Introduction to Programming

Introduction

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CSC01.D16D17.W1 | 04-05.10.12

Hello

- Me
  - ndquyen(at)uit.edu.vn
- What YOU know about computer? Studying programs? Programming? And so on…

The CSC01 Course

- Introduction to Programming
  - Replacement for the “Introduction to CS” course
  - Less: general intro, more: programming (in C)
  - CSC01.D16(K7): BE in CE
  - CSC01.D17(K7): BSc in CS
- Distribution
  - 45hrs lectures (11 weeks)
  - 30hrs labs (7-8 weeks)
- Exam
  - 50% final exam paper, 30% final exam lab, 20% activities at class

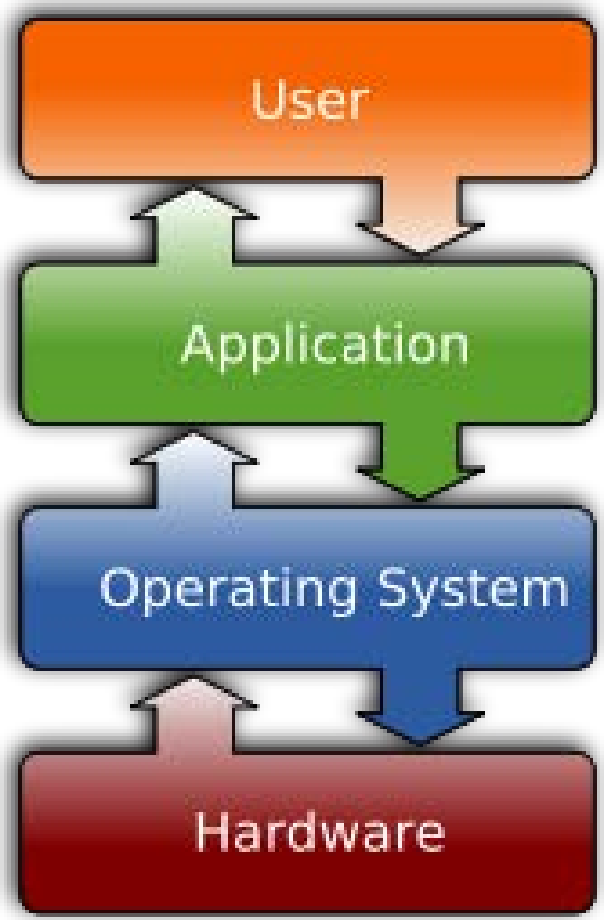
So, what are your objectives?

- See more on the syllabus…
  - Why do you study programming?
  - What is programming?
  - How to program?
- YOU are the center! YOU are most important!!!
  - Understanding
  - Discussion
  - Practicing
  - And…

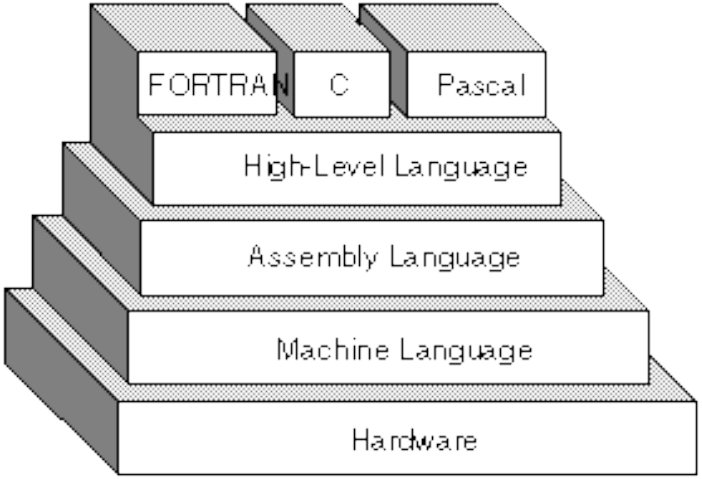
Computers…

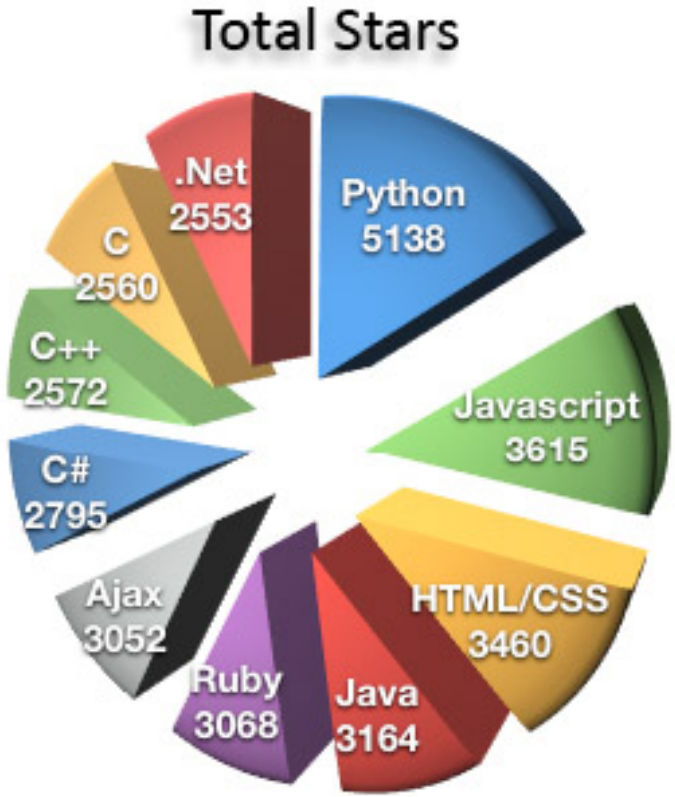
FIGURE 1-3
Input, processing, output, and storage.

