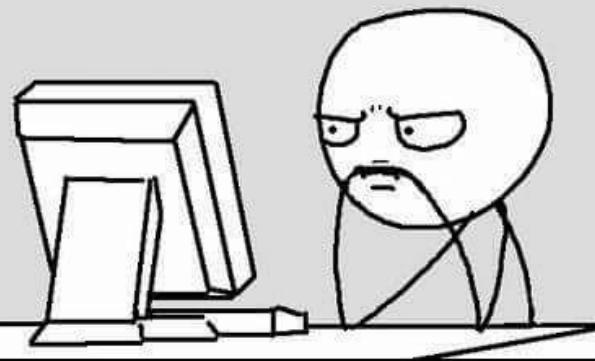
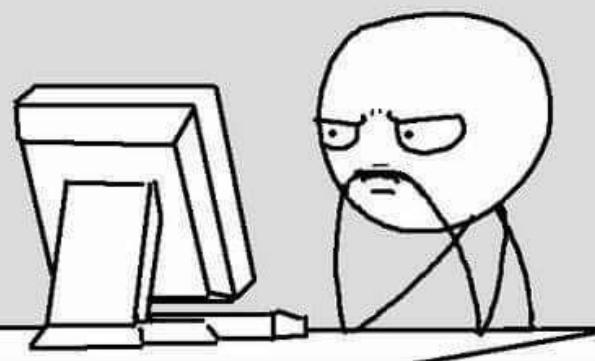


It doesn't work..... why?



It works..... why?



A Night King from Game of Thrones stands in the foreground, his pale face and white hair contrasting with his dark armor. He has his arms outstretched, palms up, as if commanding an army. Behind him is a vast, desolate landscape filled with the skeletal remains of the dead and a large, dark, pyramid-shaped structure in the background.

VARIABLES
ARE ~~COMING~~
HERE

A photograph of a woman with blonde hair, wearing a bright green sequined party hat and black sunglasses. She is making a peace sign with her hands and has a playful expression. She is wearing a blue top and several bracelets on her wrists. The background is dark and textured.

Eliška in High School



Eliška in College



Eliška
teaching



ondra

PREVIOUSLY ON

~~GAME OF THRONES~~

CS BRIDGE

Control Statements

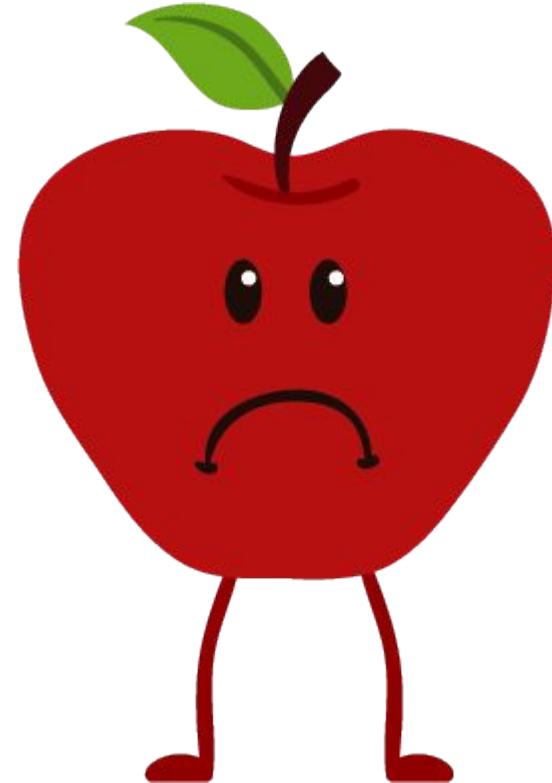
```
for(int i = 0; i < N; i++) {  
    // to repeat N times  
}  
  
while(condition) {  
    // repeat while condition holds  
}  
  
if(condition) {  
    // todo if true  
} else {  
    // todo if false  
}
```



