CL1002 – Programming Fundamentals Lab

Lab # 04

Arithmetic Operators & Escape Sequences in C

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Escape Sequences

Character combinations consisting of a backslash (\) followed by a letter or by a combination of digits are called "escape sequences." To represent a newline character, single quotation mark, or certain other characters in a character constant, you must use escape sequences. An escape sequence is regarded as a single character and is therefore valid as a character constant. Escape sequences are used to format our output. The following escape sequences can be used to print out special characters.

Escape Sequence	**Description**
\n	Newline
\t	Horizontal tab
\v	Vertical tab
\\	Backslash
\"	Double quote

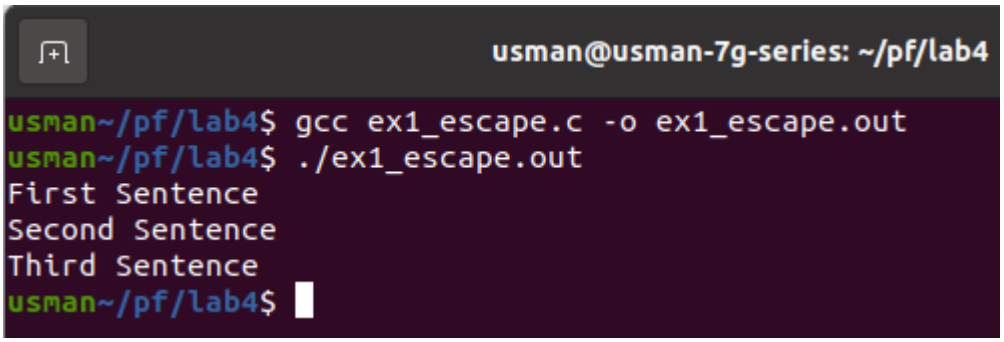
To insert a line break, a new-line character shall be inserted at the exact position the line should be broken. In C, a new-line character can be specified as \n (i.e., a backslash character followed by a lowercase n).

Example 1

```c
#include <stdio.h>
int main()
{
 printf("First Sentence\n");
 printf("Second Sentence\n");
 printf("Third Sentence\n");

 return 0;
}
```

This produces the following output:



Example 2

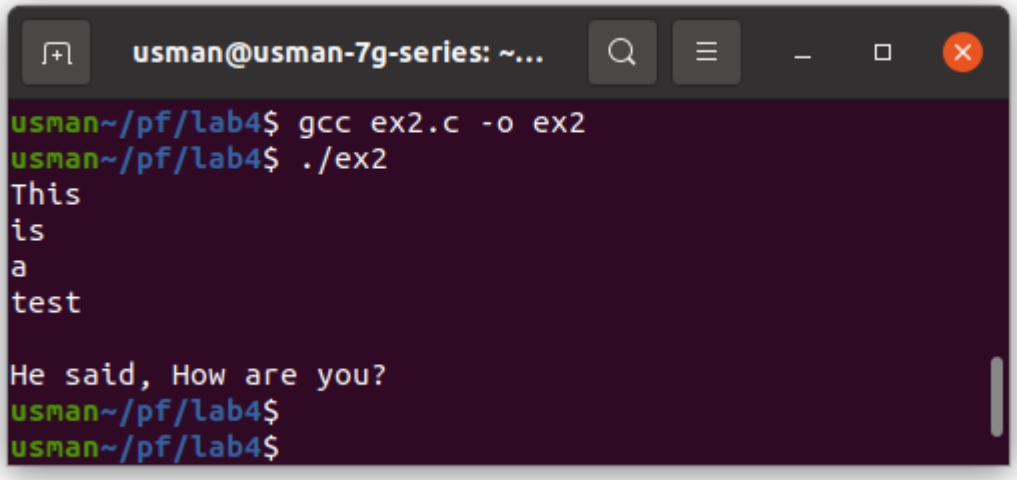
Following program shows the use of Newline Escape Sequence (\n).

```c
#include <stdio.h>
int main()
{

printf("This\nis\na\ntest\n\nHe said, How are you?\n");

 return 0;
}
```