Programs

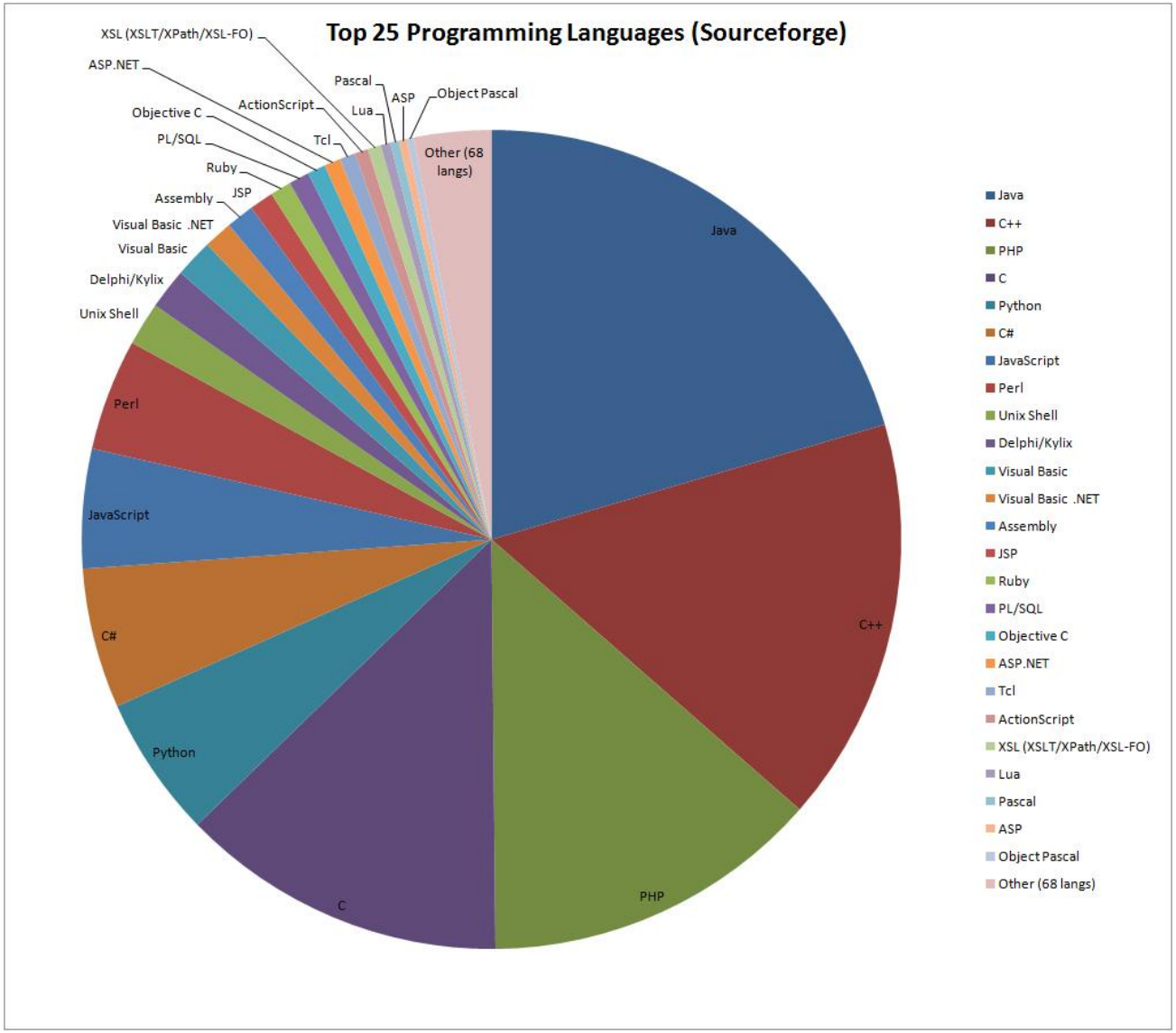


Programming Languages

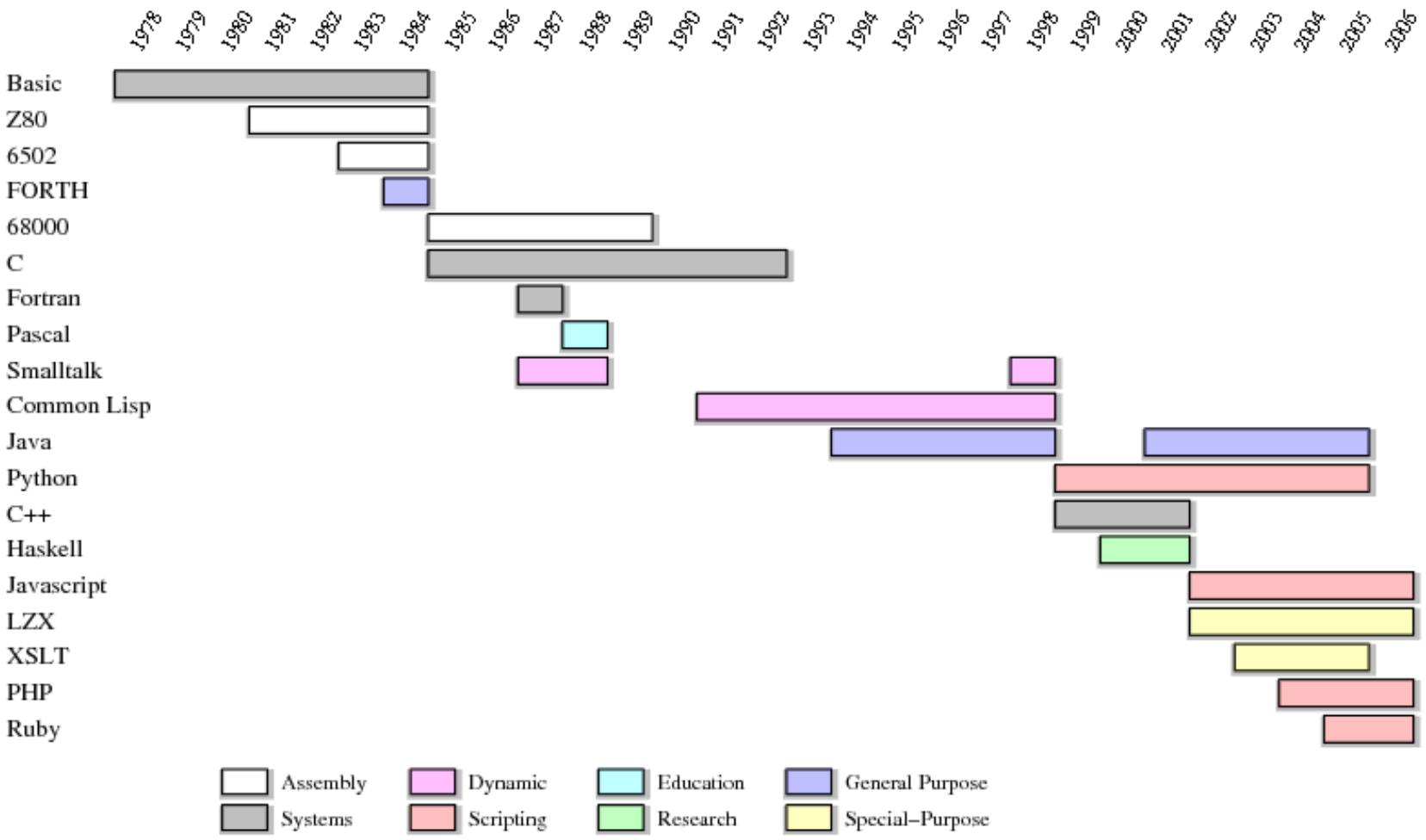




Programming Languages



Programming Languages



Outline?

- We will study within 11 weeks (lectures)
  - Tests/checks at class: 5 times (each 5% of the final score, but not exceeding 20%)
    - ⇨ Randomly! So BE CAREFUL to ATTEND your lectures!!!
  - Discussions at every lecture
  - Demonstrations on computers
