yet another insignificant...

programming notes

(avaliable @ https://chua.bitbucket.io and https://www3.ntu.edu.sg/home/ehchua/programming/index.html)

Before Getting Started...

Programmer's Survival Guide for Windows
Programmer's Survival Guide for macOS & Ubuntu
Source-Code Editors & IDEs

IM1003 Object-oriented Programming

(Week 1) Install JDK
(Week 3) Install Eclipse

Java Basics

1. Introduction to Java Programming
2. Java Basics
Exercises: Java Basics
Online Submission Exercises: Java Basics

Java OOP

3a. OOP Basics
3b. OOP Composition, Inheritance & Polymorphism
3c. OOP Wrapping-Up
Exercises: OOP
3d. String is Special

Java Graphics

4a. Graphical User Interface (GUI)
4b. Custom Graphics
Exercises: Graphics Programming

Case Study / Assignment

Introduction - Tic-tac-toe
Game Programming Assignment - Sudoku
Game Programming Assignment - Mine Sweeper
Java Game Framework and Snake Game
Game Programming Assignment - Tetris

IM2073 Web Programming

Week 1: How to Install MySQL Server and Get Started with SQL
Week 2(a): Introduction to Java Database Programming
Week 2(b): How to Install Tomcat Server and Get Started with Java Servlet Programming
Week 3: WebApp Case Study

IM2073 Mobile (Android) Programming

Project Instructions
Week 1: Android - How to install & Get Started
Week 2: Android - Basics: User Interfaces and Activities
For your project: Building Webapps in WebView
For your project: Android Networking

How to Install & Get Started...

JDK 17
Environment Variables (PATH, CLASSPATH, JAVA_HOME)
Eclipse IDE 2020-12 for Java
VS Code
NetBeans 8.2 for Java
Eclipse 4.3 (Kepler) for C/C++

Java Programming - Part I

For First-Time Programmers

1. Introduction to Java Programming

For New Comers to Java & OOP

2. Java Basics
Exercises: Java Basics
3a. OOP Basics
3b. OOP Composition, Inheritance & Polymorphism
3c. OOP Wrapping-Up
Exercises: OOP
4a. String is Special
4b. Enumeration (enum) (JDK 5)
4c. Exception Handling & Assertion
4d. Java Reference

Power Programmers

Data Representation - Integers, Floating-Point Numbers & Character Sets
Regular Expression (Regex)

Java Programming - Part II

Intermediate Java

5a. Graphical User Interface (GUI)
5b. Graphical User Interface (GUI) Part 2
5c. Graphical User Interface (GUI) Part 3
5d. Custom Graphics
Exercises: Graphics Programming
Case Study: Graphics Programming - Tic-tac-toe
Case Study: Graphics Programming Part II - AI
5e. Applet & WebStart Application
5f. Swing - Templates, Misc & How-To
5g. JavaFX - Introduction
6a. Multithreading
6b. Basic Input & Output (I/O)
6c. Advanced I/O
6d. Networking
7a. The Collection Framework, Part 1 (JDK 5)
7b. Generics (Since JDK 5)
7c. Annotation (JDK 5)
8a. Interface, Lambda Expr, Streams & Functional Prog. (JDK 8-11)
8b. Collection Framework, Part 2 (JDK 8)
9a. Java Module System (JDK 9)

Special Topics in Java

Java Unit Testing - JUnit & TestNG
Java Build - Ant & Maven [TODO]
Calendar, Date and Time
XML and Java
Regular Expression (Regex) and Java
JavaBeans
Java Logging Framework
Java Native Interface (JNI)

Java Appendices

JDK API Documentation

CodeBlocks for C/C++
Tomcat 10
Tomcat 7/8/9
More Tomcat 7
Apache 2.2 - How to Install
Apache 2.2 - How to Configure
Apache 2 with Tomcat 6
MySQL 8.0
Git
Wiki Text

Windows

Programmer's Survival Guide for Windows
Windows Basics
Cygwin & MinGW (for Windows)
Visual C++ 2010/2008 Express

Unix, Ubuntu Linux & macOS

Programmer's Survival Guide for macOS & Ubuntu
Unix Basics
Ubuntu Desktop - Install & Setup
Ubuntu Server - Install & Setup
macOS - JDK, MySQL, Tomcat...

