CSE 8A Lecture 22

• We made it – yayyy!!!
• SMarx extra final exam office hours Fri 3/15 11:15am-1pm  EBU-3B #2206
• Reminder must earn 55% or above on final exam to pass CSE 8a
• Verify grades on gradesource.com
  • Reading Quiz for Week 8 is being fixed
JAVA ARRAYS

An array is a collection of data whose elements form an ordered sequence. The elements are all the same data type (char, int, double, ...)

```java
int motel[] = {1, 3, 4, 0, 3, 2};
```

```
motel [0] [1] [2] [3] [4] [5]
  1  3  4  0  3  2
```
int age[] = {10, 20, 30, 40}; // Array of 4 integers

char[] name = {'S', 'a', 'm'}; // Array of 3 chars

double[] bank = {99.9, 88.8, 77.7}; // Alloc, init, assign
public class Grades1
{
    public static void main( String [] args )
    {
        int i, grades[];       // Declaration, no memory allocated
        grades = new int[ 4 ];  // Allocate memory dynamically

        for( i = 0 ; i < grades.length ; ++i )    // Fill with values
            grades[i] = i + 2;

        for( i = 0 ; i < grades.length ; ++i )    // length member
            System.out.println( "grades[" + i + "] " + grades[i]);
    }
}

"int [] grades;" is a declaration for the array name, grades

"grades = new int [4];" causes the dynamic allocation of memory
        for 4 whole numbers

The "[]" brackets is really an operator. The enclosed value is an "offset" of the
number of elements from the beginning address.

• Invalid array element reference generates an ArrayIndexOutOfBoundsException
Suppose the Registrar’s office asked CSE 8a to write an application to manipulate student records.

Discuss what attributes a “class Student” has:
Let’s list some of them:

- name
- id
- address
- gpa
- grades
What data type are these?

```java
??? id;
??? gpa;
??? name;
??? pid;  // “A” + id++ (A101)
??? grades;
```

A) double  
   int
   String
   String
   String

B) int
   int
   String
   int []

C) int
   double
   String
   int []

D) other
Let us create a class with instance variables. What actions operate on the data (methods)?

class Student
{
    int id;
    double gpa;
    double[] grades;
    String pid;       // “A” + id++

    // ???
}

class Student
{
    private int id;       // private data
    private double gpa;
    private double [] grades;
    private String pid;   // “A” + id++ (A101)

    public ______ Student (int i, double []g, double gp, String pd){ /* */ }
    public ______ print( ){ /* some code */ }
    public ______ avgGrade(){ return 0.0; /*stub */ }
}

A) void B) blank C) void D) blank
    void       void   int    String
    void       double double    int
class Student
{
    private int id;                        // instance variables
    private int [] grades;
    private double gpa;
    private String pid;                   // “A” + id++ (A101)

    public Student (int i, int []g, double gp){ /* */ }
    public void print (){ /* some code */ }    // instance methods
    public double avgGrade(){ return 0; /*stub */ }

    public static void main(String [] args)    // Driver
    {
        int [] myExam = {10, 14, 16, 20};
        Student s1 = new Student( 101, myExam, 3.2 );
        System.out.println( s1.avgGrade() );
        s1.print();
    }
}
class Student
{
    private int id;
    private int[] grades;
    private double gpa;
    private String pid;

    public void Student (int i, int []g, double gp){ /* */ }
    private void print () { /* some code */ }
    public double avgGrade() { return 0; /*stub */ }

    public static void main(String [] args)
    {
        int [] myExam = {10, 14, 16, 20};
        Student s1 = new Student( 101, myExam, 3.2 );
        System.out.println( s1.avgGrade() );
        s1.print();
    }
}
• Study!

• Final Exam
  - A00 Fri 3/15 8-10am Pepper Cyn 106
  - B00 Wed 3/13 11:30am–1:30pm TBA