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CHAPTER-2

CONTROL STRUCTURES

- Selective Control Structures
 - if statements
 - Switch statement
- Conditional (ternary) Operator
- Iterative (looping) control statements
 - For loop
 - Do...while loop
 - while loop
- Nesting of loops
- Jumping statements
 - Break statement
 - Continue Statement
 - Goto statement

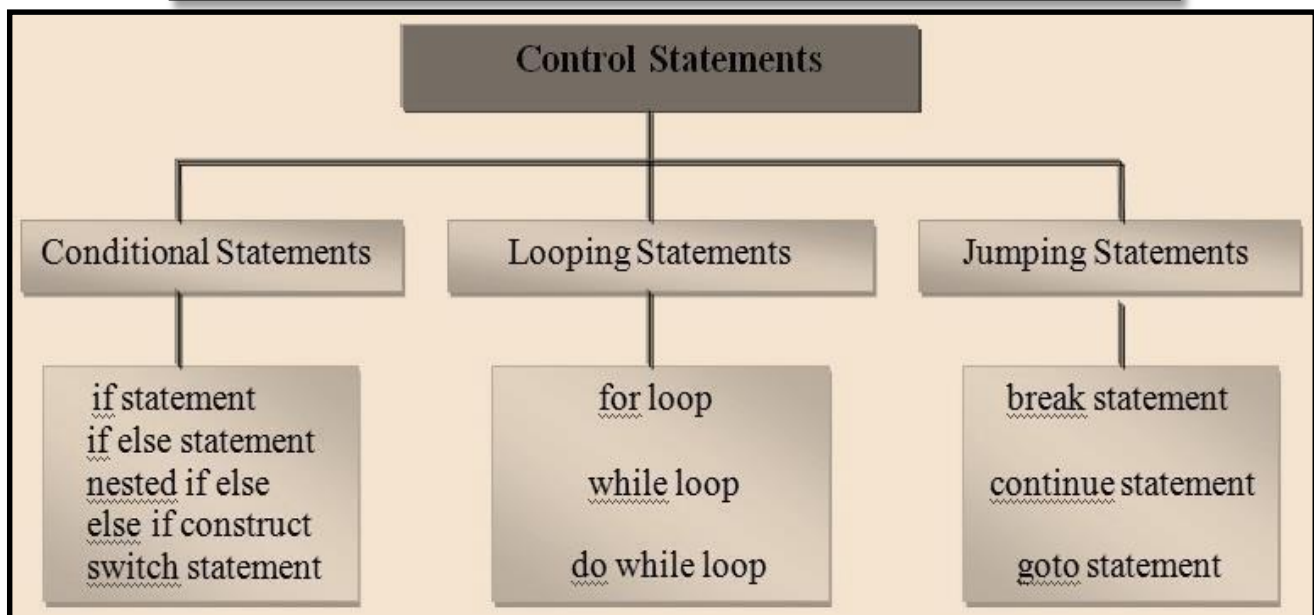
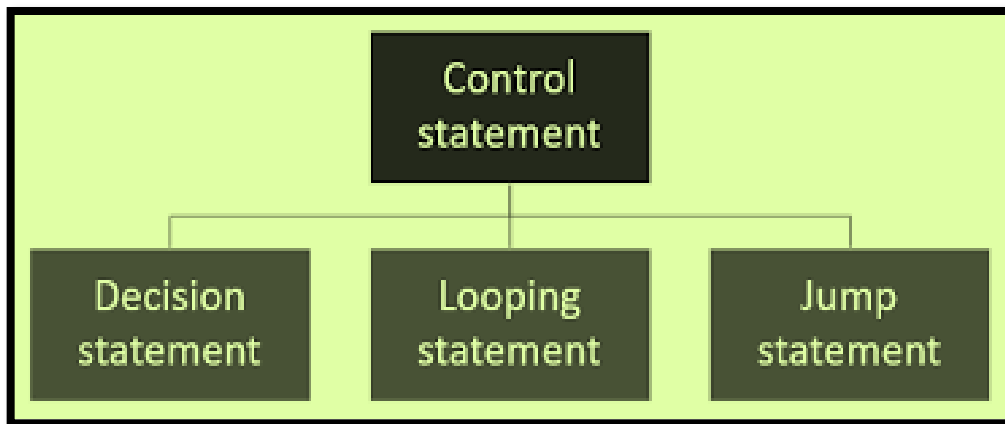
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Q-1 What is Control Structure ? List out different control structure available in C.

