Logging in From a Linux System or Localhost
4 days 34 min ago
Auto response
4 days 6 hours ago
Re: final issue.
4 days 22 hours ago
Re: Rocky, thank you for this
4 days 23 hours ago

Learning C/C++ Step-By-Step - Page 03

Submitted by ganesh35 (Contact Author) (Forums) on Sun, 2008-12-21 23:22. ::

03. Step-by-Step C/C++ --- C Programming - Basic IO Statements

Contents

As discussed, every program is a set of statements, and statement is an instruction to the computer, which is a collection of constants, variables, operators and statements.

Structure of a C program

```
<return type> main( arg-list )
{
      <declaration part>

      <Statement block>

      <Return Values >
}
```

We are going to start with Input / Output Statements as they play important roles in our further programs.

I/O Statements

Printf

This statement displays the given literal / prompt / identifiers on the screen with the given format.

Syntax:

```
printf(<"prompt/literal/format id/esc char. ">, id1,id2, .....);
```

E.g.:

```
printf("Hello");
printf("Student number : %d", sno);
printf("Student name : %s", name);
printf("3Subjects Marks : %d, %d, %d", m1, m2, m3);
```

1. Program to print a message:

```
/* 02_print.c */
#include <stdio.h>
int main( )
{
     printf("Hello");
     return 0;
}
```

Escape Characters

Common Escape Sequences

Escape Sequence	Character
\a	Bell(beep)
\b	Backspace
\f	Form feed
\n	New line
\r	Return
\t	Tab
\\	Backslash
\'	Single quotation mark
\"	Double quotation marks
\xdd	Hexadecimal representation

2. Program to print a message in a new line
- Compare with the last program.

```
/* 03_esc.c */
#include <stdio.h>
int main()
{
     printf("\nHello");
     return 0;
}
```

3. Program to display address of a person
- Multiple statements in main

```
/* 04_multi.c */
#include <stdio.h>
int main()
{
     printf("\nName of the Person");
     printf("\nStreet, Apartment//House No. ");
     printf("\nzip, City");
     printf("\nCountry");
     return 0;
}
```

Using Variables in programs

Basic Variable Types

Keyword	Range: low	Range: high	Digits of precision	Bytes of memory	Format-ID
Char	-128	127	n/a	1	%c
Int	-32, 768	32, 767	N/a	2	%d
Long	-2,147, 483, 648	2, 147, 483, 647	N/a	4	%ld
Float	3.4 x 10-38	3.4 x 1038		4	%f

Double	1.7 x 10-308	1.7 x 10308	15	8	%lf
long double	3.4 x 10-4932	3.4 x 10-4932	19	10	%Lf

4. Program to find the sum of two values
- Variables are introduced in this program

```
/* 05_var.c */
#include <stdio.h>
int main()
{
     int a , b , c;
     a = 5;
     b = 10;
     c = a + b;
     printf("%d", c);
     return 0;
}
```

5. Program to find the sum of two values with message
- Compare with the last program

```
#include <stdio.h>
int main()
{
     int a, b, c;
     a = 5;
     b = 10;
     c = a + b;
     printf("\nSum is %d", c);
     /* We have inserted extra text before printing the value*/
     return 0;
}
```

Scanf

Using this statement we can accept and values to variables during the execution of the program.

Syntax:

```
scanf(<format id/esc char">, id1,id2, .....);
```

Eg.

```
scanf("%d", &sno);
scanf("%s", name);
scanf("%d%d%d", &m1, &m2, &m3);
```

6. Program to find the sum of two value using scanf
- When you run the program it shows you the cursor and waits for your input, enter a numeric value and press "Return", do this twice and you will get the output.

```
/* 07_scanf.c */
#include <stdio.h>
int main()
{
     int a , b, c;      scanf("%d", &a);
     scanf("%d", &b);
     c = a + b;
     printf("\nSum is %d", c);
     return 0;
}
```

More Excercises:

