**Problem #1 (10 marks)**

**Matrix Transpose**

Write a program that will transpose a given 2-D square matrix. Transpose of a matrix is obtained by changing rows to columns and columns to rows. As input, the program will read the dimension *d* of the matrix followed by the elements of the matrix. **You have to use dynamic memory allocation (malloc), i.e., you are not allowed to use static array. You have to transpose the matrix in place without using any additional matrix other than the one used for input.**

|  |  |
| --- | --- |
| **Sample Input(s)** | **Corresponding Output(s)** |
| 3  1 2 3  4 5 6  7 8 9 | 1 4 7  2 5 8  3 6 9 |

**Problem #2 (10 marks)**

**Bit Reverse**

Write a C program that takes an unsigned integer number as input and reverses the bits of the number using **bitwise operators**. **You have to reverse the bits in place.**

|  |  |
| --- | --- |
| **Sample Input(s)** | **Corresponding Output(s)** |
| 4 | 8192 (assuming 2-byte integer) |

**Explanation:**

4= 0000000000000100

8192=0010000000000000