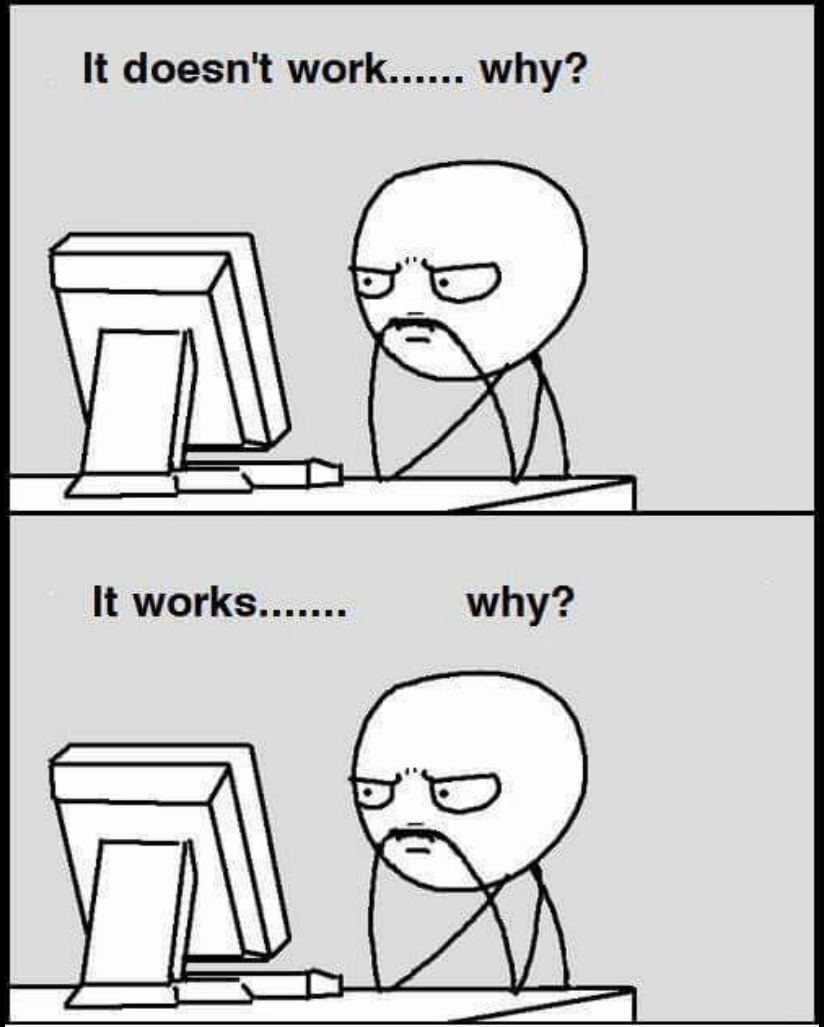

It doesn't work..... why?
It works..... why?
WeKnowMemes


VARIABLES
ARE ~~COMING~~
HERE

Eliška in High School

Eliška in College

Eliška teaching

Ondra


PREVIOUSLY ON
GAME OF THRONES
CS BRIDGE

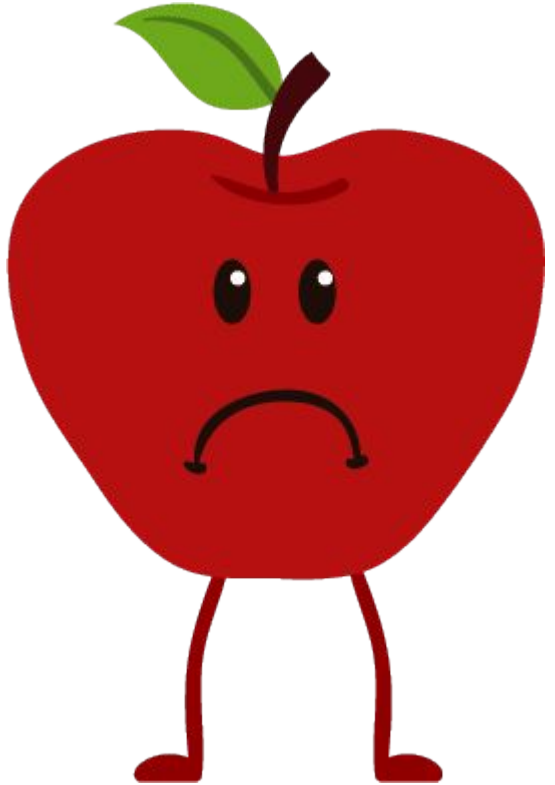
Control Statements

```
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

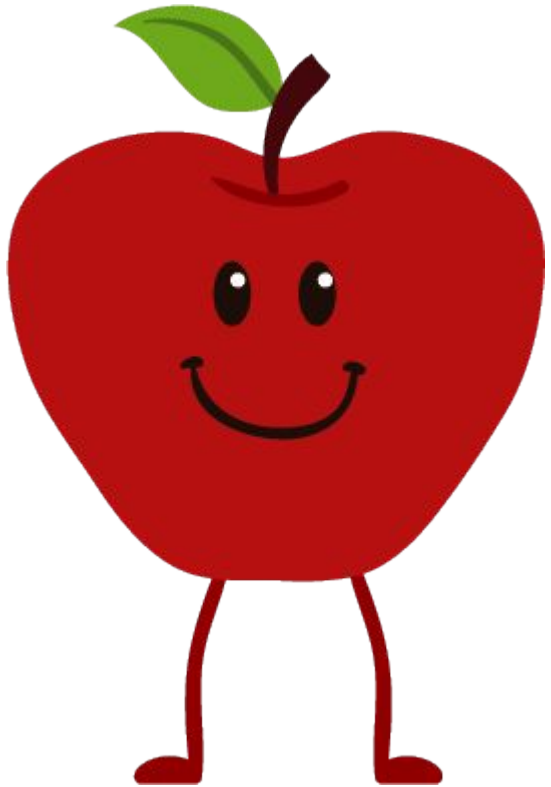
Readable code

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

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



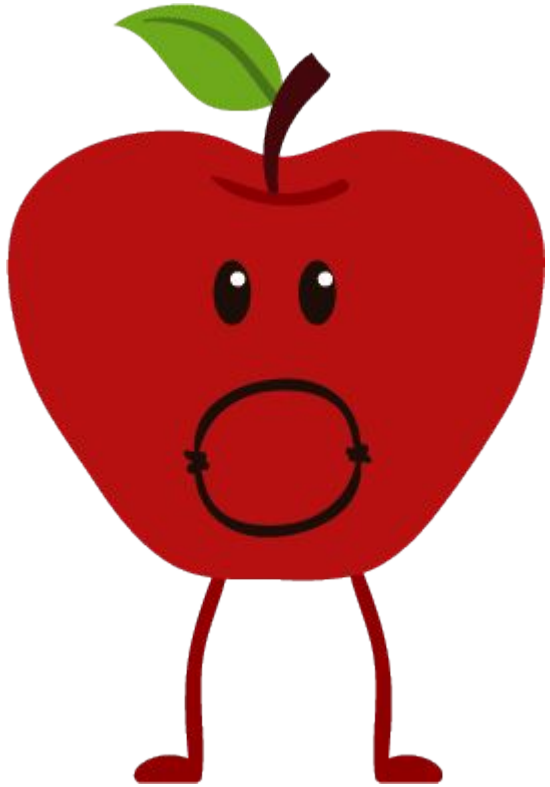
Readable code

```
public void run() {
    while (beepersInBag()) {
        findTree();
        addLeavesToTree();
    }
    moveToWall();
}

private void addLeavesToTree() {
    turnLeft();
    climbTree();
    addLeaves();
    descendToGround();
    turnLeft();


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



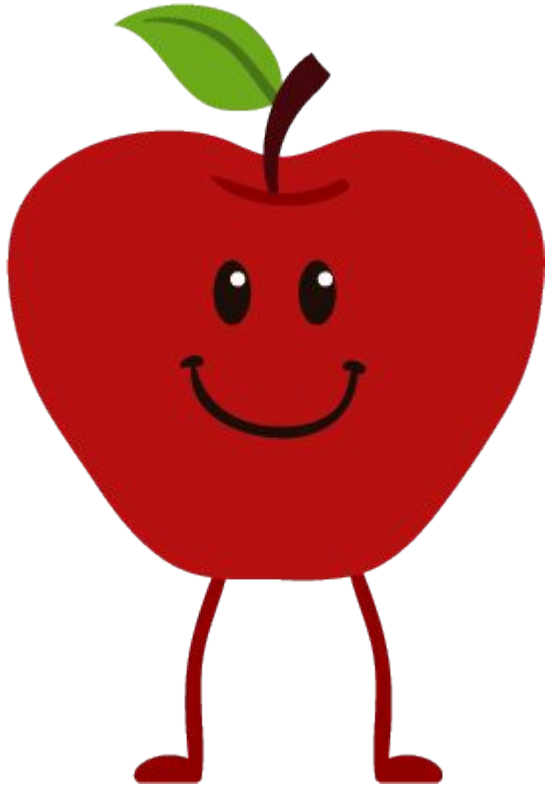
Readable code

```
public void run() {
     while (beepersInBag()) {
          findTree();
          addLeavesToTree();
     }
     moveToWall();
}

private void addLeavesToTree() {
     turnLeft();
     climbTree();
     addLeaves();
     descendToGround();
     turnLeft();


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



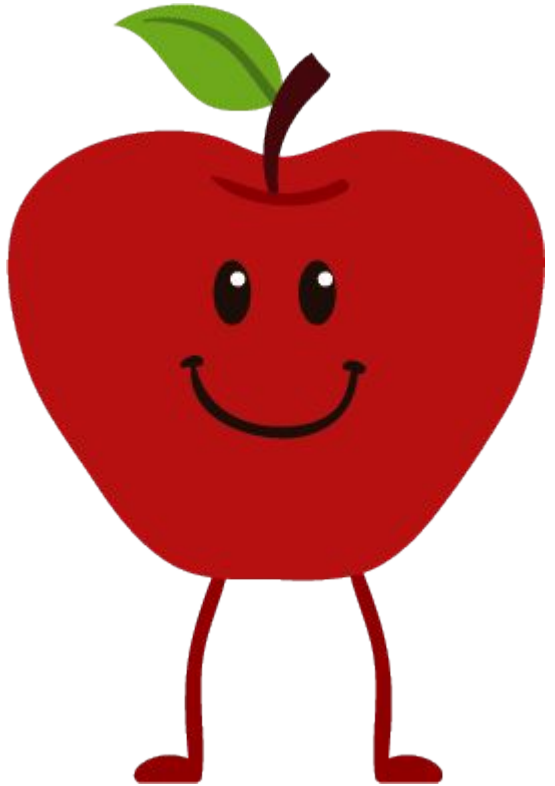
Readable code

```
public void run() {
    while (beepersInBag()) {
        findTree();
        addLeavesToTree();
    }
    moveToWall();
}

private void addLeavesToTree() {
    turnLeft();
    climbTree();
    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();
}
```



Readable code

```
public void run() {
    while (beepersInBag()) {
        findTree();
        addLeavesToTree();
    }
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}

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    turnLeft();
    climbTree();
    addLeaves();
    descendToGround();
    turnLeft();
}

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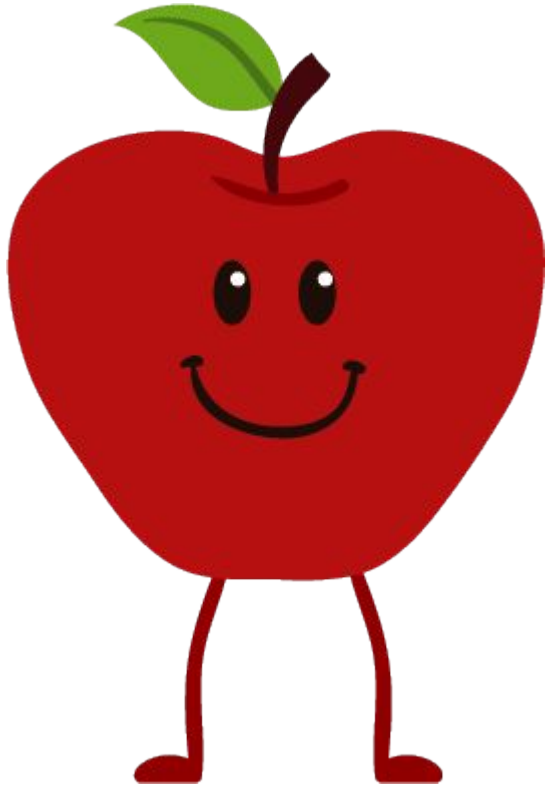
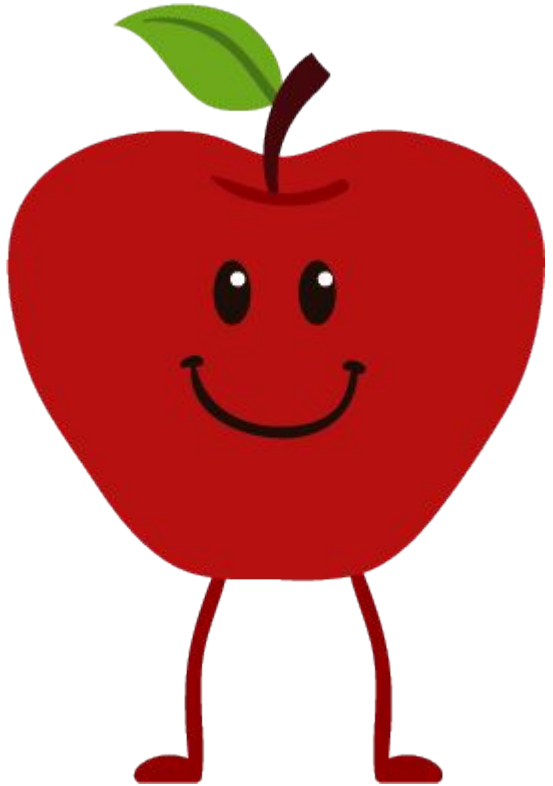



Readable code

```
public void run() {
     while (beepersInBag()) {
          findTree();
          addLeavesToTree();
     }
     moveToWall();
}

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

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



Readable code

```
public void run() {
    while (beepersInBag()) {
        findTree();
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    }
    moveToWall();
}

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

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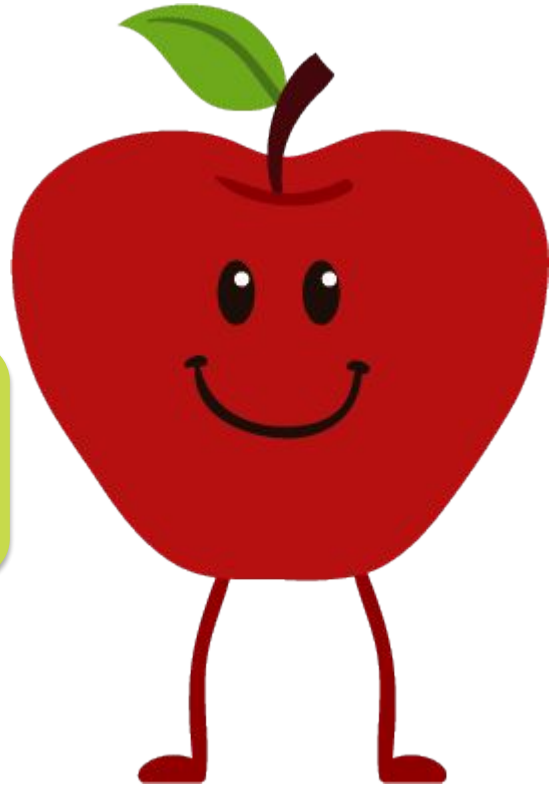
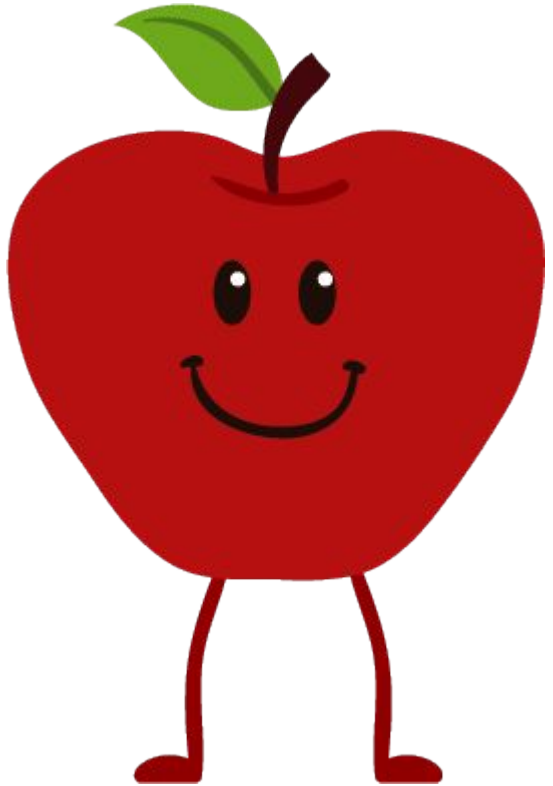
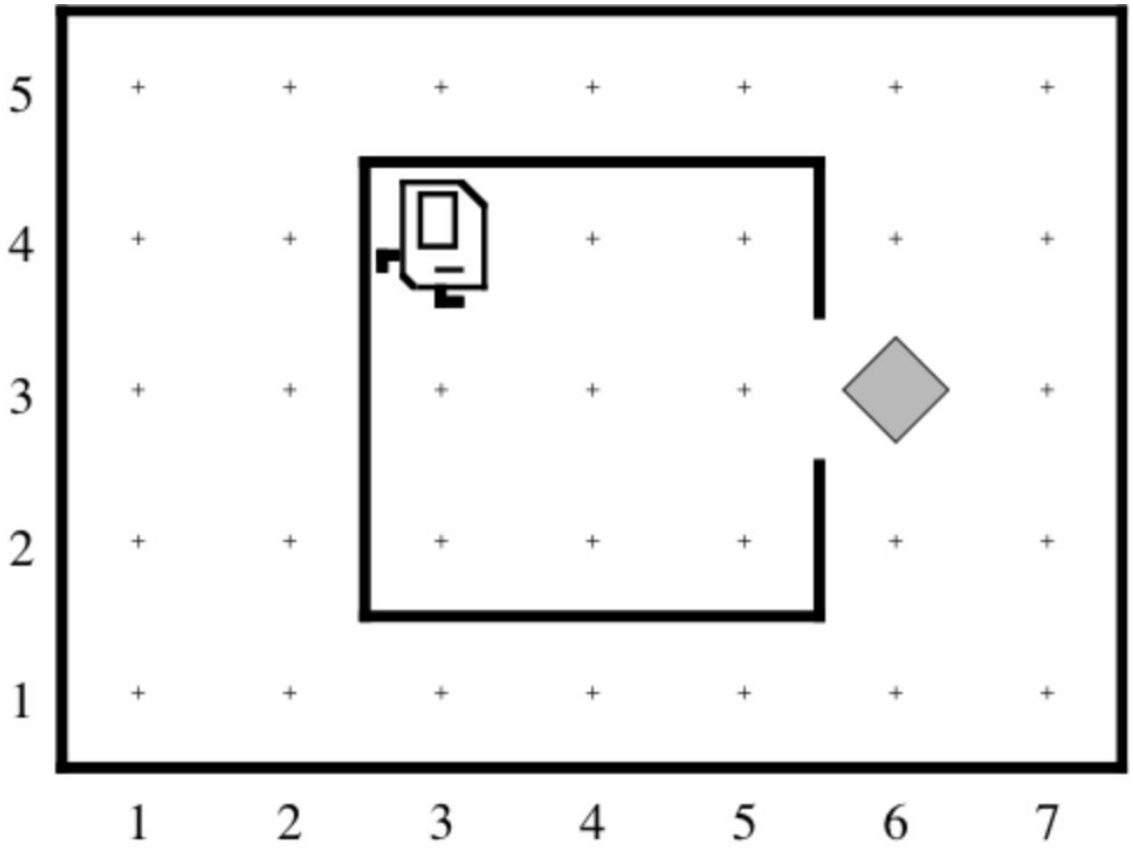



Readable code

```
public void run() {
    while (beepersInBag()) {
        findTree();
        addLeavesToTree();
    }
    moveToWall();
}

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

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

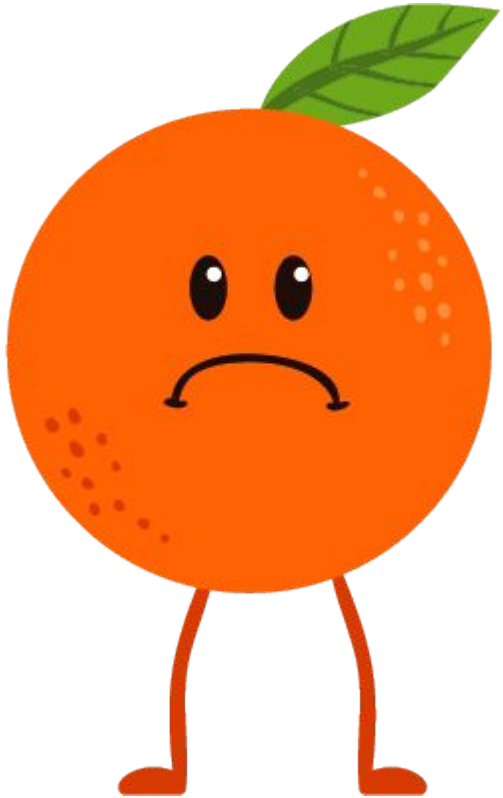


Decomposition

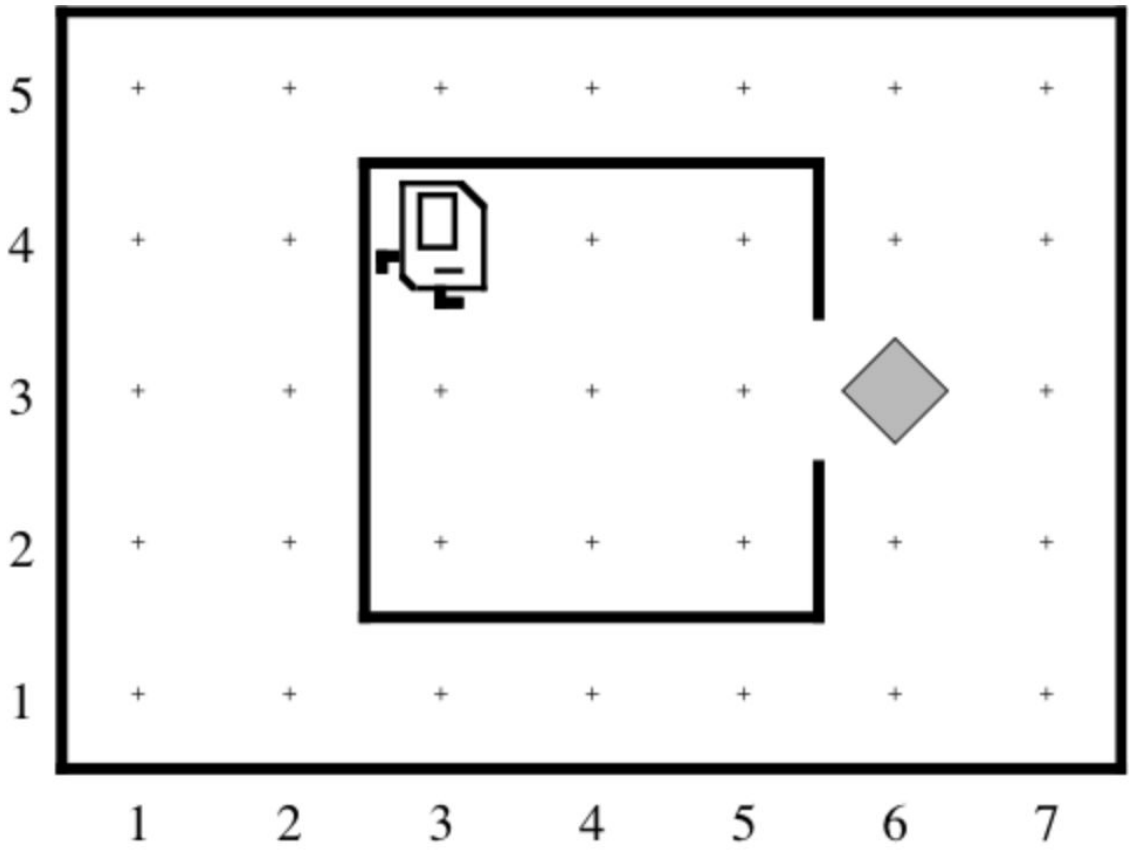


Decomposition

```
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

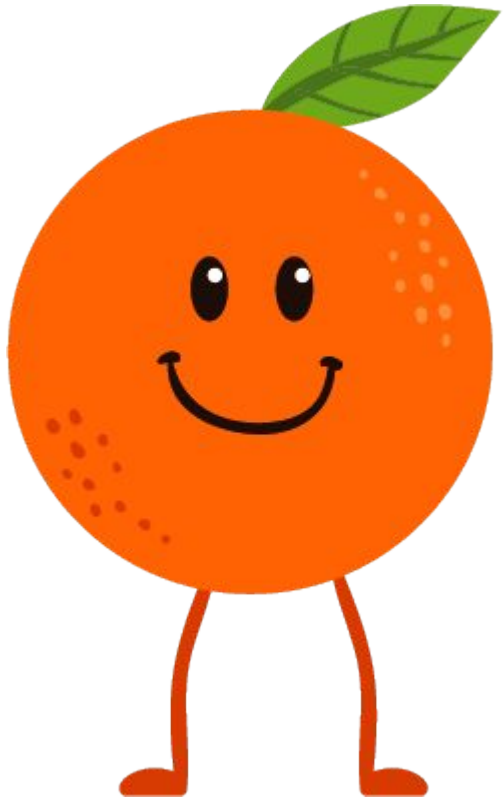
Decomposition

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

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

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

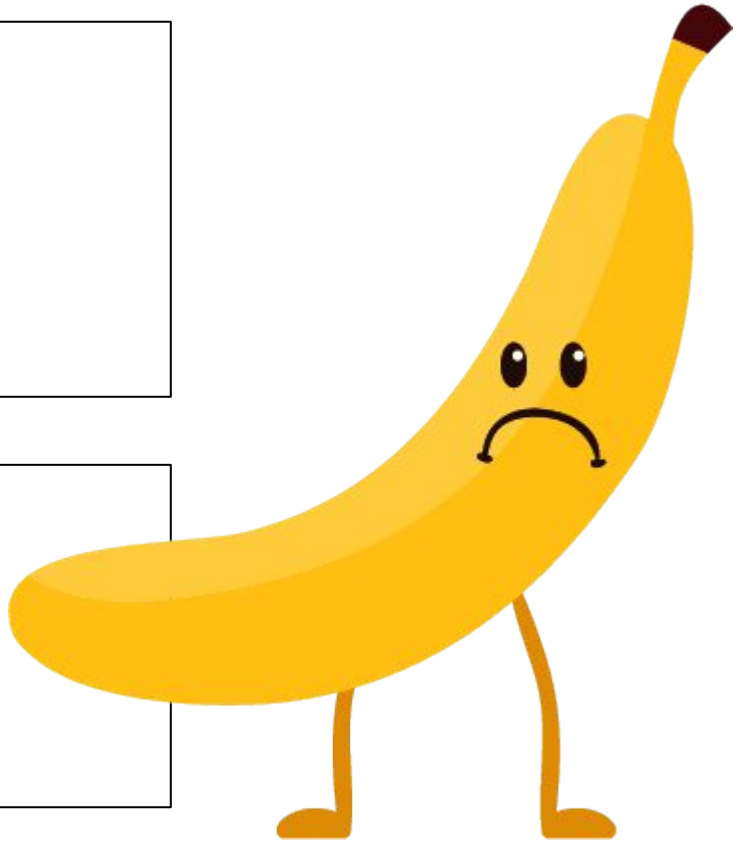
```
private void pickUpPaper() {
      pickBeeper();
}
```



Method names

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

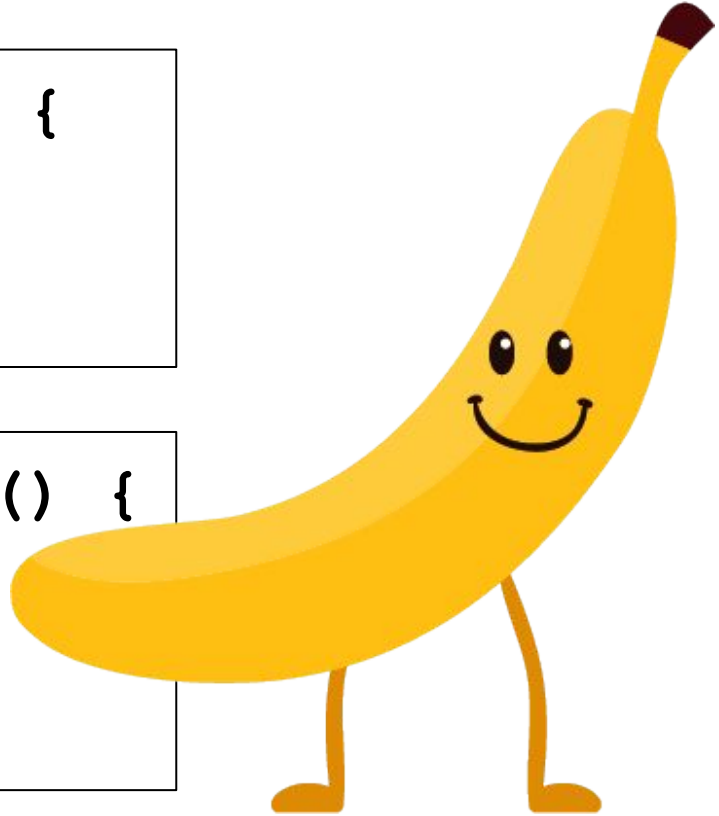
```
private void
bestMethodEverBetter() {
    ...
}
```



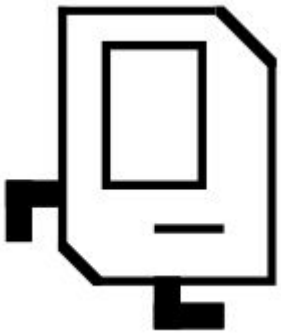
Method names

```
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';
```

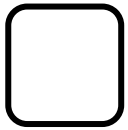
How heavy are you?

How Many Children Do I Have?

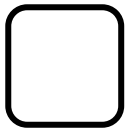
our To Do list

How to write a console program?

what are variables?



How to get user input in a console program?



How to use variables?

User Input

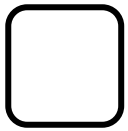
```
int children = readInt("message");

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