



Java程序设计

Java Programming Design

毛斐巧



课程信息

- ◆ 课程号：1500030003
- ◆ 课程名：java程序设计
- ◆ 课程类别：学科专业选修、3学分，72学时（36理论+36实验）
- ◆ 主选班级：2018计算机科学与技术01班
- ◆ 理论课：周五5、6节，理工楼L2-406
- ◆ 实验课：周五7、8节，南区计算机大楼322
- ◆ 先修课程：程序设计基础 或 面向对象程序设计
- ◆ 开发环境：JDK, Eclipse/MyEclipse, Apache Tomcat, MySQL



教师信息

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办公电话： **86935100**

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Office Hours: 周四**10: 00-12: 00**

助教： 钱卫

教材(1/5)



- UOOC联盟指定参考书（深圳大学教材出版基金资助）：
 - 张席. 《Java语言程序设计教程》. 西安电子科技大学出版社, 2015.8.

教材 (2/5)



■ 教材:

- 耿祥义,张跃平. 《**Java大学实用教程**》（第**3**版）. 电子工业出版社, **2012.1**.
- 张跃平,耿祥义,雷金娥. 《**Java大学实用教程学习指导**》（第**3**版）. 电子工业出版社, **2012.8**.

教材 (3/5)



■ 参考教材:

- Y. Daniel Liang. **Introduction to Java Programming, Comprehensive Version (10th Edition)**. Pearson, 2014.1.

英文影印版:

- Y. Daniel Liang. **Java语言程序设计: 基础篇** (英文版 第10版). 机械工业出版社, 2016.7.
- Y. Daniel Liang. **Java语言程序设计: 进阶篇** (英文版 第10版). 机械工业出版社, 2017.7.
- 作者主页: <http://www.cs.armstrong.edu/liang/>
- 注: 英文最新是第11版, 尚未引进.

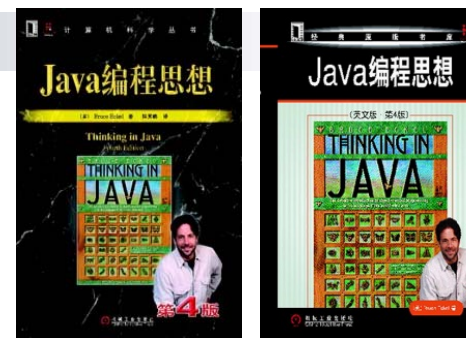
教材 (4/5)



■ 其他教材:

- Cay S. Horstmann. **Core Java Volume I--Fundamentals** (10th Edition). Prentice Hall. 2016.1. (人民邮电出版社2016.6出版了英文影印版)
- Cay S. Horstmann. **Core Java, Volume II--Advanced Features** (10th Edition). Prentice Hall. 2016.12. (人民邮电出版社2017.6出版了英文影印版)
- 官方主页: <http://www.horstmann.com/corejava.html>

教材 (5/5)



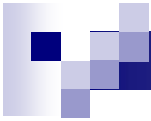
■ 其他教材:

- Bruce Eckel. **Thinking in Java** (4th Edition). Prentice Hall, 2006.2. 注: 机械工业出版社 2007.4 出版了影印版, 2007.6 出版了中译本 (陈昊鹏 译) .



教学内容和计划

- ◆ **Java**语言概述
- ◆ 数据类型、运算符及数组
- ◆ 类和对象
- ◆ 继承与接口
- ◆ 字符串及其应用
- ◆ 泛型与集合、常用实用类
- ◆ 异常处理
- ◆ 输入与输出
- ◆ 图形用户界面
- ◆ 线程
- ◆ **Java**网络编程
- ◆ 复习答疑



教学内容和计划

- 与“Introduction to Java Programming (10th Edition)”的对应关系
 - Java语言概述 [IJP-Ch1-8]
 - 基本数据类型和数组 [IJP-Ch1-8]
 - 运算符、表达式和语句 [IJP-Ch1-8]
 - 字符串和正则表达式 [IJP-Ch1-8]
 - 类和对象 [IJP-Ch9-11, 19]
 - 继承、接口和泛型 [IJP-Ch9-11, 19]
 - 常用实用类[IJP-Ch20-21]
 - 线程 [IJP-Ch30]
 - 输入流和输出流 [IJP-Ch12, 17]
 - 图形用户界面设计 [IJP-Ch14-16]
 - Java中的网络编程 [IJP-Ch31]



