

**Keep It Simple and Stupid - KISS**

**Write the Code, Change the World - Spirit of Geek**

Software Development

**软件开发**

**Big Hit | Computer Science & Technology | 2018-04-30**

**Write Once, Run Anywhere.**

**- The Slogan of Java Lang -**

# Part I. Programming Foundation Knowledge - [编程基础]

## System Overview -[系统纵览]

### Hardware Component - [硬件部分]

#### Central Process Unit - [处理器，CPU]

#### Graphic Processing Unit - [显示卡，GPU]

#### Internal Memory Bank - [内存条，MEM]

#### Peripheral Device - [外设，I/O]

### Firmware Component - [固件部分]

#### Basic Input & Output System - [BIOS]

#### Unified Extensible Firmware Interface - [UEFI]

### Software Component - [软件部分]

#### System Software - [系统软件]

##### Operating System - [操作系统，OS]

##### Database Management System - [数据库管理系统，DBMS]

##### Software Development Kit - [软件开发套件，SDK]

#### Application Software - [应用软件，App]

##### World Wide Web - [万维网]

##### HTTP Server – [服务器]

##### WEB Browser – [浏览器]

##### Multi-Media Player - [播放器]

##### Instant Message - [即时通信，IM]

##### Social Network Service - [社交网络，SNS]

##### Business Intelligence - [商业智能，BI]

##### Electronic Games - [电子游戏，E-Games]

## Programming Language - [编程语言]

### Language Popularity Index - [语言流行度指数]

### Language Abstraction Level – [语言抽象层级]

#### Digital Logic Language – [数字逻辑语言]

ASIC - Application Specific Integrated Circuit

FPGA - Field－Programmable Gate Array

DSP - Digital Signal Processing

ISP - Image Signal Processing

MCU - Micro Controller Unit

PLC - Programmable Logic Controller

#### Hardware Description Language – [硬件描述语言，HDL]

##### Electronic Design Automation – [电子设计自动化，EDA]

VHDL / Verilog/Proteus

#### Machine Language – [机器语言]

Instruction Set Architecture - [指令架构，ISA]

#### Assembly Language – [汇编语言]

Mnemonic Symbol - [助记符]

#### Advanced Language – [高级语言]

##### Domain-Specific Language - [专用语言，DSL]

##### General-Purpose Language - [通用语言，GPL]

Script Language / System Language

### Selection of Programming Language – [编程语言选择]

#### Development Efficiency – [开发效率-功能]

##### Programming Paradigms – [编程范式]

##### Language Features - [语言特性]

##### Platform Architecture - [平台架构]

##### Application Ecosystem - [应用生态]

#### Execution Velocity - [执行速度-性能]

## Development Environment - [开发环境]

### Environment Composition - [环境构成]

#### Software Development Kit - [开发套件，SDK]

#### Integrated Development Environment – [集成环境，IDE]

#### Language Plugin Bundle - [语言插件，LPB]

### Environment Construction - [环境搭建]

#### Download - [下载]

#### Installation - [安装]

#### Configuration - [配置]

#### Verification - [验证]

#### Utilization - [运用]

### Platform Profile - [平台解析]

#### Application Orientation - [应用方向]

#### System Architecture - [系统架构]

## **Core Syntax – [核心语法]**

### Basement Syntax - [基础语法]

#### Date Type - [数据类型]

##### Primitive Type - [基础类型]

Numeric / Character / Boolean

##### Reference Type - [引用类型]

#### Local Variables - [局部变量] 生存期/作用域

#### Named Constants - [定名常量]

#### Assignment Statement - [赋值语句]

#### Type Conversion - [类型转换]

##### Type Widening: Automatic Casting

##### Type Narrowing: Explicit Casting

#### Arithmetic/Logic Operations - [算逻运算]

##### Operator - [运算符]

##### Precedence - [优先级]

##### Associativity - [结合性]

#### Expression & Statement - [表达式&语句]

##### Augmented Assignment - [复合赋值]

Shortcut Operator - [快捷算符]

##### Increment & Decrement - [自增&自减]

Prefix - [前置] / Postfix - [后置]

#### Char Type - [字符类型]

##### Character Encoded Scheme - [字符编码方案]

### Flow Control - [流程控制]

#### Sequence Construct - [顺序结构]

#### Selection Construct - [选择结构]

#### Loop Construct - [循环结构]

### Method Stubs - [方法模块]

### Built-In Types - [内置类型]

#### String Type - [字串类型]

#### Array Type - [数组类型]

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# Part II. Oriented-Object Programming - [面向对象]

Encapsulation - [封装]

Inheritance - [继承]

Polymorphism - [多态]

Abstraction - [抽象]

Induction - [归纳]

Deduction - [演绎]

Algorithm - [算法]

- Describe how a problem is solved by listing the actions

that need to be taken and the order of their execution.

