

Card flip magic - error detection and correction

Is this ZE car really a connected vehicle ?...

1 Assignment and final task.

This is a team work using mathematics to conceive important principles in computer science. Feel free to share roles according questions on a voluntary basis. All members of the team have to speak equally when filming. Be creative !

2 The problem and work procedure.

ZE car is designed by Renault, French car manufacturer to be used as a connected car, using electronically signals to convert information. But how reliable are these signals in real ?

1. View the film "Computer Science Unplugged, Part 3, Parity" and discuss to ensure that you understand it all.
2. Make cards with zeroes on front sides and ones on back sides and perform the magic trick, as in the video.
3. View the film "PresentationDuCode" to understand the mathematical content of the magic trick. Discuss to ensure that you understand it all.
4. Explain the reasoning of the trick.
5. View the film "CasParticuliers" to enlarge your understanding of error detection. Discuss to ensure that you understand it all.
6. What's happening in case of two errors instead of one ? Comment.

3 Elements needed in the video.

Comment, explain, raise questions, give reasoning, convincing argument and a final solution.

Remember, YOU are the experts in sciences stating the problem and finally solving it for an international audience of your presentation. Don't be boring! Audience surely appreciates clear reasonings as well as creativity when listening to you!

Your video should contain the following elements :

- perform a magic trick as a game,
- explain the reason for two separate colors on each card,
- give reasons for the additional column and row apparently for fun in the trick,
- explain the trick mathematically,
- what principles useful in real life are shown through this trick,
- to which extent does this situation really happen in real life.