成绩评价

- ◆ 课程作业**10%**（**6次选实验**）
- ◆ 课程实验**30%**（**6次必实验**）
- ◆ 课程视频**10%**（根据**MOOC**网站导出的数据）
- ◆ 课程测验（**5%**）（根据**MOOC**网站导出的数据）
- ◆ 课堂参与**5%**
- ◆ 线上期末考试**10%**
- ◆ 线下期末考试**30%**
- ◆ 总评=（课程作业，课程实验，课程视频，课程测试，课程参与）***70%**+期末基本题成绩***30%**



几个基本问题

- **WHY**: 我为什么要学“Java程序设计”？
 - 在工业界和学术界的重要性不言而喻，是最受欢迎的语言之一
- **WHAT**: 我能从“Java程序设计”课程学到什么？
 - Java编程的基础知识
- **HOW**: 我如何能学好“Java程序设计”？
 - 教材：课堂教学
 - 实验：实际开发
 - 多查阅网上的资料，**多动手**（JDK, Eclipse/MyEclipse）



一个更有挑战性的问题

- **WHY:** 网上有那么多公开课/在线视频，我为什么还要到课堂来学？
 - 学堂在线 <http://www.xuetangx.com/>
 - 中国大学MOOC <https://www.icourse163.org/>
 - <https://www.coursera.org/>
 - <https://www.edx.org/>
 - <https://www.udacity.com/>
- 如果时间允许，多种渠道学习（互补性）

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Jul 2018	Jul 2017	Change	Programming Language	Ratings	Change
1	1		Java	16.139%	+2.37%
2	2		C	14.662%	+7.34%
3	3		C++	7.615%	+2.04%
4	4		Python	6.361%	+2.82%
5	7	▲	Visual Basic .NET	4.247%	+1.20%
6	5	▼	C#	3.795%	+0.28%
7	6	▼	PHP	2.832%	-0.26%
8	8		JavaScript	2.831%	+0.22%
9	-	▲	SQL	2.334%	+2.33%
10	18	▲	Objective-C	1.453%	-0.44%
11	12	▲	Swift	1.412%	-0.84%
12	13	▲	Ruby	1.203%	-1.05%
13	14	▲	Assembly language	1.154%	-1.09%
14	15	▲	R	1.150%	-0.95%
15	17	▲	MATLAB	1.130%	-0.88%
16	9	▼	Delphi/Object Pascal	1.109%	-1.38%
17	11	▼	Perl	1.101%	-1.23%
18	10	▼	Go	0.969%	-1.39%
19	16	▼	Visual Basic	0.885%	-1.21%
20	20		PL/SQL	0.704%	-0.84%

编程语言排行榜

- IEEE Spectrum杂志发表2018 编程语言 Top 10。

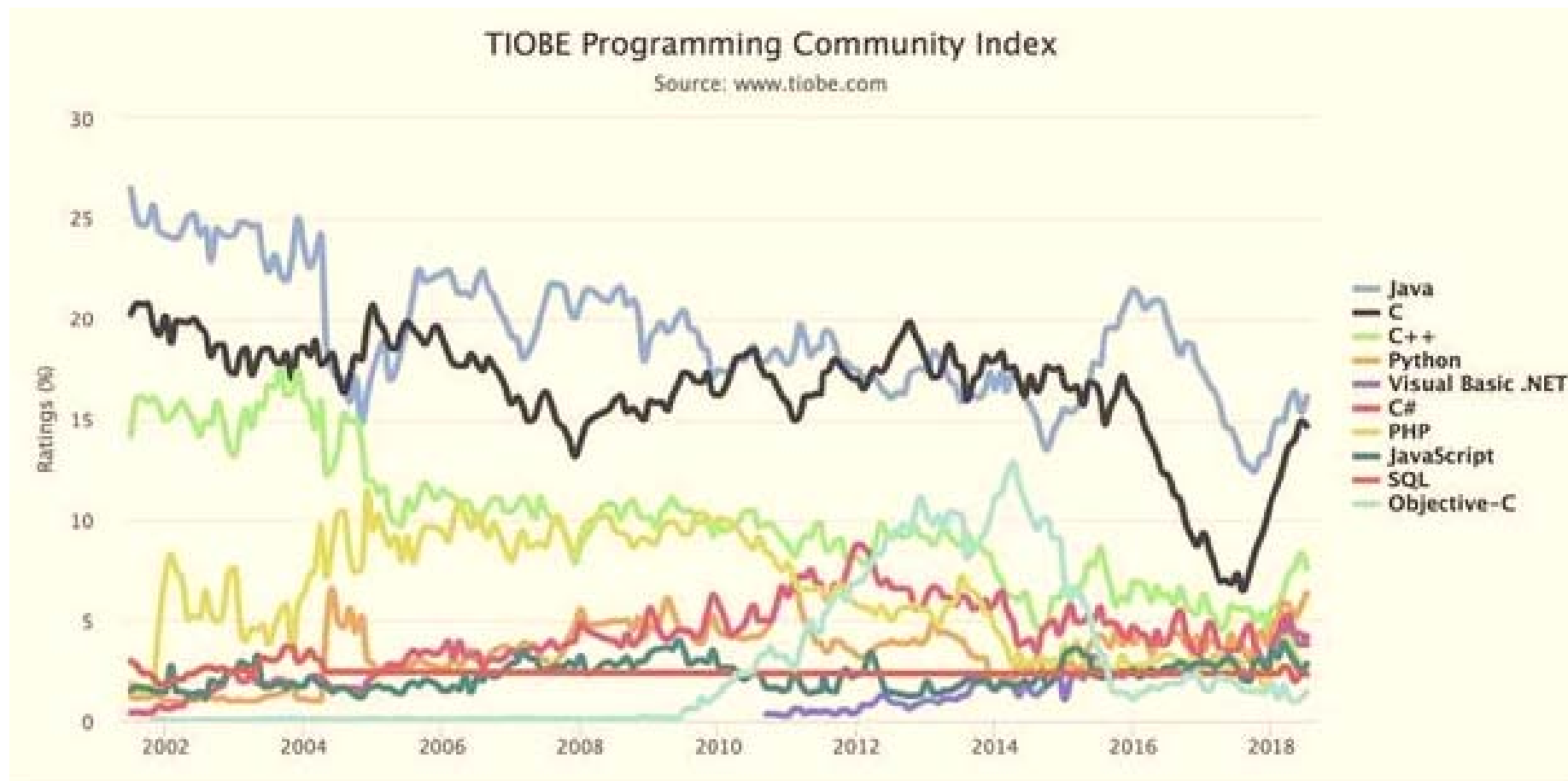
Language Rank	Types	Spectrum Ranking
1. Python	  	100.0
2. C++	  	99.7
3. Java	  	97.5
4. C	  	96.7
5. C#	  	89.4
6. PHP		84.9
7. R		82.9
8. JavaScript	 	82.6
9. Go	 	76.4
10. Assembly		74.1

