

CS120: More Mutable Objects

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factor in Java



geometry in Java



More Java Objects: Pros and Cons of Immutability

Immutable objects:

- + Reliability: you know methods cannot modify your objects
- + Reliability: references to like objects can reference the same object
- Often more efficient to modify existing object rather than creating another

```
String text = "";  
while (in.hasNextLine()) {  
    String line = in.nextLine();  
    text = text + line + "\n";  
}  
System.out.print("You entered:\n" + text);
```

Inefficient use of `String`: much object creation and garbage collection.



More Java Objects: StringBuilder

```
String text = "";  
while (in.hasNextLine()) {  
    String line = in.nextLine();  
    text = text + line + "\n";  
}  
System.out.print("You entered:\n" + text);
```

Inefficient use of `String`: much object creation and garbage collection.

```
StringBuilder text = new StringBuilder();  
for (int i = 0; i < 10; i++) {  
    String line = in.nextLine();  
    text.append(line);  
    text.append('\n');  
}  
System.out.print("You entered:\n" + text);
```

Efficient use of `String`: less object creation and garbage collection.



- ▶ We will begin writing graphical applications after Thanksgiving.
- ▶ `compute.cs.uwlax.edu` does not support (easily) running graphical applications.
- ▶ Aquinas's computer project demonstrates how to make use of the course virtual machine.

You can use (1) the course virtual machine, (2) the lab iMacs, or (3) software you run directly on your laptop; the third option will get less support!



Bounce.java



More Java Objects: Assignments

Graded Homework Aquinas: poly in Java due Monday

Ungraded labs Aquinas: geometry and geometry2

Reading Ch. 10

<https://www.flyn.org/courses/cs120-2021-fall/schedule>