48	24
50	HOSPITAL & DIAGNOSTIC CENTRES	0.00	33.05	140.96	110.65	117.67	1
51	EDUCATION	0.00	0.00	0.00	0.87	8.85	
52	HOTEL & TOURISM	60.30	153.18	163.32	226.81	166.29	3

	Sector	2000-01	2001-02	2002-03	2003-04	2004-05	
53	TRADING	52.49	206.35	184.51	143.00	63.89	1
54	RETAIL TRADING	0.00	0.00	0.00	0.00	0.00	
55	AGRICULTURE SERVICES	80.03	67.05	53.28	2.71	17.21	
56	DIAMOND,GOLD ORNAMENTS	86.02	1.72	6.29	9.01	38.55	
57	TEA AND COFFEE (PROCESSING & WAREHOUSING COFFEE & RUBBER)	92.41	0.67	0.00	1.47	0.04	
58	PRINTING OF BOOKS (INCLUDING LITHO PRINTING INDUSTRY)	0.00	0.00	30.49	0.00	0.27	
59	COIR	0.00	0.00	0.00	0.00	2.11	
60	CONSTRUCTION (INFRASTRUCTURE) ACTIVITIES	0.00	0.00	0.00	0.00	0.00	
61	CONSTRUCTION DEVELOPMENT: Townships, housing, built-up infrastructure and construction-development projects	111.14	246.80	174.69	216.15	683.21	10
62	MISCELLANEOUS INDUSTRIES	3800.90	1055.71	1058.58	1082.03	547.38	7

In []:

```
# Unpivoting melt Dataframe
melt = pd.melt(FDI_InUSD, id_vars = Sectors, value_vars = Year, var_name='Year',
               value_name='FDI(US$ Million)', ignore_index=True)
melt
```

Out[55]:

		Sector	Year	FDI(US\$ Million)
0	METALLURGICAL INDUSTRIES	2000-01	22.69	
1	MINING	2000-01	1.32	
2	POWER	2000-01	89.42	
3	NON-CONVENTIONAL ENERGY	2000-01	0.00	
4	COAL PRODUCTION	2000-01	0.00	
...
1066	PRINTING OF BOOKS (INCLUDING LITHO PRINTING IN...	2016-17	53.17	
1067	COIR	2016-17	0.00	
1068	CONSTRUCTION (INFRASTRUCTURE) ACTIVITIES	2016-17	1860.73	
1069	CONSTRUCTION DEVELOPMENT: Townships, housing, ...	2016-17	105.14	
1070	MISCELLANEOUS INDUSTRIES	2016-17	296.40	

1071 rows × 3 columns

In [56]:

```
#Unpivoting melt01 Dataframe
melt01 = pd.melt(FDI_02, id_vars = Sectors, value_vars = Year, var_name='Year',
                 value_name='FDI(₹ Crores)', ignore_index=True)
melt01=round(melt01,2)
melt01
```

Out[56]:

		Sector	Year	FDI(₹ Crores)
0	METALLURGICAL INDUSTRIES	2000-01	103.65	
1	MINING	2000-01	6.03	
2	POWER	2000-01	408.47	
3	NON-CONVENTIONAL ENERGY	2000-01	0.00	
4	COAL PRODUCTION	2000-01	0.00	
...
1066	PRINTING OF BOOKS (INCLUDING LITHO PRINTING IN...	2016-17	356.61	
1067	COIR	2016-17	0.00	
1068	CONSTRUCTION (INFRASTRUCTURE) ACTIVITIES	2016-17	12479.92	
1069	CONSTRUCTION DEVELOPMENT: Townships, housing, ...	2016-17	705.17	
1070	MISCELLANEOUS INDUSTRIES	2016-17	1987.95	

1071 rows × 3 columns

```
In [57]: # Merging the FDI(US$ Million) column of melt Dataframe into melt01 Dataframe
Merged=melt01.merge(melt,how='left')
Merged
```

Out[57]:

		Sector	Year	FDI(₹ Crores)	FDI(US\$ Million)
0	METALLURGICAL INDUSTRIES		2000-01	103.65	22.69
1	MINING		2000-01	6.03	1.32
2	POWER		2000-01	408.47	89.42
3	NON-CONVENTIONAL ENERGY		2000-01	0.00	0.00
4	COAL PRODUCTION		2000-01	0.00	0.00
...
1066	PRINTING OF BOOKS (INCLUDING LITHO PRINTING IN...		2016-17	356.61	53.17
1067	COIR		2016-17	0.00	0.00
1068	CONSTRUCTION (INFRASTRUCTURE) ACTIVITIES		2016-17	12479.92	1860.73
1069	CONSTRUCTION DEVELOPMENT: Townships, housing, ...		2016-17	705.17	105.14
1070	MISCELLANEOUS INDUSTRIES		2016-17	1987.95	296.40

1071 rows × 4 columns

```
In [76]: Merged.to_excel("file.xlsx")
```

```
In [58]: #Sorting the Sectors and Year columns
Sorted = Merged.sort_values(['Sector','Year'], ignore_index=True)
Sorted
```

Out[58]:

