Topic 1.3: Variable Scope & Constants

Learning Goals (Week 1):

- Identify data types based on value
- Map variables to the current values
- Perform basic operations on variables
- **Create and use Java and user-defined methods**
- Format Printed Output
- Obtain and process user input from the console
- Use booleans, conditionals, and compound conditionals correctly
- Select and implement different types of loops depending on scenario
- Use special String and Math operations
- Successfully implement and manipulate java arrays

Global Variables

Global variables must be declared outside of any method

for now be sure to add the **static** keyword in front (will make sense in a few weeks)

```
public class GlobalExample{

    static int id = 1001;

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

Scope

Declaring a local variable with the same name as a global one will **shadow** it.

```
public class GlobalExample{

    static int id = 1001;

    public static void main(String[] args) {
        int id = 2000;
        System.out.println(id); // prints 2000
    }
}
```

You can use the Global one using a special way of calling it, but this becomes messy and confusing. Avoid duplicate variable names whenever you can.

Named Constants

Adding the keyword **final** before a declaration makes it a “constant,” not a “variable.” This promises that its value will never change and will produce an error if you ever try to change it

```
public class FinalExample{
    public static void main(String[] args) {
        final int LEGAL_AGE = 18;
        System.out.println(LEGAL_AGE); // prints 18
        LEGAL_AGE = 21; // this line will throw a compile time error
    }
}
```

NAMING_CONVENTION_IS_ALL_UPPER_CASE_WITH_UNDERSCORES

```
int userInput;                      //This is a regular variable
final double TAX_RATE = 0.13;       //This is a constant
```

Pause & Ponder

There is no answer sheet for these questions. The best way to answer these is to try them out yourself.

1. How do you make a final static variable?
2. Can you shadow a final static variable?
3. Can all data types be final?
4. Can all data types be global/static?
5. When are some situations where a final variable makes sense?
6. When are some situations where a static variable makes sense?
7. What are some situations where a final static variable makes sense?