Control Structure :- “It used to control Flow of the Program”



If Statements:



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If Statement :-

“ To check condition & return result ”

✓ **Simple if statement:**

Detail :-

- ❖ C language provide a very powerful control structure that is “ifstatement.”
- ❖ It is decision statement that use to take some decision.
- ❖ If statement support different flavors or types.
- ❖ In this statement first of all condition will be checked.
- ❖ If condition become true than the statement following if will be execute.
- ❖ If condition become false than condition will be terminated.

The general syntax of simple if statement is follows as:

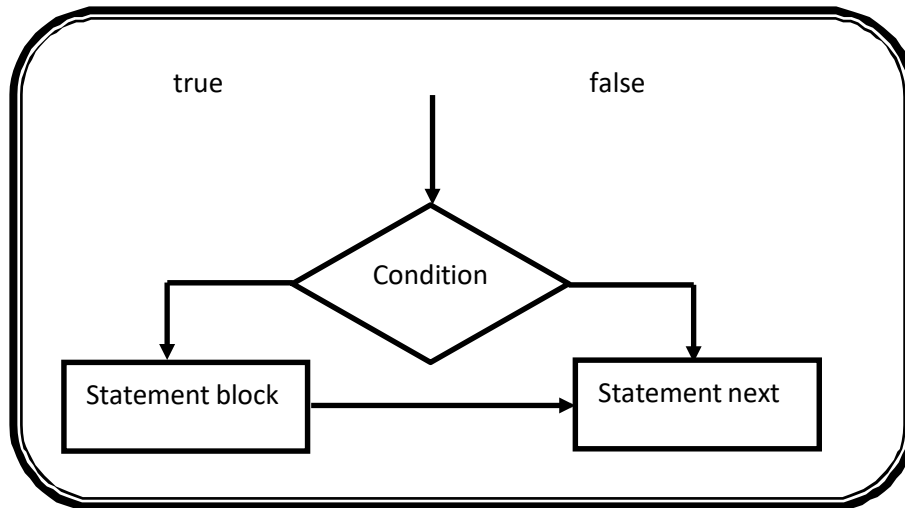
Syntax:-

```
If(expression)  
{  
    Statement-block;  
}  
Statement next;
```

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✓ **if-else statement:**

Detail :-

- ❖ In this statement first of all , condition will be checked.
- ❖ If condition become true than statement following if will be execute.
- ❖ If condition become false then statement following else will be execute.

Syntax:-

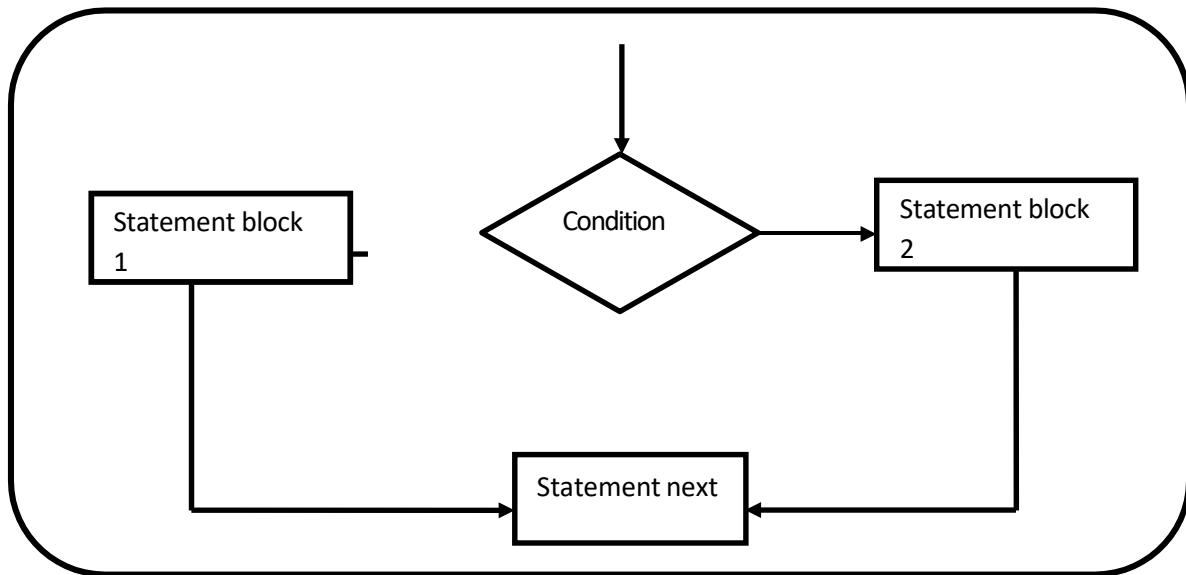
```
If(expression)  
{  
    Statement-block;  
}  
else  
{  
    Statement-block;  
}  
Next statement;
```



