CS161
Intro to Computer Science I

Arrays
Chap. 7.1 – 7.2

What is an Array?

- **Array (ar-ray) n.** An ordered arrangement of related items.
  - Example: Array of colors in a rainbow.
    - Related items?
    - Ordered arrangement?
  - Class examples?
  - Computer Science
    - Same data type/data structure
    - Contiguous memory locations

Create 1-D Array

```java
int student_grades[] = new int[5];
```

- How do you access each item?
- What does the array name represent?
- Why is the array name the address of 1st element?
- What are the initial values?
Initialize/Assign Values

- Declaration
  `int student_grades[] = {0, 0, 0, 0, 0};` OR
  `int student_grades[] = {0};`
- Individual Elements
  `student_grades[0]=0;`
  `...`
  `student_grades[4]=0;`
- Why is this incorrect?
  `student_grades={0, 0, 0, 0, 0};`

Initialize/Assign Values...

- Using a Loop
  While Loop Example:
  `i=0;`
  `while (i<5) {
    student_grades[i]=0;
    i++;
  }

  For Loop Example:
  `for(i=0; i<5; i++)
  student_grades[i]=0;`
- Which is better to use with arrays and why?

Read/Print 1-D Array Values

- Read Values From User
  `for(int i=0; i<5; i++) {
    System.out.println("Enter final grade for student "+(i + 1)+": ");
    student_grades[i] = input.nextInt();
  }

- Print Values
  `for (int i=0; i<5; i++) {
    System.out.println("Student "+(i+1)+"'s final grade is "+student_grades[i]);
  }`
Class Exercise

- Start a Java program.
- Create a 1-D Array.
- Assign values to the array.
- Print the starting address of the array.
- Print the sum of the items in the array.