Understanding Methods

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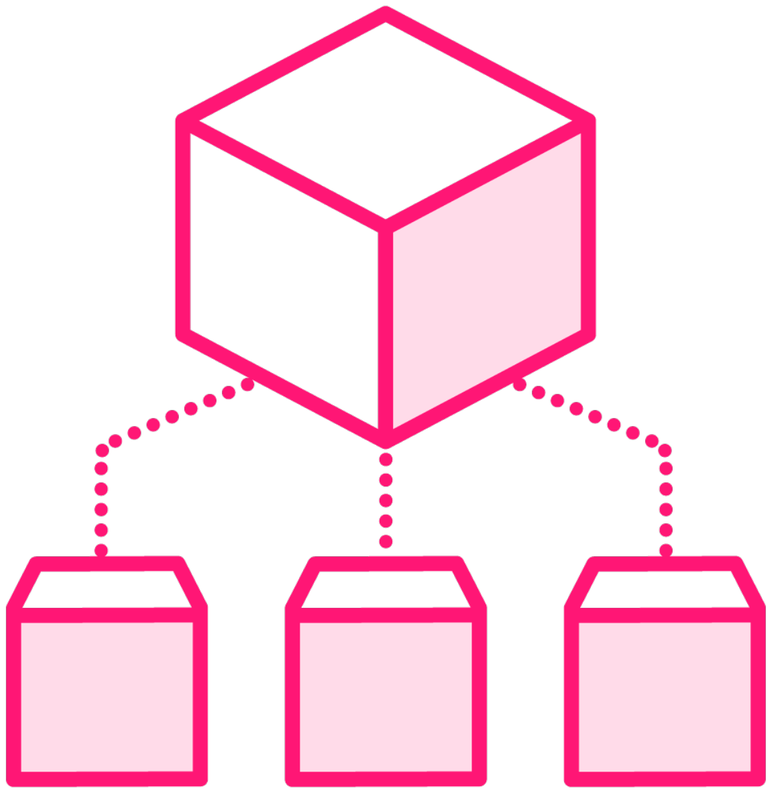
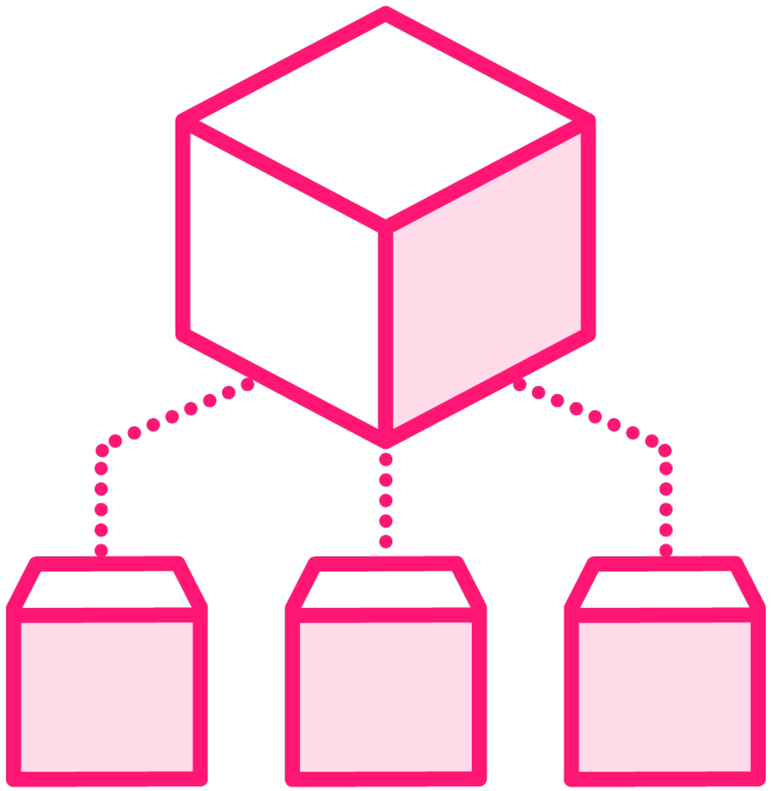
Overview

- Declaring and calling methods
- Parameters
- Exiting a method
- Returning a value
- Program command-line arguments



Method

- Mechanism for organizing code
- Enables creation of reusable code blocks
- Can receive data
- Can return data



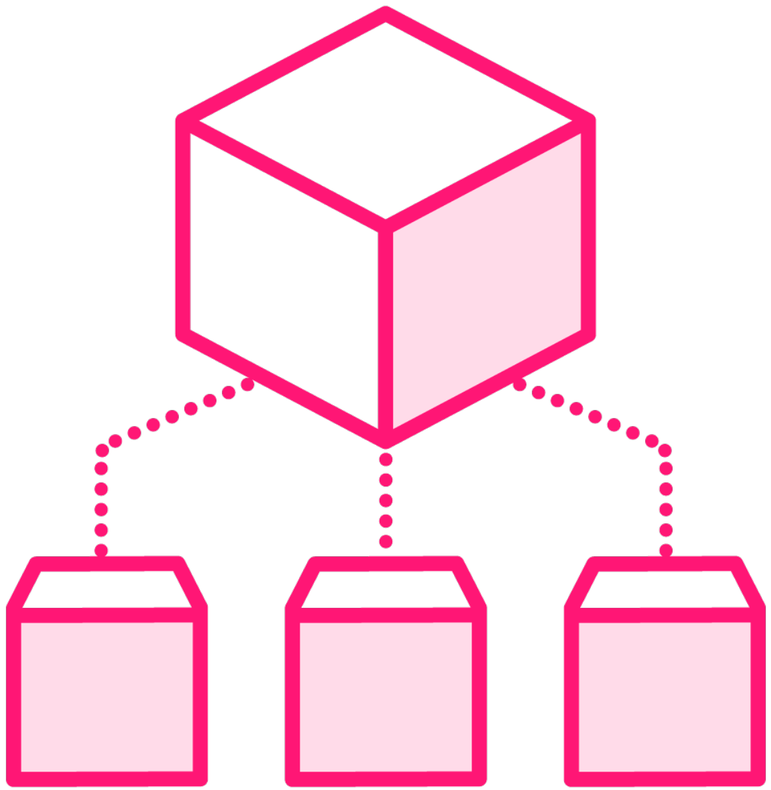
Name

- Same rules and conventions as variables

Typed parameter list

- Allow data values to be passed in
- Can be empty

```
name
```



Body

- Consists of zero or more statements
- Enclosed in brackets

Return type

- Indicates the type of data returned
- Use void when no value returned

```
                    name (typed-parameter-list)
        statements
    }
```

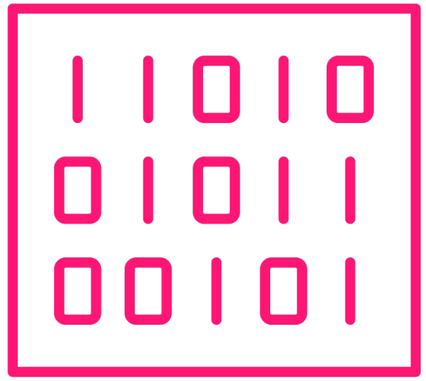
Using a Simple Method

Main.java

```
System.out.println("Before method call");
doSomething();
System.out.println("After method call");

            doSomething
    System.out.println("Inside method");
    System.out.println("Still inside");
}
```

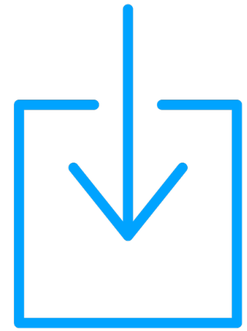
```
Before method call
Inside method
Still inside
After method call
```

Method Data



Variables

Scope limited to method where declared



Parameters

Enable passing data values to methods

Passed values matched to parameters by position

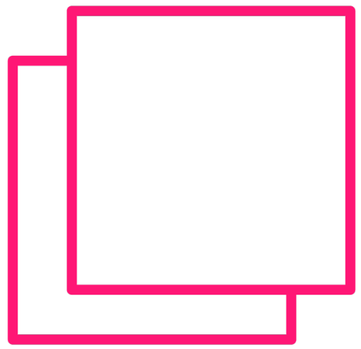
Using Parameters

```
showSum(7.5, 1.4, 3);
```

```
static void showSum(float x, float y, int count) {
    float sum = x + y;
    for(int i = 0, i < count; i++)
        System.out.println(sum);
}
```

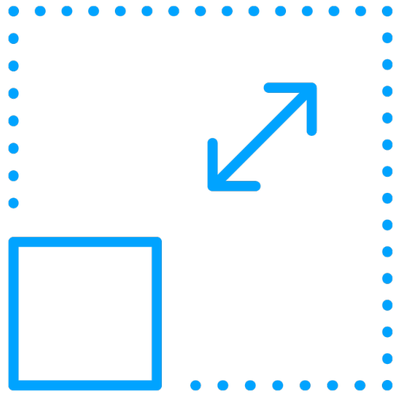
Prints 3 times

Parameter Passing



Parameters passed “by value”

Parameter receives a copy
of the original value



Method changes to parameter values

Visible within method

Not visible outside of method

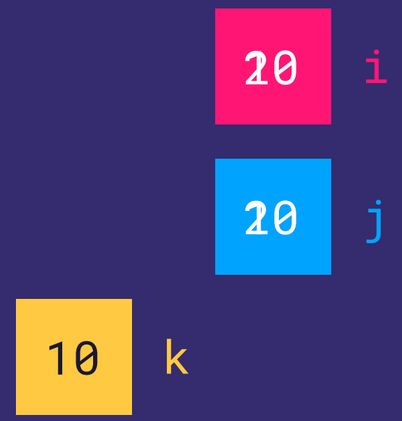
Method Changes to Parameter Values

Main.java

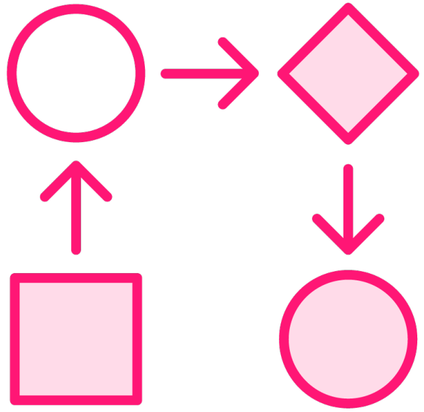
```
int val1 = 10;
int val2 = 20;
swap(val1, val2);
System.out.println(val1) // 10
System.out.println(val2) // 20
```

Main.java

```
static void swap(int i, int j) {
  int k = i;
  i = j;
  j = k
  // i:20 j:10
}
```

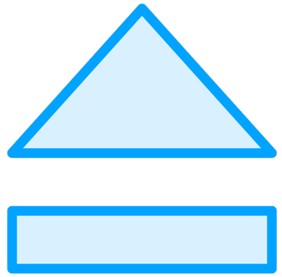


Reasons a Method Exits



End of method

No more code in method



Return statement

Explicitly exit method

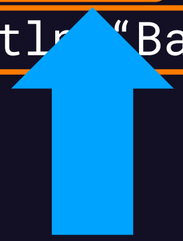
Error occurs

Method abruptly exits

Throws an exception

Exiting a Method

```
showSum(7.5, 1.4, 3);
System.out.println("Back from showSum");
```



```
static void showSum(float x, float y, int count) {
    float sum = x + y;
    for(int i = 0, i < count; i++)
        System.out.println(sum);
    return;
}
```

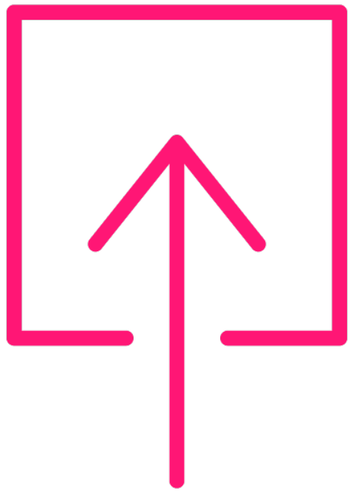
Exiting a Method

```
showSum(7.5, 1.4, 0);
System.out.println("Back from showSum");
```

```
static void showSum(float x, float y, int count) {
    float sum = x + y;
    for(int i = 0; i < count; i++)
        System.out.println(sum);
    return;
}
```

Exiting a Method

```
showSum(7.5, 1.4, 0);
System.out.println("Back from showSum");

static void showSum(float x, float y, int count) {
    if (count < 1)
        return;

    float sum = x + y;
    for(int i = 0, i < count; i++)
        System.out.println(sum);
    return;
}
```



A method can return a single value

- Value returned with return statement

Method return type

- Can be a primitive type
- Can be a more complex type such as an array

Returning a Value

```
                calculateInterest(100d, 0.05d, 10);
System.out.println(result); // 50.0



static double calculateInterest(double amt, double rate, int years) {
    double interest = amt * rate * years;
    return
}
```

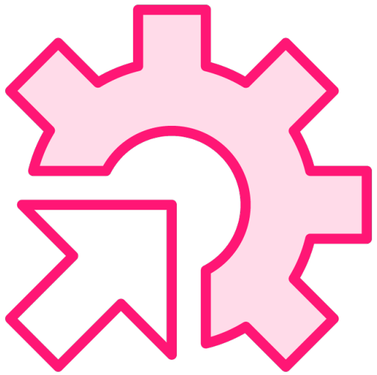
Returning a Value

```
double result = calculateInterest(100d, 0.05d, 10);
System.out.println(result); // 50.0



static double calculateInterest(double amt, double rate, int years) {

    return amt * rate * years;
}
```

Returning an Array

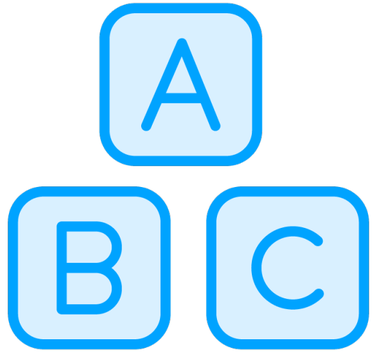
```
static double[] produceInterestHistory(double amt, double rate, int years) {
  double[] accumulatedInterest = new double[years];
  for(int yearIndex = 0; yearIndex < years; yearIndex++) {
    int year = yearIndex + 1;
    accumulatedInterest[yearIndex] = calculateInterest(amt, rate, year);
  }
  return accumulatedInterest;
}
```

Command-line Arguments



Application main method

Serves as program entry point



Receives an array as parameter

Contains command-line arguments

Command-line Arguments

```
java com.pluralsight.example.Main
```

Main.java

```
public static void main(String[] args) {
  if(args.length < 1)
    System.out.println("No args provided");
  else
    for(String arg : args)
      System.out.println(arg);
}
```

Command-line Arguments

```
java com.pluralsight.example.Main Hello “Mary Ann”
```

Main.java

```
public static void main(String[] args) {
  if(args.length < 1)
    System.out.println(“No args provided”);
  else
    for(String arg : args)
      System.out.println(arg);
}
```

```
Hello
Marry Ann
```

Summary

Method

- Mechanism for organizing code
- Enables creation of reusable code

Variables

- Scope limited to method

Summary

Parameters

- Enable passing values to methods
- Parameters passed positionally

Parameters passed “by value”

- A copy of the original value is passed
- Changes made to parameter values not visible outside of method

Summary

Method return value

- Value specified with return statement
- Can be primitive type
- Can be complex type such as an array

Command-line arguments

- Received by app's main method
- Received as String array