Administrative Stuff

- Office hours today: 2:00 - 3:20
- Boston accent assignment
- New assignment soon
- **Reading:** up to and including ch 7
- Midterm
- Last time: arrays
  - Almost all of this similar to what you’ve had previously
  - (Possibly) new stuff
    - Fixed size
    - Same type
    - length field
    - References
It’s legal to have variables named `coffee` and `COFFEE` in the same program, but not in the same scope.
It’s legal to have variables named coffee and COFFEE in the same program, but not in the same scope.

**Answer:** false
sleepy? is a legal identifier.
sleepy? is a legal identifier.

Answer: false
dj33t is a legal identifier.
dj33t is a legal identifier.

**Answer:** true
2nite is a legal identifier.
2nite is a legal identifier.

**Answer:** false
```java
public class WhatsPrinted {
    public static int func(int y) {
        return y * 2 + 5 % 3;
    }

    public static void main(String args[]) {
        int x = 10;
        func(x);
        System.out.println(x);
    }
}
```
```java
public class WhatsPrinted {
    public static int func(int y) {
        return y * 2 + 5 % 3;
    }

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

Answer: 10
```
public class WhatsPrinted {
    public static void main(String[] args) {
        int i = 100;

        do {
            System.out.println(i);
            i++;
        } while (i < 10);
    }
}
public class WhatsPrinted {
    public static void main(String []args) {
        int i = 100;

        do {
            System.out.println(i);
            i++;
        } while (i < 10);
    }
}

Answer: 100
public class WhatsPrinted {
    public static void main(String args[]) {
        int a = 5;
        func(a);
        System.out.println(a);
    }

    public static void func(int b) {
        b *= 2 + 1;
    }
}

public class WhatsPrinted {
    public static void main(String args[]) {
        int a=5;
        func(a);
        System.out.println(a);
    }

    public static void func(int b) {
        b *= 2 + 1;
    }
}

Answer: 5
public class WhatsPrinted {
    public static void main(String args[]) {
        int x=10, y=20, z=30;

        if (x < y) {
            System.out.println("Washington");
        } else if ((x + y) % 2 == 0) {
            if (z >= 30 || z <= 30) {
                System.out.print("(not Quincy) ");
            }
        } else if (z - 2 < y + 1) {
            System.out.println("Jefferson");
        } else {
            System.out.println("Madison");
        }
    }
}
public class WhatsPrinted {
    public static void main(String args[]) {
        int x=10, y=20, z=30;

        if (x < y) {
            System.out.println("Washington");
        } else if (((x + y) % 2 == 0) {
            if (z >= 30 || z <= 30) {
                System.out.print("(not Quincy) ");
            }
        } else if (z - 2 < y + 1) {
            System.out.println("Jefferson");
        } else {
            System.out.println("Madison");
        }
    }
}

Answer: Washington
public class WhatsPrinted {
    public static void mystery(int x, int y) {
        int z = 4;
        if (z <= x) {
            z = x + 1;
        } else {
            z = z + 9;
        }
        if (z <= y) {
            y++;
        }
        System.out.println(z + " " + y);
    }

    public static void main(String []args){
        mystery(10, 5);
        mystery(1, 14);
    }
}
public class WhatsPrinted {
    public static void mystery(int x, int y) {
        int z = 4;
        if (z <= x) {
            z = x + 1;
        } else {
            z = z + 9;
        }
        if (z <= y) {
            y++;
        }
        System.out.println(z + " " + y);
    }

    public static void main(String []args){
        mystery(10, 5);
        mystery(1, 14);
    }
}

Answer:
11 5
13 15
```java
class WhatsPrinted {
    public static void func() {
        System.out.print("F");
    }

    public static void main(String args[]) {
        yetAnotherFunc();
        System.out.println();
    }

    public static void anotherFunc() {
        func();
        System.out.print("C");
    }

    public static void yetAnotherFunc() {
        func();
        System.out.print("A");
        anotherFunc();
    }
}
```
class WhatsPrinted {
    public static void func() {
        System.out.print("F");
    }

    public static void main(String args[]) {
        yetAnotherFunc();
        System.out.println();
    }

    public static void anotherFunc() {
        func();
        System.out.print("C");
    }

    public static void yetAnotherFunc() {
        func();
        System.out.print("A");
        anotherFunc();
    }
}

Answer: FAFC
About how much is a megabyte?
About how much is a megabyte?

