CSE 11
Accelerated Intro to Programming
Discussion Section 3

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Logistics

- PA2 is due today
- PA3 released today
- PA2 resubmission will launched tomorrow and due after 2 weeks

Lecture recap

- Classes
    - Combine simple pieces of data together into more complicated structures
    - For example, two integers can be used to represent a point in 2D space
- Constructors
    - It does not make sense to have a fixed x and y in the point class
    - We use constructors to create objects in the class
- Objects
    - Instances of the class
    - In many cases there are infinitely many objects
        - For example, the number of points is infinite

User defined data type
— data (fields)
~ methods
— constructors ⟶ objects

specific
instances

Point
x, y

P (2, 3)

```
class Point {
    int x;
    int y;
    Point(int x, int y) {
        this.x = x;
        this.y = y;
    }
    Point add(Point other) {
        return new Point(this.x + other.x, this.y + other.y);
    }
}
```

Point p1 = new Point(6, 2)

$$p1.x = 2 + p2.x = 3$$
$$p1.y = 3 + p2.y = 5$$

Point p3 = P1.add(P2)

P3.x = 5   P3.y = 8

Lecture recap

$8 \times 4 = 0 \cdot 32$ bits the

- int $\leftarrow$ ④ bytes $2^{31}(-1)$ to -2^{31}

  -2^{31} 2^{31}

- boolean $\leftarrow$ 1 bit T or F

  int a = 2^{32};

  a = $2^{31} - 1$;

- String

- double $\leftarrow$ 8 bytes

  10^{-324} to 10^{308}

  - Floating point number
  - Use with caution

    $1/2 \rightarrow 0 \rightarrow d$

    - double value1 = 1/2;
    - double value2 = 1.0/2;
    - double value3 = 1/2.0;
    - double value4 = 1.0/2.0;

    $1.0/2 = 0.5$

    $1/2.0 = 0.5$

  - Not precise

    $1.0/2.0 = 0.5$

Lecture recap

Inbuilt Math

- Math library
  - https://docs.oracle.com/en/java/javase/15/docs/api/java.base/java/lang/Math.html
  - Lots of useful methods:
    - max/min
    - abs
    - pow
    - sqrt
    - log
    - …

$$Math.pow(2, 3)$$

$$2^3$$

PA3

- https://github.com/CSE11-SP21-Assignments/cse11-sp21-pa3-starter
- Due next Wednesday at 11:59pm PST
- Lots of stuff going on. Seek help if necessary
- Start early!

Thanks!