	Sector	Year	FDI(₹ Crores)	FDI(US\$ Million)
0	AGRICULTURAL MACHINERY	2000-01	16.63	3.64
1	AGRICULTURAL MACHINERY	2001-02	4.96	1.04
2	AGRICULTURAL MACHINERY	2002-03	65.23	13.48
3	AGRICULTURAL MACHINERY	2003-04	218.45	47.54
4	AGRICULTURAL MACHINERY	2004-05	0.00	0.00
...
1066	VEGETABLE OILS AND VANASPATI	2012-13	589.64	108.39
1067	VEGETABLE OILS AND VANASPATI	2013-14	130.38	21.55
1068	VEGETABLE OILS AND VANASPATI	2014-15	906.95	148.34
1069	VEGETABLE OILS AND VANASPATI	2015-16	224.00	34.22
1070	VEGETABLE OILS AND VANASPATI	2016-17	727.37	108.45

1071 rows × 4 columns

In [59]:

```
print("\nStats for Sectors\n", '-'*65, sep=' ')
print(pd.DataFrame(Sorted.groupby('Sector').describe().loc[:, :]).transpose())
```

Stats for Sectors

Sector		AGRICULTURAL MACHINERY	AGRICULTURE SERVICES	\
FDI(₹ Crores)	count	17.000000	17.000000	
	mean	139.573529	568.894118	
	std	172.900782	1370.805206	
	min	0.000000	2.710000	
	25%	13.270000	53.280000	
	50%	65.230000	200.010000	
	75%	218.450000	512.620000	
	max	519.030000	5798.210000	
FDI(US\$ Million)	count	17.000000	17.000000	
	mean	26.423529	112.985294	
	std	32.712807	289.004756	
	min	0.000000	0.590000	
	25%	2.770000	11.010000	
	50%	13.480000	43.900000	
	75%	47.540000	76.430000	
	max	95.410000	1222.220000	
Sector		AIR TRANSPORT (INCLUDING AIR FREIGHT)		\
FDI(₹ Crores)	count		17.000000	
	mean		334.025294	
	std		561.472152	
	min		0.000000	
	25%		18.470000	
	50%		149.610000	
	75%		398.900000	
	max		2364.740000	
FDI(US\$ Million)	count		17.000000	
	mean		59.672941	
	std		87.551007	
	min		0.000000	
	25%		4.110000	
	50%		31.220000	
	75%		74.560000	
	max		361.250000	
Sector		AUTOMOBILE INDUSTRY		\
FDI(₹ Crores)	count	17.000000		
	mean	5448.391765		
	std	5302.601717		
	min	547.220000		
	25%	1124.340000		
	50%	4422.970000		
	75%	8362.800000		
	max	16664.560000		
FDI(US\$ Million)	count	17.000000		
	mean	980.818824		
	std	826.274049		
	min	119.090000		
	25%	235.760000		
	50%	922.990000		
	75%	1517.280000		
	max	2725.640000		

Sector		BOILERS AND STEAM GENERATING PLANTS	\
FDI(₹ Crores)	count	17.000000	
	mean	69.850588	
	std	146.562122	
	min	0.000000	
	25%	0.000000	
	50%	2.870000	
	75%	18.790000	
	max	510.000000	
FDI(US\$ Million)	count	17.000000	
	mean	11.479412	
	std	22.610923	
	min	0.000000	
	25%	0.000000	
	50%	0.630000	
	75%	3.960000	
	max	77.910000	
Sector		CEMENT AND GYPSUM PRODUCTS	\ CERAMICS
FDI(₹ Crores)	count	17.000000	17.000000
	mean	1721.744706	225.081765
	std	3397.785201	307.072289
	min	0.720000	1.020000
	25%	102.010000	23.560000
	50%	667.180000	54.670000
	75%	1536.760000	335.220000
	max	14286.580000	912.580000
FDI(US\$ Million)	count	17.000000	17.000000
	mean	308.190000	44.712941
	std	519.880859	61.892458
	min	0.160000	0.210000
	25%	19.690000	4.330000
	50%	139.900000	12.000000
	75%	267.900000	51.210000
	max	2130.100000	198.430000
Sector		CHEMICALS (OTHER THAN FERTILIZERS)	\ COAL PRODUCTION
FDI(₹ Crores)	count	17.000000	17.000000
	mean	4119.481176	7.184118
	std	5276.194267	16.450240
	min	93.000000	0.000000
	25%	619.970000	0.000000
	50%	1716.440000	0.000000
	75%	4759.900000	1.010000
	max	19363.080000	56.690000
FDI(US\$ Million)	count	17.000000	17.000000
	mean	781.946471	1.631765
	std	1051.388076	3.929237
	min	20.240000	0.000000
	25%	128.120000	0.000000
	50%	365.940000	0.000000
	75%	786.760000	0.220000
	max	4040.710000	14.080000
Sector		COIR	\ ... SEA TRANSPORT
FDI(₹ Crores)	count	17.000000	... 17.000000

	mean	1.272941	...	907.107647
	std	2.135075	...	1302.401223
	min	0.000000	...	11.010000
	25%	0.000000	...	141.880000
	50%	0.180000	...	328.080000
	75%	2.110000	...	1351.330000
	max	8.320000	...	4930.050000
FDI(US\$ Million)	count	17.000000	...	17.000000
	mean	0.238824	...	159.562941
	std	0.365699	...	197.774282
	min	0.000000	...	2.410000
	25%	0.000000	...	29.320000
	50%	0.040000	...	64.620000
	75%	0.470000	...	284.850000
	max	1.360000	...	735.060000

