

計算機程式

第一單元 Introduction to Computers,
the Internet and the WWW

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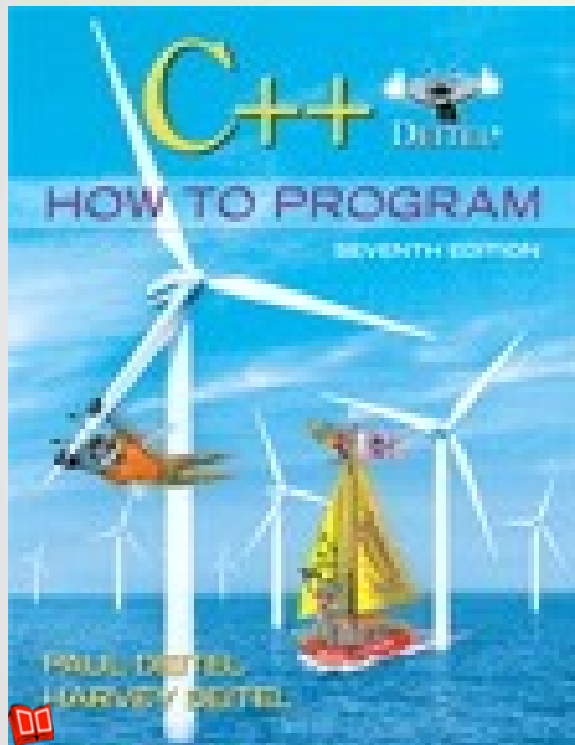
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法第 46、52、65 條合理使用。

本課程指定教材



書名：C++ How to Program, 7/e
作者：Harvey M. Deitel and Paul J. Deitel
出版社：Deitel & Associates
出版日期：2010

Computer: At A Glance (1/3)

- Hardware

- Central Processing Unit (CPU)
- Arithmetic and Logic Unit (ALU)
- Main Memory
- Secondary Storage Unit
- Input unit
- Output unit
- Network Interface



Computer:At A Glance (2/3)

- Software
 - System software
 - e.g.,Operating System (OS)
 - Application software
 - e.g.,Powerpoint,MS Word,Skype
 - Programming language
 - Machine language
 - Assembly language
 - High-level language



Computer:At A Glance (3/3)

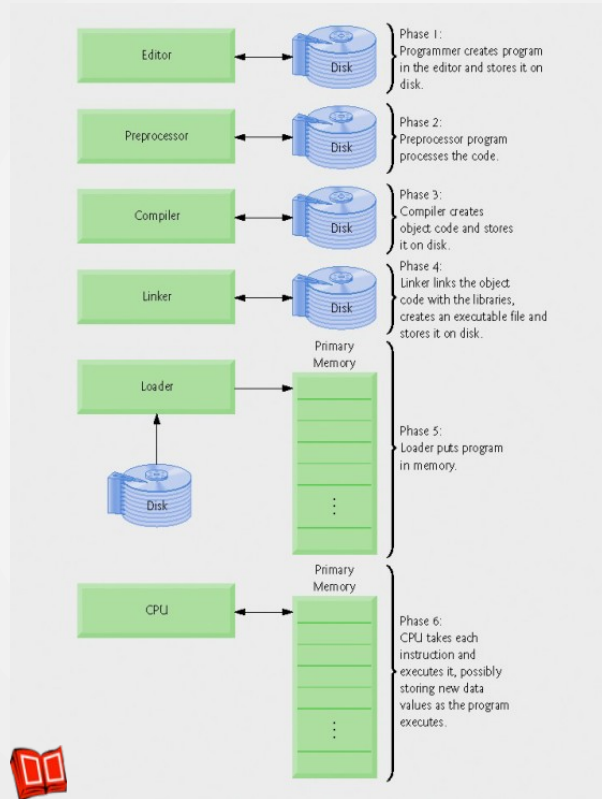
- Evolution of Computing/computer
 - Main frame
 - Personal computer
 - Networked computer
 - Thin client and clout computing
 - Personal computing
 - Distributed computing
 - Client/Server computing
 - Peer-to-peer computing



