TRADURRE IN ITALIANO IL TESTO SEGUENTE:

Coins for Making Change Efficiently (by Ivars Peterson)

Most businesses in the United States make change using just four different types of coins: 1 cent (penny), 5 cents (nickel), 10 cents (dime), and 25 cents (quarter). This distribution of coinage suggests an interesting question: Is it the most efficient way to make change? In other words, is this the optimal choice of coin values for minimizing the number of coins required to handle typical transactions?

The item I had just bought cost 29 cents. I gave the cashier a dollar bill, and she gave me two quarters, two dimes, and a penny in change. She could just as well have given me seven dimes and a penny or some other combination of coins adding up to 71 cents, but there's no way she could have made change with fewer than five coins.

Computer scientist Jeffrey Shallit of the University of Waterloo has worked out an answer. In finding coin denominations that minimize the average cost of making change, Shallit assumed that every amount of change between 0 and 99 cents is equally likely. For the current four-denomination system, he found that, on average, a change-maker must return 4.70 coins with every transaction. But the combination of 1 cent, 5 cents, 18 cents, and 25 cents requires only 3.89 coins in change per transaction, as does the combination of 1 cent, 5 cents, 18 cents, and 29 cents.

"We would therefore gain about 17 percent efficiency in change-making by switching to either of these four-coin systems," Shallit says. "The trouble with 18-cent pieces," he admits, "is that it's hard to figure out the best way to make change in your head."

Despite its apparent inefficiency, the current U.S. system of coin denominations has a striking advantage over many other possible systems. When most people make change, they give the coins of highest value first, then the next highest, and so on. Computer scientists call such a scheme the "greedy algorithm."

The nice thing about the current system is that the greedy algorithm always gives the smallest number of coins possible within the system, whereas for other sets of denominations the greedy algorithm doesn't always give the minimum number of coins. For example, if coins had the values 1, 7, and 10, the greedy algorithm would represent 14 as $10 + 1 + 1 + 1 + 1$, whereas the combination $7 + 7$ uses fewer coins.

The Euro system would benefit from the addition of a 1.33 or 1.37 Euro coin...

TRADURRE IN INGLESE LE FRASI SEGUENTI:

1. La moneta da 29 centesimi sarebbe piuttosto difficile da usare.
2. Gli Stati Uniti non hanno mai prodotto una moneta da 18 centesimi.
3. Il sistema americano ha meno monete di quello europeo.
4. Quante monete sono necessarie per fare 83 centesimi?
5. Mi presteresti 83 centesimi?