SIEC: C PROGRAMMING

L #03: BASIC C PROGRAM STRUCTURES

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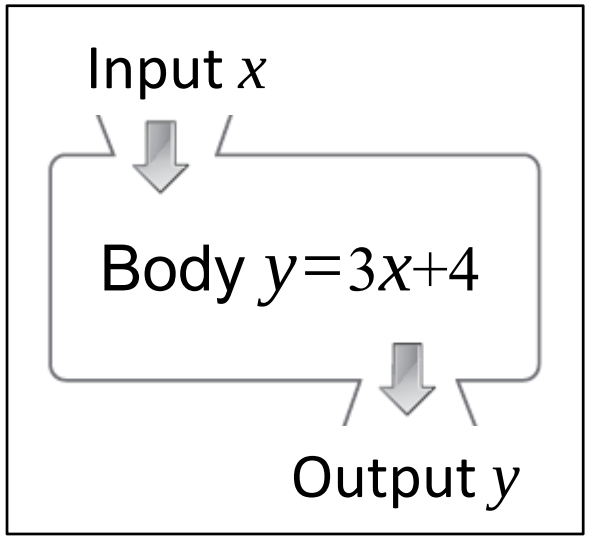
Contents

- C Program Basic Structure
- C Basic Syntax

C Program Basic Structure

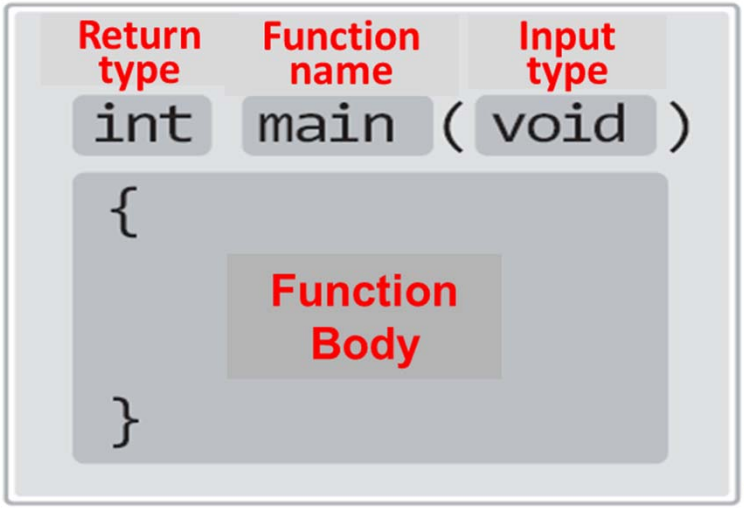
C Program Basic Structure

- General function
  - The general function is to conduct some roles using the input and output the result of the roles.
  - The Function generally consists of the Input, body (i.e. some role), and output.
  - The role of the following function is to multiply the input value by 3, then add 4 and output the result.



C Program Basic Structure

- Function in C programming
  - The function is a basic unit of C programming (or all programming).
  - The function in C programming consists of the return type, function name, input type, and function body.
  - The function name is used to call the function.
  - The input type is used to define the type of the input value such as the integer, float, character, string, etc.
  - The return type (or output type) is used to define the type of the output value such as the integer, float, character, string, etc.
  - The function body is to conduct some roles using the input and return (or output) the result.

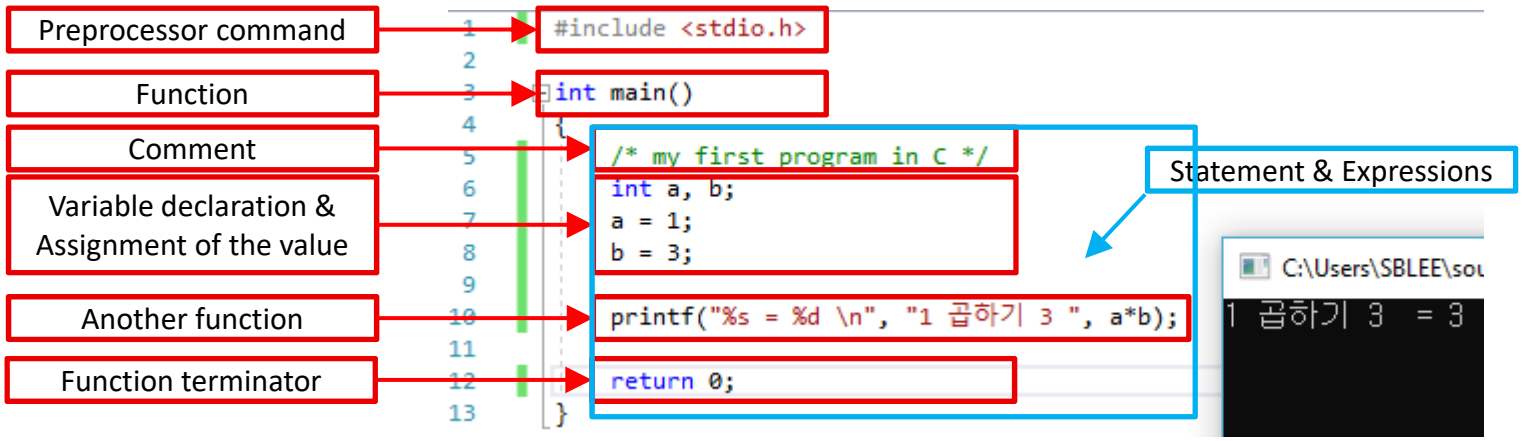


C Program Basic Structure

- Basic components of C program
  1. Preprocessor Commands: include some header files with an extension **.h** (e.g. **stdio.h**, **math.h**, etc.)
  2. Functions: include some roles you want to do.
  3. Variables: Be nothing but a name given to a storage area that our programs can manipulate.
  4. Statements & Expressions
  5. Comments

C Program Basic Structure

- Basic components of C program



- The first line of the program #include <stdio.h> is a preprocessor command, which tells a C compiler to include stdio.h file before going to actual compilation.
- The next line int main() is the main function where program execution begins.
- The next line /*...*/ will be ignored by the compiler and it has been put to add additional comments in the program.
- The next lines int a, b;, a=1;, b=1; is a variable declaration and assignment of each variable value.
- The next line printf(...) is another function available in C which causes the message "1 곱하기 3 = 3" to be displayed on the DOS screen.
- The next line return 0; terminates main() function and returns the value 0.