  - Exercises at blackboard and on your papers
  - Group-studying
  - …

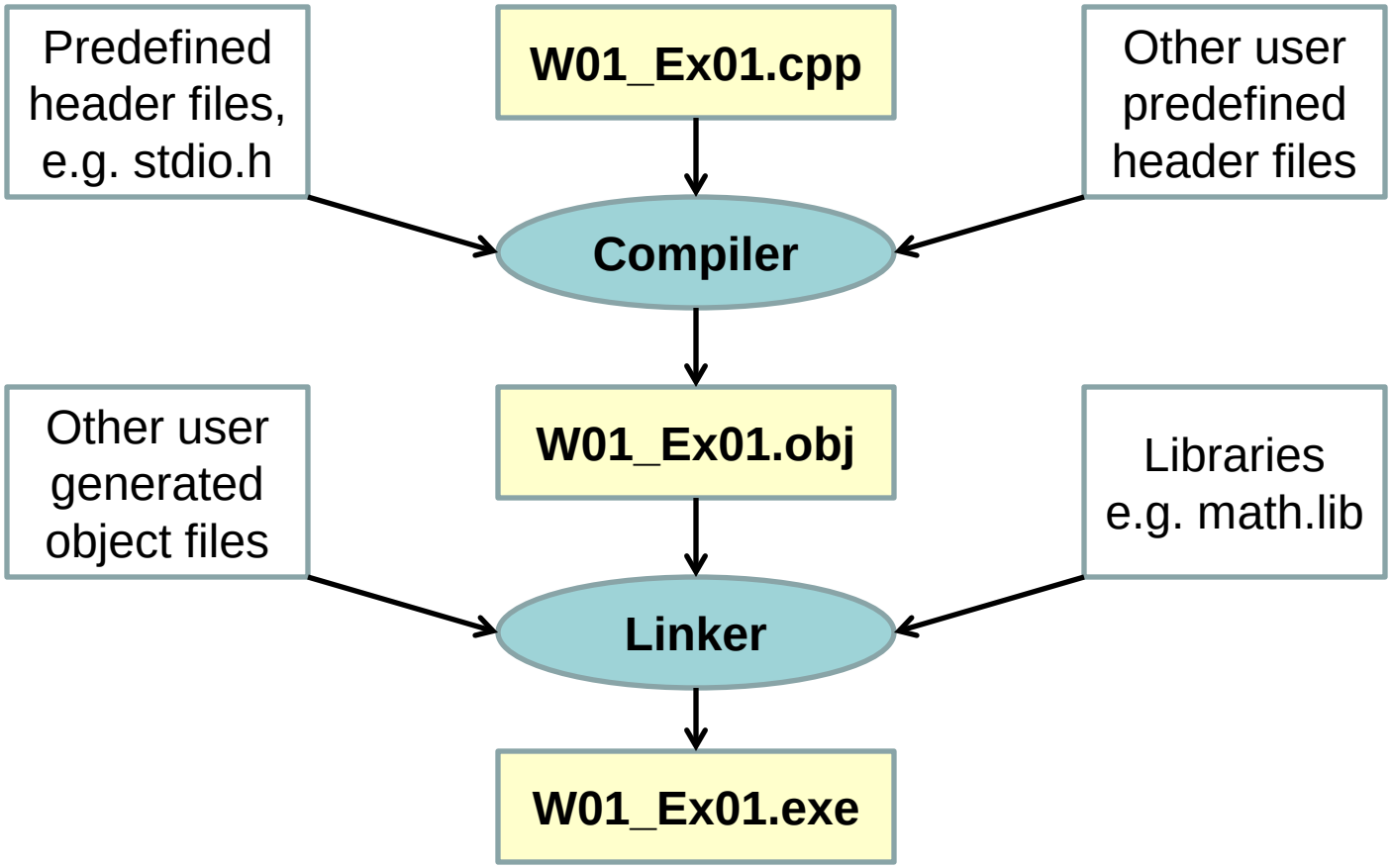
  - But 1st, take a look at a program…

An Example…

- Lets see…


```
#include <stdio.h>
#include <conio.h>
int main()
{
	int n;
	printf("Enter a number: ");
	scanf("%d", &n);
	if (n % 2)
		printf("%d is an odd number", n);
	else
		printf("%d is an even number", n);
	getch();
	return 0;
}
```