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✓ **If-else if-else statement:**

Detail :-

- ❖ In this case, first of all first condition will be checked.
- ❖ If first condition become false than second condition will be checked.
- ❖ If second condition become false than other condition will be checked.
- ❖ If any condition become true than the statement following that 'if' will be executed.
- ❖ If no any conditions become true than finally the statement following else will be execute.

Syntax:-

```
If(expression1)
{
    statement block 1
}
Else if(expression2)
{
    statement block 2;
}
```

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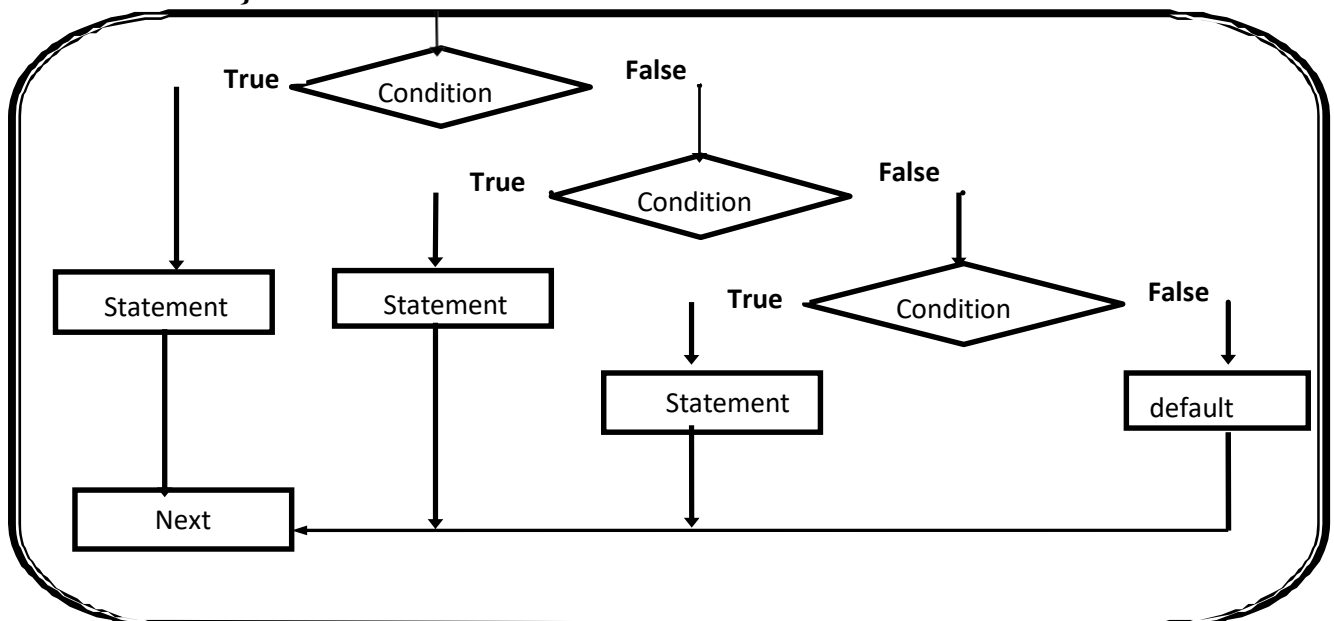


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```
Else if(expression3)
{
    statement;
}
Next statements;
```

Example:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int no;
    clrscr();
    printf("\n enter the number");
    scanf("%d",&no);
    printf("\n number is zero");
    else
    printf("\n number is positive");
    getch();
}
```





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Q-2 Explain Nested If with example.

