C Programming

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IIT-Kanpur

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Instructors, Tutors and TA

Instructor

- R. K. Ghosh, Dept of CSE
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Instructors, Tutors and TA

Tutors

- Ajai Jain, CSE (ajain@cse.iitk.ac.in)
- Amitabh Mukerjee, CSE (amit@cse.iitk.ac.in)
- Phalguni Gupta, CSE (pg@cse.iitk.ac.in)
- Shashank Mehta, CSE (skmehta@cse.iitk.ac.in)
- Student tutors (names not available yet).
- There will be at least two TAs for each section.
- Web page http://www.iitk.ac.in/esc101 will be updated in due course with details of section TAs and other tutors.

Instructors, Tutors and TA

- Class timings are: Mon, Wed, Thu 8.00 AM
- Tutorial timing is: Tuesday 8.00 AM
- Lab timings are: Mon, Tue and Wed 2.00-5.00 PM
- C1-3 on Tuesday
- C4-6 on Monday
- C6-9 on Wednesday

Course Objectives and Other Related Aspects

Objectives

- We need to understand how to write C code.
  - Understand the syntax,
  - Understand the meaning of statements, and
  - To be able to use statements to express the steps of a computation in a **correct** and **uncluttered** manner.
  - Understand algorithms and to design these.
- **Practice or perish**, don't miss labs and try to complete all the programs.

Course Objectives and Other Related Aspects

Text books

- "C programming" by Brian Kernighen & Dennis M. Ritchie.
- "C programming: A modern approach" by K N King.
- Many free books and lots of material on C coding practices available on Web.
- **Words of caution**:
  - Don't copy or use someone else's code,
  - Discuss with peers, but develop your own code.

Course Objectives and Other Related Aspects

Grading scheme

- Exams (written)
  - Mid terms: I & II each of 15%
  - End term: 30%
  - Quizes: 10%
- Exams (Lab)
  - Weekly labs: 10%
  - Two lab exams: 10% each
- Programs
  - Algorithm correctness: 40%
  - Input/output correctness: 40%
  - Comment/indentation/programming style: 20%

Course Objectives and Other Related Aspects

Disturbances

- Mobiles in classes or tutorials is considered an offense.
- Surfing net, logging into face books and other sites of social networking, or using emails during lab hours.

Unfair means

- Zero tolerance on adopting unfair means.
  - On detection of unfair means and malpractices F grade will be awarded, and the matter will be reported to disciplinary committee.

