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## 3.3 Nested Control Structure (Switch statement, Continue statement, Break statement, goto statement)

### (i) Switch Statement

- When there are a number of else alternatives another way of representing this multi-way selection is by the Switch statement.

- The General format of a Switch statement is

```
Switch (expr)
{
  Case Constant1: StmtList1;
                  break;
  Case Constant2: stmtList2;
                  break;
  Case Constant3: stmtList3;
                  break;
  ...
  ...
  ...
  default: stmtListn;
}
```

- When there is a Switch statement, it evaluates the expression expr and then looks for a matching case label.

- If none is found, the default label is used. If no default is found, the statement does nothing.

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- The expanded flowchart of the Switch statement is

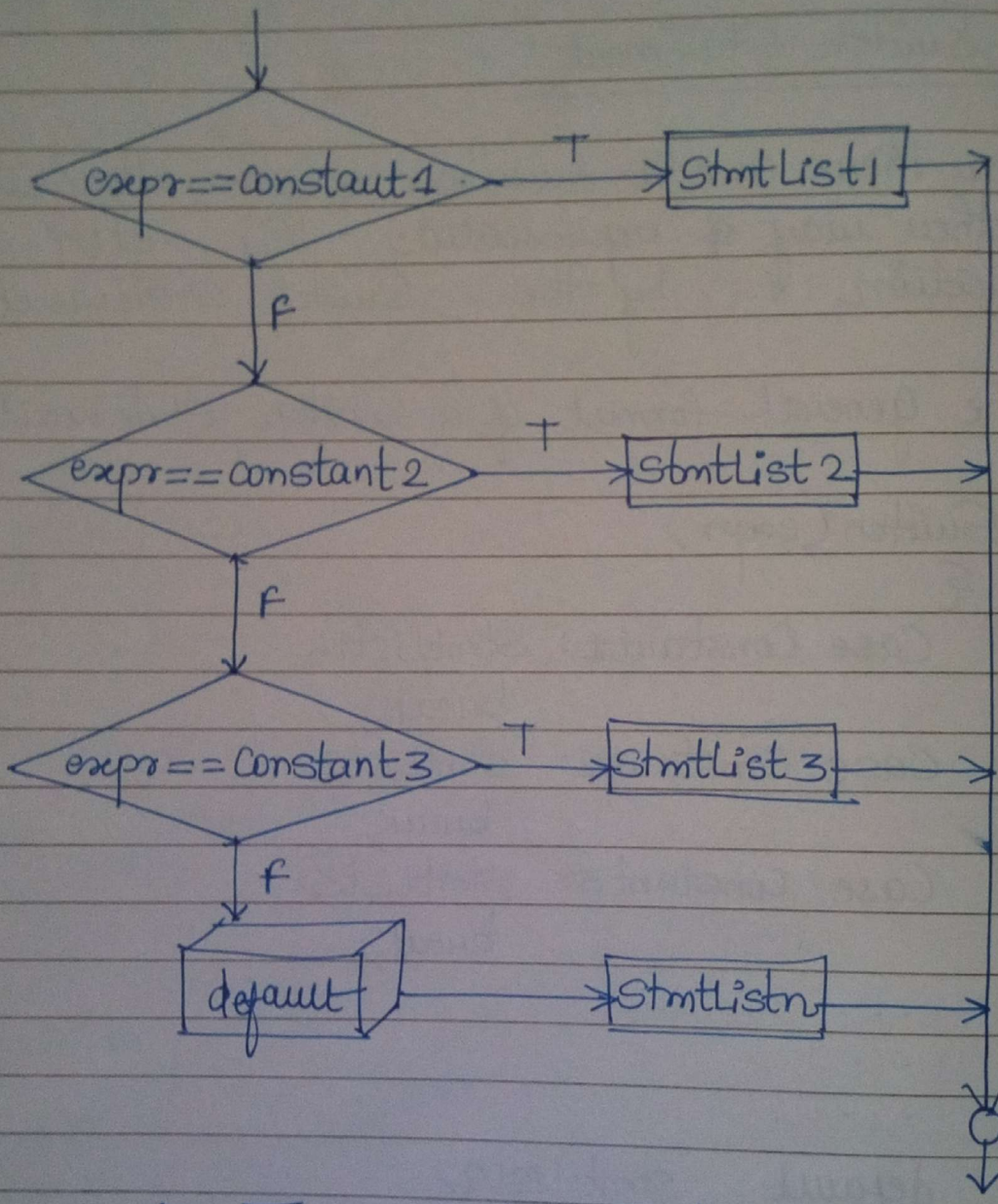


fig: The C Switch Construct

- This Construct evaluates the expression expr and matches its evaluated value with the case constants and then the statements in the corresponding statement list are executed.

- Otherwise if there is a default (which is Optional) then the program branches to its statements list when none of the case Constants match with the evaluated value of expr.

- The case Constants must be integer or character Constants. The expression must evaluate to an integral type. Single Quotes must be used around char Constants specified with each case.

- Once again, it is emphasized that the default case, if present, will be selected if none of the prior cases are chosen. A default Case is not required but it is good programming practice to include one.

- Perhaps the biggest defect in the Switch Statement is that cases do not break automatically after the execution of the corresponding statement list for the Case label. Once the statement list under a Case is executed, the flow of Control continues down executing all the following cases until a break statement is reached.

- The break statement must be used within each Case if one does not want the following cases to execute once one case is selected. When the break statement is executed within a Switch, C executes the next statement outside the Switch Construct. However, Sometimes it may be desirable not to use the break statement in a particular case.

```
printf("Not Equal\n");
```

On executing the program code, the computer would print 'Equal', as observed earlier.

### 4.5.2 for Construct

A loop formed by using the for statement is generally called a determinate or definite loop because the programmer knows exactly how many times it will repeat. The number of repetitions can be determined mathematically by manually checking the logic of the loop. The general form of the for statement is as follows:

```
for(initialization; TestExpr; updating)
  stmT;
```

```
printf("Not Equal\n");
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```
for(initialization; TestExpr; updating)
  stmT;
```

***Initialization*** This part of the loop is the first to be executed. The statement(s) of this part are executed only once. This statement involves a loop control variable.

***`TestExpr`*** `TestExpr` represents a test expression that must be true for the loop to continue execution.

**`stmT`** stmT is a single or block of statements.

***Updating*** The statements contained here are executed every time through the loop before the loop condition is tested. This statement also involves a loop control variable.

for Syntax

for Explanation

(6)

what is array?

Example 1.5.3

while Syntax.

(7) Switch definition

Syntax

what is break

(5)

what is factorial
Example

for Syntax

for Explaination

(6)

what is armstrong
Example 153

while Syntax.

(7) Switch defination
Syntax

what is break.