Detail :-

- ❖ In this statement , user can create one if statement inside other if statement ,that is called nested if.
- ❖ It means that we create outside if than it is called “outer if” and if we create inside if than it is called “inner if”.

Syntax:-

```
If(expression1)
{
if(expression2)
{
        statement block 1
}
Else
{
        statement block 2;
}
Else
{
        statement block 3;
}
}
```

Next statements;

Example:-

```
#include<stdio.h>
#include<conio.h>
void main()
{
        int n1,n2,n3;
```



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```

        clrscr();
printf("\n enter the n1,n2,n3");
scanf("%d",&n1,&n2,&n3);
    if(n1>n2)
    {
        If(n1>n3)
            printf("\n n1 is max");
        else
            printf("\n n3 is max");

        else If(n2>n3)
            printf("\n n2 is max");
        else

            printf("\n n3 is max");
    }
    getch();
}

```

1 Word Question – Answer

SR.NO.	QUESTION	ANSWER
1	How Many Control Structures available in C ? Give name.	6 (two) If Statement Switch Statement
2	If any condition become false ,statement following _____ will be execute.	Else
3	In nested if first of all _____ condition will be checked.	Outer
4	How many flavors/types of If statement.Givename.	4(four) Simple if If...else If...else..if...els eNested if



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5	Which indicate easy way to represent multipleconditions at the same time?	Else...i
---	---	----------

Q-3 Explain Switch_case statement with example.

“ MULTI WAY DECISION STATEMENT ”

CASE :- WE CAN CREATE ANY NUMBER OF CASE VALUES INSIDE

SINGLE SWITCH STATEMENT.

DEFAULT :- IT EXECUTE WHEN NO ANY CASE VALUE BECOME TRUE

- ❖ The switch case statement is also known as multi condition statement.
- ❖ It provide facility to check the condition.
- ❖ Switch case make it easy to give the choice and take the decision.
- ❖ It also support multiple case values. But at a time only one case value Become true.
- ❖ If any case value match with the condition than finally statement following that case will be execute.
- ❖ If no any case value match with the condition then finally the statement following default will be execute.

Break :-

- ❖ This statement is used to end or stop process of particular case.
- ❖ Without break the program will continue to the next case



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Syntax:-

```
Switch(Condition)
{
    Case Expression 1:
        Statement
        block1;break;

    Case Expression 2:
        Statement
        block2;break;
    .....
    .....

    default:
        Statement block;
}
```

Example:

```
#include<stdio.h>
#include<conio.h>

void main()
{
    int
    color=1;
    clrscr();
    printf("\n enter the color 1. RED 2. GREEN 3. BLUE");
    scanf("%d",&color);
    switch(color)
    {
        case 1:
            printf("\n RED");
```



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```
        break;
case 2:
    printf("\n GREEN");
    break;
case 3:
    printf("\n BLUE");
    break;
default:
    printf("\n NO COLOR");
    }
getch();
}
```

1 Word Question – Answer

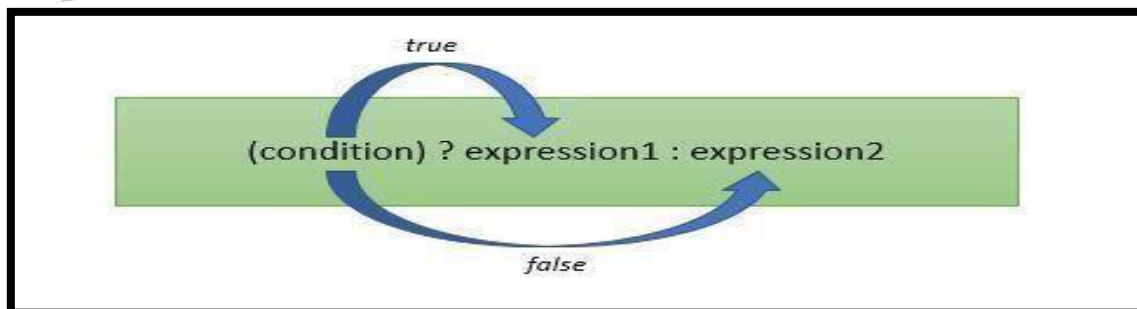
SR.NO.	QUESTION	ANSWER
1	Switch represent _____	Multiway Decision Statement
2	If no any case value match with condition then statement following_____ will execute.	Default
3	_____ statement is used to terminate particular case.	Break
4	In switch case statement , any case value will be followed by_____ sign.	: (Colon)
5	Write down syntax to represent switch statement	Switch(Expression)

Q-4 Explain Conditional Operator with example.