Recursion - [递归]

- Solve Inherently Recursive Problems.

Modularity - [模块化]

Reusability - [复用性]

Flexibility - [伸缩性]

Scalability - [可扩性]

Exception Handling - [异常处理]

Binary Stream - [二进制位流]

Text Stream - [文本流]

Type Generic - [类型泛化]

- Improve the Software Reliability & Reusability.

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# Part III. Advanced Programming - [高阶编程]

## Common Data Structures - [数据结构]

### Java Collection Framework - [集合框架]

## Graphical User Interface - [图形界面]

### Basic Controls - [基础控件]

### Container Pane - [容器窗格]

### Shapes Drawing - [图形绘制]

### Event Driven - [事件驱动]

### Media Resource : Image/Animation/Audio/Video

## Network Protocols Suite - [网络协议]

### - Make Programs From Different Hosts Over Internet Talk

### With Each Other.

### OSI/RM- [开放系统互连参考模型]

**Open System Interconnect/Reference Model**

### WWW - [万维网，World Wide Web]

#### HTTP - [超文本传输协议，Hyper-Text Transfer Protocol]

运输载体

#### HTML - [超文本标记语言，Hyper-Text Markup Language]

骨架结构

#### CSS - [层叠样式表，Cascading Style Sheet]

外观样式

#### JS - [客户端脚本语言，ECMAScript/JavaScript]

交互响应

#### JSP - [服务端脚本语言，Java Server Page]

#### AJAX - [阿贾克斯，Asynchronous Javascript And XML]

## Data Management - [数据管理]

### Data Interchange Format - [数据交换格式，DIF]

#### eXtensible Markup Language - [可扩展标记语言，XML]

#### JavaScript Object Notation - [JS对象简谱，JSON]

#### YAML Ain’t Markup Language - [YAML]

### DataBase Management System - [数据库管理系统，DBMS]

#### Structured Query Language - [结构化查询语言，SQL]

# Part IV. Development Framework - [开发框架]

## Design Patterns - [设计模式]

## Application Scenarios - [应用场景]

## Open Source Frameworks - [开源框架]

### Spring

### Struts

### Hibernate

### MyBatis

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# Part V. Project Practice - [项目实践]

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# Part VI. Resource Appendix - [资源附录]

## Ecological Association - [生态群落]

### Authoritative Institution - [权威机构，AI]

Java Community Process - [社区进程，JCP]

Open Service Gateway Initiative - [开放服务网关协议，OSGI]

### Community Organization - [组织社群，CO]

Java User Group - [用户群组，JUR]

### Authorization License - [授权许可，AL]

### Technical Specification - [技术规范，TS]

Request For Comments - [请求评论，RFC]

Java Specification Request - [规范提案，JSR]

## Library Reference - [类库依赖]

### Specific Import - [确切引用]

### Wildcard Import - [通配引用]

## Coding Exercise - [编程练习]

## Case Study - [案例研究]

### Code Demo - [代码演示]

### Code Snippet - [代码片段]

### Sample Run - [运行示例]

### Routine Analysis - [例程分析]

## Pair Coding - [结对编程]

## Error Type : Syntax(Compile)/Runtime/Logical

## Concurrency - [并发]

## - Make Programs More Responsive & Interactive and

## Introduce Parallel Programming.

## Process - [进程]

## Thread - [线程]

## Lock - [资源锁]

## Semaphore - [信号量]

## Development Boot Camp - [开发培训]

## Development Workflow - [开发流程]

### IPO = Input → Process → Output

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**The Language Is a Tool, Not the End.**

- THOUGHTS ABOUT LANGUAGE -

**- COMBINATION of motion & static -**

**Common grammar (static) + extension mechanism (motion)**

- Design of Lang -

**Write Less, Do More**

- ModulAL Development -

**- Top-Down & Stepwise Refinement -**

**- Divide & Conquer -**

**-** Techniques of Development -

**Fundamental First, Problem Driven**

**-** Thought of Pedagogics -

**Nothing comes for free**

**-** philosophy of human being -

OTHERS: You gotta be a fool to believe that will work.

STEVE JOBS: Stay Hungry， Stay Foolish.

**-** Pioneering and enterprising -

**慕课**

**MOOC**

Massive Open Online Courses

**文凭**

**Diploma**

**STEM**

**科学（Science）/技术（Technology）/工程（Engineering）/数学（Mathematics）**

**知识Knowledge & 技能Expertise**

**POSIX**

Portable Operating System Interface of UNIX

**ISO Standard Code: ISO/IEC 9945**

提供源代码级别的可移植性标准