Basics of a Typical C++ Environment

- C++ system
 - o Program development environment
 - o Language itself
 - o C++ standard library:
 - Classes and functions
- Software IC
- Six phases
 - o Edit, preprocess, compile, link, load, execute
 - o .cpp, .c, .cc, .c
 - o xx.cpp, #something, CC xx.cpp, a.out

Six Phases in Program Execution



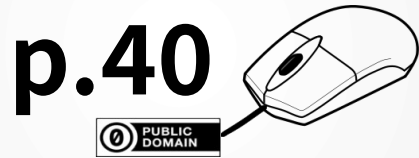
C++ Program Structure

- Single-line comment line: //
- Preprocessor directives: # something
 - e.g., #include
- Main body
 - Classes and functions
 - Must come/start with a function called main(), which is delimited by {}.
 - Mostly come with I/O

A skeleton Outline of a Simple C++ Program

- `//` → preprocessor directive
- `#include <iostream>`
- `int main () {`
 - program goes here!
- `o return 0;`
- `}` → function name


Examples (1/2)



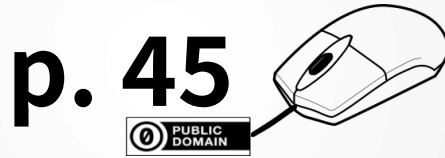
Examples (2/2)



Escape Characters

escape sequence	description
<code>\n</code>	Newline. Position the screen cursor to the beginning of the next line.
<code>\t</code>	Horizontal tab. Move the screen cursor to the next tab stop.
<code>\r</code>	Carriage return. Position the screen cursor to the beginning of the current line; do not advance to the next line.
<code>\a</code>	Alert. Sound the system bell.
<code>\\</code>	Backslash. Used to print a backslash character
 <code>\'</code>	Single quote. Use to print a single quote character.
<code>\"</code>	Double quote. Used to print a double quote character.

Another Example



Another Example (cont.)

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C++ Keywords

C++ Keywords

Keywords common to the C and C++ programming languages

auto	break	case	char	const	continue	default
do	double	else	enum	extern	float	for
goto	if	int	long	register	return	short
signed	sizeof	static	struct	switch	typedef	union
unsigned	void	volatile	while			

C++ only keywords

and	and_eq	asm	bitand	bitor	bool	catch
class	compl	const_cast	delete	dynamic_cast		explicit
export	false	friend	inline	mutable	namespace	
new	not	not_eq	operator	or	or_eq	private
protected	public	reinterpret_cast		static_cast	template	this
throw	true	try	typeid	typename	using	virtual
wchar_t	xor	xor_eq				



Built-in Data Types

- bool
- char
- short int
- unsigned short int
- int
- unsigned int
- long int
- unsigned long int
- float
- double
- long double

- bool
- char
- short int vs. unsigned short int
- int vs. unsigned int
- long int vs. unsigned long int
- float
- double
- long double

Variables

- Memory concept
- Declaration
 - data type variable name
 - e.g., int a;
- Variables have characteristics
 - name,type,size ,and vale
 - case sensitive: e.g.,CAT,Cat,cat
 - declared before used (anywhere)
 - legal identifier
- I/O: destructive vs. non-destructive

More on Operators


→ associability

Operators	Associativity	Type
()	left to right	parentheses
* / %	left to right	multiplicative
+ -	left to right	additive
<< >>	left to right	stream insertion/extraction
< <= > >=	left to right	relational
== !=	left to right	equality
=	right to left	assignment

↓ precedence relation



One More Example

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版權聲明

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7			Faculty Web Sites , Typical Java Development Environment(http://faculty.inverhills.mnscu.edu/speng/cs1126/Notes/Chapter01/JavaDE.htm), 瀏覽日期： 2012/9/14 。依據著作權法第 46 、 52 、 65 條合理使用。
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12			C++ How to Program, 7/e , 作者： Harvey M. Deitel and Paul J. Deitel , 出版社： Deitel & Associates , 出版日期： 2010 , P.41 。 依據著作權法第 46 、 52 、 65 條合理使用。
15			臺灣大學電機系 廖婉君教授
18			C++ How to Program, 7/e , 作者： Harvey M. Deitel and Paul J. Deitel , 出版社： Deitel & Associates , 出版日期： 2010 , P.49 。 依據著作權法第 46 、 52 、 65 條合理使用。