Biography on Self-study of Computer Science

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March 28, 2009

Abstract. I started to self-study computer science from the autumn of 1999; till now, almost ten years has passed. During this period, I have learned a lot of concepts and technologies on computer sciene, including Programming Language, Operating System Kernel, Database, Algorithm Analysis, Network Security, Computer Architecure, etc.

Programming Language.

Java is the first programming language I meet during my self-study. I still remember the first Java book I bought is the Chinese Translation of "Java How to Program". especially I remember the confusion I have gotten when I see the self-reference structure in Java, I thought it is kind of recursive definition, because at that time I do not know that at the low level, reference is just a pointer, a word of memory, it does not have any type information.

Before that, I already I have gotten some ideas about programming from college's Visuan Basic course,

so it not a problem for me to understand $a = a + 1$.

At that time, I am interested on playing GO, which is a ancient board game oriented from Chins and is popular in China, Japan, and Korea. The very first non-trivial program I have ever developered is a program used to play Go.

Basically, I need to translate the rule of GO into the Java language, I also need to consider the data structure to represent the board and status of Board.

I was a wonderful experience for me, I become familiar with the process of solving problem with

computer.

Operating System Kernel.

My first touch with Operating System is during my preparation of Graduate Entry Exam at the end of 2003. The textbook we use is Minix version 2 developed by Tanebum.

Later I also read the book "The Design and Implementation of Unix", which is based on Unix V6.

Starting from the autumn of 2006, I become interested in Linux Kernel, I have read the following books. "Linux Kernel Scenario Analysis", which

cover 2.4.0 “Understanding the Linux Kernel”, “The Design and Implementation of Linux Kernel”, Robert love. I also tried to build kernel by myself, the book “Linux Kernel In a Nutsheel” helps.

Database.

During my training period of my first IT job at Zhongxin, I have the oppotunity to install Oracle 9i database and play with it for a while. Becuase of this previous experience, when I start my second IT job at BLEUM, I am able to take the oppotunity of database maintenance.

Starting from April of 2006, I start to pursue Oracle Certified Professional on Database Administrator. and I got the OCP at July. During this period, I have systematically learned the "Oracle 9i Concept" and "Oracle Programming—Expert on one one", and "Effective Oracle by Design". I am grateful that I have the oppotunity to apply my Oracle Knowldge and Experience in Performance tuning of the J2EE WEB applicaion developed by our team.

The most helpful knowledge about Oracle is the internal mechanism of how all kinds of features are implemented. For example, How is the SQL state-

ment get executed. without such kind of knowledge, you can not tell the difference between a good SQL statement and a bad one, because they may be equivalent from logical point of view. Another tips is about practice and testing. Oracle provides lots of tools to help you get the trace information about low level details. using them to collect information will help you make the right decision.

Network Security.

I have security concern in my mind when I first time started to surf the internet, majorly because the

rumor about virus and cracker. So I bought a book about the security.

Later when I start to develop WEB applicaiton on j2EE Platform, I had the oppotunity to look deeper into the security mechanism. I master the concept like symmetric encryption. computational infeasibility. In order to understand them, I also need to know more mathematics, especially the number theory.

Algorithm and Algorithm Analysis.

I become interested in Donald E. Knuth's "The Art of Computer Programming" since I heard of it.

but I never have the time to go deep into it until 2007.

From June of 2007, after I have finished a few important project in tight schedule. I got some time to read the MMIX—The RISC Computer for the new Millennium. It is the first time to me to have a close look at the computer architecture of a mordern RISC computer. Honestly I like to such kind of hardware details, I believed in solid fundation. Later I am even inspired to implemnent a simulator for it. Knuth already provided a perfect simulator for it. I just want to practice my Java skill by reimplement it in Java.

till now, the obstable is that for the floating point instruction, I can not implement it easily with Java, although Java announce it is IEEE-754 compatible. I could have converted the C code to Java, but it sounds boring. so it is still pending.

During the reading of TAOCP, I have written my program to verify my understanding of the algorithm in the book. it provides so many ideas for you to explore, there are many more ideas in the exercises.

Regular Expression.

Regular expression is a handy powerful tool. I have the time to go deep into it on May 2008. I majorly refer to "Master Regular Expression", I practiced most of examples described in the book. The most important thing is that I start to use it in my daily work. I also realized that most of tool actually have good build in support of regular expression, they are just there waiting for use to use.

I also have the pleasure to help team mates improve their efficiency by showing them how to use regular expression in their daily work.

Others

I have start to learn all kinds of different things. they are interesting and I enjoy the course of learing. but till now I still did not reveal the way to take effect of those kinds of broad knowledge.