NIU CS240
Computer Programming In CPP

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Computer Programming In CPP

1 Lecture 1

1.1 Data

- There are several data types (numbers, characters, etc)
- individual data items must be declared and named - this is known as creating a variable
- values that are put into variables can come from
  - program instructions
  - user input
  - files
- program instructions can alter these values
- original or newly computer values can go to
  - screen
  - printer
  - disk

Instructions:

- for data input (from keyboard, disk)
- for data output (to screen, printer, disk)
- computation of new values
- program control (decisions, repetition)
- modularization (putting a sequence of instructions into a package called a function)

1.2 The Language

The C++ language is made up of

- keywords/reserved words (if, while, int, etc.)
- symbols: { } = | <= ! [ ] * & (and more)
- programmer-defined names for variables and functions

These programmer-defined names:

- 1 - 31 chars long; use letters, digits, _ (underscore)
- start with a letter or _
- are case-sensitive: *Num* is **different** than *num*
- should be meaningful: *studentCount* is better than s or sc

1.3 Data Types

Each data item has a type and a name chosen by the programmer. The type determines the range of possible values it can hold as well as the operations that can be used on it. For example, you can add a number to a numeric data type, but you cannot add a number to someone's name. (What would "Joe" + 1 mean?)

Figure:

Type	Keyword
Boolean	bool
Character	char
Integer	int
Floating point	float
Double floating point	double
Valueless	void
Wide character	wchar_t

Note:-

Floating point numbers have a limit of 6 significant figures and doubles have a limit of 12 characters.

1.4 Arithemetic operators

The arithmetic operators are:

- + addition
- - subtraction or unary negation (-5)
- * multiplication
- / division (see special notes on division below)
- % modulus division -- integer remainder of integer division

Note:-

There is no exponential operator

2 Assignment Statements; Control Structures; Symbolic Constants; Formatting Output

3 Cascading Ifs; Conditional Expressions; Compound Conditions; Data Type `bool`

4 Functions

5 Function Summary Sheet

6 Character Functions

7 Arrays

8 Arrays and Functions

9 References and Call By Reference; Input and Output

10 Object Oriented Programming

11 C++ Strings

12 Structures