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- ❖ **CONDITIONAL OPERATOR IS SIMILAR TO “IF – ELSE” STATEMENT.**
 - **CONDITIONAL OPERATOR ALSO KNOWN AS “TERNARY OPERATOR”**



Detail :-

- ❖ The conditional operator is also known as ternary operator.
- ❖ The conditional statement is used to check the condition.
- ❖ The conditional operator support mainly 3 arguments.
 - (i)Condition
 - (ii) True Part**
 - (iii)FalsePart
- ❖ In C language there are two conditional operators.
 - ? (Question mark) --True part
 - : (Colon) -- False part
- ❖ The general form of the ternary operator is as follow:

Syntax:

(Condition)? Statement-1 : statement -2;

- ❖ First of all condition will be checked.
- ❖ If the condition become true then the statement followed by ? is executed

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❖ If condition become false than the statement followed by : is executed.

Example :

`(a>b)? printf("a is maximum"): printf("b is maximum");`

1 Word Question – Answer

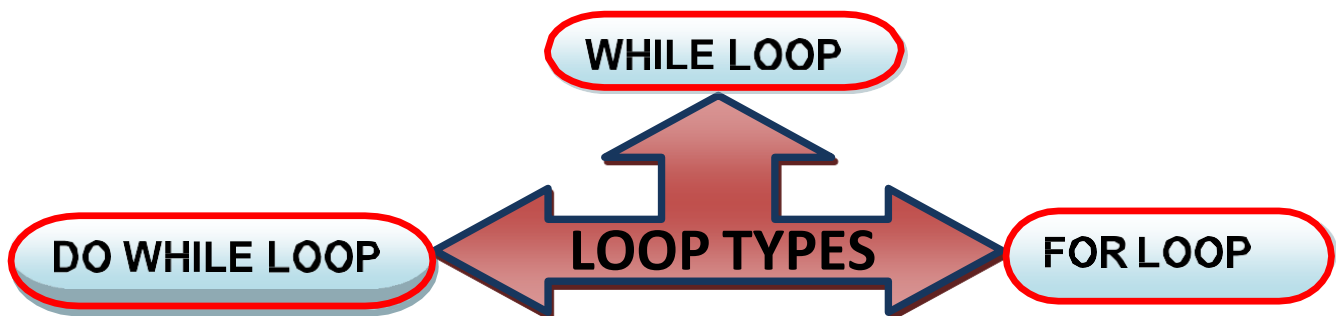
SR.NO.	QUESTION	ANSWER
1	Conditional operator also known as _____	Ternary operator
2	Syntax for conditional operator is _____	(condition) ?<statement -1> :<statement -2>
3	In conditional operator _____ is used to indicate false part.	:(Colon)
4	Conditional operator is similar to _____ statement.	If...else

Q-5 Explain Iterative (looping) control statements.



Loop Means “to execute block of code repeatedly”.

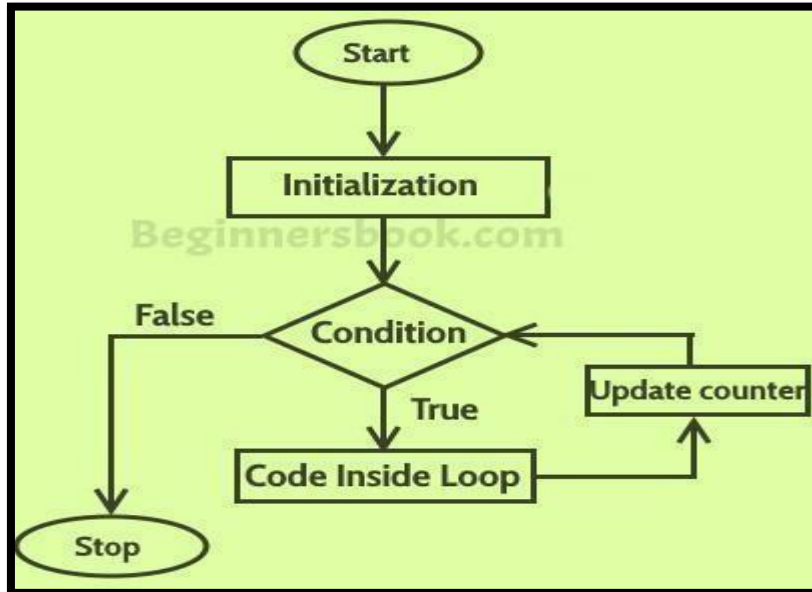
Looping statements also called “Iterative statements”.