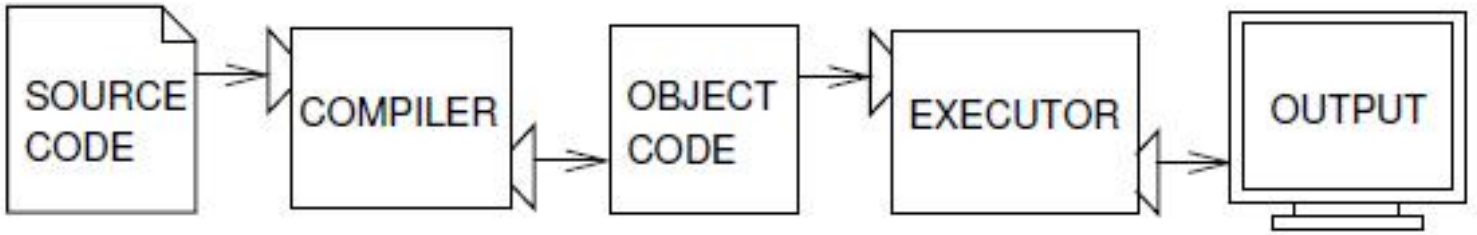
Programming…



- http://www.tenouk.com/Module1.html

Compiler vs. Interpreter

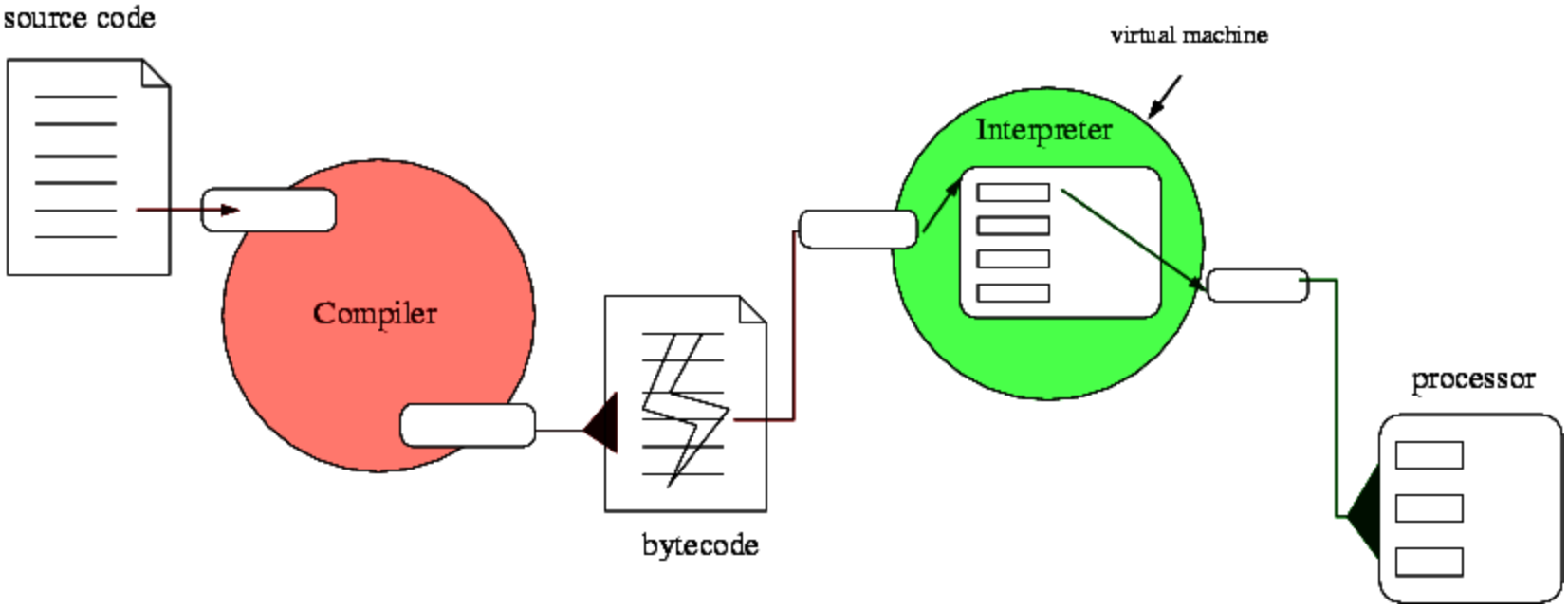
An interpreter processes the program a little at a time, alternately reading lines and performing computations.



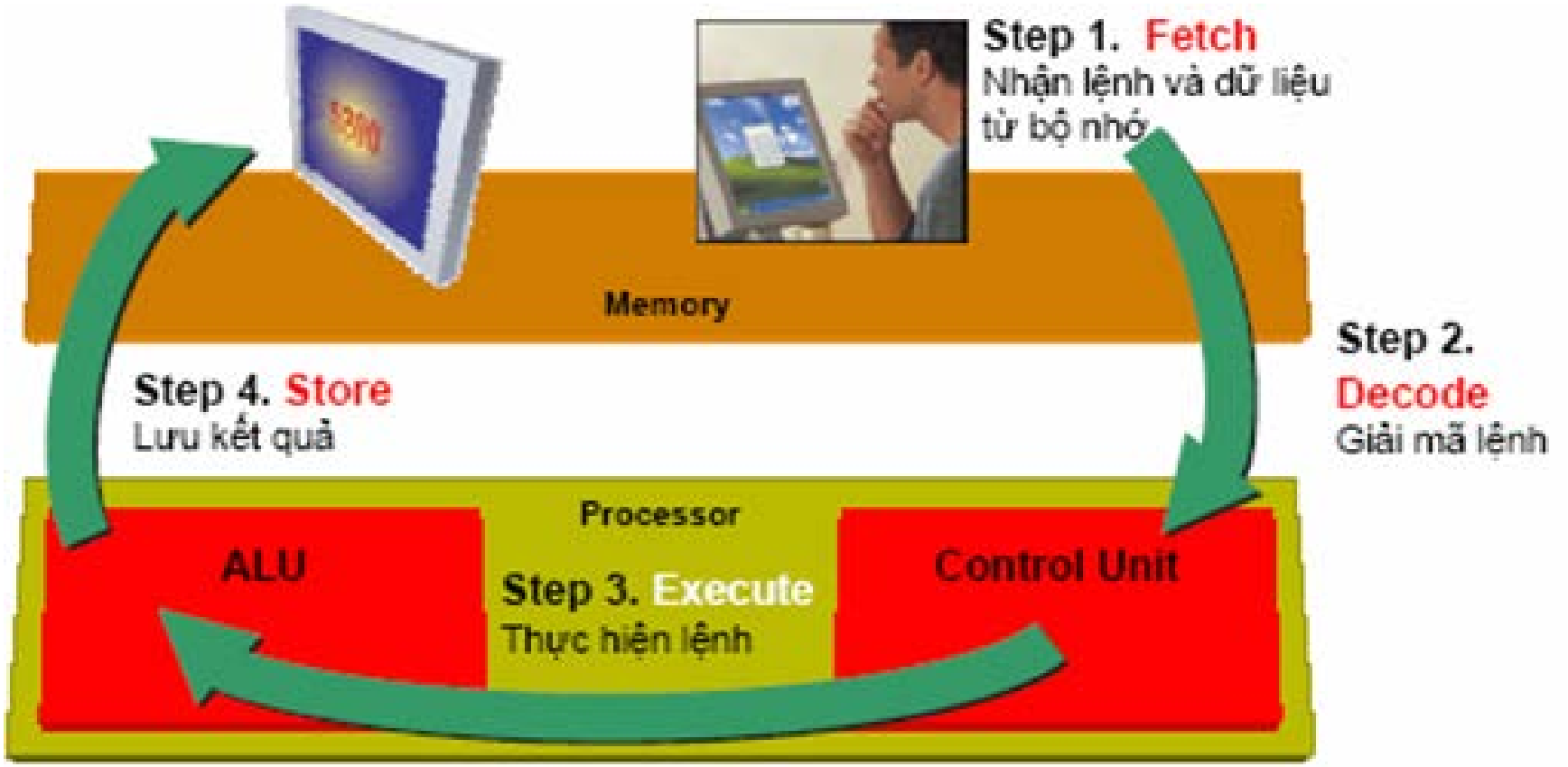
A compiler translates source code into object code, which is run by a hardware executor.

