

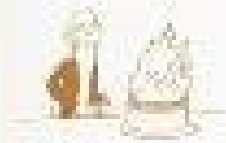
趣味应用-不插电的计算机科学

徐迎晓

xuyingxiao@126.com

COMPUTER SCIENCE
*Unplugged*SM

Understanding computing
through games and puzzles



Tim Bell
Andrea Arpaci-Dusseau 
in Milan
Mila Felloni

Scott Brumley
Mort Powell



吴廷华 译



不插电的

计算机科学

玩智力游戏 学信息知识

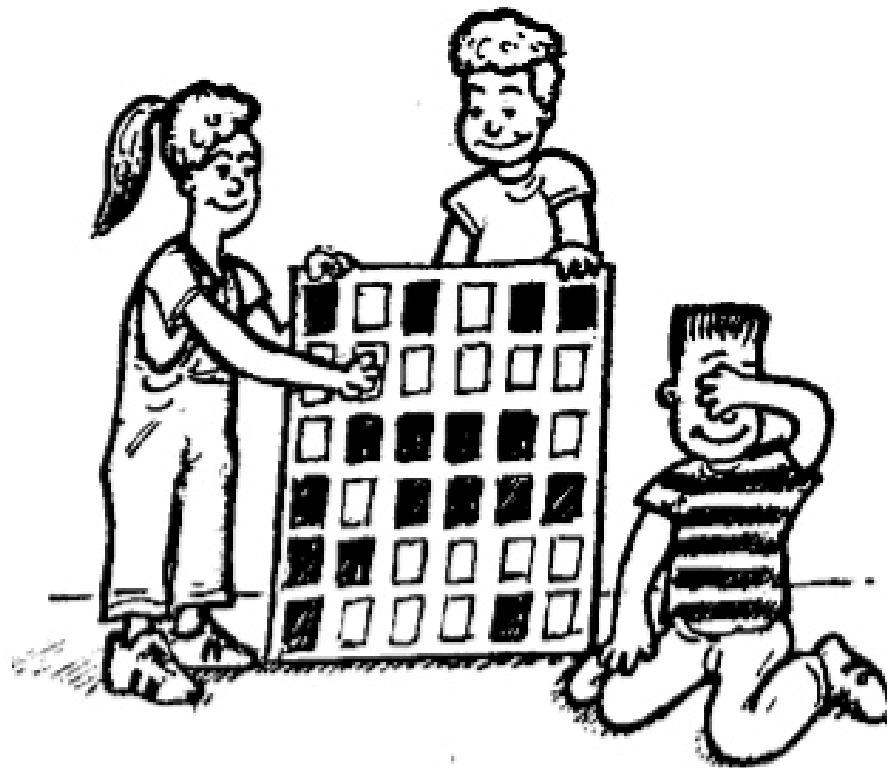


CARD FLIP MAGIC

- When data is stored on a disk or transmitted from one computer to another, we usually assume that it doesn't get changed in the process. But sometimes things go wrong and the data is changed accidentally.
- This activity uses a magic trick to show how to detect when data has been corrupted, and to correct it.



CARD FLIP MAGIC



CARD FLIP MAGIC

- This exercise illustrates even parity.
- When computer data is transmitted to another computer, extra bits are added so that the number of 1s is even.
- The receiving computer can detect if something gets messed up during the transmission and can correct it if there is one error.
- What happens if there are two errors?

CARD FLIP MAGIC

- Here is an example of parity in real life:

$$\begin{array}{r} 1 \times 10 = 10 \\ 4 \times 9 = 36 \\ 2 \times 8 = 16 \\ 5 \times 7 = 35 \\ 9 \times 6 = 54 \\ 3 \times 5 = 15 \\ 7 \times 4 = 28 \\ 6 \times 3 = 18 \\ 7 \times 2 = \underline{14} \end{array}$$

$$226 / 11 = 20 \text{ remainder } 6$$

$$\text{Checksum Digit} = 11 - 6 = 5$$



CARD FLIP MAGIC

- More parity:



|||||
Homer J. Simpson
742 Evergreen Terrace
Springfield, OR 97477-1357

- 技术
- 管理，策略
- 开眼界
- 案例分析

- 对象 → Learning Object → Serious Game
- 计算思维