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LOOP EXECUTION :-



Detail :-

- ❖ Loop is used to execute the statements for number of times .
- ❖ Loop provide easy way to repeat the task and reduce the code.
- ❖ A loop is a group of statements that are executed until some conditionsatisfied.
- ❖ In C language we have to provide Following to execute any loop.
 - Starting value
 - Condition
 - Increment/Decrement
- ❖ In C language there are 3 types of looping statements.
 - While loop [Entry Controlled loop]
 - Do..while loop [Exit Controlled loop]
 - For loop [Entry Controlled loop]

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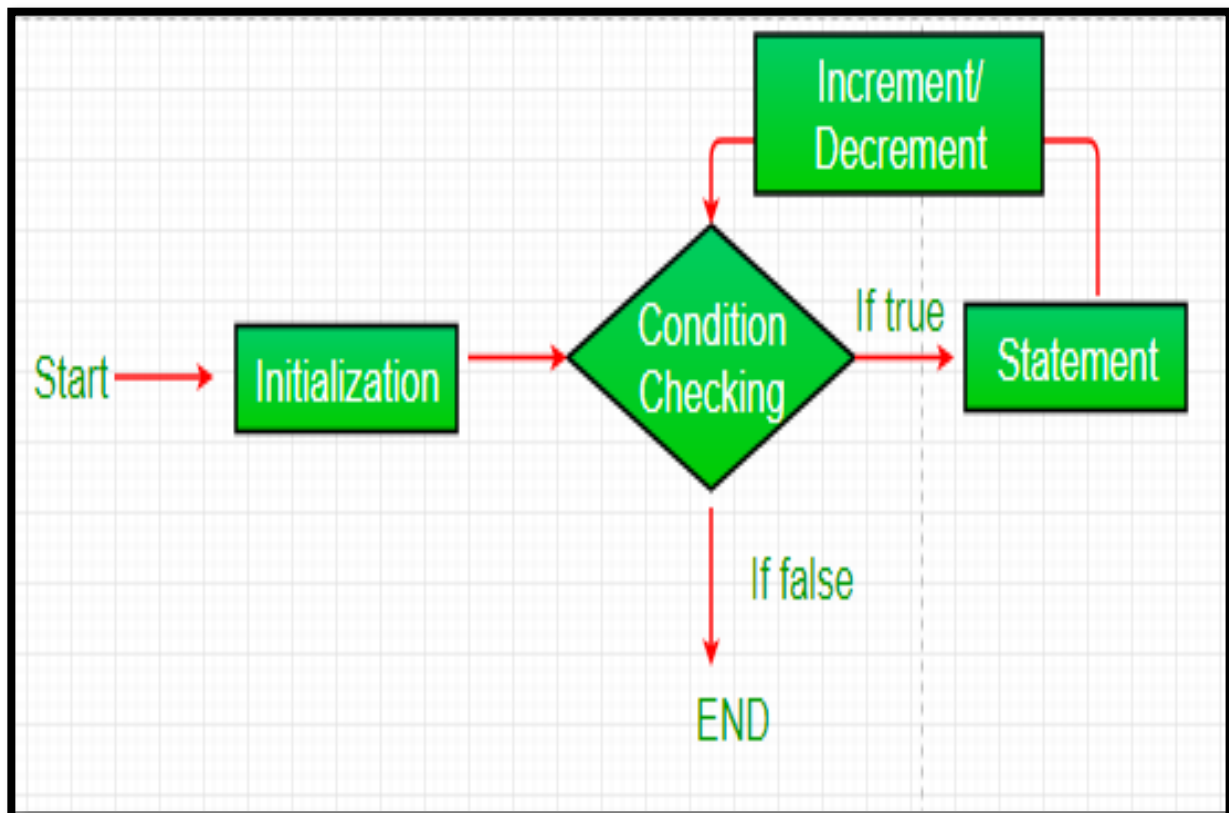
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❖ A loop declaration and execution can be done in following ways.

