Administrative Stuff

- Assignment 6
- Today’s office hours
  - rescheduled: 12:30-1:50
  - or appointment, or drop by
Last Time

- more on JUnit and what should be done in Assignment 6
- Random
- sentinel loops
Midterm

- Remember, the material is cumulative
- You’ll see this stuff again
Legal Identifiers

- babble-babble
- c00lg33k
- 2Be0rWhat
Legal Identifiers

- babble-babble no
- c00lg33k
- 2Be0rWhat
Legal Identifiers

- babble-babble no
- c00lg33k yes
- 2Be0rWhat
Legal Identifiers

- babble-babble no
- c00lg33k yes
- 2BeOrWhat no
question

True or false: it’s legal to have variables named `sammy` and `Sammy` in the same program, but not in the same scope.
question
True or false: it’s legal to have variables named `sammy` and `Sammy` in the same program, but not in the same scope.

answer
True. Java is case sensitive. `sammy` and `Sammy` are considered to be two different variables. (Bad idea, but not illegal)
public class WhatsPrinted2 {
    public static void main(String args[]) {
        int nx=0;
        for (int i=0; i<3; i++) {
            int lastNX=nx;
            for (int j=0; j<8; j++) {
                if ((i+j)%2==0) {
                    nx++;
                }
            }
        }
        System.out.println(lastNX);
    }
}
public class WhatsPrinted2 {
    public static void main(String args[]) {
        int nx=0;
        for (int i=0; i<3; i++) {
            int lastNX = nx;
            for (int j=0; j<8; j++) {
                if ((i+j)%2==0) {
                    nx++;
                }
            }
        }
        System.out.println(lastNX);
    }
}

Answer: error. lastNX accessed out of scope
class WhatsPrinted10 {
    public static void main(String args[]) {
        f3();
        System.out.println();
    }

    public static void f2() {
        f1();
        System.out.print("b");
    }

    public static void f3() {
        f1();
        System.out.print("c");
        f2();
    }

    public static void f1() {
        System.out.print("a");
    }
}

a

acb
class WhatsPrinted10 {
    public static void main(String args[]) {
        f3();
        System.out.println();
    }

    public static void f2() {
        f1();
        System.out.print("b");
    }

    public static void f3() {
        f1();
        System.out.print("c");
        f2();
    }

    public static void f1() {
        System.out.print("a");
    }
}
About How Much is a Gigabyte?

- $10^3$ bytes
- $10^6$ bytes
- $10^9$ bytes
- $10^{12}$ bytes
- $10^{15}$
About How Much is a Gigabyte?

- $10^3$ bytes
- $10^6$ bytes
- $10^9$ bytes
- $10^{12}$ bytes
- $10^{15}$
```java
class WhatsPrinted4 {
    public static void func(int x, int y, int z) {
        x += y + 2;
        y--;
        z /= 2;
        System.out.println(z);
    }
    public static void main(String[] args) {
        int x = 10, y = 20, z = 30;
        func(z, x, y);
    }
}
```
public class WhatsPrinted4 {
    public static void func(int x, int y, int z) {
        x+=y+2;
        y--;
        z/=2;
        System.out.println(z);
    }

    public static void main(String args[]) {
        int x=10, y=20, z=30;
        func(z, x, y);
    }
}

Answer: 10
public class WhatsPrinted {
    public static void main(String args[]) {
        func(0);
    }

    public static void func(int start) {
        for (int i=start; i>=0; i--) {
            System.out.print(i);
        }
    }
}
public class WhatsPrinted {
    public static void main(String args[]) {
        func(0);
    }

    public static void func(int start) {
        for (int i=start; i>=0; i--) {
            System.out.print(i);
        }
    }
}