Output



Example 3

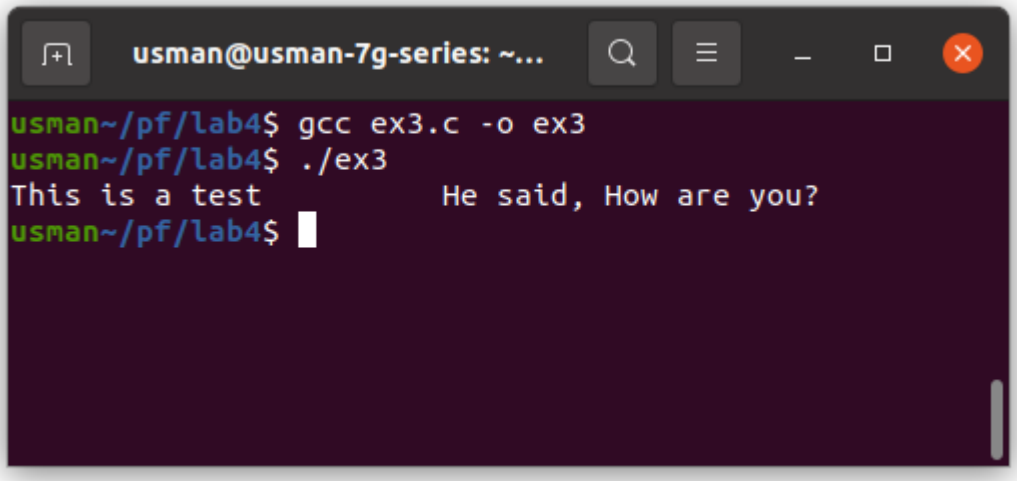
This program shows the use of Horizontal tab Escape Sequence (\t).

```c
#include <stdio.h>
int main()
{

printf("This is a test\t\tHe said, How are you?\n");

 return 0;
}
```

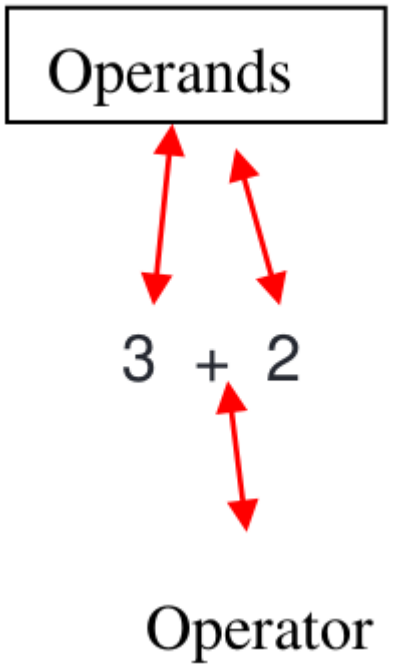
Output



Now try escape sequences \\ , **v** , \" yourself.

Operators

Operators are special symbols that carry out arithmetic or logical computation. The value that the operator operates on is called the operand.



Here, + is the operator that performs addition. 2 and 3 are the operands and 5 is the output of the operation.

```
int sum1 = 100 + 50;      // 150 (100 + 50)
int sum2 = sum1 + 250;    // 400 (150 + 250)
int sum3 = sum2 + sum2;   // 800 (400 + 400)
```

Arithmetic Operators

Arithmetic operators are used to perform mathematical operations like addition, subtraction, multiplication etc.

Operator	Meaning	Example
+	Add two operands	x + y
-	Subtract right operand from the left	x - y
*	Multiply two operands	x * y

/	Divide left operand by the right one	x / y
%	Modulus - remainder of the division of left operand by the right	x % y (remainder of x/y)

Assignment operators

Assignment operators are used to assign values to variables.

int a = 5 is a simple assignment operator that assigns the value 5 on the right to the variable a on the left.

Operator	Example	Equivatent to
=	x = 5	x = 5
+=	x += 5	x = x + 5
-=	x -= 5	x = x - 5
*=	x *= 5	x = x * 5
/=	x /= 5	x = x / 5
%=	x %= 5	x = x % 5

Example 4

```c
#include<stdio.h>
int main()
{
int a=11;
int b=3;
int remainder = a%b;
printf("\nRemainder: %d", remainder);
return 0;
}
```

Output:

Remainder: 2

Example 5 | Basic Calculator:

```c
#include<stdio.h>
int main()
{
   int a=2;
   int b=3;
   int sum=a+b;
   int diff=a-b;
   int product=a*b;
   int division=a/b;
   int mod=a%b;
   printf("a = %d b = %d", a, b);
   printf("\nSum: %d", sum);
   printf("\nDiff: %d", diff);
   printf("\nProduct: %d", product);
   printf("\nDivision: %d", division);
   printf("\nModulus: %d", mod);
return 0;
}
```

Output

a = 2 b = 3

Sum: 5

Diff: -1

Product: 6

Division: 0

Modulus: 2