Soft Computing Lab Assignment 2

Q1.Write a Python function to calculate the factorial of a number (a non-negative integer).The function accepts the number as an argument.

In [33]:
```python
def factorial(n):
    if n == 0:
        return 1
    else:
        return n * factorial(n - 1)
```

In [34]:
```python
n = int(input("Enter the number you want the factorial of : "))
```

Enter the number you want the factorial of : 6

In [35]:
```python
print(factorial(n))
```

720

Q2.Write a Python function that takes a list and returns a new list with unique elements(No duplicate value) of the first list. Example: L1=[5,4,3,5,3,7] New=[5,4,3,7]

In [36]:
```python
def UniqueList(UL):
    s = []
    for a in UL:
        if a not in s:
            s.append(a)
    return s
```

In [37]:
```python
print(UniqueList([6,3,5,3,5,3,4,6,2,9,6,9,1,7,7,10,8]))
```

[6, 3, 5, 4, 2, 9, 1, 7, 10, 8]

Q3. Write a code to reverse an array (Use Numpy).

In [38]:
```python
import numpy as np
A = np.array([5,10,15,20,25,30,35,40,45,50])
print("Entered Array List : \n", A)
ReversedArray = np.flip(A)
print("\nReversed Array List : \n", ReversedArray)
```

Entered Array List :
 [5 10 15 20 25 30 35 40 45 50]

Reversed Array List :
 [50 45 40 35 30 25 20 15 10 5]

Q4. Write a Pandas program to convert the first column of a DataFrame as a Series.

In [39]:
```python
import pandas as pd
dig = {'Dairymilk': [40, 50, 90, 100, 250],
       'DarkChocolate': [300, 200, 100, 250, 500],
       'Perk': [50, 60, 45, 80, 90],
       'Fuse': [100, 150, 300, 200, 250],
       'KitKat': [110, 200, 150, 60, 70]}
```

In [40]:
```python
df = pd.DataFrame(data=dig)
```

In [41]:
```python
df
```

Out[41]:

	Dairymilk	DarkChocolate	Perk	Fuse	KitKat
0	40	300	50	100	110
1	50	200	60	150	200
2	90	100	45	300	150
3	100	250	80	200	60
4	250	500	90	250	70

Q5. Read the dataset file 'USA_Housing' using pandas and create a new dataframe to store first 50 row and 'Avg. Area House Age', 'Avg. Area Number of Bedrooms' and ' price' column of the Dataset.

In [42]:
```python
import pandas as pd
df = pd.read_csv("USA_Housing.csv")
```

In [43]:
```python
df
```

Out[43]:

	Avg. Area Income	Avg. Area House Age	Avg. Area Number of Rooms	Avg. Area Number of Bedrooms	Area Population	Price	Address
0	79545.45857	5.682861	7.009188	4.09	23086.80050	1.059034e+06	208 Michael Ferry Apt. 674\nLaurabury, NE 3701...
1	79248.64245	6.002900	6.730821	3.09	40173.07217	1.505891e+06	188 Johnson Views Suite 079\nLake Kathleen, CA...
2	61287.06718	5.865890	8.512727	5.13	36882.15940	1.058988e+06	9127 Elizabeth Stravenue\nDanieltown, WI 06482...
3	63345.24005	7.188236	5.586729	3.26	34310.24283	1.260617e+06	USS Barnett\nFPO AP 44820
4	59982.19723	5.040555	7.839388	4.23	26354.10947	6.309435e+05	USNS Raymond\nFPO AE 09386
...	...	...	...	...	...	...	...
4995	60567.94414	7.830362	6.137356	3.46	22837.36103	1.060194e+06	USNS Williams\nFPO AP 30153-7653
4996	78491.27543	6.999135	6.576763	4.02	25616.11549	1.482618e+06	PSC 9258, Box 8489\nAPO AA 42991-3352
4997	63390.68689	7.250591	4.805081	2.13	33266.14549	1.030730e+06	4215 Tracy Garden Suite 076\nJoshualand, VA 01...
4998	68001.33124	5.534388	7.130144	5.44	42625.62016	1.198657e+06	USS Wallace\nFPO AE 73316
4999	65510.58180	5.992305	6.792336	4.07	46501.28380	1.298950e+06	37778 George Ridges Apt. 509\nEast Holly, NV 2...