Android

Android - How to install & Get Started
Android - Basics and User Interfaces
Android - More Basics
Android - Custom 2D Graphics
Android - 3D Graphics in OpenGL ES
Android - Networking
Android - Bluetooth
Android - Native Development Kit (NDK)

Arduino

Arduino - Get Started

Power User Software Notes

Windows
Word, Excel, Dreamweaver

ICPC

Getting Started
Tips, Trick & Tweaks
PC^2 (U/C)

Packages and CLASSPATH
Java Archive (JAR)
Java Miscellaneous How-To
JDK 5 New Features
JDK 6 New Features
JDK 7 New Features
JDK 8 (LTS) New Features
JDK 9 New Features
JDK 10 (18.3) New Features
JDK 11 (18.9) (LTS) New Features
JDK 12 (19.3) New Features
JDK 13 (19.9) New Features

Java ME (Obsoleted)

1. Java ME: Getting Started, Basics & Game Programming

Java Game Programming

1. Introduction: The World of Bouncing Balls
2. 2D Graphics, Java 2D and Images
3. Playing Sound
4. Java Game Framework and Snake Game

Client-Side Programming

HTML/CSS

HTML/CSS Basics
HTML/CSS Intermediate
More HTML5/CSS3
HTML/CSS Tips & How-To

JavaScript

JavaScript Basics
JavaScript ES6 and beyond
jQuery & Ajax
JavaScript/jQuery Advanced Examples

Client-Side Frameworks

Bootstrap, Font Awesome, Parsley and Others
AngularJS

Node.js & Server-Side JavaScript

1. Node.js Basics

Database Programming

MySQL/MariaDB

1. MySQL 1: How to Install and Get Started
2. MySQL 2: By Examples for Beginners
3. Relational Database Design
4. MySQL 3: Intermediate
5. SQL Sample Databases
6. MySQL 4: Miscellaneous
7. MySQL Utilities

JDBC

1. Introduction to Java Database Programming (JDBC)
2. JDBC - Part 2
3. JDBC Intermediate

PostgreSQL

1. PostgreSQL: Get Started

MongoDB

1. MongoDB: Get Started

Server-side Programming

Java Servlet / JSP

0. How to Install Tomcat and Get Started

1. Java Servlets Case Study
2. Java Servlets
3. Tomcat's Java Servlet Examples Explained
4. More on Tomcat
5. Java Servlets Case Study Continue
6. Getting Started with JSP by Examples
7. JavaServer Pages (JSP)
8. JavaServer Faces (JSF)
9. Java Web Database Applications
10. Struts
11. Java Web Services

PHP

0. Setup AMP (Apache/MySQL/PHP)
1. PHP Basics
2. PHP/MySQL Webapps
3. OOP in PHP
5. PHP Miscellaneous
6. PHP Unit Testing

Perl

1. Perl Basics
2. Regular Expression, File IO & Text Processing

Python

1. Python Basics
1a. Python File & Text Processing
2. Python OOP
3. Python Data Analytics
4. Python Database & Webapp
5. Python Webapp with Flask
6. Python IDEs & Tools

Webapps

Basics

Terminology

Testing

Webapp Acceptance Testing with Selenium

Security

Advanced Webapps Security

Misc

Advanced Webapps Tips

Blockchain

Ethereum Smart Contract
Bitcoin

Web Protocols

HTTP 1: Basics
HTTP 2: State Management
HTTP 3: Authentication
HTTP 4: SSL

3D Graphics & OpenGL

Setup on Various Platforms

OpenGL in C/C++
JOGL 2.0 | JOGL 1.1
LWJGL 2.8
Java 3D

Computer Graphics with OpenGL

CG 1. Introduction to OpenGL
CG 2. Computer Graphics - Basic Theory
CG 3. OpenGL Examples
CG 3. Computer Graphics - Curves & Surfaces [TODO]

CG 4. OpenGL Shading Language (GLSL) [TODO]

References & Resources

OpenGL|ES

3D Graphics in OpenGL ES (for Android)

Physics Engine

Bullet Physics & JBullet Physics Engine

C/C++ Programming

C++ Programming Language

0. C++ Introduction
1. C++ Basics
2. C++ More Basics
3. C++ OOP Basics
4. C++ Pointers, References & Dynamic Allocation
5. C++ OOP Examples
6. C++ OOP Inheritance & Polymorphism
7. C++ Operator Overloading
8. C++ Template & Generic Programming
9. C++ Strings
10. C++ Libraries & STL
11. C++ IO Streams & File IO
12. C++ Misc, Tips & Traps
13. Data Structure and Algorithm in C++

C Programming Language

0. C Introduction
1. C Basics

C/C++ Compilers and IDEs

GCC and Make

CodeBlocks for C/C++

Eclipse for C/C++

Visual C++

Last modified: March, 2021