HEALTHY PROGRAMMING STYLE

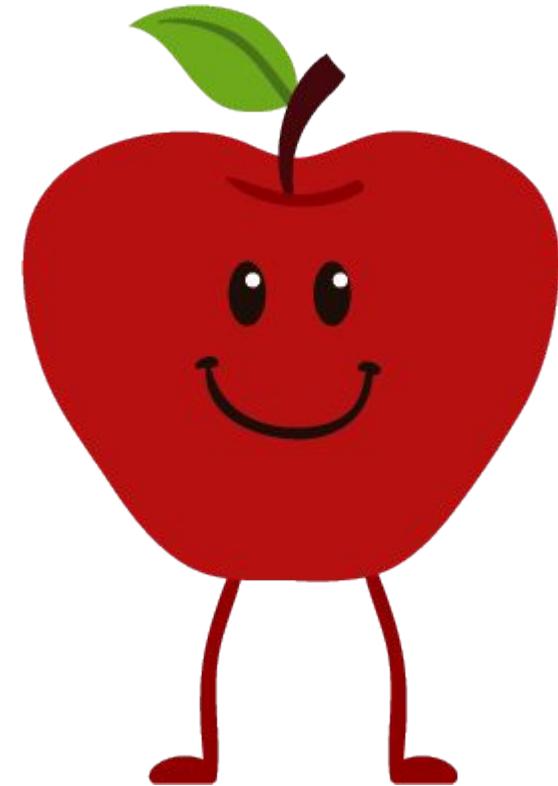
Readable code

```
public void run() {  
    while (beepersInBag()) {  
        findTree();  
        addLeavesToTree();  
    }  
    moveToWall();  
}  
  
private void addLeavesToTree () {  
    turnLeft();  
    climbTree();  
    addLeaves();  
    descendToGround();  
    turnLeft();  
  
    private void findTree () {  
        moveToWall();  
    }  
}
```



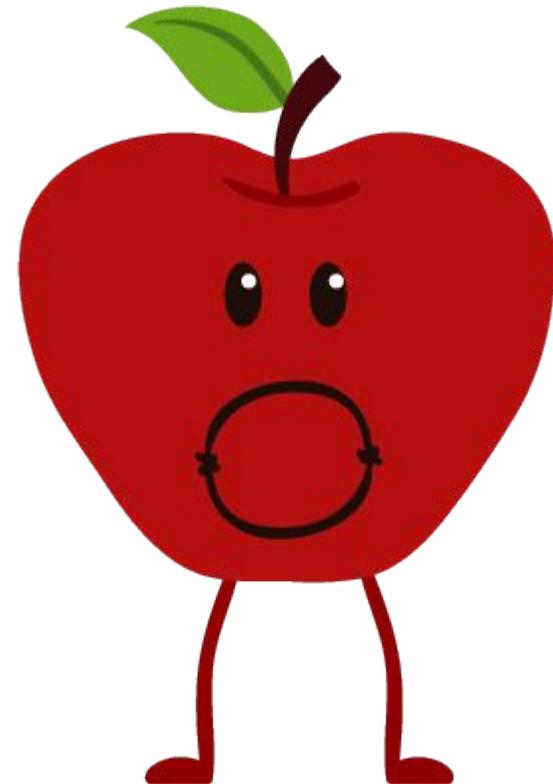
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    addLeaves();  
    descendToGround();  
    turnLeft();  
}  
  
private void findTree() {  
    moveToWall();  
}
```



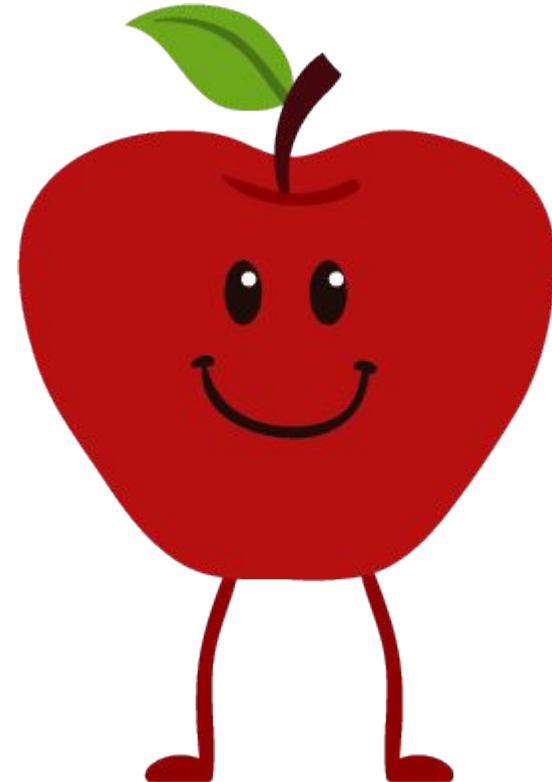
Readable code

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}
```



