CompSci 6
Programming Design and Analysis

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Announcements

- Assignment 6 was out before spring break
  - Breakout – be sure to snarf code!
- Topic today is 2D arrays
- No reading for next time.

Two-Dimensional Arrays

```
int [][] values = new int[20][15];
```

- Declares an array with 20 rows, 15 cols
- Sum up all the values

```
int sum = 0;
for (int k=0; k<20; k++)
{
   for (int j=0; j<15; j++)
   {
      sum += values[k][j];
   }
}
```

Classwork Today

- APT – Pixmap
  - Read in 1D array and convert to 2D array
  - Print 2D array
  - Expand the 2D array
  - Print 2D array again
  - Convert new 2D array back to 1D array

Idea

- Convert 1D array to 2D array
- Each item in 2D array is replaced by 3 rows and 4 cols of that item

```
1D array: 1 2 3 4
2x2

2D array:

   ┌─┐
   │1│2
   └─┘
    3 4

Expand 3x4

2D array expanded:

 ┌─────────┐
 │1 1 1 1  │2 2 2 2
 │1 1 1 1  │2 2 2 2
 │1 1 1 1  │2 2 2 2
 └─────────┘
  3 3 3 3 4 4 4 4
  3 3 3 3 4 4 4 4
  3 3 3 3 4 4 4 4
```

Idea (cont)

- Convert 2D array back to 1D array:

111122221111222211112223334443333444433334444