C++ Variables

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Variables in C++

• Allow storage of data internally for the program
• Allow storage of information from the user
• There are different types of variables which service different needs
• Examples:
  – Variables that store texts
  – Variables that store integers (positive & negative numbers)
  – Variables that store decimals (floating point numbers)
Declare/Create variables

• In order to use a variable in C++, we have to first declare i.e., create it
• Model:
  variable_type variable_name;

• variable_type: The type of a variable, depends on the type of data we want to store.
• variable_name: The name of a variable, how we want to refer to it in the rest of the program.
Legal Variable Names

• C++ rules for legal variable names
  – 1. Must start with a letter, can end with numbers
  – 2. Must not have a space in the name
  – 3. Can not have special characters
    • Only allowed character is "_ "(underscore)
  – 4. Must not be a C++ keyword

• Suggestions for variable names
  – Variable names should be meaningful
  – Variable names should be easy to read
Illegal Variable Names

• Example of illegal variable names
  – int number of cakes;
    • Has spaces
  – int 1number;
    • Begins with a number
  – int discount%;
    • Contains a symbol
  – double int;
    • Contains a keyword, int
  – int string;
    • Although not a keyword, it will not allow us to declare and use string variables.
Important Note

• C++ is case sensitive!!

• Examples:
  – int hello; //declares a variable hello
  – int Hello; //declares another variable Hello
  – Int hello; //error, Int is not a C++ type
  – Double amount; //error, Double is not a type
Types of variables
String

• Variable declaration
  – string name;
  – string address;
  – string day;

• Examples of strings
  – name = "Vincent";
  – address = "65-30 Kissena Blvd.";
  – day = "2";

• Examples of INVALID strings
  – name = 'Vincent';
  – address = 65-30 Kissena Blvd.;
  – day = 2;
int (integers)

• Variable declaration
  – int number;
  – int year;
  – int age;

• Examples of integers
  – number = 14;
  – year = 2011;
  – age = 30;

• Examples of INVALID int
  – number = "14";
  – year = '2011';
  – age = "thirty";
  – age = 34.5
double (decimals, high precision)

• Variable declaration
  – double pi;
  – double e;

• Examples of double (decimals)
  – pi = 3.1415926535;
  – e = 2.71828;

• Examples of INVALID double
  – pi = "3.141";
  – pi = ' 3.141 ';

char (characters)

• Variable declaration
  – char c;
  – char newline;
  – char code;

• Examples of char (characters)
  – c = 'c';
  – newline = '\n';
  – code = 65; //max number is 127

• Example of INVALID char
  – code = 456;
  – newline = "\n";
bool(boolean: true or false)

• Variable declaration
  – bool reply;
  – bool answer;

• Examples of bool(boolean)
  – answer = true;
  – answer = false;
  – reply = 0;
  – reply = 1;

• Examples of INVALID bool
  – answer = “true”;
  – reply = ‘0’; //value becomes true