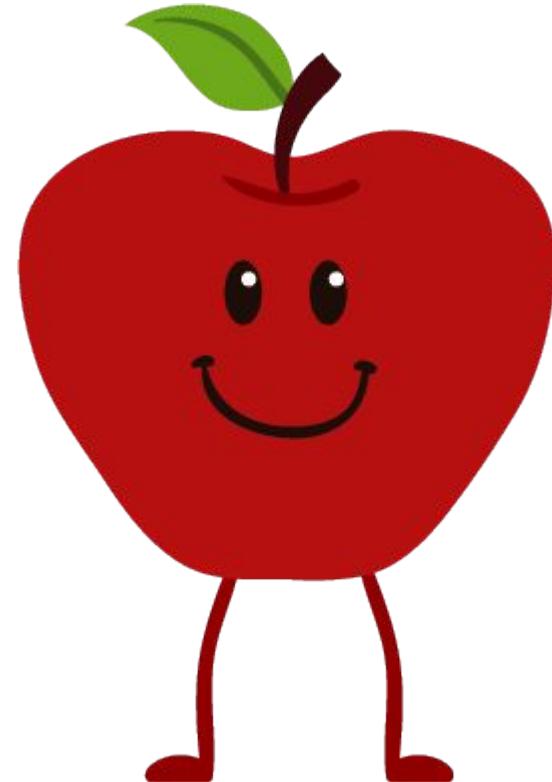
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```