Sector SERVICES SECTOR (Fin., Banking, Insurance, Non Fin/Business, Out sourcing, R&D, Courier, Tech. Testing and Analysis, Other) \

FDI(₹ Crores)	count		17.000000
	mean		18608.681765
	std		16698.651422
	min		326.060000
	25%		2049.480000
	50%		19803.970000
	75%		27166.090000
	max		58244.060000
FDI(US\$ Million)	count		17.000000
	mean		3498.617059
	std		2831.889810
	min		71.380000
	25%		456.150000
	50%		4174.530000
	75%		5215.980000
	max		8684.070000

Sector SOAPS, COSMETICS & TOILET PREPARATIONS SUGAR \

FDI(₹ Crores)	count		17.000000	17.000000
	mean		393.616471	72.420000
	std		450.163526	166.075304
	min		0.000000	0.000000
	25%		4.000000	0.770000
	50%		116.610000	19.210000
	75%		656.060000	44.560000
	max		1265.080000	692.890000
FDI(US\$ Million)	count		17.000000	17.000000
	mean		70.818235	12.025294
	std		78.330885	25.257412
	min		0.000000	0.000000
	25%		0.890000	0.170000
	50%		24.580000	3.970000
	75%		108.440000	10.070000
	max		222.080000	105.850000

Sector TEA AND COFFEE (PROCESSING & WAREHOUSING COFFEE & RUBBER) \

FDI(₹ Crores)	count		17.000000
	mean		30.460588

	std	44.958731
	min	0.000000
	25%	1.470000
	50%	10.730000
	75%	35.450000
	max	170.530000
FDI(US\$ Million)	count	17.000000
	mean	6.542353
	std	10.001876
	min	0.000000
	25%	0.320000
	50%	1.600000
	75%	6.200000
	max	37.080000
Sector	TELECOMMUNICATIONS	TEXTILES (INCLUDING DYED, PRINTED) \
FDI(₹ Crores)	count	17.000000
	mean	7703.884706
	std	9103.589012
	min	397.420000
	25%	1653.050000
	50%	5075.580000
	75%	9570.770000
	max	37315.670000
FDI(US\$ Million)	count	17.000000
	mean	1408.588824
	std	1412.295111
	min	86.490000
	25%	303.870000
	50%	1260.700000
	75%	1997.240000
	max	5563.690000
Sector	TIMBER PRODUCTS	TRADING \
FDI(₹ Crores)	count	17.000000
	mean	53.154706
	std	4969.872353
	min	90.558838
	25%	0.000000
	50%	52.490000
	75%	0.310000
	max	184.510000
FDI(US\$ Million)	count	2269.070000
	mean	7.200000
	std	3904.830000
	min	348.050000
	25%	25171.460000
	50%	54.840000
	75%	17.000000
	max	0.000000
	count	835.934118
	mean	14.763112
	std	1118.499035
	min	9.275294
	25%	0.000000
	50%	11.490000
	75%	0.070000
	max	38.130000
	count	498.040000
	mean	1.580000
	std	737.950000
	min	10.230000
	25%	53.170000
	50%	3845.320000
Sector	VEGETABLE OILS AND VANASPATI	
FDI(₹ Crores)	count	17.000000
	mean	227.364706
	std	275.365623
	min	0.000000

```
25%           7.770000
50%          130.380000
75%          311.580000
max          906.950000
FDI(US$ Million) count      17.000000
mean          41.029412
std           45.645703
min           0.000000
25%          1.690000
50%          21.550000
75%          65.020000
max          148.340000
```

[16 rows x 63 columns]

Sector-wise Total FDI 2000-17

```
In [60]: #Grouping by Sector column to find Total FDI Inflow per Sector from FY2000-01 to FY
Sectorwise_fdi = Sorted.groupby('Sector').sum()
Sectorwise_fdi.sort_values(by='FDI(US$ Million)', ascending=False)
```

Out[60]:

Sector	Year	FDI(₹ Crores)	FDI(US\$ Million)
SERVICES SECTOR (Fin.,Banking,Insurance,Non Fin/Business,Outsourcing,R&D,Courier,Tech. Testing and Analysis, Other)	2000-012001-022002-032003-042004-052005-062006...	316347.59	59476.49
COMPUTER SOFTWARE & HARDWARE	2000-012001-022002-032003-042004-052005-062006...	137276.82	24669.49
CONSTRUCTION DEVELOPMENT: Townships, housing, built-up infrastructure and construction-development projects	2000-012001-022002-032003-042004-052005-062006...	115185.97	24293.09
TELECOMMUNICATIONS	2000-012001-022002-032003-042004-052005-062006...	130966.04	23946.01
AUTOMOBILE INDUSTRY	2000-012001-022002-032003-042004-052005-062006...	92622.66	16673.92

