Introduction to Computer Programming (PEN 203)

C++ → It depends on object-oriented.

Programming stages

Objects are determined.

↓

Objects are defined by coding

↓

Objects are used in the main program
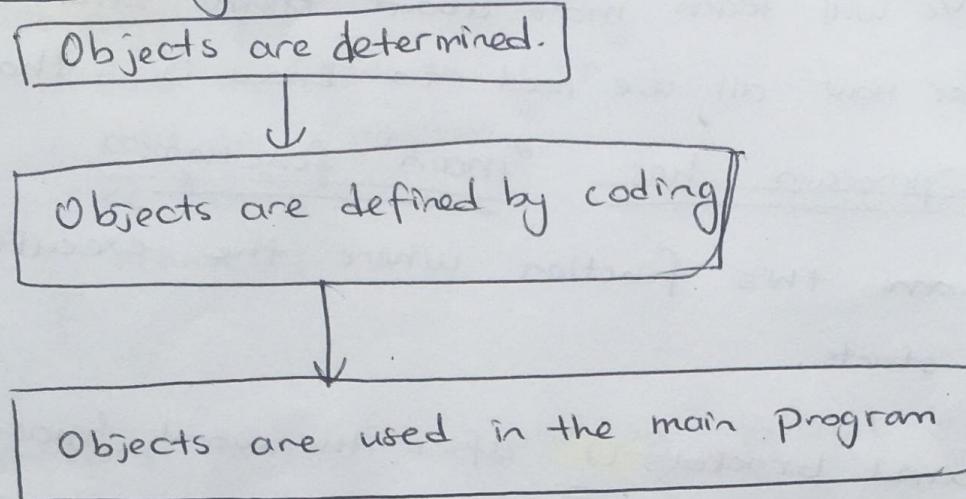
⊗ C++ was developed by Bjarne Stroustrup of AT&T Bell Laboratories in the early 1980's, and was based on the C language.

Fundamental Concepts of C++

Our first C++ program

```
1  # include <iostream>
2  using namespace std;
3
4  // main() is where program execution begins.
5  int main() {
6      cout << "Hello World"; // prints Hello World
                    → system ("pause");
7      return 0;
8  }
```

it is needed to stop printing
→ depends on the version of C++

Let us observe this piece of code carefully. This program consists of a function called "main".

⇒ Functions are one of the fundamental building blocks of C++. We will learn more about them later lectures, but for now all, we need to know is that every C++ program has "main" function. It is from this function where the execution of the program starts.

⇒ The round brackets '()' after the word 'main' are known as 'parenthesis' and they tell the compiler that this is a function and not a variable.

⇒ They are followed by '{ }' curly braces. The first curly bracket '{' begins the function and its counterpart '}' is used to delimit the function. They can be compared to the BEGIN and the END keywords in some other programming languages.

Ex: Main() function

```
1   #include <iostream>
2   using namespace std;
3
4   // Please, print the "This is C++ program."
5   int main() {
6       cout << "This is C++ ";
7       cout << "program."
8       << "\n";
9       return 0;
10  }
```

⟹ Functions have the following general syntax.

Syntax:

```
return_type main()
{
- - - - -
body of the function
- - - -
}
```

⟹ #include : This statement is a preprocessor directive. A preprocessor directive is an instruction to the compiler. A part of the compiler known as the "preprocessor" deals with these directives before the actual compilation process of the program begins.

* There exists many such preprocessor directives; all preprocessor directives begin with the "#" sign.

③

"#include" is defined as a header file, "iostream" is an example of a header file and deals with the basic input/output operations and contains information about "cout" that is necessary for our program.

Comments

→ Comments make programming simple. They not only help us to understand a piece of code written by some one else better but also help in writting ones own program specially in large programs where one needs to keep track of what's going on. Comments help in increasing the program readability and increase program's maintainability. In C++ comments can be given in two ways:

1) Single line comments : They start with // (double slash) symbol and terminate at the end of the line.

Ex: int a; // declares the variable 'a' of integer type.

2) Multi line comments: Start with a /* symbol and terminate with a */ symbol.

Ex:
/* This is a multi line
   comment */

(4)