Variables (Declaring, Assigning, Initializing)
Name the 8 primitive types
char, int, double, float, long, short, byte, boolean
Declare and assign a float variable called $f$ to 9.
float f = 9F;
What is the difference between declaring, assigning, and initializing?
Declaring just tells the computer that you’ll use this variable sometime. Example: char c;

Assigning just assigns a value to the variable. Example c = ‘a’;

Initializing does declaring and assigning in one step. Example int i = 3;

**Note: You only declare or initialize once per variable, but you can assign (or re-assign) as many times as you want**
What is printed?

```java
public class Practice {
    public static void main (String [] args) {
        int i = 9;
        double pi = 3.14;
        i = (int) pi;
        pi = (double) i;
        System.out.println("i: " + i);
        System.out.println("pi: " + pi);
    }
}
```
i: 3
pi: 3.0
What is printed?

```java
public class Practice {
    public static void main(String[] args) {
        int i0 = 1;
        int i1 = 3;
        System.out.println("i0/i1: " + i0/i1);
        double result0 = i0/i1;
        System.out.println("double i0/i1: " + result0);

        double d0 = 1.0;
        double d1 = 3.0;
        System.out.println("d0/d1: " + d0/d1);
        int result1 = (int) (d0/d1);
        System.out.println("int d0/d1: " + result1);
    }
}
```
i0/i1: 0
double i0/i1: 0.0
d0/d1: 0.3333333333333333
int d0/d1: 0
What is printed?

```java
public class Practice {
    public static void main (String [] args) {
        int i = 3;
        if (i++ == 3)
            System.out.println("i : "+i);
        if (++i == 5)
            System.out.println("i : "+i);
        System.out.println(i % 3);
    }
}
```
i: 4
i: 5
2
Given the predefined char variable called c. Declare an int variable called i and assign it to the ASCII value of c. For example, if c = ‘a’, then i = 97.
int i = (int) c;
Printing (print, println)
Write a print and println statement that prints the following:

```java
name
assignment
date
```

`name`, `assignment`, and `date` are pre-defined variables.
// using print
System.out.print(name + "\n");
System.out.print(assignment + "\n");
System.out.print(date + "\n");
// OR
System.out.print(name + "\n" + assignment + "\n" + date + "\n");

// using println
System.out.println(name);
System.out.println(assignment);
System.out.println(date);
Print the following pre-defined variables in the format below (ending with a newline):

Age: **age**, Name: **first**, GPA: **gpa**

Note: **age**, **first**, **gpa** are pre-defined variables.
System.out.println("Age:" + age + ", Name: " + first + ", GPA: " + gpa);
Scanners
Initialize a Scanner called `reader` that reads from the keyboard.
Scanner reader = new Scanner (System.in);
Read in a double from the pre-defined Scanner called reader and store it into the pre-defined variable d.
d = reader.nextDouble();
Read in an int from the pre-defined Scanner called \texttt{reader} and store it into the pre-defined variable \texttt{i}. 
i = reader.nextInt();
Close the Scanner called reader.
reader.close();
Conditionals
Store the result when you check if the pre-defined int variables \texttt{i1} and \texttt{i2} are equal into the pre-defined variable \texttt{b}.
// the parenthesis are optional
b = (i1 == i2);
Write an if statement that prints “between 0 and 100” on a new line, when the predefined variable int \(i\) is between 0 and 100.
if (i >= 0 && i <= 100)
    System.out.println("between 0 and 100");
Write an if statement that prints “char is a or c” on a new line, when the predefined variable char c is either ‘a’ or ‘c’.
if (c == 'a' || c == 'c')
    System.out.println("char is a or c");
Write a switch statement based on the following information:
- if the integer \( i \) is 0, print “zero”
- if the integer \( i \) is 1, print “one”
- if the number \( i \) is 2, print “two”
- if the number \( i \) is anything else, print “less than zero or greater than two”
switch (i) {
    case 0: System.out.println("zero"); break;
    case 1: System.out.println("one"); break;
    case 2: System.out.println("two"); break;
    default: System.out.println("less than zero or greater than two");
}

// Optional: You could also have a break on the default statement
What does this code print?

```java
public class Practice {
    public static void main (String [] args) {
        double d = 3.2;
        if (d < 3.5)
            System.out.println("less than 3.5");
        else if (d < 3.3)
            System.out.println("less than 3.3");
        else if (d <= 3)
            System.out.println("less than or greater than 3");
        else
            System.out.println("greater than or equal to 3.5");
    }
}
```
less than 3.5
What does this code print?

```java
public class Practice {
    public static void main(String[] args) {
        double d = 3.2;
        if (d < 3.5)
            System.out.println("less than 3.5");
        if (d < 3.3)
            System.out.println("less than 3.3");
        if (d <= 3)
            System.out.println("less than or equal to 3");
        else
            System.out.println("greater than or equal to 3.5");
    }
}
```
less than 3.5
less than 3.3
greater than or equal to 3.5
What does this code print?

```java
public class Practice {
    public static void main (String [] args) {
        char c = 'g';
        boolean b = false;
        if (c > 'b' && c < 'z' || c == 'g')
            b = true;
        if (c == 'a' && c == 'g')
            b = false;
        if (b == true && c == 'g')
            b = true;
        System.out.println("Value of b: " + b);
    }
}
```
Value of b: true
What is printed?

```java
public class Practice {
    public static void main (String [] args) {
        char grade = 'a';
        boolean passing = true;
        switch (grade) {
            case 'a': passing = true;
            case 'b': passing = true;
            case 'c': passing = true;
            case 'd': passing = false;
            case 'f': passing = false;
        }
        System.out.println("Passing status: "+ passing);
    }
}
```
Passing status: false