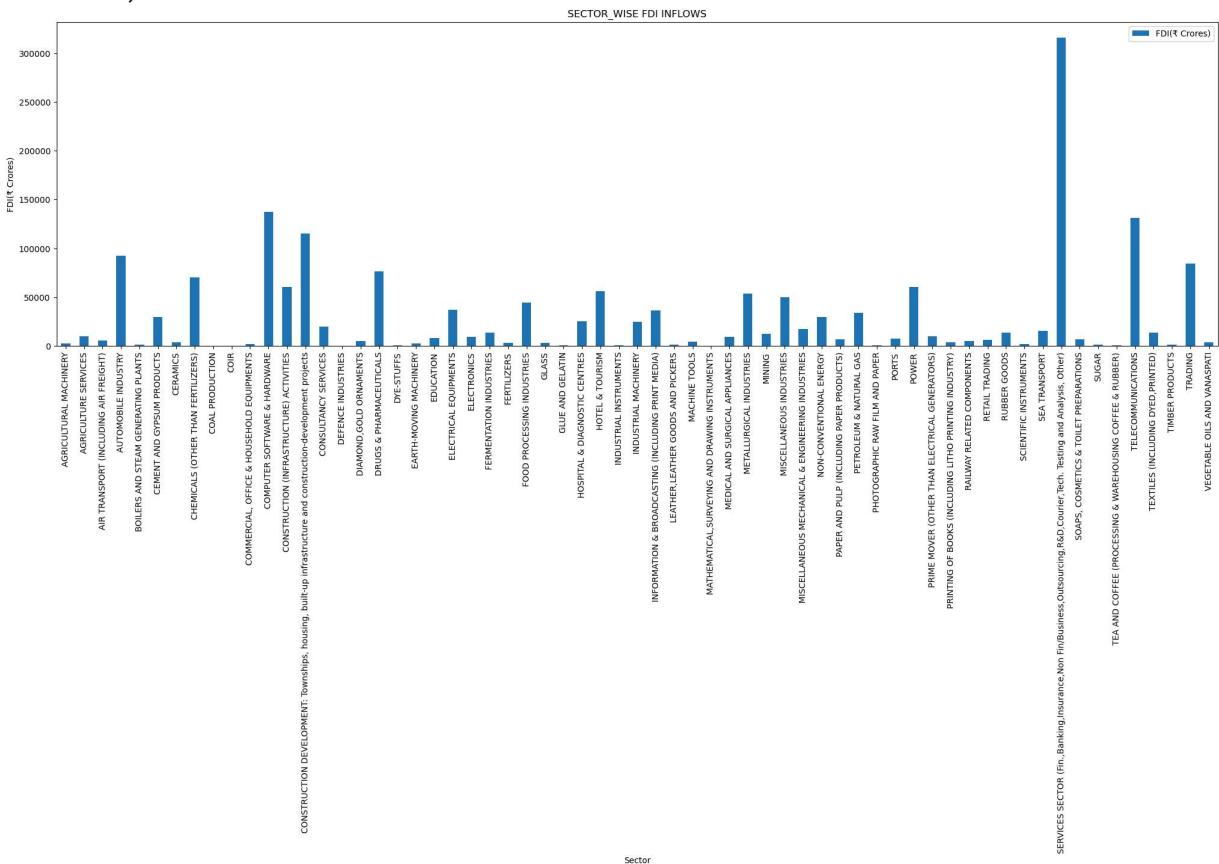
PHOTOGRAPHIC RAW FILM AND PAPER	2000-012001-022002-032003-042004-052005-062006...	278.37	67.28
COAL PRODUCTION	2000-012001-022002-032003-042004-052005-062006...	122.13	27.74
MATHEMATICAL,SURVEYING AND DRAWING INSTRUMENTS	2000-012001-022002-	41.61	7.98

Sector	Year	FDI(₹ Crores)	FDI(US\$ Million)
	032003-		
	042004-		
	052005-		
	062006...		
	2000-012001-		
	022002-		
DEFENCE INDUSTRIES	032003-	26.09	5.12
	042004-		
	052005-		
	062006...		
	2000-012001-		
	022002-		
COIR	032003-	21.64	4.06
	042004-		
	052005-		
	062006...		