5000 rows × 7 columns

In [44]:
```python
dfFirstFifty = df.head(50)
```

In [45]:
```python
dfFirstFifty
```

Out[45]:

	Avg. Area Income	Avg. Area House Age	Avg. Area Number of Rooms	Avg. Area Number of Bedrooms	Area Population	Price	Address
0	79545.45857	5.682861	7.009188	4.09	23086.80050	1.059034e+06	208 Michael Ferry Apt. 674\nLaurabury, NE 3701...
1	79248.64245	6.002900	6.730821	3.09	40173.07217	1.505891e+06	188 Johnson Views Suite 079\nLake Kathleen, CA...
2	61287.06718	5.865890	8.512727	5.13	36882.15940	1.058988e+06	9127 Elizabeth Stravenue\nDanieltown, WI 06482...
3	63345.24005	7.188236	5.586729	3.26	34310.24283	1.260617e+06	USS Barnett\nFPO AP 44820
4	59982.19723	5.040555	7.839388	4.23	26354.10947	6.309435e+05	USNS Raymond\nFPO AE 09386
5	80175.75416	4.988408	6.104512	4.04	26748.42842	1.068138e+06	06039 Jennifer Islands Apt. 443\nTracyport, KS...
6	64698.46343	6.025336	8.147760	3.41	60828.24909	1.502056e+06	4759 Daniel Shoals Suite 442\nNguyenburgh, CO ...
7	78394.33928	6.989780	6.620478	2.42	36516.35897	1.573937e+06	972 Joyce Viaduct\nLake William, TN 17778-6483
8	59927.66081	5.362126	6.393121	2.30	29387.39600	7.988695e+05	USS Gilbert\nFPO AA 20957

9	81885.92718	4.423672	8.167688	6.10	40149.96575	1.545155e+06	Unit 9446 Box 0958\nDPO AE 97025
10	80527.47208	8.093513	5.042747	4.10	47224.35984	1.707046e+06	6368 John Motorway Suite 700\nJanetbury, NM 26854
11	50593.69550	4.496513	7.467627	4.49	34343.99189	6.637324e+05	911 Castillo Park Apt. 717\nDavisborough, PW 7...
12	39033.80924	7.671755	7.250029	3.10	39220.36147	1.042814e+06	209 Natasha Stream Suite 961\nHuffmanland, NE ...
13	73163.66344	6.919535	5.993188	2.27	32326.12314	1.291332e+06	829 Welch Track Apt. 992\nNorth John, AR 26532...
14	69391.38018	5.344776	8.406418	4.37	35521.29403	1.402818e+06	PSC 5330, Box 4420\nAPO AP 08302
15	73091.86675	5.443156	8.517513	4.01	23929.52405	1.306675e+06	2278 Shannon View\nNorth Carriemouth, NM 84617
16	79706.96306	5.067890	8.219771	3.12	39717.81358	1.556787e+06	064 Hayley Unions\nNicholsborough, HI 44161-1887
17	61929.07702	4.788550	5.097010	4.30	24595.90150	5.284852e+05	5498 Rachel Locks\nNew Gregoryshire, PW 54755
18	63508.19430	5.947165	7.187774	5.12	35719.65305	1.019426e+06	Unit 7424 Box 2786\nDPO AE 71255
19	62085.27640	5.739411	7.091808	5.49	44922.10670	1.030591e+06	19696 Benjamin Cape\nStephentown, ME 36952-4733
20	86294.99909	6.627457	8.011898	4.07	47560.77534	2.146925e+06	030 Larry Park Suite 665\nThomashaven, HI 8794...
21	60835.08998	5.551222	6.517175	2.10	45574.74166	9.292476e+05	USNS Brown\nFPO AP 85833
22	64490.65027	4.210323	5.478088	4.31	40358.96011	7.188872e+05	95198 Ortiz Key\nPort Sara, TN 24541-2855
23	60697.35154	6.170484	7.150537	6.34	28140.96709	7.439998e+05	9003 Jay Plains Suite 838\nLake Elizabeth, IN ...
24	59748.85549	5.339340	7.748682	4.23	27809.98654	8.957371e+05	24282 Paul Valley\nWest Perry, MI 03169-5806
25	56974.47654	8.287562	7.312880	4.33	40694.86951	1.453975e+06	61938 Brady Falls\nLewisfort, DE 61227
26	82173.62608	4.018525	6.992699	2.03	38853.91807	1.125693e+06	3599 Ramirez Springs\nJacksonhaven, AZ 72798
27	64626.88098	5.443360	6.988754	4.00	27784.74228	9.754295e+05	073 Christopher Falls Suite 882\nWest Cynthia,...
28	90499.05745	6.384359	4.242191	3.04	33970.16499	1.240764e+06	6531 Chase Prairie Apt. 245\nSusanshire, MN 22365
29	59323.79210	6.977828	8.273697	4.07	37520.65773	1.577018e+06	17124 Johnson Squares\nLake Robertfurt, AL 618...
30	77811.52203	5.314460	6.686686	3.24	33754.73780	1.246830e+06	1359 Mitchell Vista\nCourtneyfort, NY 93065-7224
31	68652.60921	6.124342	6.290820	4.42	39355.62573	1.170721e+06	4343 Joshua Lake Suite 096\nPierceview, NV 626...
32	55041.35158	7.127129	8.591923	5.36	30122.47348	1.071279e+06	0057 Jacob Coves Apt. 932\nLake Emily, VA 3946...
33	50218.70846	6.118808	7.333554	6.29	16810.78331	5.343051e+05	039 Jordan Pike\nEmilyville, ID 27442
34	55909.32230	5.419563	9.289854	6.00	22355.23541	9.363690e+05	66338 Novak Curve Suite 628\nTaylorborough, OK...
35	74372.81021	5.500129	6.593046	2.07	39395.15118	1.199194e+06	7167 Angela Park Suite 013\nMorrishaven, NH 66...
36	78667.90460	5.470652	7.780837	4.10	27637.65655	1.233220e+06	34964 Sara Fields Apt. 584\nPort Raymondville,...
37	78699.51510	5.652784	6.756454	3.01	22836.60757	1.081150e+06	7585 Lynn Loop\nEast Judy, WV 73336
38	53128.18545	5.180664	5.426903	2.39	32947.71196	5.247128e+05	Unit 1388 Box 9350\nDPO AP 70848
39	17796.63119	4.949557	6.713905	2.50	47162.18364	3.023558e+05	9932 Eric Circles\nLake Martha, WY 34611-6127
40	58566.84936	6.579691	5.034525	2.17	39705.46496	1.026817e+06	7896 Walker Spring\nLoriport, MH 72956
41	75537.79451	7.845216	7.555661	6.30	32778.19534	1.762215e+06	549 Darren Plaza\nLake Kevin, UT 27155
42	46147.05306	6.623333	7.606832	4.43	27161.12861	8.820572e+05	90634 Michelle Valleys\nNorth Victoria, WV 99370
43	70421.47649	6.907083	7.634319	4.44	43183.92849	1.744932e+06	580 Lara Neck Apt. 541\nDavidsonstad, ID 34638...