- Check condition to start a loop
- Initialize loop with declaring a variable.
- Executing statements inside loop.
- Increment or decrement of value of a variable.

(i) **While loop:**

- While loop is also known as **Entry controlled loop.**
- While loop is entry controlled loop because the condition will be checked first then statement will be executed.
- In this loop, if condition becomes true then statement will be executed otherwise loop will be terminated.

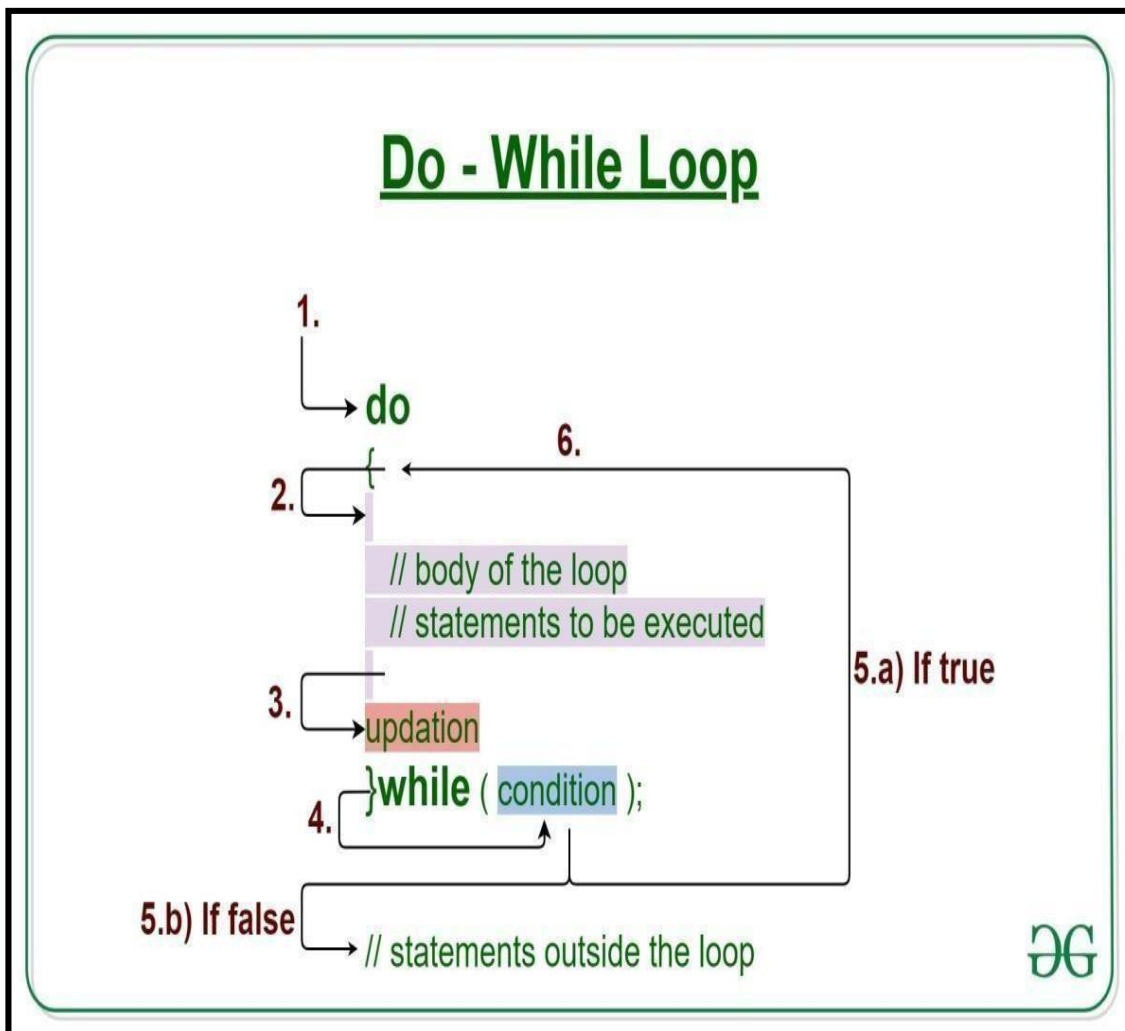




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- Do..While loop is also known as **Exit controlled loop.**
- Do..While loop is exit controlled loop because the statement will be execute first and condition will be checked at last.
- In this loop , if condition become false then atleast once statement will be execute because condition will be checked at last.





