**Programming Tools for Mathematics**

**Lab Assignement N°2**

**Exercise 1** Start a new MATLAB session.

1. **Variable creation** : Generate variables according to their description as follow :
2. A : a row vector of values ranging from 3 to 5 with a unit step.
3. B : a row vector of values ranging from 3 to 46 incremented by 7.
4. Initialize a row vector D containing 5 columns to 0
5. Initialize a column vector E containing 3 rows to 5
6. Initialize C : a vector of 7 columns with real random values between 0 and 1
7. F: a column vector of twelve equally spaced elements ranging from 9 to 24

|  |  |  |  |
| --- | --- | --- | --- |
| 16 | 3 | 2 | 13 |
| 5 | 10 | 11 | 8 |
| 9 | 6 | 7 | 12 |
| 4 | 14 | 15 | 1 |

1. G: a vector composed of the both A and B variables on the same row. What is the name of this operation?
2. What is the length of vector G?
3. H : a null square matrix of order 5
4. I = elements of the showed matrix
5. J : a 5 by 2 matrix of elements equal to 3.7.
6. K : random integer values, on a matrix of 4 rows by 3 columns
7. L : composed of H and J matrices, on the 1st row and I and K matrices on the 2nd row,
8. How many rows are there on L? how many columns? How to obtain the size of L according to its dimension?
9. M: Transpose the last matrix
10. Same as question 14 using M matrix
11. **Variable indexing** : Type the right commands to extract indicated elements to the specified variables :

|  |  |  |  |
| --- | --- | --- | --- |
|  | Asked variable | Description | Original variable |
|  | a | The 1st element. | A |
|  | b | All elements | B |
|  | c | From the 4th to the last element | C |
|  | f | The 1st, 3rd, 2nd, and last elements (respect this order) | F |
|  | h | Element on the 2nd row and 3rd column | H |
|  | i | The 7th element | I |
|  | k | Elements on these index: 2,4,6,8 | K |
|  | l | Elements on the intersection of the 3rd, 6th, 7th rows and 1st, 4th, and 7th columns. | L |
|  | m | All elements of the 1st, 3rd, 2nd, and last column respectively | M |
|  | n | The sub-matrix formed by the first 5 rows. | M |
|  | p | Interchange the 2nd and 4th rows , and columns 1 and 3. | M |