No.3

Top 10 Programming Languages by *IEEE Spectrum*, July 2018

<https://spectrum.ieee.org/at-work/innovation/the-2018-top-programming-languages>

TOP10编程语言TIOBE指数走势2002-2018



反映了编程语言的热门程度和流行趋势



Java发展简史

- 1991: A group of Sun Microsystems engineers, led by Patrick Naughton and James Gosling
- 1995: SunWorld'95, the HotJava browser
- 1996: Java 1.0
- ...
- 2004: Java 5.0
- 2006: Java 6
- 2009-2010: Sun Microsystems was acquired by Oracle
- 2011: Java 7
- 2014: Java 8
- 2017: Java9
- 2018.3,2018.9: Java10, Java11
- 2019.3: Java12
- 2019.8:Java 13



Java As A Programming Platform

- Java is a whole **platform (平台)**:
 - a good **language** (e.g., pleasant syntax and comprehensive semantics),
 - a huge **library** (e.g., fancy graphics, networking and database access, data mining package, recommender systems),
 - a high-quality execution **environment** that provides services such as security, portability across operating systems, and automatic garbage collection.



Buzzwords(关于Java的行业流行语)

- **Object oriented**: similar to that of **C++**.
- **Simple**: e.g., there is **no pointer arithmetic**.
- **Network-savvy** (网络的): e.g., access objects across the Internet via URLs is similar to access **a local file system**.
- **Multithreaded**: e.g., **multithreading** is convenient.



Buzzwords

- **Robust**: Java has a pointer model that eliminates the possibility of overwriting memory and corrupting data.
- **Secure**: Java enables the construction of virus-free, tamper(篡改)-free systems, which avoids attacks.
- **Dynamic**: e.g., finding out the runtime information is straightforward.



Buzzwords

- **Portable**: e.g., **Strings** are saved in a standard Unicode format.
- **Architectural neutral**: the **java compiler** generates an architecture-neutral object file format - bytecodes.
- **Interpreted**: the **java interpreter** can execute Java bytecodes directly on any machine to which the interpreter has been ported.
- **High performance**: a **just-in-time compiler** can monitor which code is executed frequently and optimize just that code for speed.

More about Java

- [http://en.wikipedia.org/wiki/Java_\(programming_language\)](http://en.wikipedia.org/wiki/Java_(programming_language))
- Java is a computer programming language that is concurrent, class-based, **object-oriented**, and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "**write once, run anywhere**" (WORA), meaning that code that runs on one platform does not need to be recompiled for another.



James Gosling,
creator of Java



Logo



Duke (公爵), Mascot (吉祥物)