Compiler vs. Interpreter

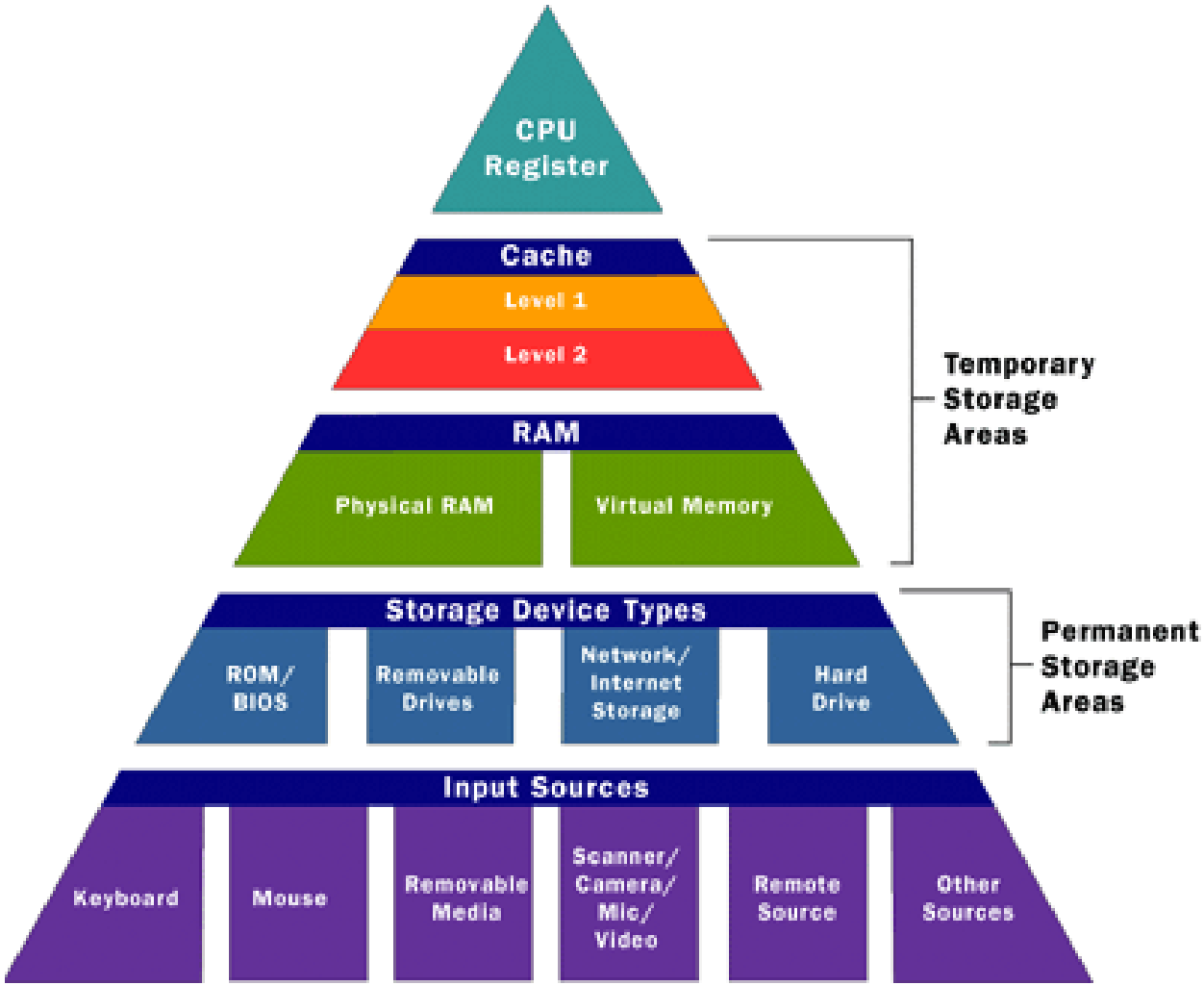
- In combination…



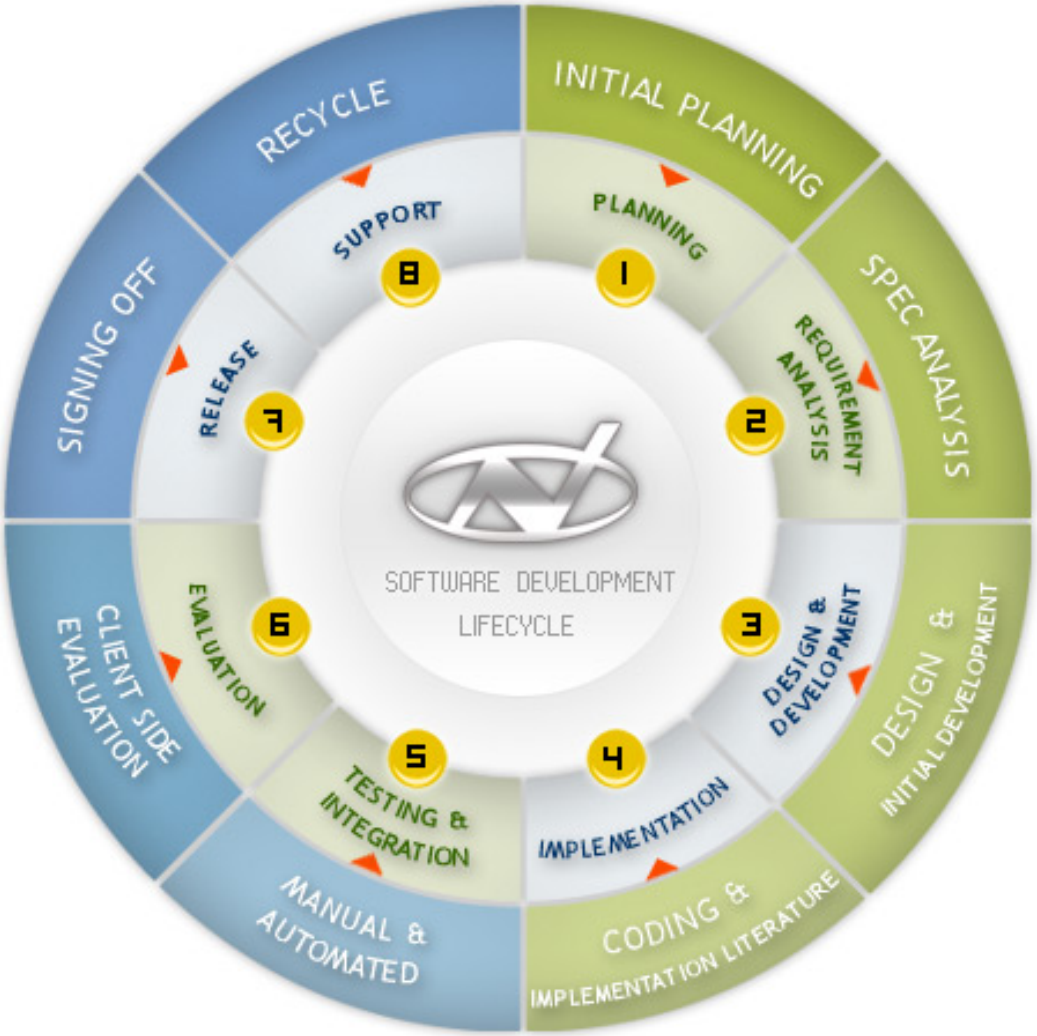
Machine Cycle



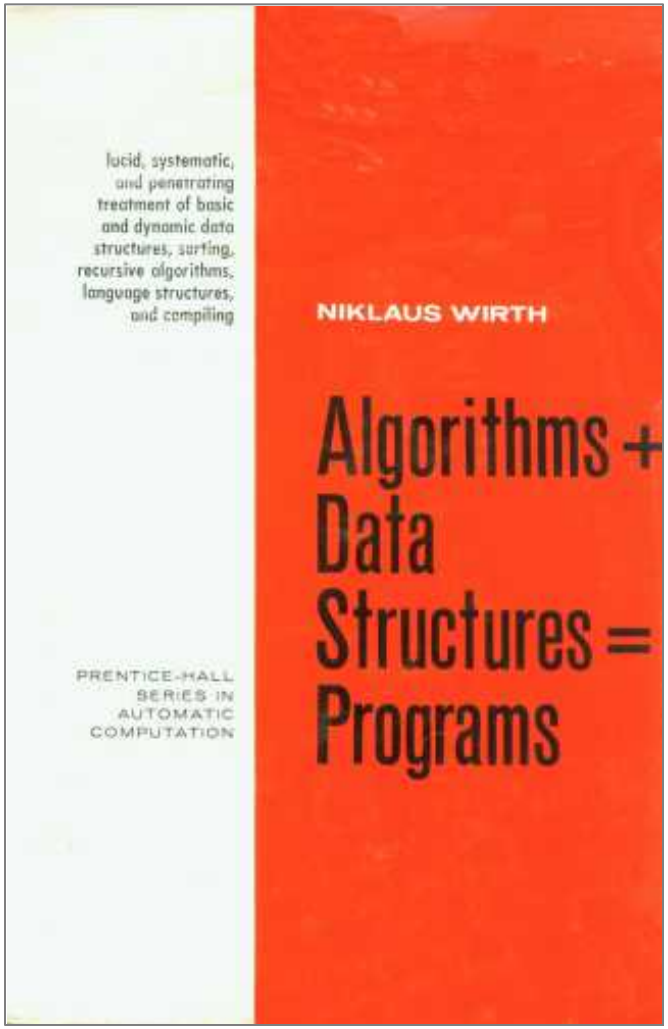
Processing…


CPU
Register
Cache
Level 1
Level 2
RAM
Physical RAM
Virtual Memory
Temporary
Storage
Areas
Storage Device Types
ROM/
BIOS
Removable
Drives
Network/
Internet
Storage
Hard
Drive
Permanent
Storage
Areas
Input Sources
Keyboard
Mouse
Removable
Media
Scanner/
Camera/
Mic/
Video
Remote
Source
Other
Sources

