

# Practice Problems

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2022-11-17

## Basic

1. Do you know what “FLAMES” calculation is? Google it. Write a function that takes the names of two people and calculates the “FLAMES” compatibility .
2. Write a function that takes a number of teams and generates a groups matching schedule (for FIFA/ IPL).
3. Encrypting text is a huge application of programming. Write a code that takes a string and transforms it using the following rules:
  - a. All numbers are changed to corresponding lower case alphabet (1 is changed to a, 2 to b and so on.)
  - b. All alphabet are shifted by 2, in uppercase. (a is C, B is D, X is Z, Z is B)
  - c. All special characters are maintained as they are.
4. Write a function that takes a date and finds out the day of the year. The input format of the date shall be “DD-MM-YYYY”. Assume that each year has exactly 365 days (ignoring the concept of leap years). Then find out which R function allows you to do the same thing. Check the output of your function against that of the R function.

## Intermediate

1. Implement the bubble sort algorithm for a vector of numbers. See this video to understand bubble sort: <https://www.youtube.com/watch?v=Cq7SMsQBEUw>
2. Write a function that takes four digits and identifies the set of arithmetic operations that when applied on the numbers result in the number 10. For example, if the numbers are 5,2,1,2;  $5*2*(2-1)$

## Advanced

1. Implement quick-sort algorithm.
2. Design the game tic-tac-toe in the console for two players. Think about how to design a bot to play the game for you.