

ASSIGNMENT #2

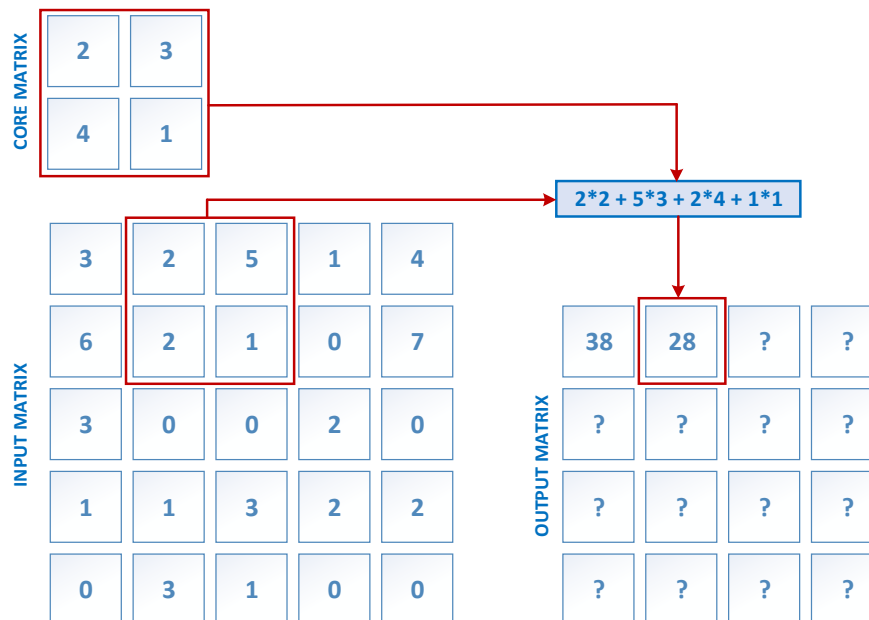
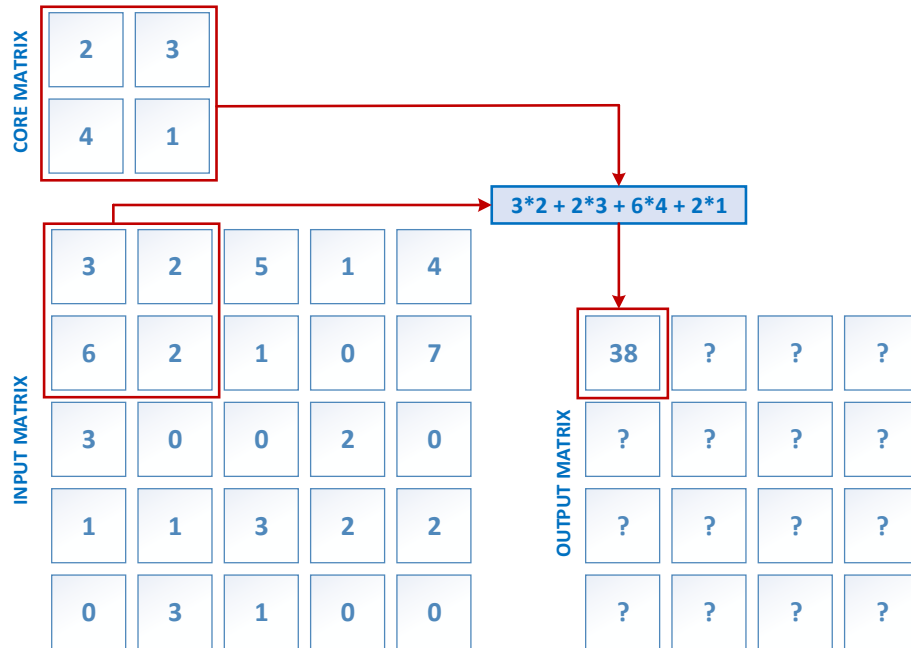
SUBJECT & BASIC INFORMATION

➡ Writing down the C++ program that calculates a result matrix depending on these criteria below:

- ✚ A = B**C and ** is a special matrix operation on B and C
- ✚ B is an input square matrix
- ✚ C is core square matrix/frame
- ✚ A is the output/result matrix
- ✚ Initially, core frame is set onto numbers of the top left of the the input matrix
- ✚ The overlapping cells are multiplied by themselves, the resulting products are summed and written to the first cell in the result matrix.
- ✚ In the next step, the core frame is shifted by 1 to the right on the input matrix and the same processes are repeated until the end of the current column
- ✚ When the frame reaches the end of the column of related row as a result of iterative operations, it is taken to the beginning of the row again and shifted by 1 to the next row.
- ✚ The size of the output matrix depends on the size of input matrix, size of core frame and will be calculated as follows:
 - The number of columns of the output matrix will be calculates as follows:

$$output_row_size = (input_row_size - core_row_size) + 1$$
 - Because, matrixes are square, the number of rows of the output matrix equals to the number of rows

➡ FIRST TWO STEPS OF OUTPUT MATRIX CALCULATION FOR A 5X5 INPUT AND A 2X2 CORE MATRIX



REQUIREMENTS

➡ The values of input matrix (A) should be:

```
unsigned int input[10][10]={3,2,5,1,4,5,7,8,1,0,
6,2,1,0,7,4,1,0,3,1,
3,0,0,2,0,1,5,2,0,0,
1,1,3,2,2,4,3,3,3,1,
0,3,1,0,0,4,6,1,1,2,
7,1,2,2,1,0,3,3,4,7,
4,3,6,0,3,9,9,8,8,1,
5,3,1,2,7,6,1,5,3,1,
0,3,1,0,0,4,6,1,1,2,
3,0,1,2,0,1,4,2,1,5};
```

- ➡ Your program should run when the input matrix is changed (eg. while controlling your homeworks other input test matrixes will be used)
- ➡ Size of core matrix/frame(B) will be between 2x2 and 5x5 (size should be declared at first), the values of this matrix should be between [1-10] and entered by the user.
- ➡ The maximum size of the output matrix will be 100x100.
- ➡ Output each of these on the screen
 - ✚ input matrix in the matrix format
 - ✚ core matrix in the matrix format
 - ✚ result matrix in the matrix format

RULES & EVALUATION

- ➡ Using a **goto** statement is strictly prohibited.
- ➡ Each C++ file should include this comment lines below at the beginning of the C++ file

```
//*****
//**
//**      STUDENT NAME.....:      **
//**      STUDENT NUMBER.....:    **
//*****
```

- ➡ You should compile your codes with **Microsoft Visual Studio 2019**. (NOTE: If you use another compiler, please test your codes with these compilers before uploading your homework on system)
- ➡ **Deadline:** Control SABIS system
- ➡ A report should be prepared for each assignment
 - ✚ First page of the report should be a cover page including student information (name, surname, number, lecturer, course name, ...)
 - ✚ The content of the assignment (a brief explanation of your program) should be included after the cover page
 - ✚ At the end of the report, there should be an **'honor code'** signed by yourself.
- ➡ You should upload only your C++ file (.cpp file) and your report (in pdf format) together before deadline.
- ➡ Evaluation Criteria
 - ✚ Comment lines (student information, explaining operations like variable names, if statements, loops, etc.)
 - ✚ Obeying the variable declaration rules
 - ✚ Being readable (intendation, comments, etc.)
 - ✚ Correct compilation of the code
 - ✚ Reporting (cover page, content, honor code, etc.)
 - ✚ ...