63 rows × 3 columns

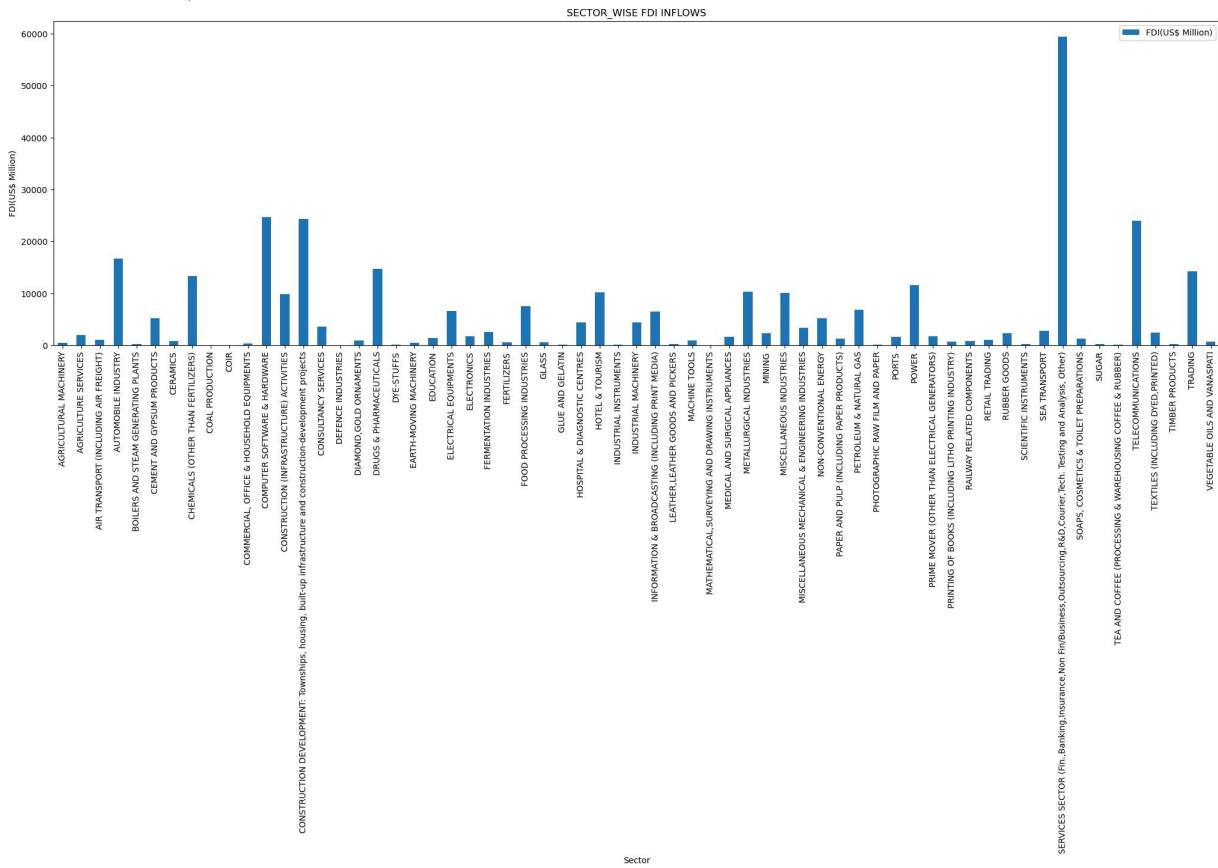
```
In [61]: Sectorwise_fdi.plot(kind='bar',y='FDI(₹ Crores)',figsize = (25,7), legend= True, ti
```

```
Out[61]: <Axes: title={'center': 'SECTOR_WISE FDI INFLOWS'}, xlabel='Sector', ylabel='FDI(₹ Crores)'>
```



```
In [62]: Sectorwise_fdi.plot(kind='bar',y='FDI(US$ Million)',figsize = (25,7), legend= True,
```

```
Out[62]: <Axes: title={'center': 'SECTOR_WISE FDI INFLOWS'}, xlabel='Sector', ylabel='FDI(U S$ Million)'>
```



Best & Worst Performing Sectors:

TOP 10 SECTORS

```
In [63]: #Top 10 and bottom 10 sectors
```

```
Top_10_Sectors = Sectorwise_fdi.nlargest(10,['FDI(₹ Crores)'])
```

```
In [64]: #Calculating percentage-wise FDI share among top 10 sectors and among all sectors
```

```
Total_fdi = round(melt01['FDI(₹ Crores)').sum(),2)
Sum = Top_10_Sectors['FDI(₹ Crores)'].sum()
Top_10_Sectors['In %age'] = round(Top_10_Sectors['FDI(₹ Crores)']/Sum*100,2)
Top_10_Sectors['%age to Total Inflows'] = round((Top_10_Sectors['FDI(₹ Crores)']/To
Top_10_Sectors
```

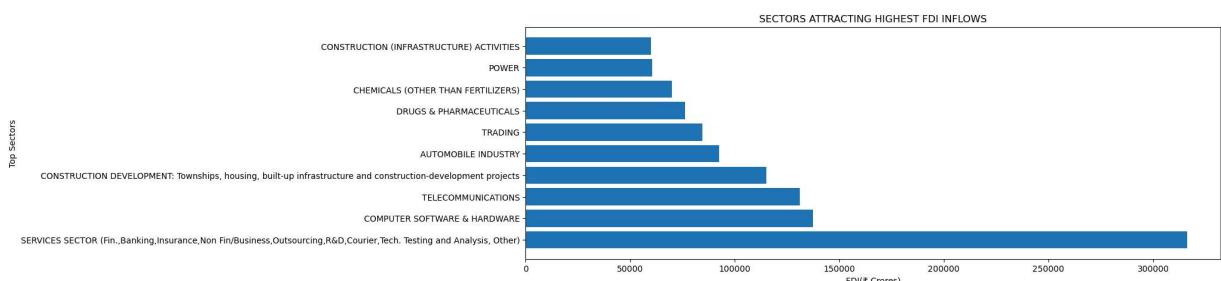
Out[64]:

Sector	Year	FDI(₹ Crores)	FDI(US\$ Million)	In %age	%age to Total Inflows
SERVICES SECTOR (Fin., Banking, Insurance, Non Fin/Business, Outsourcing, R&D, Courier, Tech. Testing and Analysis, Other)	2000-012001-022002-032003-042004-052005-062006...	316347.59	59476.49	27.66	17.65
COMPUTER SOFTWARE & HARDWARE	2000-012001-022002-032003-042004-052005-062006...	137276.82	24669.49	12.00	7.66
TELECOMMUNICATIONS	2000-012001-022002-032003-042004-052005-062006...	130966.04	23946.01	11.45	7.31
CONSTRUCTION DEVELOPMENT: Townships, housing, built-up infrastructure and construction-development projects	2000-012001-022002-032003-042004-052005-062006...	115185.97	24293.09	10.07	6.43
AUTOMOBILE INDUSTRY	2000-012001-022002-032003-042004-052005-062006...	92622.66	16673.92	8.10	5.17
TRADING	2000-012001-022002-032003-042004-052005-062006...	84487.83	14210.88	7.39	4.72
DRUGS & PHARMACEUTICALS	2000-012001-	76377.64	14706.90	6.68	4.26