**Answer:** $10^6$ bytes
public class WhatsPrinted {
    public static void mystery(int x) {
        int y = 0;
        while (x % 2 == 0) {
            y++;
            x = x / 2;
        }
        System.out.println(x + " " + y);
    }
    public static void main(String[] args) {
        mystery(19);
        mystery(42);
    }
}
public class WhatsPrinted {
    public static void mystery(int x) {
        int y = 0;
        while (x % 2 == 0) {
            y++;
            x = x / 2;
        }
        System.out.println(x + " " + y);
    }
}

    public static void main(String []args) {
        mystery(19);
        mystery(42);
    }
}

Answer:
19 0
21 1
What is the most important job of the Java compiler?
What is the most important job of the Java compiler?

Answer: to translate my code into more primitive instructions
```java
public class WhatsPrinted {
    public static void func(int x, int y, int z) {
        x = y/4;
        y += 3;
        z++;
    }

    public static void main(String []args) {
        int x = 4, y = 5, z = 6;
        func(y, z, x);
        System.out.println(z);
    }
}
```
public class WhatsPrinted {
    public static void func(int x, int y, int z) {
        x = y/4;
        y += 3;
        z++;
    }

    public static void main(String []args) {
        int x = 4, y = 5, z = 6;
        func(y, z, x);
        System.out.println(z);
    }
}

Answer: 6
public class WhatsPrinted {
    public static void func(int x, int y, int z) {
        x += y-1;
        y /= 2;
        z--;
        System.out.println(z);
    }

    public static void main(String args[]) {
        int x=10, y=20, z=30;
        func(y, z, x);
    }
}
public class WhatsPrinted {
    public static void func(int x, int y, int z) {
        x += y-1;
        y /= 2;
        z--;
        System.out.println(z);
    }

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

        func(y, z, x);
    }
}

Answer: 9
public class WhatsPrinted {
    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 == 0) {
                s1 = s1 + s2;
                i+=2;
            } else {
                s2 += s3;
            }
        }
        System.out.println(s1);
    }
}
public class WhatsPrinted {
    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 == 0) {
                s1 = s1 + s2;
                i+=2;
            } else {
                s2 += s3;
            }
        }

        System.out.println(s1);
    }
}

Answer: boblobloblaw
```java
public class WhatsPrinted {
    public static void main(String[] args) {
        int a = 0;
        for (int i = 0; i < 3; i++) {
            int b = a;
            for (int j = 0; j < 8; j++) {
                if ((i + j) % 2 == 0) {
                    a++;
                }
            }
        }
        System.out.println(b);
    }
}
```
public class WhatsPrinted {
    public static void main(String args[]) {
        int a=0;
        for (int i=0; i<3; i++) {
            int b=a;
            for (int j=0; j<8; j++) {
                if ((i+j)%2==0) {
                    a++;
                }
            }
        }
        System.out.println(b);
    }
}

Answer: Compiler error
What is the result of the following expression?

\[ \frac{8}{5} \times 5 + 16 \]
What is the result of the following expression?

\[ \frac{8}{5} \times 5 + 16 \]

**Answer:** 21
What is the result of the following expression?

\[ \frac{2.0}{5} \equiv \frac{2}{5} \]

\[ 0.4 \equiv 0 \]
What is the result of the following expression?

\[ \frac{2.0}{5} == \frac{2}{5} \]

Answer: \textit{false}
What is the result of the following expression?

```java
"wellspring".substring(4) + "__" + "cab".charAt(2) + "streaks".substring(2, 6)
```

Result: `spring break`
What is the result of the following expression?

"wellspring".substring(4) + " " + "cab".charAt(2) + "streaks".substring(2, 6)

Answer: "spring break"
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 already properly declared somewhere else in our program.
t does not occur in s
t does not occur in s

**Answer:**

```
!s.contains(t); or
```

```
s.indexOf(t) == -1
```
s and t contain the same number of characters.
Translate

s and t contain the same number of characters.