Organization of a computer

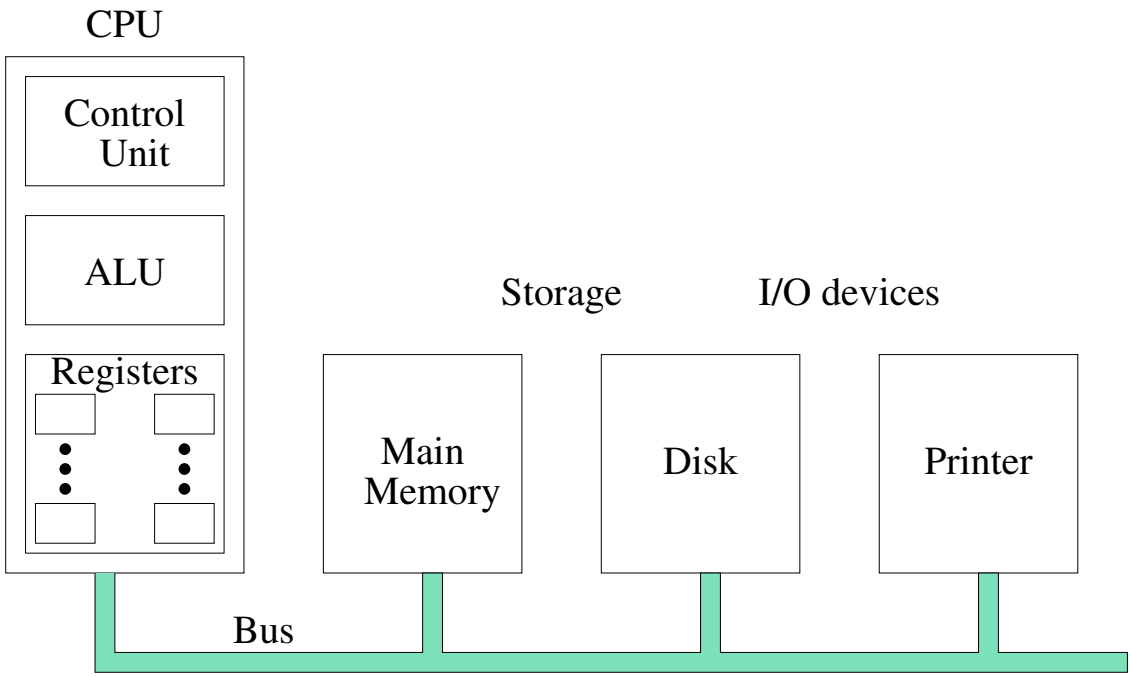
Physical components

- CPU
- Memory: RAM
- Storage: hard disk
- Input/Output devices.
- Motherboard.
- Data bus.
- Ports.

Organization of a computer

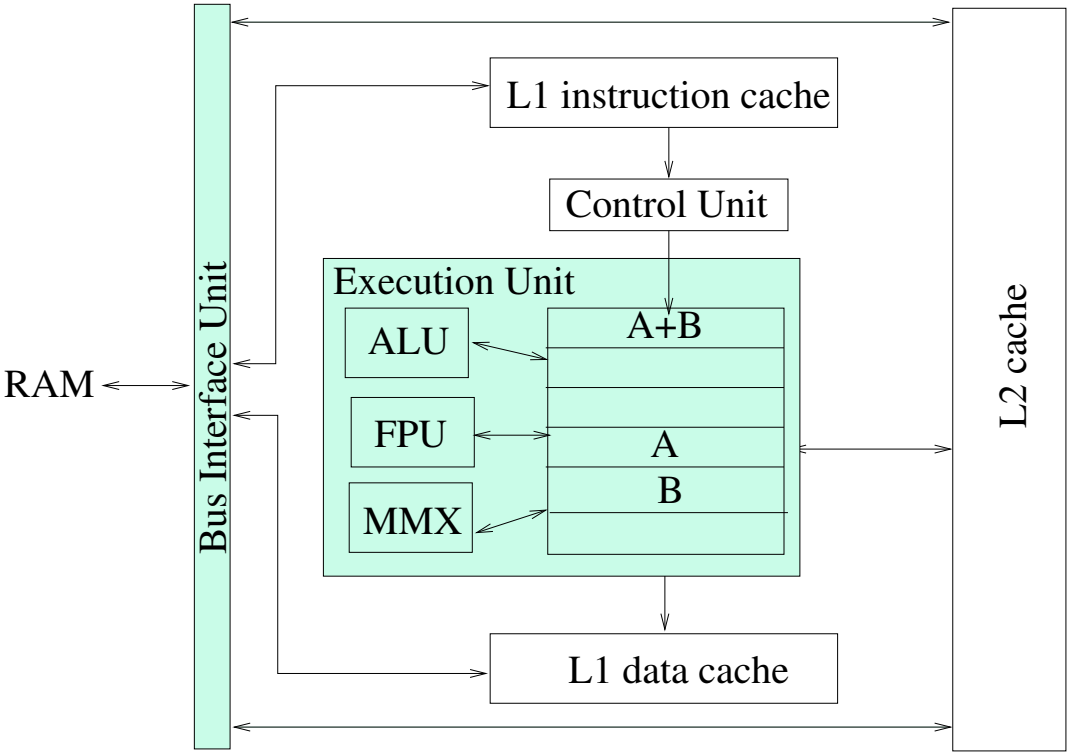
Basic operations

- Input
- Output
- Storage
- Processing
- Control



Organization of a computer

Functional units of CPU



Organization of a computer

Functional units of CPU

- Information from RAM sent along BIU which makes a copy and sends it to L2 cache.
- BIU determines if the information is data or instruction. and sends it to appropriate L1 cache.
- CU fetches instruction from instruction cache breaks it down into micro instructions before delivering to execution unit.
- Execution unit consists of ALU, FPU or MMX (graphics/audio)
- It checks if data is needed, fetches data from L1 data cache $\rightarrow$ L2 cache $\rightarrow$ RAM.