Readable code

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```

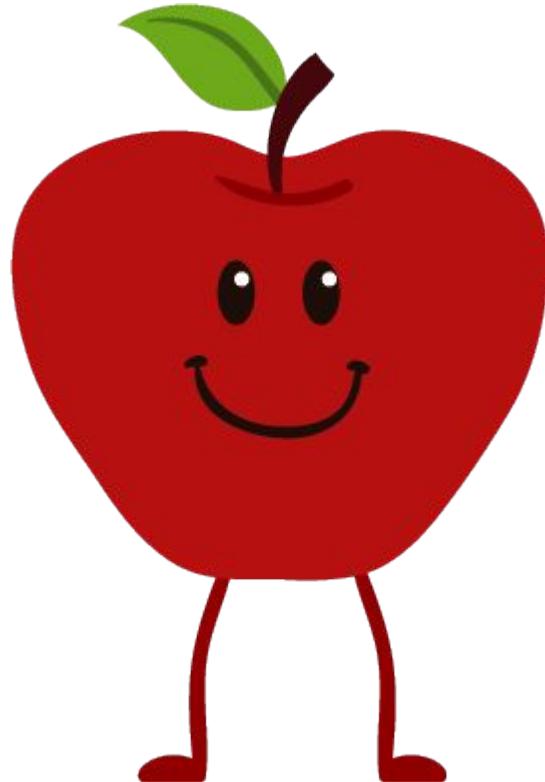


Readable code

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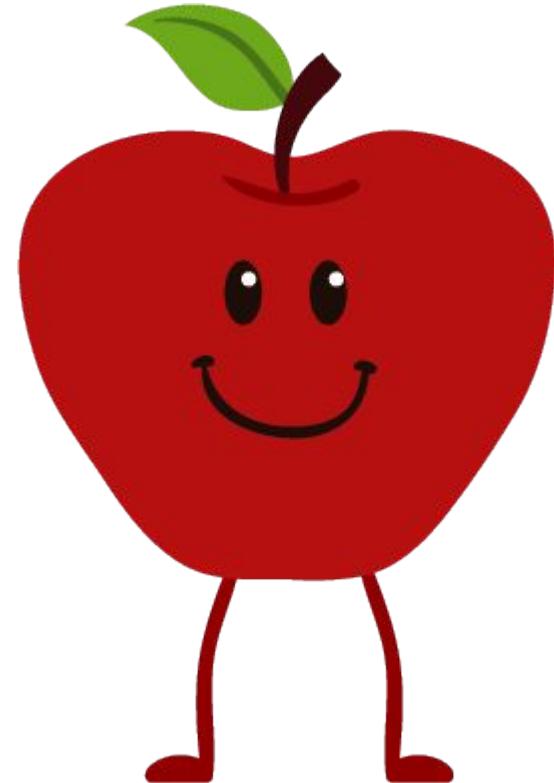
```
private void addLeavesToTree () {  
    turnLeft();  
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    addLeaves();  
    descendToGround();  
    turnLeft();  
}
```

```
private void findTree () {  
    moveToWall();  
}
```



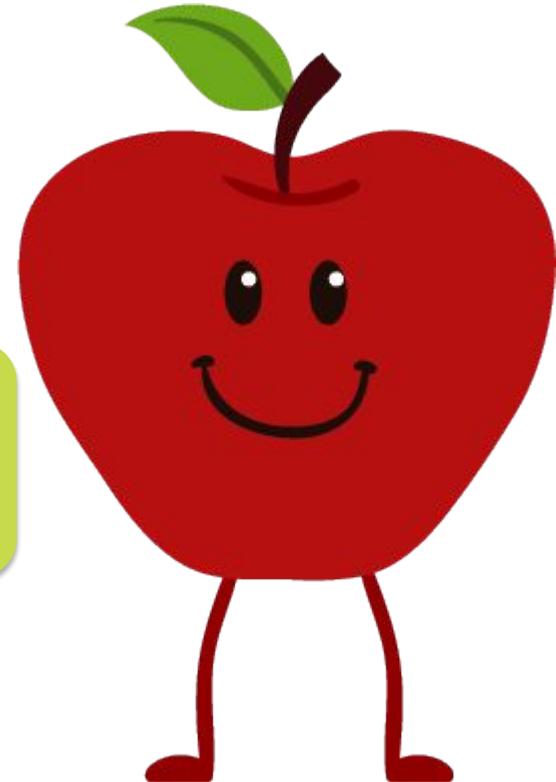
Readable code

```
public void run() {  
    while (beepersInBag()) {  
        findTree();  
        addLeavesToTree();  
    }  
    moveToWall();  
}  
  
private void addLeavesToTree () {  
    turnLeft();  
    climbTree();  
    addLeaves();  
    descendToGround();  
    turnLeft();  
}  
  
private void findTree () {  
    moveToWall();  
}
```