Software Development



Programming…



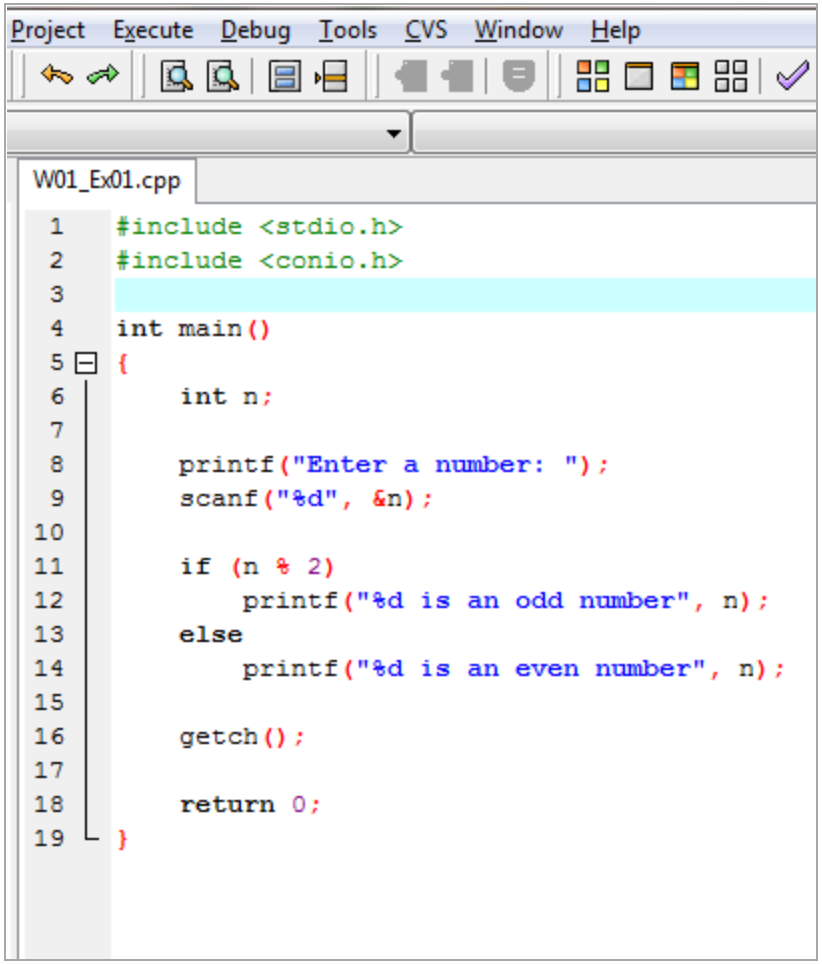
Programming…

- Problem Identification & Analysis
- Solutions
- Algorithms: Pseudo-code vs. Flowchart
- Implementation
  - Structure
  - Syntax
- Adjustment/Debugging
- Execution
- Maintenance

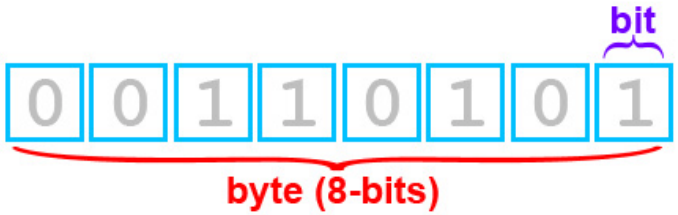
circularly

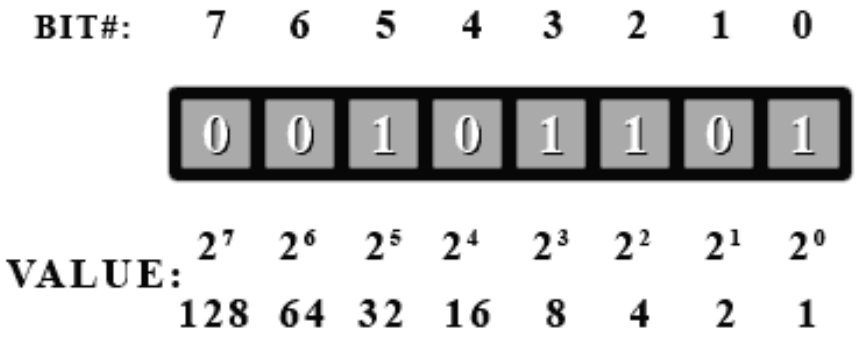
Course Outline

1. Introduction
2. Basics in C
3. Function
4. String
5. Array
6. Problem Solving
7. Conditional Statements
8. Loop Statements
9. Struct
10. File



Data





Link…

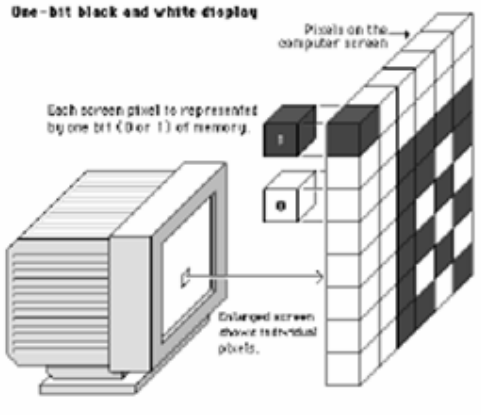
$$X = a_n\, a_{n-1} \ldots a_1\, a_0 = a_n b^n + a_{n-1} b^{n-1} + \ldots + a_1 b + a_0$$

Data

- http://en.wikipedia.org/wiki/Byte

Prefixes for multiples of bits (b) or bytes (B)						
Decimal			Binary			
Value	Metric		Value	JEDEC	IEC	
1000	k	kilo	1024	K kilo	Ki	kibi
1000^2	M	mega	1024^2	M mega	Mi	mebi
1000^3	G	giga	1024^3	G giga	Gi	gibi
1000^4	T	tera	1024^4		Ti	tebi
1000^5	P	peta	1024^5		Pi	pebi
1000^6	E	exa	1024^6		Ei	exbi
1000^7	Z	zetta	1024^7		Zi	zebi
1000^8	Y	yotta	1024^8		Yi	yobi

