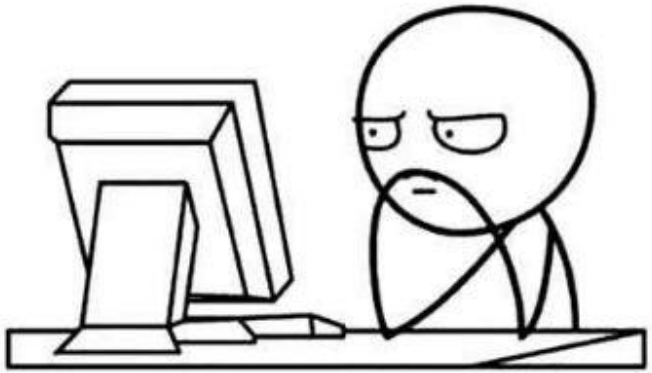
Never let your computer
know that you are in a hurry.



Computers can smell fear.
They slow down if they know that
you are running out
of time.

SHELDON COOPER

presents

FUN WITH VARIABLES

PREVIOUSLY ON CS BRIDGE

Declaring a variable

```
int counter = 42;
```

variable types

```
String str = "Hi";
```

```
int num = 5;
```

```
double fraction = 0.2;
```

```
boolean cond = false;
```

```
char cond = 'X';
```

Binary Operators

+	Addition	*	Multiplication
−	Subtraction	/	Division
		%	Remainder

Comparison Operators

< Less Than	== Equal To
> Greater Than	!= Not Equal To
<= Less or Equal	
>= More or Equal	

Resulting Type

int / int = int

double / double = double

int / double = double

Resulting Type

int + int = int

double + double = double

int + double = double

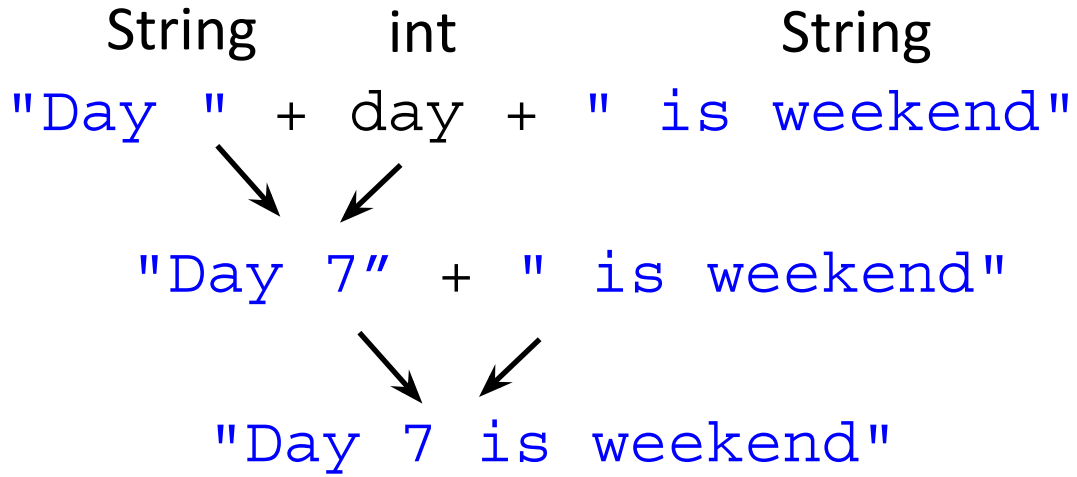
Resulting Type

String + String = String

String + int = String

String Concatenation

```
println("Day " + day + " is weekend");
```



Priority of Operations

What will be the value of the number variable?

```
int number = 1 + 2 / 10 * 10
```

Priority of Operations

What will be the value of the number variable?

```
int number = (1 + 2) / 10 * 10
```

Our To Do list

- [ ] Logical operators
- [ ] Lifetime of a variable
- [ ] Constants
- [ ] Random Numbers

PROGRAMMING TIME

Should I go to school today?

```
int day = readInt("Enter a day: ");
if (day < 1 || day > 7) {// OR
    println("Not a day of week");
} else if (day >=1 && day <=5) {// AND
    println("School day");
} else {
    println("Weekend!");
}
```

Logical Operators

Operator	Description	Example	Result
!	not	`!(2 == 3)`	`true`
&&	and	`(2 == 3) && (-1 < 5)`	`false`
||	or	`(2 == 3) || (-1 < 5)`	`true`

programmer joke:

!false

It's funny
because it's true

Our To Do list

- [x] Logical operators
- [ ] Lifetime of a variable
- [ ] Random Numbers
- [ ] Constants

Lifetime of a variable

What do you think this does?

```
private void printSomeNumber() {
    int m = 5;
    if (m < 6) {
        int m = 6;
    }
    println(m);
}
```

Lifetime of a variable

```
private void printSomeNumber() {
    int m = 5;
    if (m < 6) {
        int m = 6;
    }
    println(m);
}
```

Duplicate local variable m

Lifetime of a variable

Is this OK?

```
private void printSomeNumber() {
    int m = 5;
    if (m < 6) {
        int n = 6;
    }
    println(m);
}
```

Lifetime of a variable

And what about this?

```
private void printSomeNumber() {
    int m = 5;
    if (m < 6) {
        int n = 6;
    }
    println(n);
}
```

Lifetime of a variable

```
private void printSomeNumber() {
    int m = 5;
    if (m < 6) {
        int n = 6;
    }
    println(n);
}
```

n cannot be resolved to a variable

Lifetime of a variable

```
public void run() {

    for (int i = 0; i < 5; i++) {
        println(i);
    }

}
```

Lifetime of a variable

```
public void run() {

    for (int i = 0; i < 5; i++) {
        println(i);
    }
    println("The last value of i: " + i);

}
```

i cannot be resolved to a variable

Our To Do list

- [x] Logical operators
- [x] Lifetime of a variable
- [ ] Constants
- [ ] Random Numbers

what is a constant?


WORLD OF WARCRAFT
2004-2009
WEI 2009
BLIZZARD ENTERTAINMENT


Stylish Black Shirt
Binds when equipped
Chest
Cloth
18 Armor
Durabilitiy 35/35
Equip: Impress others with style.
Requires Level 5


Stylish Black Shirt
Binds when equipped
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Durabilitiy 35/35
Equip: Impress others with style.
Requires Level 5

How to declare a constant?

```
private static final String STYLISH_BLACK_SHIRT_OWNER = "Eliska";
```

How to declare a constant?

```
private static final String STYLISH_BLACK_SHIRT_OWNER = "Eliska";
```

This is always the same! You do not change this!

How to declare a constant?

```
private static final String STYLISH_BLACK_SHIRT_OWNER = "Eliska";
```

This is what you change!
And you already know this - This is how you declare a variable.

Constants

```
public class Creative extends ConsoleProgram {



    public void run() {

        int bigBangEpisodes =
                readInt("How many episodes of the Big Bang Theory have you watched? ");
        int gameOfThronesEpisodes =
                readInt("How many episodes of Game of Thrones have you watched? ");

        int minutesWatched = bigBangEpisodes * 20 + gameOfThronesEpisodes * 50;

        int hoursWatched = minutesWatched / 60;
        println("Hours spent watching TV shows: " + hoursWatched);

    }

}
```

Constants

```
public class Creative extends ConsoleProgram {

    private static final int BIG_BANG_MINUTES_PER_EPISODE = 20;
    private static final int GAME_OF_THRONES_MINUTES_PER_EPISODE = 50;

    public void run() {

        int bigBangEpisodes =
                readInt("How many episodes of the Big Bang Theory have you watched? ");
        int gameOfThronesEpisodes =
                readInt("How many episodes of Game of Thrones have you watched? ");

        int minutesWatched = bigBangEpisodes * BIG_BANG_MINUTES_PER_EPISODE
                + gameOfThronesEpisodes * GAME_OF_THRONES_MINUTES_PER_EPISODE;

        int hoursWatched = minutesWatched / 60;
        println("Hours spent watching TV shows: " + hoursWatched);

    }

}
```

MY_FEELINGS do not change...

```
private static final String MY_FEELINGS = "I love";

public void run() {

    String you = "Pepa";
    println(MY_FEELINGS + " " + you);

    //after some time...
    you = "Marek";
    println(MY_FEELINGS + " " + you);

}
```

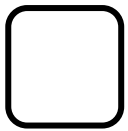
...but you do.

Our To Do list

Logical operators

Lifetime of a variable

Constants



Random Numbers

Random Numbers

```
public class RandomNumbers extends ConsoleProgram {

    // A random number generator
    RandomGenerator rg = new RandomGenerator();

    public void run() {
        // change this code to print 1000 random numbers
        // in the range 0 to 100.
        int example = rg.nextInt(0, 10);
        println(example);
    }
}
```

Our To Do list

Logical operators

Lifetime of a variable

Constants

Random Numbers


THE END