Constants, Symbolic Constants, Assignment Statement

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Constants

Constants are the fixed values that never change during the execution of a program.

- Constants are also called literals.
- Constants can be any of the data types.
- It is considered best practice to define constants using only upper-case names.

Following are the various types of constants:

1. **Numeric Constants**
   - Integer Constants
   - Real Constants
2. **Character Constants**
   - Single Character Constants
   - String Constants
   - Backslash Character Constants

Numeric Constants

Integer Constant

It's referring to a sequence of digits. Integers are of three types viz:

1. Decimal Integer
2. Octal Integer
3. Hexadecimal Integer

Example:

15, -285, 0, 78818, +25, 0045, 0X6

Real Constants

The numbers containing fractional parts like 99.25 are called real constant. The real constants are also called as floating point constants. The real constant contains a decimal point and a fractional value.

Example:

15.25, 250.00

Character Constants

Single Character Constants

It simply contains a single character enclosed within ' and ' (a pair of single quote). It is to be noted that the character '8' is not the same as 8. Character constants have a specific set of integer values known as ASCII values (American Standard Code for Information Interchange).

Example:

'X', '5', ';'

String Constant

These are a sequence of characters enclosed in double quotes, and they may include letters, digits, special characters, and blank spaces. It is again to be noted that "G" and 'G' are different - because "G" represents a string as it is enclosed within a pair of double quotes whereas 'G' represents a single character.

Example:

"Hello!", "2015", "2+1"

Backslash Character Constants

C supports some character constants having a backslash in front of it. The lists of backslash characters have a specific meaning which is known to the compiler. They are also termed as "Escape Sequence".

For Example:

\t is used to give a tab

\n is used to give a new line

Constants	Meaning
\a	beep sound
\b	backspace
\f	form feed
\n	new line

\r	carriage return
\t	horizontal tab
\v	vertical tab
\'	single quote
\"	double quote
\	backslash
\0	null

Example of constant in C

declare a value that does not change like the circle constant PI, there are two ways to declare this **constant**

1. By using the **const** keyword in a variable declaration which will reserve a storage memory

```
#include <stdio.h>
void main()
{
const double PI = 3.14;
printf("%f", PI);
/*PI++;  This will generate an error as constants
cannot be changed */
}
```

2. By using the **#define** pre-processor directive which doesn't use memory for storage and without putting a semicolon character at the end of that statement

```
#include <stdio.h>
#define PI 3.14
void main()
 {
     printf("%f", PI);
 }
```

Assignment Statement in C

C provides an assignment operator for this purpose, assigning the value to a variable using assignment operator is known as an assignment statement in C. The function of this operator is to assign the values or values in variables on right hand side of an expression to variables on the left hand side.

Syntax

Variable = constant / variable/ expression;

Example:

```
NORMAL_TEMP = 98.6;
MAX_NUM_SCORES = 3;
```

Symbolic Constants in C

Symbolic Constant is a name that substitutes for a sequence of characters or a numeric constant, a character constant or a string constant. When program is compiled each occurrence of a *symbolic constant* is replaced by its corresponding character sequence.

Syntax

#define name text

Example:

```
#define MAX 50
#define TRUE 1
#define FALSE 0
#define SIZE 15
#define PI  3.14
```