7. Program to find the sum of two values with message display
- Messages are optional but introduces user-friendly interaction
- Compare with the last program

```
/* 08_sum.c */
#include <stdio.h>
int main()
{
     int a , b, c;      printf("Enter A value "); scanf("%d", &a);
     printf("Enter B value "); scanf("%d", &b);
     c = a + b;
     printf("\nSum is %d", c);
     return 0;
}
```

8. Program to find the result of (a+ b)2
- Similar to sum of two values program but the formulae is different

```
/* 09_formula.c */
#include <stdio.h>
int main()
{
     int a, b, c;
     printf("Enter A value "); scanf("%d", &a);
     printf("Enter B value "); scanf("%d", &b);
     c = a * a + b * b + 2 * a * b;

     printf("Result is %d", c);
     return 0;
}
```

9. Program to find the annual salary of an employee
- input : eno, name, sal
- Process : Asal = sal * 12
- Output : Eno, name, sal, asal
- This program introduces the different types of variable

```
/* 10_emp.c */
#include <stdio.h>
int main()
{
     int eno;
     char name[10]; /* name with 10 characters width */
     float sal, asal; /* sal & asal as real values */
     printf("Enter Employee number "); scanf("%d", &eno);
     printf("Enter Employee name "); scanf("%s", name);
     printf("Enter Employee salary "); scanf("%f", &sal);

     asal = sal * 12;
     printf("\nEmployee number %d", eno);
     printf("\nEmployee name %s", name);
     printf("\nEmployee salary %f", sal);
     printf("\nAnnual Salary %f", asal);
     return 0;
}
```

10. Write a program to find the total and average marks of a student
- Input : Sno, name, sub1, sub2, sub3
- process : total = sub1 + sub2 + sub3; avg = total / 3
- output : sno, name, total, avg
- Similar to the above program just accept, process, and print the values

```
/* 11_stud.c */
#include <stdio.h>
int main()
{
     int sno, sub1, sub2, sub3, total;
     char name[10];
     float avg;

     clrscr(); /* clear the screen before its output */
     printf("Enter Student number "); scanf("%d", &sno);
     printf("Enter Student name "); scanf("%s", name);
     printf("Enter Subject1 marks "); scanf("%d", &sub1);
     printf("Enter Subject2 marks "); scanf("%d", &sub2);
     printf("Enter Subject3 marks "); scanf("%d", &sub3);

     total = sub1 + sub2 + sub3;
     avtg = total / 3;

     printf("\nStudent number %d", sno);
     printf("\nStudent name %s", name);
     printf("\nTotal marks %d", total);
     printf("\nAverage marks %f" , avg);
     return 0;
}
```

More IO Statements

Gets:

To accept a string from the key board. It accepts string value up to the carriage return.

Syntax:

```
gets( <id.> );
```

E.g.:

```
gets(name);
gets(street);
```

puts

It displays the given string value on the screen.

Syntax:

```
puts( <id.> / <"prompt">);
```

E.g.:

```
puts(name);
puts(street);
```

getch - Read char without echo

getche - read char with echo

getchar - read char and accept carriage return

putch

It can print a character on the screen.

Syntax:

```
putch(<char>).
```

E.g.:

```
putch('a');
putch(65);
```

getch

It accepts a character from console.

Syntax:

```
char = getch().
```

E.g.:

```
ch = getch();
option = getch();
```

previous up next
Learning C/C++ Step-By-Step - Page 02 Learning C/C++ Step-By-Step - Page 04

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- Beginner's Guide To c++
- An Explanation of Pointers (C++)

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Comments will be published after administrator approval.

Not compiling in g++
Submitted by Erica (not registered) on Mon, 2012-12-31 20:56.

In 11_stud.c

```
avtg = total / 3;
```

should be

```
avg = total / 3;
```

Also the clrscr() function won't compile in g++. If others need you can add // to the start of the line and the line will become a comment.

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example numbering
Submitted by Scott_R (not registered) on Tue, 2012-01-03 23:24.

The numbering for the examples is off by one.

For example:

"10. Write a program to find the total and average marks of a student"

/* 11_stud.c */

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