```
 1 "C:\Users\Rafal Kostrzynski\AppData\Local\Programs\
   Python\Python38-32\python.exe" C:/ML_Lecture/venv/
   Code/LAB1.py
 2 Zeros:
 3  [0. 0. 0. 0. 0. 0. 0. 0. 0. 0.]
 4
 5 Fives:
 6  [5. 5. 5. 5. 5. 5. 5. 5. 5. 5.]
 7
 8 Ten to Fifty array:
 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
10  34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50]
11
12 3x3 matrix 0 to 8:
13  [[0 1 2]
14  [3 4 5]
15  [6 7 8]]
16
17 3x3 matrix zeros:
18  [[0. 0. 0.]
19  [0. 0. 0.]
20  [0. 0. 0.]]
21
22 Gaus:
23  [[-0.47746596  2.650929   -1.03597572  0.36435156  0
   .02066404]
24  [ 0.55700349 -0.1053755   1.0324112   1.20947812 -0.
   84402831]
25  [-0.8866055  -0.0163601  -0.88075344 -0.79816562  0.
   18620417]
26  [-1.28341602 -0.83682447 -1.32294611  0.16552714  0.
   88669714]
27  [-1.98814569  0.2566207  -2.60083773  1.74599005 -0.
   09514094]]
28
29 10x10 Array:
30  [[0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 ]
31  [0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19 0.2 ]
32  [0.21 0.22 0.23 0.24 0.25 0.26 0.27 0.28 0.29 0.3 ]
33  [0.31 0.32 0.33 0.34 0.35 0.36 0.37 0.38 0.39 0.4 ]
34  [0.41 0.42 0.43 0.44 0.45 0.46 0.47 0.48 0.49 0.5 ]
35  [0.51 0.52 0.53 0.54 0.55 0.56 0.57 0.58 0.59 0.6 ]
36  [0.61 0.62 0.63 0.64 0.65 0.66 0.67 0.68 0.69 0.7 ]
```

```
 [0.71 0.72 0.73 0.74 0.75 0.76 0.77 0.78 0.79 0.8 ]
 [0.81 0.82 0.83 0.84 0.85 0.86 0.87 0.88 0.89 0.9 ]
 [0.91 0.92 0.93 0.94 0.95 0.96 0.97 0.98 0.99 1
.  ]]

Evenly spaced values:
 [0.         0.05263158 0.10526316 0.15789474 0.
21052632 0.26315789
 0.31578947 0.36842105 0.42105263 0.47368421 0.
52631579 0.57894737
 0.63157895 0.68421053 0.73684211 0.78947368 0.
84210526 0.89473684
 0.94736842 1.        ]

Random numbers from 1 to 25:
 [14  9 15 23 18  6 20 15 21 11 23  5 11  6  2 13 19
23  9 16  2 10  5 12
 16]

Reshaped random numbers:
 [[14  9 15 23 18]
 [ 6 20 15 21 11]
 [23  5 11  6  2]
 [13 19 23  9 16]
 [ 2 10  5 12 16]]

Sum of all values:
 324

Mean of all values:
 12.96

Deviation of all values:
 6.384230572277288

Sum of columns:
 [58 63 69 71 63]

5 x 5 random numbers:
 [[60 39 23 70 46]
 [45 63 89 73 36]
 [29 50 31 70  5]
 [16 89 37 68 28]
 [81 20 28 77 32]]
```

```
 76
 77 Median of the random numbers:
 78  45.0
 79
 80 Min of the random numbers:
 81  5
 82
 83 Max of the random numbers:
 84  89
 85
 86 Random numbers with random axis size:
 87  [[26 69 78 96 63 26 18]
 88  [15  3 41 12 51  7 54]
 89  [23  7 59 31 92 56 66]
 90  [ 6 15 84  0 36 91 88]
 91  [11 62 93 21 94 12 70]
 92  [ 0 58 90 15  9  7 49]
 93  [18 37 69 24 48 71 19]
 94  [31 71 31  6 67 69 72]
 95  [25  1 99 35 13 74 29]
 96  [77 72 13 59 46 41 94]]
 97
 98 Transposition:
 99  [[26 15 23  6 11  0 18 31 25 77]
100  [69  3  7 15 62 58 37 71  1 72]
101  [78 41 59 84 93 90 69 31 99 13]
102  [96 12 31  0 21 15 24  6 35 59]
103  [63 51 92 36 94  9 48 67 13 46]
104  [26  7 56 91 12  7 71 69 74 41]
105  [18 54 66 88 70 49 19 72 29 94]]
106
107 Matrix A + Matrix B:
108  [[ 66  39  43  73  15]
109  [ 18   4  48  83  52]
110  [ 97  47  88  87  63]
111  [100  47  78  64  80]
112  [ 57  39  30  42  50]
113  [  5  14   6  88  29]
114  [ 53  56  35  63  52]]
115
116 Matrix A + Matrix B:
117  [[ 94  19  90  88  17]
118  [ 50  80  75  57  84]
119  [ 82  31  92  54  35]
```

```
 [ 70  69  67  46  18]
 [ 70  66 100  85  26]
 [ 17  12  50  48  77]
 [ 15  12   1  94   4]]

Matrix A + Matrix B:
 [[160  58 133 161  32]
 [ 68  84 123 140 136]
 [179  78 180 141  98]
 [170 116 145 110  98]
 [127 105 130 127  76]
 [ 22  26  56 136 106]
 [ 68  68  36 157  56]]

Matrix A for multiplication:
 [[ 73  20  54   9]
 [ 89  86  94  63]
 [ 78  78  57  47]
 [ 32  93  58  40]
 [ 80 100  59  57]
 [ 31  31  10  17]
 [100  49  46  61]]

Matrix B for multiplication:
 [[34 47  7 92 49 58 40]
 [64 59 71 43 41 72 41]
 [14 85 82 13 67 91  8]
 [36 79 94  2 87 23 69]]

Matrix A * Matrix B with np.matmul():
 [[ 4842  9912  7205  8296  8798 10795  4793]
 [12114 22224 20359 13234 19666 21357 12185]
 [10134 16826 15176 11365 14928 16408 10017]
 [ 9292 15081 15343  7777 12747 14750  8317]
 [11998 19178 17856 12541 16932 18520 11705]
 [ 3790  5479  4836  4349  4939  5331  3764]
 [ 9376 16320 13685 12027 15298 14917 10586]]

Matrix A * Matrix B with np.dot():
 [[ 4842  9912  7205  8296  8798 10795  4793]
 [12114 22224 20359 13234 19666 21357 12185]
 [10134 16826 15176 11365 14928 16408 10017]
 [ 9292 15081 15343  7777 12747 14750  8317]
 [11998 19178 17856 12541 16932 18520 11705]
```

```
164  [ 3790  5479  4836  4349  4939  5331  3764]
165  [ 9376 16320 13685 12027 15298 14917 10586]]
166
167
168 Process finished with exit code 0
169
```