Assignment - 1

For a n x n identity matrix, the rows are R1,R2,…,Rn and columns are C1,C2,…,Cn. Consider a binary string of length n-1. The position of 1 in the string indicates that which columns/rows of the identity matrix are to be added. The following example illustrates how the transformed matrices are generated considering binary strings.

Example: Let a 4x4 identity matrix be

1 0 0 0
0 1 0 0
0 0 1 0
0 0 0 1

For binary string of length 3, the following matrix operations are defined considering rows.

Serial No.	Binary String	Operations to be performed	Final Matrix
1	000	R1,R2,R3,R4	1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1
2	001	R1,R2,R3+R4	1 0 0 0 0 1 0 0 0 0 1 1
3	010	R1,R2+R3,R4	1 0 0 0 0 1 1 0 0 0 0 1
4	011	R1,R2+R3+R4	1 0 0 0 0 1 1 1
5	100	R1+R2,R3,R4	1 1 0 0 0 0 1 0 0 0 0 1
6	101	R1+R2,R3+R4	1 1 0 0 0 0 1 1
7	110	R1+R2+R3,R4	1 1 1 0 0 0 0 1
8	111	R1+R2+R3+R4	1 1 1 1

Similarly, for binary string of length 3, the following matrix operations are defined considering columns.

Serial No.	Binary String	Operations to be performed	Final Matrix
1	000	C1,C2,C3,C4	1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1
2	001	C1,C2,C3+C4	1 0 0 0 1 0 0 0 1

			0 0 1
3	010	C1,C2+C3,C4	1 0 0 0 1 0 0 1 0 0 0 1
4	011	C1,C2+C3+C4	1 0 0 1 0 1 0 1
5	100	C1+C2,C3,C4	1 0 0 1 0 0 0 1 0 0 0 1
6	101	C1+C2,C3+C4	1 0 1 0 0 1 0 1
7	110	C1+C2+C3,C4	1 0 1 0 1 0 0 1
8	111	C1+C2+C3+C4	1 1 1 1

Now enter binary string for row (say x) and column (say y)
Enter x = 001
Enter y = 110

Initial Identity Matrix (I)		Matrix (say I_{row}) after row-wise operation on I considering string x		Matrix after column-wise operation on I_{row} considering string y
1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1	Perform x = 001	1 0 0 0 0 1 0 0 0 0 1 1	Perform y = 110	1 0 1 0 1 1

Sample Input/output:
Enter the number of rows in the identity matrix = 4
Enter x = 001
Enter y = 110
Final matrix:
1 0
1 0
1 1

Use separate functions to perform the different functionalities. The name of the program should be **assign1_<ROLL_NO>.c**. If you copy others' program or if you allow others to copy your program then in both cases the penalty will be same.