

Computer Organization

计算机组成原理

章亦葵

ZHANGYK@TJU.EDU.CN

李幼萌

LIYOUMENG@TJU.EDU.CN

天津大学软件学院



Content & Purpose

Understanding computer systems from a programmer's perspective

从程序员的视角深入理解计算机系统

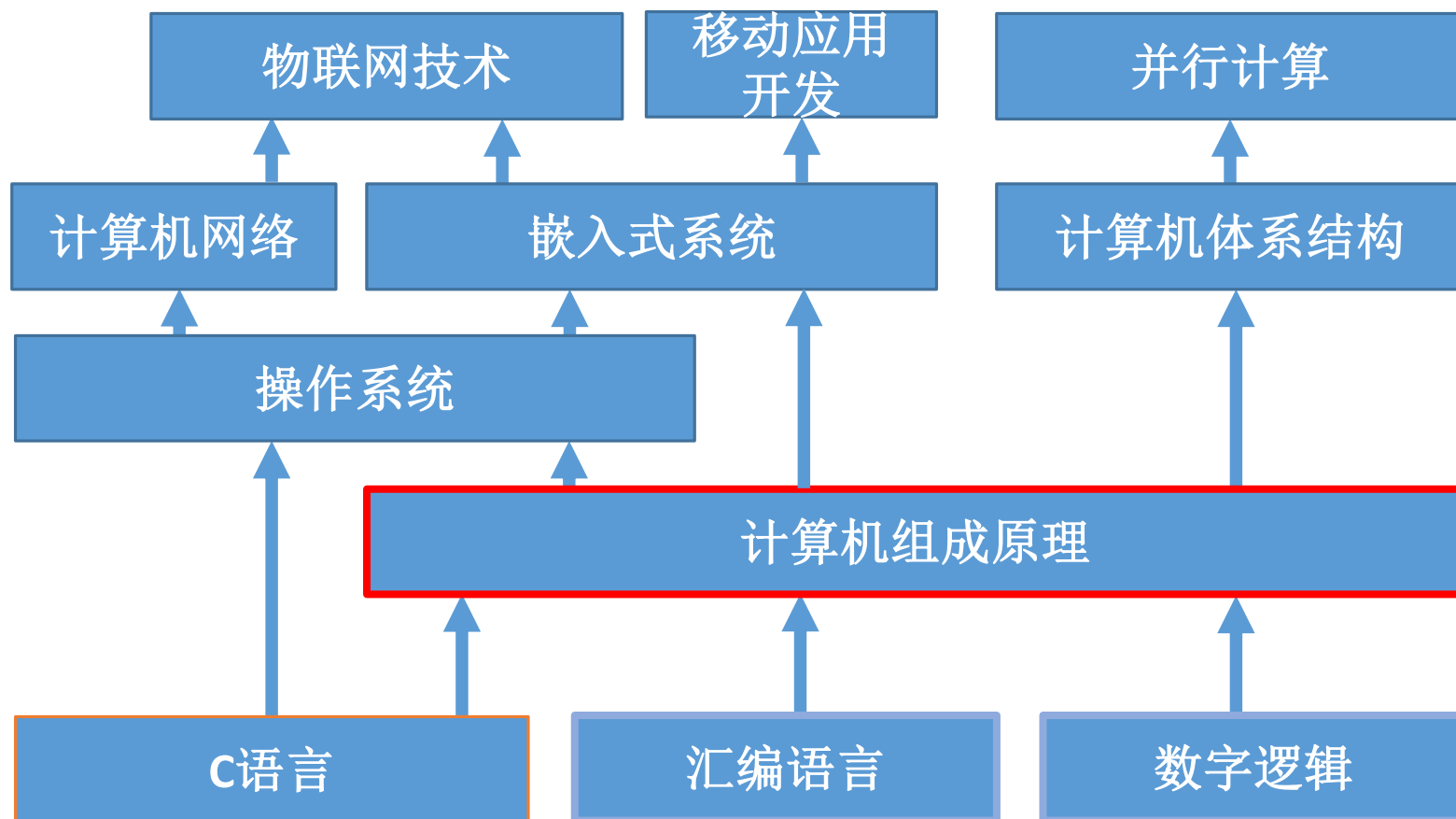
Become more effective programmers

- ✓ Able to find and eliminate bugs efficiently
- ✓ Able to understand and tune for program performance

Prepare for later “systems” classes

- ✓ Compilers, Operating Systems, Networks, Embedded Systems, Storage Systems, etc.

Courses Architecture



Course Perspective

Our Course is Programmer-Centric

- ✓ Purpose is to show that by knowing more about the underlying system, one can be more effective as a programmer
- ✓ Enable you to
 - Write programs that are more reliable and efficient
 - Incorporate features that require hooks into OS
 - E.g., concurrency, signal handlers

You can learn from this class

New programming language No

A good understanding of the PL you have learned Yes

How to program application No

How system works Yes

New programming framework No

The idea of programming Yes

Textbooks

1. (美)布莱恩特, 奥哈拉伦 著, 龚奕利, 雷迎春 译, 深入理解计算机系统(原书第3版), 机械工业出版社 2016. 11
2. (美)布莱恩特, 奥哈拉伦 著, 龚奕利, 雷迎春 译, 深入理解计算机系统(原书第2版), 机械工业出版社 2011. 1



Reference

章亦葵，李幼萌，Intel凌动平台嵌入式应用与实践，清华大学出版社，2013



Reference about C/C++

1. Brian Kernighan and Dennis Ritchie, “The C Programming Language, Second Edition”, Prentice Hall,1988
2. 《C陷阱与缺陷 C Traps and Pit falls》 【美】 Andrew Koenig 著 高巍 译 王昕 审校 人民邮电出版社

Table of Content

1. A tour Of Computer Systems
2. Representing and Manipulating Information
3. Machine Level Programming
4. Processor Architecture
5. Memory Hierarchy
6. Linking
7. Exception & Interruption
8. Virtual Memory

Requirement in class

It is serious:

```
if ( Class_absence >= 4 times  
    || Copy_From_Others() )  
{  
    Total_Score = 0;  
}
```

Evaluation

本课程的成绩评价方法

- 1.平时的作业：45%（Git@OSChina上的实践项目的博客、源程序、文档等）
- 2.实验：15%（3个实验）
- 3.期末考试：40%

完成3个实验：

- 地点：55楼-211
- 时间：第5、7、9周的周三晚上

Final Exam.: 具体时间另行通知