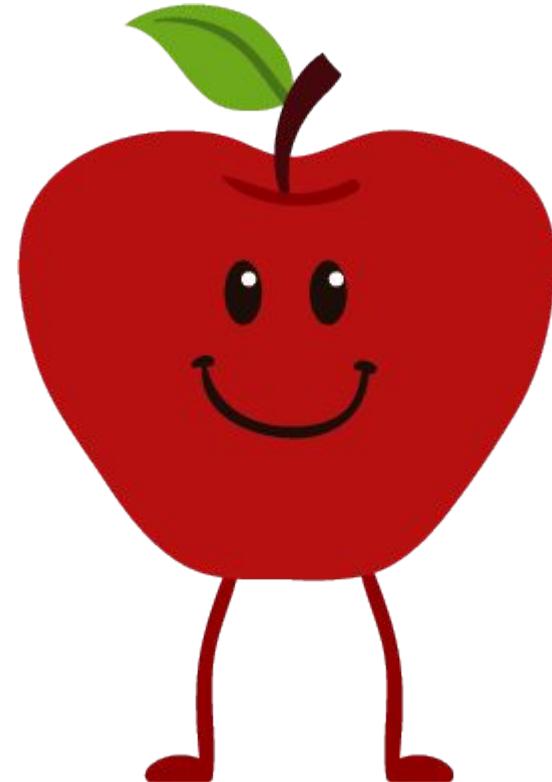
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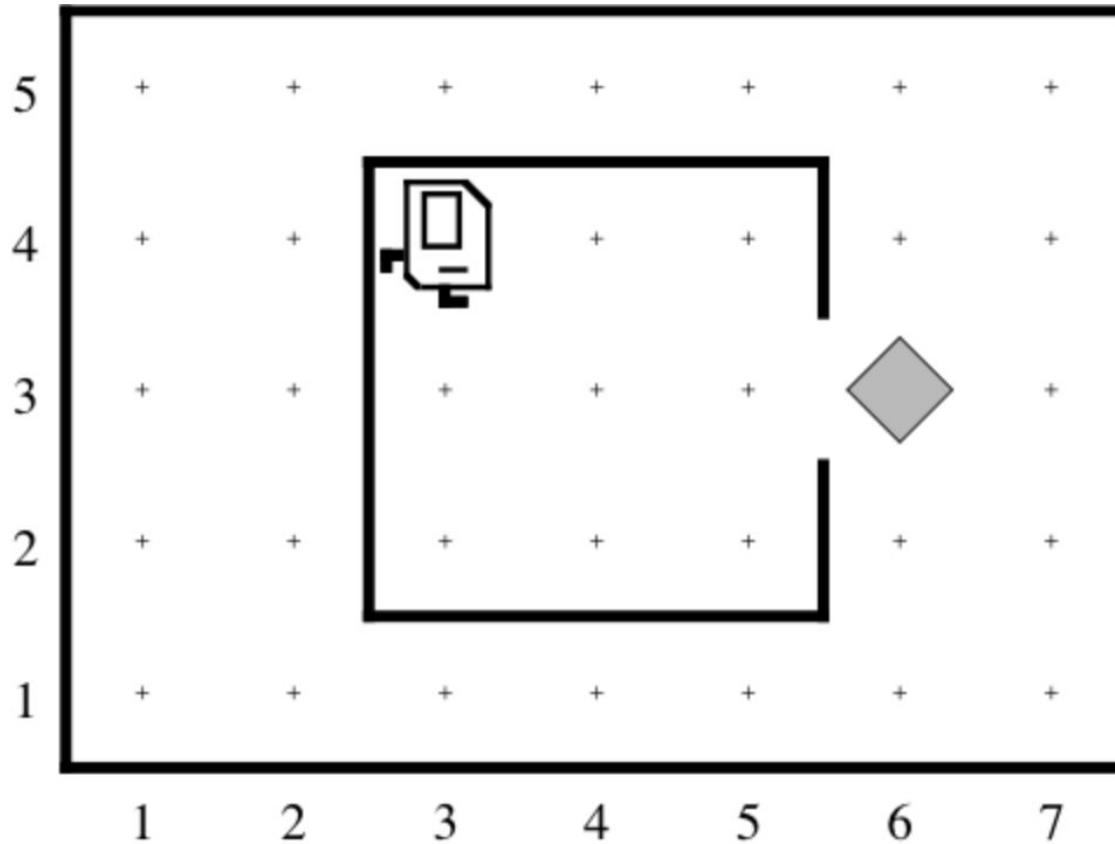


