CIS 1068

March 1, 2018
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
- 2BeOrWhat
Legal Identifiers

- babble-babble **no**
- c00lg33k
- 2BeOrWhat
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
```java
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");
    }
}
```
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
- $10^{15}$
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);
    }
}
```java
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
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);
    }
}
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
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
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;
    }
}
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;

        func(x);
        System.out.println(x);
    }
}
```java
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
```
516 / 10 / 5 / 2.0 * 2 + 14 / 5
516 / 10 / 5 / 2.0 * 2 + 14 / 5

Answer: 12.0
2 \% 5 - 9 \% 4 + 72 \% 10
2 \% 5 - 9 \% 4 + 72 \% 10

Answer: 3
!(2<7%2*3 || 5%10>=5+3)
!(2<7%2*3 || 5%10>=5+3)

**Answer:** false
1 + 2 + "." + 3 * 4 + (5 + 6)
$1 + 2 + \text{"."} + 3 * 4 + (5 + 6)$

**Answer:** “3.1211”
5/21 == 5.0/21
5/21 == 5.0/21

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

\text{Answer: } 9
"beak".charAt(0) + "r" + "beak".substring(1,4);
"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

\(!s\.contains(t)\);

or

\( s\.indexOf(t) == -1 \)
Question
The number of characters in s is even

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

Answer
\[ x \cdot y > x + y \]
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 \( L \leq H \), 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 \texttt{sum}.

Answer
\texttt{sum=sumRange(-56, 30);}

or

\texttt{int sum=sumRange(-56, 30);}