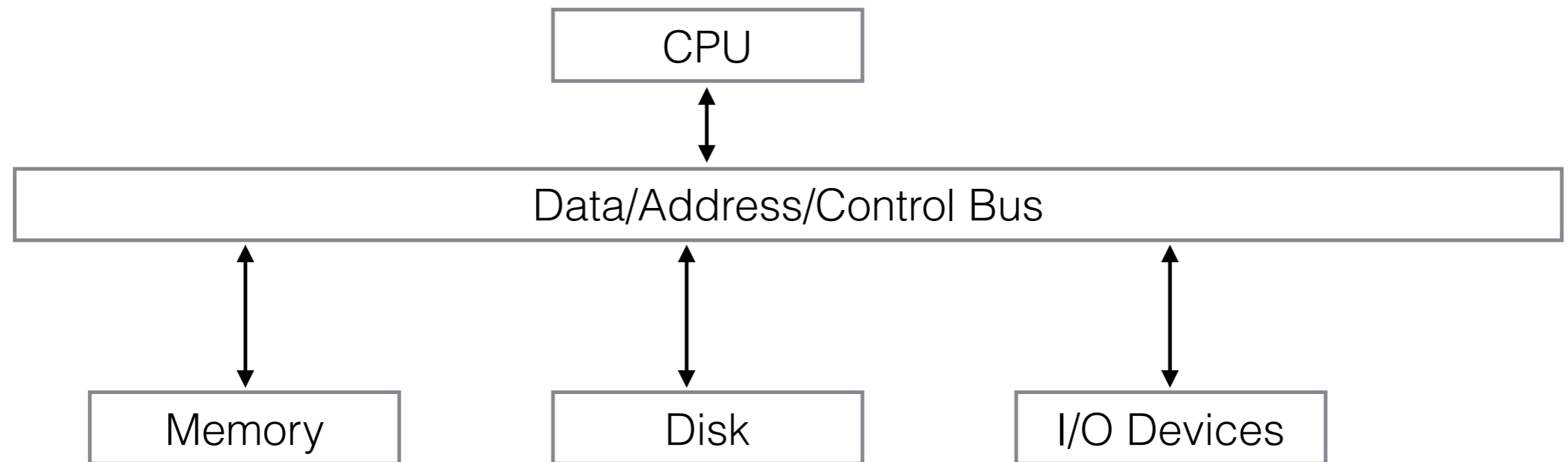# Applications Programming

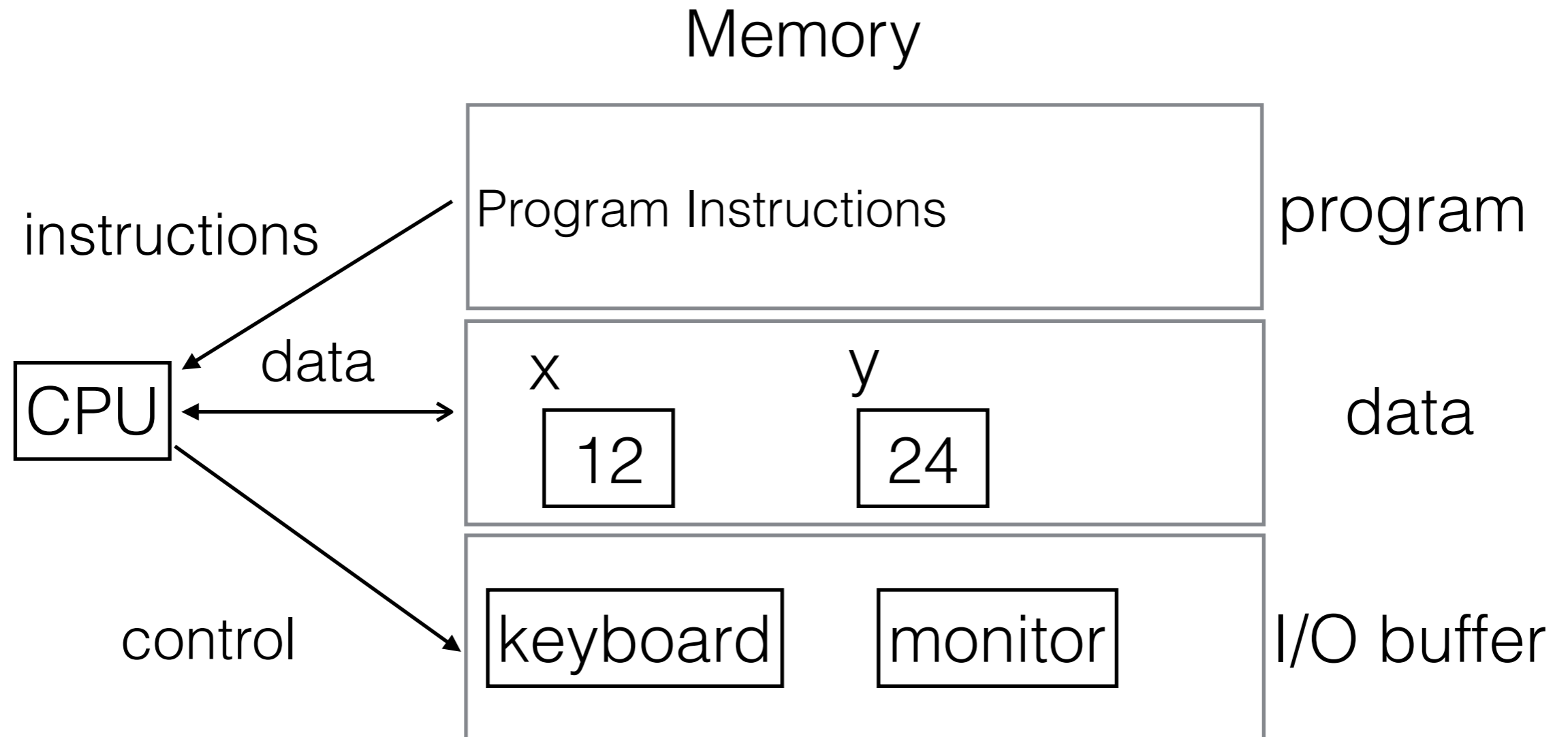General Introduction of Computer Systems

Computer Hardware

- CPU
- Memory (Volatile)
  - Cache
  - Main Memory
- Flash Memory
- Storage (Permanent)
  - Hard drive (online)
  - Tape, CD, Flash Memory, etc (offline)
- Peripheral Devices (Important)
  - Monitor
  - Keyboard
  - Mouse
  - Printer
  - Other input/output devices, such as scanner, fax machine, etc.
- Networks

Computer Hardware Architecture

```
                    ┌──────────────┐
                    │     CPU      │
                    └──────────────┘
                           ↕
┌─────────────────────────────────────────────────────────────┐
│                   Data/Address/Control Bus                    │
└─────────────────────────────────────────────────────────────┘
        ↕                     ↕                      ↕
  ┌───────────┐         ┌───────────┐         ┌─────────────┐
  │  Memory   │         │   Disk    │         │ I/O Devices │
  └───────────┘         └───────────┘         └─────────────┘
```

Executing Programs

Memory

instructions

| Program Instructions |

program

CPU

data

| x | | y | |
| 12 | | 24 | |

data

control

| keyboard | | monitor |

I/O buffer

Operating System

- The functionality of Operating Systems

  - Program/Command Execution

  - Resource Management

  - File Management

- The commonly used Operating Systems

  - Windows

  - Unix

  - Linux

  - Mac OS

  - other specialized ones, such as Android for mobile device, etc

File System

- Functionality: Manage files

- Structure: Tree structure

- Terminology

  - Directory/Folder

  - Home Directory

  - Subdirectory

- File Types

  - Text files

  - Binary files

Utility Programs

- Text Editors

  - Notepad (on Windows)

  - Emacs/GEdit/Vim (on Linux)

  - TextEdit (on Mac OS)

- Interpreters and Compilers

  - Source Code of a Program vs Executable Code

  - Stand alone compiler vs Integrated Development Environment

Application Softwares

- Office Software

    - Word/Excel/PowerPoint (Microsoft)

    - Pages/Numbers/Keynote (Apple)

    - Open Office

- Web Browser

- Other Software for

    - entertainment

    - special purposes

    - etc

Your Tasks

- Find out which operating system you are using on your computer

- Find the software that manages files on your computer

- Find at least one text editor on your computer

- Find at least one web browser on your computer

- Install MS Office 365 on your computer