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    moveToWall();  
}
```

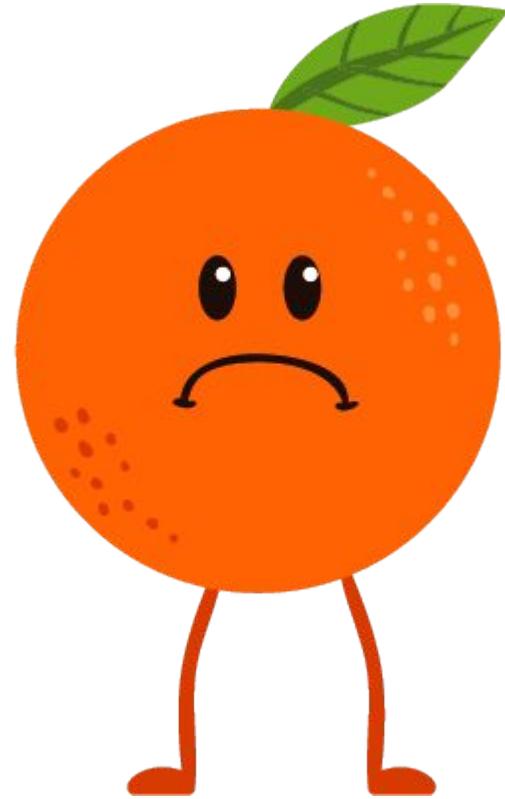


Decomposition

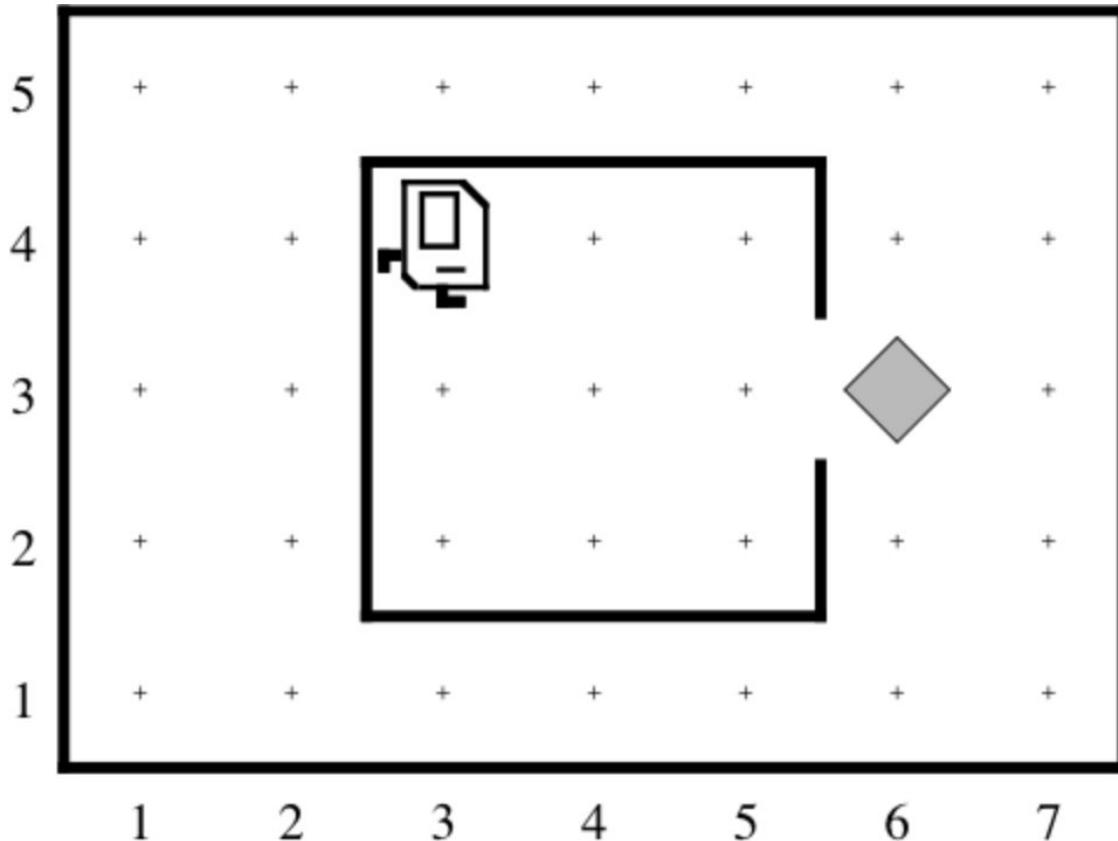


Decomposition

```
public void run() {  
    move();  
    move();  
    turnLeft();  
    turnLeft();  
    turnLeft();  
    move();  
    turnLeft();  
    move();  
    pickBeeper();  
    turnLeft();  
    turnLeft();  
    move();  
    move();  
    move();  
    turnLeft();  
    turnLeft();  
    turnLeft();  
    move();  
}  
}
```



Decomposition



Collect Newspaper
=
Exit House
then
PickUpPaper
then
ReturnHome

Decomposition

```
public void run() {  
    exitHouse();  
    pickUpPaper();  
    returnHome();  
}
```

```
private void exitHouse()  
{  
    move();  
    move();  
    turnRight();  
    move();  
    turnLeft();  
    move();  
}
```

```
private void returnHome() {  
    turnAround();  
    move();  
    move();  
    move();  
    turnRight();  
    move();  
}
```

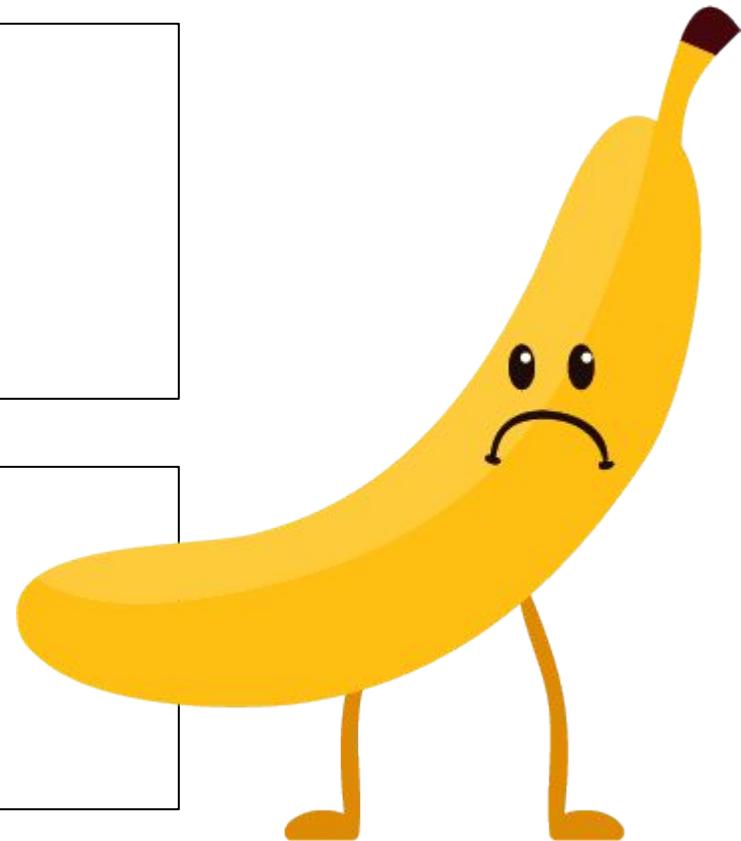
```
private void pickUpPaper() {  
    pickBeeper();  
}
```



Method names

```
private void  
bestMethodEver() {  
    ...  
}
```

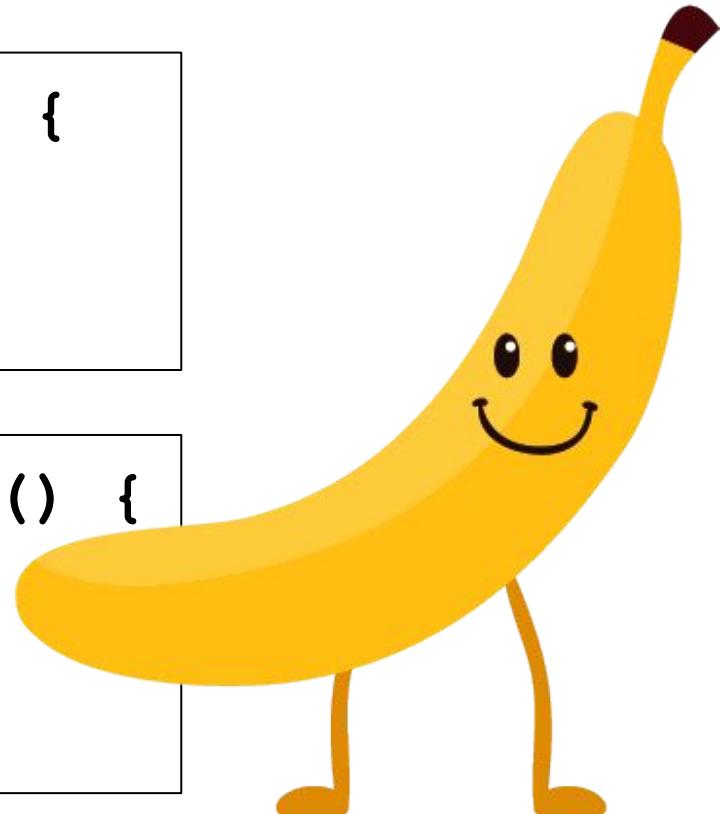
```
private void  
bestMethodEverBetter() {  
    ...  
}
```



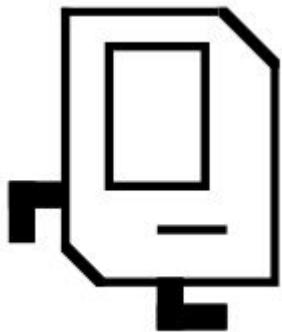
Method names

```
private void turnRight() {  
    ...  
}
```

```
private void buildColumn() {  
    ...  
}
```



See You Later!



I will miss you.

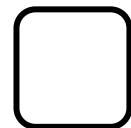
Enjoy Java!

Call me maybe?

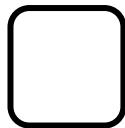
Java



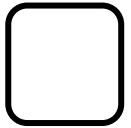
Our To Do list



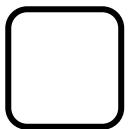
How to write a console program?



what are variables?



How to get user input in a
console program?



How to use variables?

Console Program

Do you like trains?

Yes



Hello world

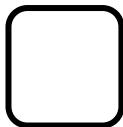
```
import acm.program.*;  
  
public class HelloProgram extends ConsoleProgram {  
  
    public void run() {  
        println("Hello world!");  
    }  
  
}
```



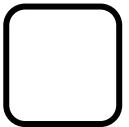
Our To Do list



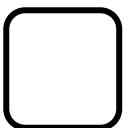
How to write a console program?



what are variables?



How to get user input in a
console program?



How to use variables?

what is a variable?

variables in maths

$$2x + 3x - 4y = 0$$

variables in computer science



Declaring a variable

Declaring a variable - TYPE

int



Declaring a variable - NAME

int counter



Declaring a variable - vALUE

```
int counter = 42;
```



variable types



variable types in Java

String str = "Hi";



int num = 5;



double fraction = 0.2;



boolean cond = false;



char cond = 'X';



How heavy are you?



How Many Children Do I Have?



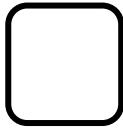
Our To Do list



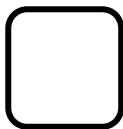
How to write a console program?



what are variables?



How to get user input in a
console program?



How to use variables?

User Input

```
int children = readInt("message");
```

```
double weight = readDouble("message");
```

```
String name = readLine("message");
```

Our To Do list



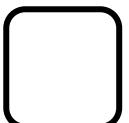
How to write a console program?



what are variables?



How to get user input in a
console program?



How to use variables?

Binary Operators

- | | | | |
|---|-------------|---|----------------|
| + | Addition | * | Multiplication |
| - | Subtraction | / | Division |
| | | % | Remainder |

PROGRAMMING
TIME

what do you think this does?

```
import acm.program.*;

public class HelloProgram extends ConsoleProgram {
    public void run() {
        println(1/2);
    }
}
```

Resulting Type

int / int = int

double / double = double

int / double = double

PROGRAMMING
TIME

Comparison Operators

< Less Than

== Equal To

> Greater Than

!= Not Equal To

<= Less or Equal

>= More or Equal

PROGRAMMING
TIME

Our To Do list

- How to write a console program?
- what are variables?
- How to get user input in a console program?
- How to use variables?

Your job: Play with variables!





The End