Using Arrays in Parallel

- Data is often organized along more than one *dimension*
    - This is why spreadsheets are so useful
    - Rows represent entities
    - Columns represent information
- How would you represent this data in a C++ program?

0	1	2	3	4

Ed	John	Peter	Mary	Pedro
99	100	100	100	98

name_array[1] ⇔ John
lab1[1] <=> the grade of lab 1 for John

	A	B	C	D
1	student id	lab1 score	lab2 score	
2				
3	u307780	95	66	
4	u675421	99	84	
5	u418245	91	97	
6	u105767	57	80	
7	u665907	72	86	
8	u957906	71	86	
9	u878762	60	97	
10	u120275	36	73	
11	u605893	77	87	
12	u660981	39	33	
13	u568151	36	58	
14	u900906	75	44	
15	u592930	74	43	
16	u319177	69	34	
17	u491202	32	81	
18	u359348	30	67	
19	u630760	87	84	
20	u103412	78	84	
21	u436856	84	68	
22	u899514	99	95	
23	u720524	90	32	
24	u421949	58	57	
25	u486141	48	30	
26	u859146	43	43	
27				

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- How would you represent this data in a C++ program?
  - A 2-dimensional array
    - Limited to one data type (int)
  - 3 arrays used in parallel
    - Can have different column types

	A	B	C	D
1	student id	lab1 score	lab2 score	
2				
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4	u675421	99	84	
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Using Arrays in Parallel

- Declare three arrays of the same length
  - string id[24];
  - int lab1[24];
  - int lab2[24];
- The values for a row are found at the same position/index in the three arrays
  - Row 10 ID: id[9]
  - Row 10 lab1 score: lab1[9]
  - Row 10 lab2 score: lab2[9]

	A	B	C	D
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27				

Example: employee data

- For each employee, we have:
  - Name
  - Position
  - Review score
  - For example, in our text file:

peter	manager	86
michael	developer	68
samir	developer	75
lumbergh	vp	82

1. **Declare variables to hold/store the data**
2. Read from the file into the variables
3. Print out the data