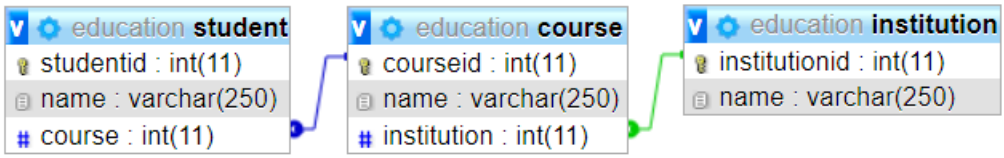
TASKS

Write <u>efficient</u> algorithms to solve each of the three tasks below:

1) Given an array K with N integers from 1 to N+1 such that the array has exactly one integer missing, write a Java function that returns the missing integer.
   e.g. given K = [3,5,4,1], the function should return 2

2) Given a string S of length N, write a Java function that transforms the string by reversing characters in groups of four, and returns the transformed string.
   e.g. when S = 'Lorem at' the output should be 'eroLta m'
   when S = ' Tempor ip' the output should be 'meT roppi'

3) You're given a database (education) with three tables (student, course, institution) as illustrated below:



   a) Use the diagram above to create the tables (the database, table and column names should remain as indicated)
   b) Write a MySQL query that will display the number of students per course per institution in the format below

INSTITUTION NAME	COURSE NAME	NUMBER OF STUDENTS
University College Dublin	Bsc. Actuarial Science	50
University College London	MPhil Genomics	9