Sector	Year	FDI(₹ Crores)	FDI(US\$ Million)	In %age	%age to Total Inflows
	022002-				
	032003-				
	042004-				
	052005-				
	062006...				
CHEMICALS (OTHER THAN FERTILIZERS)	2000-				
	012001-				
	022002-				
	032003-	70031.18	13293.09	6.12	3.91
	042004-				
	052005-				
	062006...				
POWER	2000-				
	012001-				
	022002-				
	032003-	60397.97	11589.13	5.28	3.37
	042004-				
	052005-				
	062006...				
CONSTRUCTION (INFRASTRUCTURE) ACTIVITIES	2000-				
	012001-				
	022002-				
	032003-	60099.59	9817.47	5.25	3.35
	042004-				
	052005-				
	062006...				

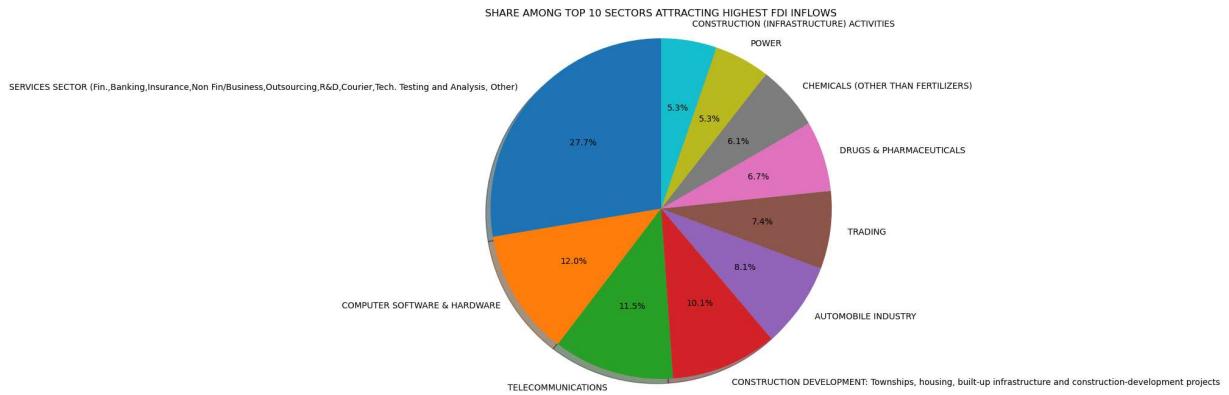
In [65]: *##Creating bar chart to visualise Total FDI inflow in top 10 sectors using Matplotlib*

```
plt.figure(figsize=(15,5))
plt.barh(Top_10_Sectors.index,Top_10_Sectors['FDI(₹ Crores)'])
plt.title('SECTORS ATTRACTING HIGHEST FDI INFLOWS')
plt.xlabel('FDI(₹ Crores)')
plt.ylabel('Top Sectors')
plt.show()
```



In [66]: #Creating pie chart to visualise percentage share of FDI among top 10 sectors using

```
plt.figure(figsize=(20,8))
plt.pie(Top_10_Sectors['FDI(₹ Crores)'],labels=Top_10_Sectors.index,autopct='%.1f%'
plt.axis('equal')
plt.title('SHARE AMONG TOP 10 SECTORS ATTRACTING HIGHEST FDI INFLOWS ')
plt.show()
```



From the above Chart, we can understand that Service Sector Managed to Attract highest FDI which was ₹316347.59Cr greater than any other Sector and among top 10 Sectors it has 27.7% share and among all it has 17.65%.

BOTTOM 5 SECTORS

In [67]: #Calculating share among Bottom sectors and as a whole

```
Bottom_5_Sectors = Sectorwise_fdi.nsmallest(5,['FDI(₹ Crores)'])
Sum = Bottom_5_Sectors['FDI(₹ Crores)'].sum()
Bottom_5_Sectors['In %age'] = round(Bottom_5_Sectors['FDI(₹ Crores)']/Sum*100,2)
Bottom_5_Sectors['%age to Total Infloows'] = round((Bottom_5_Sectors['FDI(₹ Crores)']
Bottom_5_Sectors
```

Out[67]:

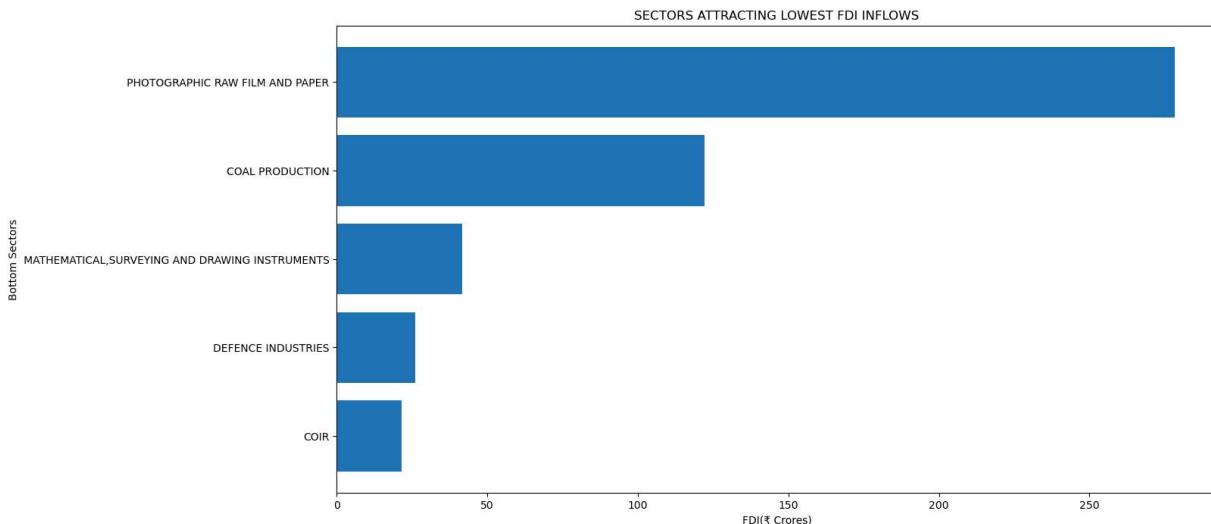
Sector	Year	FDI(₹ Crores)	FDI(US\$ Million)	In %age	%age to Total Inflows
COIR	2000-012001-022002-032003-042004-052005-062006...	21.64	4.06	4.42	0.001
DEFENCE INDUSTRIES	2000-012001-022002-032003-042004-052005-062006...	26.09	5.12	5.33	0.001
MATHEMATICAL,SURVEYING AND DRAWING INSTRUMENTS	2000-012001-022002-032003-042004-052005-062006...	41.61	7.98	8.49	0.002
COAL PRODUCTION	2000-012001-022002-032003-042004-052005-062006...	122.13	27.74	24.93	0.007
PHOTOGRAPHIC RAW FILM AND PAPER	2000-012001-022002-032003-042004-052005-062006...	278.37	67.28	56.83	0.016

In [68]: #Creating bar chart to visualise Total FDI inflow in Bottom 5 sectors using Matplotlib

```

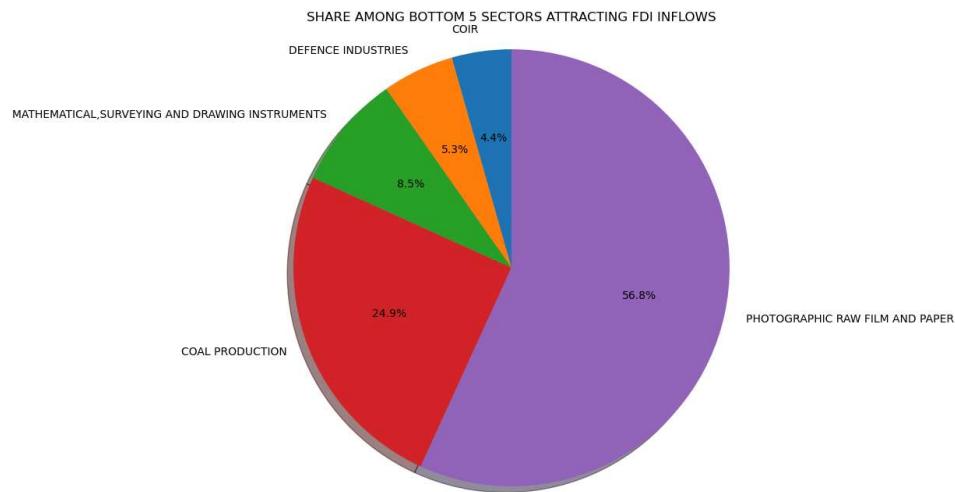
plt.figure(figsize=(15,8))
plt.barh(Bottom_5_Sectors.index,Bottom_5_Sectors['FDI(₹ Crores)'])
plt.title('SECTORS ATTRACTING LOWEST FDI INFLOWS')
plt.xlabel('FDI(₹ Crores)')
plt.ylabel('Bottom Sectors')
plt.show()

```



```
In [69]: #Creating pie chart to visualise percentage share of FDI among top 10 sectors using

plt.figure(figsize=(20,8))
plt.pie(Bottom_5_Sectors['FDI(₹ Crores)'], labels=Bottom_5_Sectors.index, autopct='%1.1f%%')
plt.axis('equal')
plt.title('SHARE AMONG BOTTOM 5 SECTORS ATTRACTING FDI INFLOWS')
plt.show()
```



Among Bottom 5 sectors, Coir has the lowest FDI of ₹21.64Cr having only 4.4% share among bottom 5 sectors and among all it has only 0.001208%.

