

## Assignment 1

**SANSKAR DAGAR**

[sanskar.dagar2020@vitstudent.ac.in](mailto:sanskar.dagar2020@vitstudent.ac.in)

### VIT Applied Data Science 2023

1. Assign your Name to variable name and Age to variable age. Make a Python program that prints your name and age.

1.

```
name = "Sanskar Dagar"
```

```
age = "21"
```

```
print("Name:", name)
```

```
print("Age:", age)
```

```
In [2]: name = "Sanskar Dagar"
age = "21"
print("Name:", name)
print("Age:", age)

Name: Sanskar Dagar
Age: 21
```

2. X="Datascience is used to extract meaningful insights."

Split the string.

2.

```
X = "Data science is used to extract meaningful insights."
```

```
words = X.split()
```

```
print(words)
```

```
In [3]: X = "Data science is used to extract meaningful insights."
words = X.split()

print(words)

['Data', 'science', 'is', 'used', 'to', 'extract', 'meaningful', 'insights.']
```

3. Make a function that gives multiplication of two numbers.

3.

```
def multiply_numbers(a, b):  
    result = a * b  
    return result  
  
num1 = 3  
num2 = 4  
  
multiplication_result = multiply_numbers(num1, num2)  
print("Multiplication Result:", multiplication_result)
```

```
In [4]: ► def multiply_numbers(a, b):  
        result = a * b  
        return result
```

```
In [5]: ► num1 = 3  
        num2 = 4  
        multiplication_result = multiply_numbers(num1, num2)  
        print("Multiplication Result:", multiplication_result)
```

Multiplication Result: 12

4. Create a Dictionary of 5 States with their capitals. also print the keys and values.

4.

```
states_capitals = {  
    "Tamil Nadu": "Chennai",  
    "Delhi": "New Delhi",  
    "Maharashtra": "Mumbai",  
    "West Bengal": "Kolkata",  
    "Haryana": "Chandigarh"  
}
```

```
print("States:")
```

```
for state in states_capitals.keys():  
    print(state)
```

```
print("\nCapitals:")
```

```
for capital in states_capitals.values():
```

```
    print(capital)
```

```
In [6]: > states_capitals = {  
        "Tamil Nadu": "Chennai",  
        "Delhi": "New Delhi",  
        "Maharashtra": "Mumbai",  
        "West Bengal": "Kolkata",  
        "Haryana": "Chandigarh"  
    }
```

```
In [7]: > print("States:")  
for state in states_capitals.keys():  
    print(state)
```

```
States:  
Tamil Nadu  
Delhi  
Maharashtra  
West Bengal  
Haryana
```

```
In [8]: > print("\nCapitals:")  
for capital in states_capitals.values():  
    print(capital)
```

```
Capitals:  
Chennai  
New Delhi  
Mumbai  
Kolkata  
Chandigarh
```

5. Create a list of 1000 numbers using range function.

5.

```
numbers = list(range(1000))
```

```
print(numbers)
```

```
In [9]: numbers = list(range(1000))

print(numbers)
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31,
32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61,
62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91,
92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117,
118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141,
142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164,
165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188,
189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212,
213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236,
237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260,
261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284,
285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308,
309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332,
333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356,
357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380,
381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404,
405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428,
429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452,
453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476,
477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500,
501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524,
525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548,
549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572,
573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596,
597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620,
621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644,
645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668,
669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692,
693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716,
717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740,
741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764,
765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788,
789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812,
813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836,
837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860,
861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884,
885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908,
909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932,
933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956,
957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980,
981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999]
```

6. Create an identity matrix of dimension 4 by 4.

6.

dimension = 4

identity\_matrix = []

for i in range(dimension):

    row = []

    for j in range(dimension):

        if i == j:

            row.append(1)

        else:

            row.append(0)

    identity\_matrix.append(row)

for row in identity\_matrix:

```
print(row)
```

```
In [10]: dimension = 4
identity_matrix = []

for i in range(dimension):
    row = []
    for j in range(dimension):
        if i == j:
            row.append(1)
        else:
            row.append(0)
    identity_matrix.append(row)
```

```
In [11]: for row in identity_matrix:
print(row)
```

```
[1, 0, 0, 0]
[0, 1, 0, 0]
[0, 0, 1, 0]
[0, 0, 0, 1]
```

7. Create a 3x3 matrix with values ranging from 1 to 9.

7.

```
matrix = []
```

```
value = 1
```

```
for i in range(3):
```

```
    row = []
```

```
    for j in range(3):
```

```
        row.append(value)
```

```
        value += 1
```

```
    matrix.append(row)
```

```
for row in matrix:
```

```
    print(row)
```

```
In [12]: matrix = []
value = 1

for i in range(3):
    row = []
    for j in range(3):
        row.append(value)
        value += 1
    matrix.append(row)
```

```
In [13]: for row in matrix:
        print(row)
```

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

---

8. Create 2 similar dimensional array and perform sum on them.

8.

```
import numpy as np
```

```
array1 = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
```

```
array2 = np.array([[10, 20, 30], [40, 50, 60], [70, 80, 90]])
```

```
sum_array = array1 + array2
```

```
print(sum_array)
```

```
In [14]: import numpy as np
```

```
In [15]: array1 = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
        array2 = np.array([[10, 20, 30], [40, 50, 60], [70, 80, 90]])
```

```
In [16]: sum_array = array1 + array2
```

```
In [17]: print(sum_array)
```

```
[[11 22 33]
 [44 55 66]
 [77 88 99]]
```

---

9. Generate the series of dates from 1st Feb, 2023 to 1st March, 2023 (both inclusive).

9.

```
import datetime
```

```
start_date = datetime.date(2023, 2, 1)
```

```
end_date = datetime.date(2023, 3, 1)
```

```
delta = datetime.timedelta(days=1)
```

```
current_date = start_date
```

```
while current_date <= end_date:
```

```
    print(current_date)
```

```
    current_date += delta
```

```
In [18]: ► import datetime
```

```
In [19]: ► start_date = datetime.date(2023, 2, 1)
end_date = datetime.date(2023, 3, 1)
delta = datetime.timedelta(days=1)
```

```
In [20]: ► current_date = start_date
```

```
In [21]: ► while current_date <= end_date:
    print(current_date)
    current_date += delta
```

```
2023-02-01
2023-02-02
2023-02-03
2023-02-04
2023-02-05
2023-02-06
2023-02-07
2023-02-08
2023-02-09
2023-02-10
2023-02-11
2023-02-12
2023-02-13
2023-02-14
2023-02-15
2023-02-16
2023-02-17
2023-02-18
2023-02-19
2023-02-20
2023-02-21
2023-02-22
2023-02-23
2023-02-24
2023-02-25
2023-02-26
2023-02-27
2023-02-28
2023-03-01
```

10. Given a dictionary, convert it into corresponding dataframe and display it  
dictionary = {'Brand': ['Maruti', 'Renault', 'Hyundai'], 'Sales' : [250, 200, 240]}.

10.

import pandas as pd



```
dictionary = {'Brand': ['Maruti', 'Renault', 'Hyundai'], 'Sales': [250, 200, 240]}
```

```
df = pd.DataFrame(dictionary)
```

```
print(df)
```

```
In [22]: ► import pandas as pd
```

```
In [23]: ► dictionary = {'Brand': ['Maruti', 'Renault', 'Hyundai'], 'Sales': [250, 200, 240]}  
df = pd.DataFrame(dictionary)
```

```
In [24]: ► print(df)
```

	Brand	Sales
0	Maruti	250
1	Renault	200
2	Hyundai	240