44	62614.42062	5.499310	7.440505	6.32	26888.57956	1.153871e+06	43087 Jerome Field\nWest Deborah, SD 49213
45	66394.87159	7.069512	7.204640	3.18	39741.07751	1.499989e+06	71956 Jenkins Fall\nBrooketown, PW 67485-0764
46	73946.85107	4.863154	7.537182	6.35	35261.12702	1.109588e+06	8034 Pierce Prairie Suite 727\nDevonfurt, NE 3...
47	69144.74571	7.296224	5.928223	3.22	19030.61549	9.801773e+05	Unit 8108 Box 5159\nDPO AP 04678
48	77278.69703	6.238891	6.919204	2.13	21725.95429	1.323952e+06	08639 Garcia Port\nAnthonybury, CT 17971
49	86754.19663	6.604440	6.252455	4.02	43017.44076	1.662495e+06	91863 Curtis Point\nNew Richard, AK 99996-7554

In [46]:
```python
df_column = df[['Avg. Area House Age', 'Avg. Area Number of Bedrooms', 'Price']]
```

In [47]:
```python
df_column
```

Out[47]:

	Avg. Area House Age	Avg. Area Number of Bedrooms	Price
0	5.682861	4.09	1.059034e+06
1	6.002900	3.09	1.505891e+06
2	5.865890	5.13	1.058988e+06
3	7.188236	3.26	1.260617e+06
4	5.040555	4.23	6.309435e+05
...	...	...	...
4995	7.830362	3.46	1.060194e+06
4996	6.999135	4.02	1.482618e+06
4997	7.250591	2.13	1.030730e+06
4998	5.534388	5.44	1.198657e+06
4999	5.992305	4.07	1.298950e+06

5000 rows × 3 columns

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