

User interface design for vending machines

 devblogs.microsoft.com/oldnewthing/20050112-00

January 12, 2005



Raymond Chen

How hard can it be to design the user interface of a vending machine? You accept money, you have some buttons, the user pushes the button, they get their product and their change. At least in the United States, many vending machines arrange their product in rows and columns (close-up view). To select a product, you type the letter of the row and the number of the column. Could it be any simpler? Take a closer look at that vending machine design. Do you see the flaw? (Ignore the fact that the picture is a mock-up and repeats row C over and over again.) The columns are labelled 1 through 10. That means that if you want to buy product C10, you have to push the buttons “C” and “10”. But in our modern keyboard-based world, there is no “10” key. Instead, people type “1” followed by “0”. What happens if you type “C”+”1”+”0”? After you type the “1”, product C1 drops. Then you realize that there is no “0” key. And you bought the wrong product. This is not a purely theoretical problem. I have seen this happen myself. How would you fix this? One solution is simply not to put so many items on a single row, considering that people have difficulty making decisions if given too many options. On the other hand, the vendor might not like that design, since their goal is to maximize the number of products. Another solution is to change the labels so that there are no items where the number of button presses needed do not match the number of characters in the label. In other words, no buttons with two characters on them (like the “10” button). Switch the rows and columns, so that the products are labelled “1A” through “1J” across the top row, and “9A” through “9J” across the bottom. This assumes you don’t have more than nine rows. (This won’t work for super size vending machines – look at the buttons on that thing; they go up to “U”! You can see another solution in that most recent vending machine: Instead of calling the tenth column “10”, call it “o”. Notice that they also removed rows “I” and “O” to avoid possible confusion with “1” and “o”. A colleague of mine pointed out that some vending machines use numeric codes for all items rather than a letter and a digit. For example, if the cookies are product number 23, you punch “2” “3”. If you want the chewing gum (product code 71), you punch “7” “1”. He poses the following question: What are some problems with having your products numbered from 1 to 99?

Answers next time.

[Raymond Chen](#)

Follow