Answer: 0
```java
public class WhatsPrinted3 {

    public static void ifElse(int a, int b) {
        if (a < b) {
            a++;
        }
        if (a < b) {
            a++;
        } else {
            b++;
        }
        if (a >= b) {
            b = b - 5;
        }
        System.out.println(a + "\n", " + b);
    }

    public static void main(String args[]) {
        ifElse(10, 5);
        ifElse(3, 9);
    }
}
```
public class WhatsPrinted3 {
    public static void ifElse(int a, int b) {
        if (a < b) {
            a++;
        }
        if (a < b) {
            a++;
        } else {
            b++;
        }
        if (a >= b) {
            b = b - 5;
        }
        System.out.println(a + " , " + b);
    }
    public static void main(String args[]) {
        ifElse(10, 5);
        ifElse(3, 9);
    }
}
Which analogy is most accurate?

- cookie cutter is to cookie as object is to class
- cookie is to cookie cutter as object is to class
- cookie cutter is to cookie as blueprint is to object
- cookie is to cookie cutter as blueprint-class is to class
- cookie is to cookie cutter as base class is to object
Which analogy is most accurate?

- cookie cutter is to cookie as object is to class
- **cookie is to cookie cutter as object is to class**
- cookie cutter is to cookie as blueprint is to object
- cookie is to cookie cutter as blueprint-class is to class
- cookie is to cookie cutter as base class is to object
public class WhatsPrinted08 {
    public static void main(String args[]) {
        String s1 = "bob";
        String s2 = "lob";
        String s3 = "law";

        for (int i = 0; i < 5; i++) {
            if ((i + 2) > 3) {
                s1 += s2;
            } else {
                s1 = s2 + s3;
            }
        }
        System.out.println(s1);
    }
}
public class WhatsPrinted08 {
    public static void main(String args[]) {
        String s1="bob";
        String s2="lob";
        String s3="law";

        for (int i=0; i<5; i++) {
            if ((i+2)>3) {
                s1+=s2;
            } else {
                s1=s2+s3;
            }
        }
        System.out.println(s1);
    }
}
public class WhatsPrinted01 {
    public static void func(int x, int y, int z) {
        y+=3;
        x=y/4;
        z++;
    }
    public static void main(String []args) {
        int x=10, y=20, z=30;
        func(y, z, x);
        System.out.println(y);
    }
}
public class WhatsPrinted01 {
    public static void func(int x, int y, int z) {
        y+=3;
        x=y/4;
        z++;
    }

    public static void main(String []args) {
        int x=10, y=20, z=30;
        func(y, z, x);
        System.out.println(y);
    }
}

Answer: 20
```java
public class WhatsPrinted {
    public static void main(String args[]) {
        int y = 10;
        func(y);
        System.out.println(y);
    }

    public static void func(int x) {
        x += 7 % 3;
    }
}
```
```java
public class WhatsPrinted {
    public static void main(String args[]) {
        int y = 10;

        func(y);
        System.out.println(y);
    }

    public static void func(int x) {
        x += 7 % 3;
    }
}

Answer: 10
```
```java
public class WhatsPrinted {
    public static void main(String args[]) {
        int y = 10;
        func(y);
        System.out.println(y);
    }

    public static void func(int x) {
        x += 7 % 3;
    }
}
```
public class WhatsPrinted {
    public static void main(String args[]) {
        int y=10;

        func(y);
        System.out.println(y);
    }

    public static void func(int x) {
        x+=7%3;
    }
}

Answer: 10
What’s the most important job of the Java compiler?

- to find syntax errors in my code
- to run my code
- to translate my code into more primitive instructions
- to find logic errors in my code
- to ruin my weekends
What’s the most important job of the Java compiler?

