CSE 110 Online
Bitwise operator, 2-D Array and Recursion

Full Marks: 20 **Time: 60 minutes**

Problem #1 (6 marks)
Grading MCQ Exam

Write a program that does the grading of students who have attended an MCQ exam. For example, let us assume there are four students and the MCQ exam had five questions (each had options A, B, C, D). The answers are stored in a two dimensional array where each row records a student's answers to the questions. The correct answer is A B B A C. Each question has one mark. You have to calculate the marks obtained by each student and store it in a one dimensional array.

Sample Input(s)	**Corresponding Output(s)**
4 5 A B B A C A B A C C B C C A B C D A A D D A B A B	3 1 1 2

Problem #2 (7 marks)
Series Summation by Recursion

Write a program that finds the sum of the following series using Recursion:
f(n) = (1) + (2*3) + (4*5*6) + … up to n terms
For n = 2, f (n) = (1) + (2*3) = 7
For n = 4, f (n) = (1) + (2*3) + (4*5*6) + (7*8*9*10) = 5167

Sample Input(s)	**Corresponding Output(s)**
2 4	7 5167

Problem #3 (7 marks)

Bit invert

Write a C program to toggle or invert n-th bit of a number. The program takes an unsigned integer number u as input and reverses the n-th bits of the number using **bitwise operators**.
For example, for u = 4 and n = 9, the output is 516.
You have to perform this operation in place, which means you can not use an additional integer or array to store the result.

Sample Input(s)	**Corresponding Output(s)**
4 9 4 1	516 (assuming 2-byte integer) 6

Explanation:
0000000000000100 = 4
0000001000000100 = 516