Year-wise Details:

Year-wise FDI Inflow

```
In [70]: #Creating Dataframe
melt02 = melt01[['Year', 'FDI(₹ Crores)']]
melt02=round(melt02.groupby('Year').sum(),2)
```

```
In [71]: #reating new column of % growth over previous year
```

```
melt02['% growth over previous year'] = round(melt02.pct_change()*100,2)
```

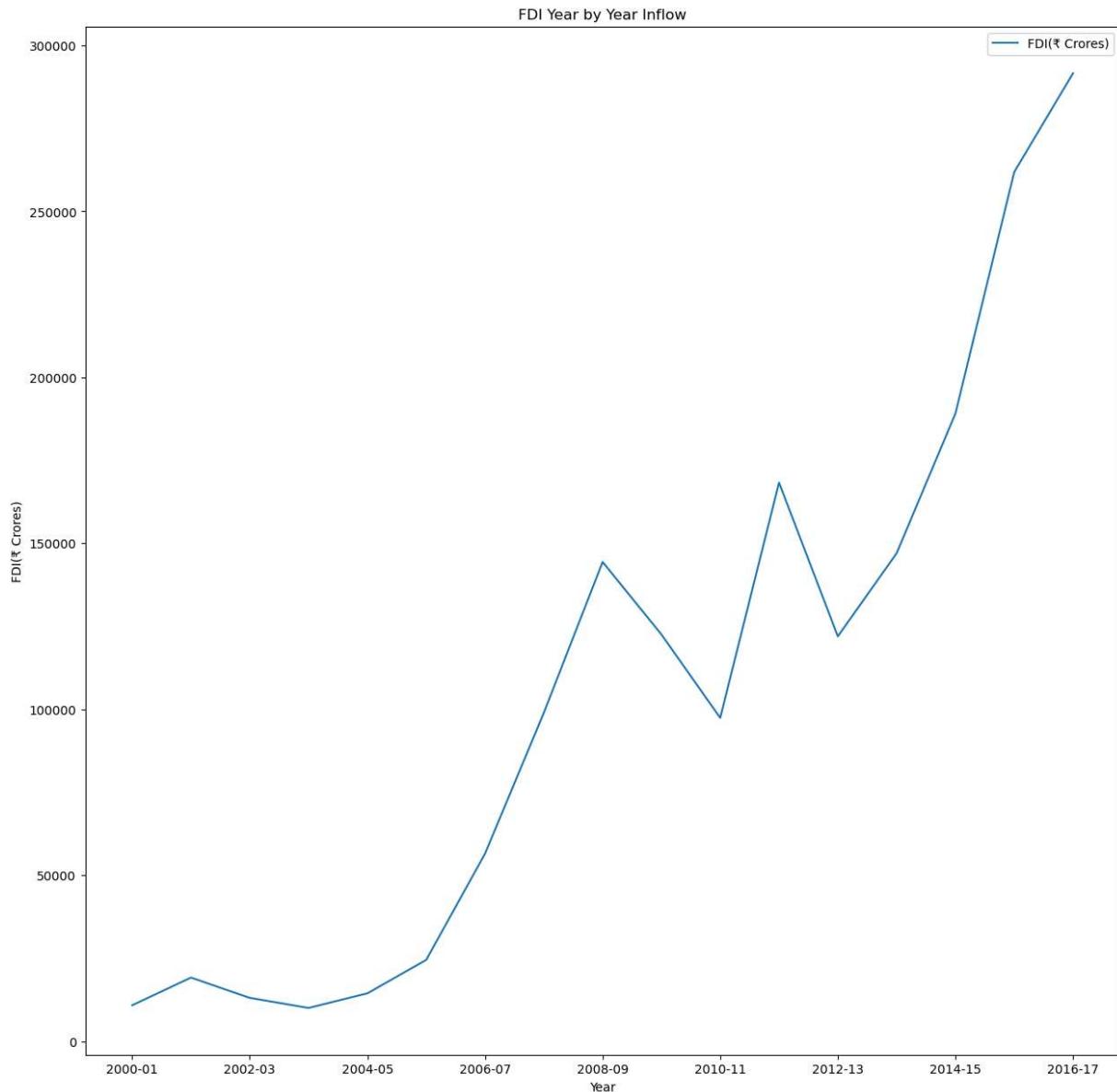
```
In [72]: print('\n'*8+"Details on Variation of FDI INFLOW Year-wise"+'*'*8) #Year-wise FDI INFLOW
melt02.fillna(' - ')
```

*****Details on Variation of FDI INFLOW Year-wise*****

Out[72]: **FDI(₹ Crores) % growth over previous year**

Year		
2000-01	10865.97	-
2001-02	19208.02	76.77
2002-03	13086.22	-31.87
2003-04	10053.15	-23.18
2004-05	14461.59	43.85
2005-06	24524.51	69.58
2006-07	56512.74	130.43
2007-08	98940.57	75.08
2008-09	144390.03	45.94
2009-10	122558.27	-15.12
2010-11	97421.29	-20.51
2011-12	168298.80	72.75
2012-13	121984.32	-27.52
2013-14	147010.90	20.52
2014-15	189108.88	28.64
2015-16	261846.45	38.46
2016-17	291608.67	11.37

```
In [73]: #plotting to show Year by Year FDI Inflow
melt02.plot.line(y='FDI(₹ Crores)', figsize=(15,15))
plt.ylabel('FDI(₹ Crores)')
plt.title('FDI Year by Year Inflow')
plt.show()
```



We can analysis from the graph that in the year 2011-2012 the inflow of FDI was second highest of last 15 years i.e. 168298.80. Year 2012-13 and 2013-14 the FDI inflow fluctuated from 121984.32 to 147010.90 respectively. In last Financial Year i.e. 2016-2017 the amount of FDI Inflow were ₹291608.67Cr which is the highest FDI inflow in last 17 years.

In []:

In []:

In []: