

Lecture 63

Java – Methods

Mostafa Elhosseini

Professor at College of Computer Science and
Engineering

Taibah University

<https://youtube.com/drmelhosseini>

| Introduction

- A boss asks a worker to perform a task and report back when the task is done
- Boss: calling Method — caller
- Report back: Return
- Using a Method is in some ways like hiring someone to perform a specific job for you

| Introduction

- No one can perform all of life's tasks personally
- A computer program (except for a very simple one) is in much the same situation; it can't handle every task alone.
- Instead, it calls on other program-like entities — called Methods in java—to carry out specific tasks

| What is a Method ?

- A Method is a block of code that performs a specific task when the function is called (invoked).
- Piece of reusable code that solves particular task
- Methods can have parameters and return values.

| Example

- You've called methods on specific objects—for example, method **nextInt** on **Scanner** objects and methods **printf**, **print** and **println** on the `System.out` object

| Why Methods?

- You can use Methods to make your code reusable, better organized, and more readable.
- Avoid having to write the same code over and over
- Easier to organize programs and keep track of what they were doing
- Easier to debug
- A common problem-solving technique is to break problems down into subproblems. Methods allow you to focus on each subproblem in isolation, and then compose them into a complete solution
- Programmer do not need to worry about using accidentally the same variables names in different Methods

| When to use Methods?

- If a particular fragment of the code begins to appear in more than one place, consider the possibility of isolating it in the form of a function
- If a piece of code becomes so large that reading and understanding it may cause a problem, consider dividing it into separate, smaller problems, and implement each of them in the form of function
- If you are going to divide the work among multiple programmers, decompose the problem to allow the product to be implemented as a set of separately written functions packed together in different modules

| Hint...

- A good and attentive developer divides the code (or more accurately: the problem) into well-isolated pieces, and encodes each of them in the form of a Method
 - Each piece of code can be encoded separately
 - Tested separately

| Where do the Method come from?

- You don't always have to write new methods to get work done. As a reminder.
- **Java class library**
 - aka java Application interface – java API – java class library
 - contains thousands of classes you can use
 - **Math** class
 - Math is in the **java.lang package**
 - The easiest way to find documentation for Java classes is to do a web search for **Java** and the **name of the class**
- you can write your own functions – **customized** functions

| References

- Java: How to Program, 9th Edition (Deitel) 9th Edition by Paul Deitel , Harvey M. Deitel
- Head First Java, 2nd Edition 2nd Edition by Kathy Sierra, Bert Bates
- Think Java: How to Think Like a Computer Scientist 1st Edition by Allen B. Downey, Chris Mayfield