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1.3 Assignment

(1) Explain data types, variables and keywords in detail with example.

* Data Types:

A data type is a keyword that defines what type of data a variable can hold. For example the data type int can hold whole numbers, while data type float can hold numbers with decimal points.

→ int: Whole numbers such as 1,456, 322
→ char: Contains characters, such as letters, numbers, spaces and symbols.
→ string: contains a set of character, such as "Hello", "How are you".
→ float: Contains numbers with a decimal point such as 9.1, 2.6552, 3.1425128
→ double: stores fractional numbers, such as 2.34 and 1.145
→ Boolean: Contains only one of two possible values, such as true or false.

* Variables:

A variable is a name associated with a memory location in the computer, where you can store a value that can change or vary

→ Declaration: Specifying the type and name of the variable.
→ int age;

→ Initialization: Assigning a value to the variable at the time of declaration
→ int age = 22;

* Keywords:
Keywords are reserved words in c++ that have special meaning to the compiler. They cannot be used as variable names.

- auto
- const
- bool
- explicit
- new
- struct
- throw
- bool
- union
- int
- virtual
- long
- void
- mutable
- while.
- continue
- friend
- operator
- switch
- true
- break
- double
- float
- catch
- public
- char
- register
- class
- return
- private
- short
- try
- case
- default
- for
- protected
- sizeof
- delete.
- static
- else
- this
- enum
- typedef

(2) Describe boolean data type in detail with example.

The boolean data type is a data type that store one of two values; true or false. It's named after George bool, who developed boolean algebra, a system of logic that uses true and false values.

→ In C++, the boolean data types is declared using the keyword bool. For example the following code declares a boolean variable name is_valid:

```
bool is_valid;
```

→ Boolean variables can be used in conditional statements to control the flow of program.

→ Boolean variables can also be used in mathematical expressions.

→ example:

```
include<iostream>
using namespace std;

int main(){
    bool is_valid = true;
```

```
    if (is_valid) {
        cout << "The value is valid." << endl;
    } else {
        cout << "The value is not valid!" << endl;
    }

    return 0;
}
```