C - SWITCH STATEMENT

A **switch** statement allows a variable to be tested for equality against a list of values. Each value is called a case, and the variable being switched on is checked for each **switch case**.

Syntax:

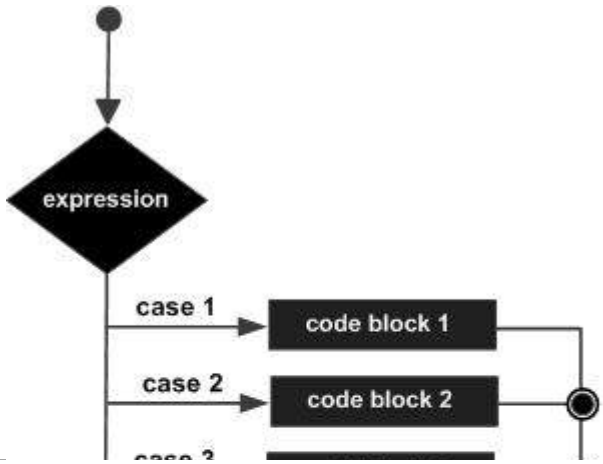
The syntax for a **switch** statement in C programming language is as follows:

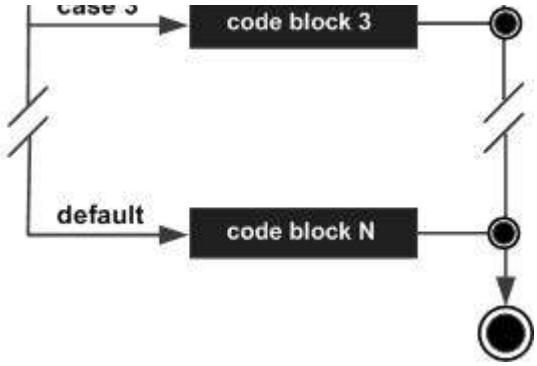
```
switch(expression){
    case constant-expression  :
       statement(s);
       break; /* optional */
    case constant-expression  :
       statement(s);
       break; /* optional */

    /* you can have any number of case statements */
    default : /* Optional */
       statement(s);
}
```

The following rules apply to a **switch** statement:

- The **expression** used in a **switch** statement must have an integral or enumerated type, or be of a class type in which the class has a single conversion function to an integral or enumerated type.
- You can have any number of case statements within a switch. Each case is followed by the value to be compared to and a colon.
- The **constant-expression** for a case must be the same data type as the variable in the switch, and it must be a constant or a literal.
- When the variable being switched on is equal to a case, the statements following that case will execute until a **break** statement is reached.
- When a **break** statement is reached, the switch terminates, and the flow of control jumps to the next line following the switch statement.
- Not every case needs to contain a **break**. If no **break** appears, the flow of control will *fall through* to subsequent cases until a break is reached.
- A **switch** statement can have an optional **default** case, which must appear at the end of the switch. The default case can be used for performing a task when none of the cases is true. No **break** is needed in the default case.

Flow Diagram:





Example:

```
#include <stdio.h>

int main ()
{
   /* local variable definition */
   char grade = 'B';

   switch(grade)
   {
   case 'A' :
      printf("Excellent!\n" );
      break;
   case 'B' :
   case 'C' :
      printf("Well done\n" );
      break;
   case 'D' :
      printf("You passed\n" );
      break;
   case 'F' :
      printf("Better try again\n" );
      break;
   default :
      printf("Invalid grade\n" );
   }
   printf("Your grade is  %c\n", grade );

   return 0;
}
```

When the above code is compiled and executed, it produces the following result:

```
Well done
Your grade is B
```