CS 211 Data Structures and Algorithms Lab
Details of course project

Bulls and Cows is an old two-player code-breaking game. A variant of it is described below.

Let's call the two players A and B. At the beginning of the game, both A and B should have a secret four-digit number with them. A secret number should not start with '0' and all the digits should be distinct. For example 1873 is a valid secret number whereas 0164 and 8843 are not.

A and B take turns to ask questions to break each other's secret number. The one who takes lesser number of questions to discover other's secret number wins the game. If both A and B take equal number of questions, then there is a tie.

A question is again a four-digit number. Here, repetition of digits is allowed. Further, a question can start with '0'. When a player asks a question, then the opponent replies with the number of bulls and cows. A bull is a digit which is in the same position in both the question and in the secret number, whereas a cow is a digit which is present both in the question and in the secret number, but in a different position.

For example, let B's secret number be 3480. If A ask the question 4583, then B answers 1 bull and 2 cows (here bull is the digit 8 and two cows are the digits 3 and 4). If A asks the question 3395, then B's answer will be 1 bull and 0 cow (note that 3 is counted as a bull, not as a cow).

Your task:

Students will be split into various teams. Each team is supposed to write a program which represents one player in the game. Your program will compete with other teams' programs. The input/output formats and the evaluation plan will be intimated later.

Please send the details of your team by 31st July. A team should contain at least two members and at most four members.