- to find syntax errors in my code
- to run my code
- **to translate my code into more primitive instructions**
- to find logic errors in my code
- to ruin my weekends
public class WhatsPrinted5 {
    public static int func(int y) {
        return y *= 2 % 5;
    }

    public static void main(String args[]) {
        int x = 10;
        x = func(x);
        System.out.println(x);
    }
}
public class WhatsPrinted5 {
    public static int func(int y) {
        return y*=2%5;
    }

    public static void main(String args[]) {
        int x=10;
        func(x);
        System.out.println(x);
    }
}

Answer: 10
\[
\frac{516}{10} / 5 / 2.0 \times 2 + \frac{14}{5}
\]

\[
10.0 + 2 = 12.0
\]
\[
\frac{516}{10} \div 5 \div 2.0 \times 2 + \frac{14}{5}
\]

**Answer:** 12.0
$2 \times 5 - 9 \times 4 + 72 \times 10$

$2 - 1 + 2$

$3$
2 \% 5 - 9 \% 4 + 72 \% 10

Answer: 3
\[ (2 < 7 \% 2 \times 3 | | 5 \% 10) = 5 + 3 \]

\[ (T \parallel F) \]

\[ ! (T) \rightarrow F \]
!(2<7%2*3 || 5%10>=5+3)

Answer: false
$1 + 2 + " . " + 3 \times 4 + -(5 + 6)$
1 + 2 + "." + 3 * 4 + (5 + 6)

Answer: “3.1211”
\[\downarrow \downarrow\]

\[
5/21 \equiv 5.0/21
\]

\[
\mapsto
f
\]

\[
\mapsto
0
\]
5/21 == 5.0/21

Answer: false
$9 + \frac{2}{5} \times 5$
$9 + \frac{2}{5} \times 5$

**Answer:** 9
"beak".charAt(0) + "r" + "beak".substring(1,4);

**Answer:** “break”
Question
Translate each of the following statements from English to Java. For example, if the English is "x is larger than 10", you’d write the Java expression \( x > 10 \). Assume that we already have int \( x \), int \( y \), and the String \( s \) and String \( t \) properly declared somewhere else in our program.
t does not occur in \( s \).

Answer

\(~\) \( !s\text{.contains}(t); \)

or

\( s\text{.indexOf}(t) == -1 \)

\( \uparrow \quad \uparrow \)
Question
The number of characters in s is even

Answer
\texttt{s.length()} \% 2 == 0
Question
The product of x and y is larger than the sum of x and y.

Answer
x*y > x+y
Write a method called `printTri()` that takes an integer `numLines` as an argument. The method prints a triangle which is `numLines` high with the following format:

```
if numLines=1:  
    if numLines=2:  
        if numLines=3:  
        etc.
1
22
333
1
22
1
```
public static void printTri(int height) {
    for (int i=height; i>0; i--) {
        for (int j=0; j<i; j++) {
            System.out.print(i);
        }
        System.out.println();
    }
}
Question
Write the single line of code that calls your method in order to print a triangle that’s 9 lines tall.

Answer
printTri(9);
Question
Write the few lines of code that print the integers between 35 and 999 that are divisible by 6 (i.e. 36, 42, 48, ...).

Answer

```java
for (int i=35; i<=999; i++) {
    if (i%6==0)
        System.out.println(i);
}
```

or

```java
for (int i=36; i<=999; i+=6) {
    System.out.println(i);
}
```

and probably others
Write a method which is passed two integers, \( L \) and \( H \) (for low and high). The method returns the sum of the integers from \( L \) to \( H \) inclusive. For example, if \( L \) is 5 and \( H \) is 11, the method returns 56 (which is \( 5 + 6 + 7 + 8 + 9 + 10 + 11 \)). If \( L > H \) or \( H \leq L \), return \( L \). You do not have to write a complete class. You do not have to use a Scanner to read user input from the keyboard.
public static int sumRange(int L, int H) {
    int s=0;    /* for sum */
    if (H<=L) {
        return L;
    }
    for (int i=L; i<=H; i++) {
        s+=i;
    }
    return s;
}
Question
Write the single line of code that calls your method in order to calculate the sum of the integers from -56 to 30 and stores the result in an integer named sum.

Answer
```java
sum=sumRange(-56, 30);
```
or
```java
int sum=sumRange(-56, 30);
```