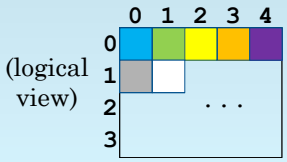
Multiply "Larger" Dimension by Size of Smaller

We choose which dimension to map first.

Here, row index **y** is multiplied by **width**:

(x,y) → y * width + x



(logical view)

(layout in memory)

Let's Have Some Fun

Time for some fun…

Let's play cards!

You can teach me …

… how to sort my hand.

Parameters and Local Variables for Insertion Sort

```
void insertion_sort
(int32_t values[], int32_t num_vals)
{
    int32_t sorted, current, index;
```

the cards (each 0 to 12)

the number of cards

number sorted (after loop body)

card to insert

position to insert

Main Loop: Sort One Card at a Time Until All are Sorted

One card is always sorted, so start with 2.

Done when **num_vals** cards are sorted.

```
for (sorted = 2; num_vals >= sorted;
     sorted++) {
    // insert one more card
}
```

Sort one card at a time.

loop invariant: before loop body, first (**sorted – 1**) cards are sorted