C Basic Syntax

C Basic Syntax

- Tokens in C
  - A C program consists of various tokens and a token is either a keyword, an identifier, a constant, a string literal, or a symbol.
  - For example, the following C statement consists of five tokens:

```
printf("Hello, World! \n");
```

  - The individual tokens are as follows:

```
printf                  Identifier
(                       Symbol
"Hello, World! \n"      String literal
)                       Symbol
;                       Symbol
```

C Basic Syntax

- Semicolons (;)
  - In C program, the semicolon is a statement terminator. So, each individual statement must be ended with a semicolon. It indicates the end of one logical entity.

```
printf("Hello, World! \n");
return 0;
```

- Comments
  - Comments are like helping text in your C program. So, they are ignored by the compiler. It is essential not choice for understanding your codes.
  - One-line comment can start with /* and terminates with the characters */ or it can start with // and terminates with nothing.
  - But, multiline comments must start with /* and terminates with the characters */.

```
1   #include <stdio.h>
2
3   int main()
4   {
5       /* my first program in C*/
6       // my first program in C
7       /* my first
8                  program in C*/
9       printf("Hello, world! \n");
10      return 0;
11  }
```

C Basic Syntax

- Identifiers
  - A C identifier is a name used to identify a variable, function, or any other user-defined item.
  - An identifier starts with a letter A to Z or a to z or an underscore _ followed by zero or more letters, underscores, and digits (0 to 9), as follows:

```
mohd        zara    abc    move name   a 123
myname50    _temp   j      a23b9       retVal
```

  - However, C does not allow punctuation characters (i.e. @, $, and %) within identifiers.
  - C is a case sensitive programming language. Thus, Manpower and manpower are two different identifiers in C. That is, C program distinguishes between first case and second case.

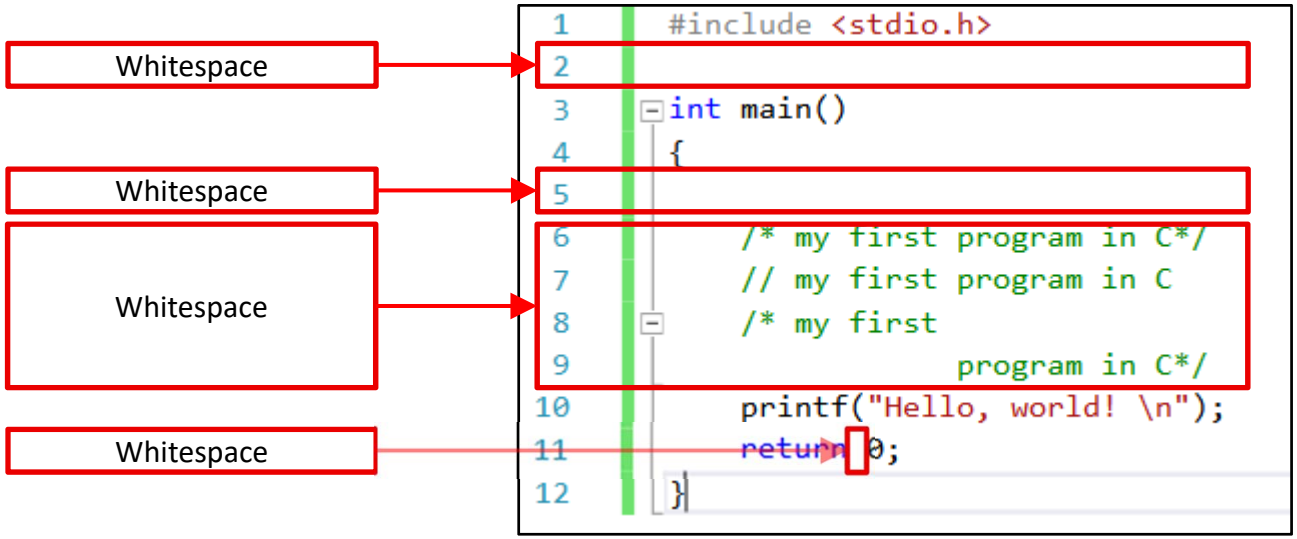
C Basic Syntax

- Keywords
  - The following list shows the reserved words (keywords) in C.
  - These reserved words may not be used as constant or variable or any other identifier names.

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

C Basic Syntax

- Whitespace in C
  - A line (i.e. 2 and 5 line) containing only whitespace is known as a blank line, and a C compiler totally ignores it.
  - Whitespace is the term used in C to describe blanks, tabs, newline characters and comments.



C Basic Syntax

- Whitespace in C
  - Whitespace separates one part of a statement from another.
  - There must be at least one whitespace character (usually a space) between *int* and *age* for the compiler to be able to distinguish them.

```
int age;
```

Thank You

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