Data



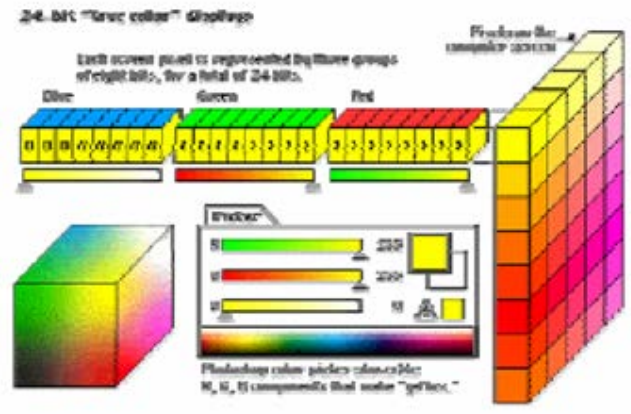
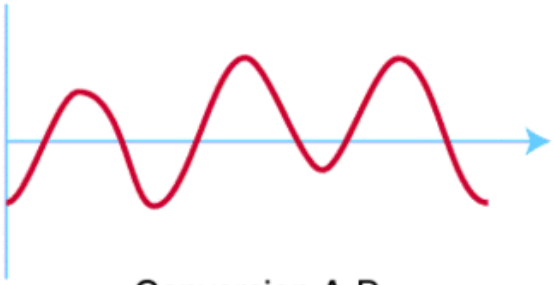
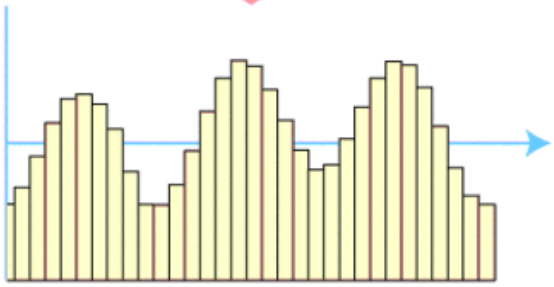


fig. 1



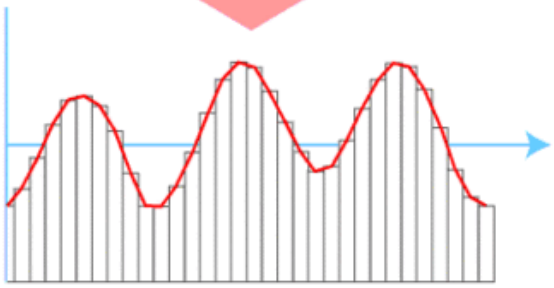
Conversion A-D

fig. 2

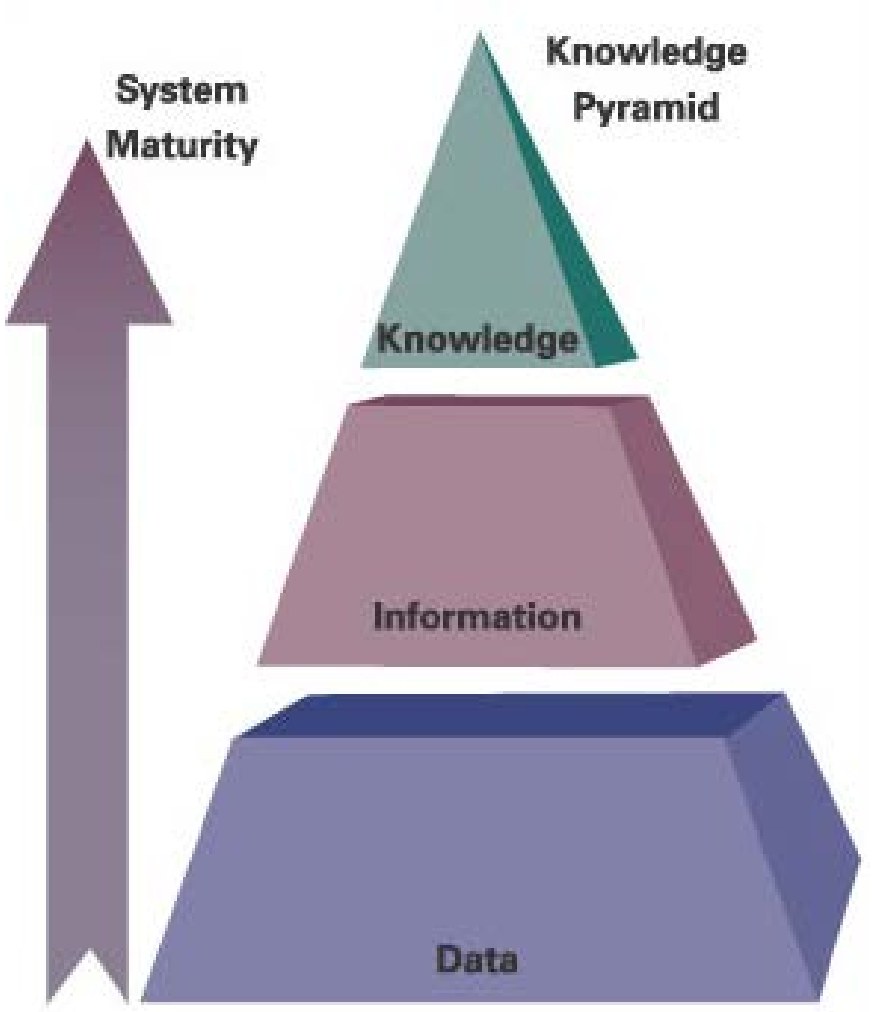


Conversion D-A

fig. 3



Data


System
Maturity
Knowledge
Pyramid
Knowledge
Information
Data

Notes

- Resources
  - http://en.wikiversity.org/wiki/Introduction_to_Programming
  - http://www.deansdirectortutorials.com/Lingo/IntroductionToProgramming.pdf
  - http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical-programming-in-c-january-iap-2010/lecture-notes/
  - http://www.doc.ic.ac.uk/~wjk/C++Intro/
  - http://www.mikeware.us/cpp/
  - http://mathbits.com/MathBits/CompSci/compsci.htm
  - …

Notes

- Moodle
  - https://courses.uit.edu.vn/
- IDEs
  - DevCPP (http://sf.net/projects/orwelldevcpp/)
  - Eclipse CDT (http://www.eclipse.org/cdt/)
  - MS Visual C++ (DreamSpark)