Answer: `s.length() == t.length()`
The sum of $x$ and $y$ is greater than the product of $x$ and $y$
Translate

The sum of $x$ and $y$ is greater than the product of $x$ and $y$

Answer: $x + y > x \times y$
Write the few lines of code that print the integers between 95 and 45 that are divisible by 6 as a:

- `for` loop
- `while` loop
- `do-while` loop
for loop

```java
for (int i = 45; i <= 95; i++) {
    /* i = 45 is ok too */
    if (i % 6 == 0) {
        System.out.println(i);
    }
}
```
int i = 45;                          /* i = 45 is ok too */
while (i <= 95) {
    if (i % 6 == 0) {
        System.out.println(i);
    }
    i++;
}
do-while loop

```java
int i = 45; /* i = 45 is ok too */
do {
    if (i % 6 == 0) {
        System.out.println(i);
    }
    i++;
} while (i <= 95);
```
Write a method called `sumK` which is passed an `int b` (for "beginning") and an `int k`. The method returns the sum of the next `k` integers starting with and including `b`. For example, if `b = 3` and `k = 5`, the method returns `25`, *i.e.*, `3 + 4 + 5 + 6 + 7 = 25`. 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 sumK(int b, int k) {
    int sum = 0;
    int cur = b;
    for (int i = 0; i < k; i++) {
        sum += cur;
        cur++;
    }
    return sum;
}
Write the single line of code that calls your method in order to calculate the sum of the next 10 integers starting with 15 and stores the result in an integer named sum.
Write the single line of code that calls your method in order to calculate the sum of the next 10 integers starting with 15 and stores the result in an integer named \( \text{sum} \).

**Answer:** \( \text{sum} = \text{sumK}(15, 10); \)
Write a program which reads in from the user at the keyboard a series of temperatures. The program should continue to read in temperatures until the user enters a temperature of -100. The program then prints the average of all temperatures considered to be hot. Define a constant HOT_THR such that any temperature greater or equal to HOT_THR is considered to be hot.

If no hot temperatures have been entered, instead of printing the average of the hot temperatures print, “No hot days”.
```java
final int SENT = -100;
final int HOT_THR = 80;
    int sumTemps = 0;
    int numTemps = 0;
String prompt = "Enter a temp or " + SENT + " to quit: ";
Scanner in = new Scanner(System.in);

System.out.print(prompt);
    int cur = in.nextInt();
while (cur != SENT) {
    if (cur >= HOT_THR) {
        sumTemps += cur;
        numTemps++;
    }
    System.out.print(prompt);
    cur = in.nextInt();
}
if (numTemps > 0) {
    System.out.println("The average hot temperature is " +
                      (double)sumTemps/numTemps);
} else {
    System.out.println("No hot days");
}
```
Write a program which reads in from the user at the keyboard a series of temperatures. The program should continue to read in temperatures until the user enters a temperature of -100. The program then prints the coldest of all of the hot temperatures. Define a constant HOT_THR such that any temperature greater or equal to HOT_THR is considered to be hot.

If no hot temperatures have been entered, instead of printing the coldest of the hot temperatures print, “No hot days”.
final int SENT = -100;
final int HOT_THR = 80;
final int IMPOSSIBLY_HIGH_TEMP = 200; /* or any impossibly
     * high temperature */

int coldestSoFar = IMPOSSIBLY_HIGH_TEMP;

String prompt = "Enter a temp or " + SENT + " to quit: ";
Scanner in = new Scanner(System.in);

System.out.print(prompt);
int cur = in.nextInt();
while (cur != SENT) {
    if (cur >= HOT_THR && cur < coldestSoFar) {
        coldestSoFar = cur;
    }
    System.out.print(prompt);
    cur = in.nextInt();
}
if (coldestSoFar == IMPOSSIBLY_HIGH_TEMP) {
    System.out.println("The coldest hot temperature is " + coldestSoFar);
} else {
    System.out.println("No hot days");
}