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Syntax:

```
do
{
    statements;
    (increment/decrement);
}while(condition);
```

Example:

```
int i=1;

clrscr();
do
{
    printf(“\n %d”,i);
    i++;
}while(i<=10);
```

(iii)

For loop:

- For loop is also known as **Entry controlled loop**.
- It is also known as faster loop in C language.
- In this loop we can give starting value , condition and increment /decrement in single line.

Syntax:

```
for(Initialization; test-condition; increment /decrement)
{
    Statements;
}
```

Example:

```
clrscr();
```

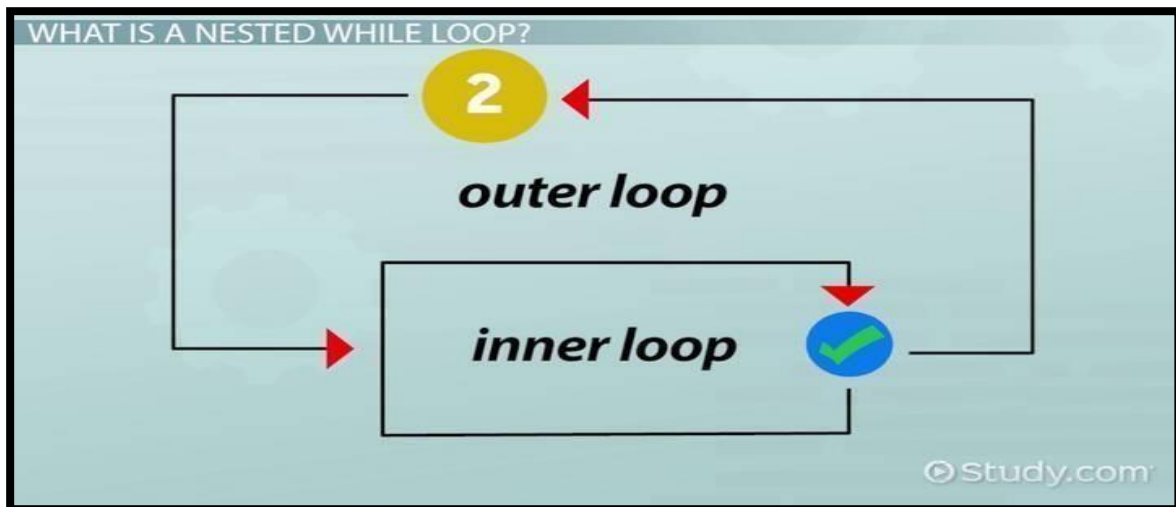
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```
for(i=0; i<5; i++)  
{  
    printf("\n\t Hello"); // 5 times  
}
```

Q-6 Explain Nested Loop in C Language.

Nested loops are the loops which contain another looping statement in a single loop.



Detail :-

- ❖ Nested loop provide facility to create one loop inside other loop.
- ❖ You can create number of looping statement inside single loop.
- ❖ The first loop is known as outer loop and the loop inside first loop is called inner loop.
- ❖ The outer loop is used for counting rows and the inner loop is used for counting columns.

Syntax:

```
for(Initialization; test-condition; increment /decrement)  
{
```



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```

For(Initialization;test-condition;increment/decrement)
{
    statements;
}

```

Example:

```

Int i ,j;
for(i=1; i<=5; i++)
{
    For(j=1;j<=i;j++)
    {
        Printf("* ");
    }
}

```

1 Word Question – Answer

SR.NO.	QUESTION	ANSWER
1	Nested loop means _____	Loop within Loop
2	The first loop in nested loop is called _____	Outer loop
3	The loop inside the first loop is called _____	Inner loop

Q-7 Explain Break , continue & Goto Statements.

OR

Explain Jumping Statements in detail.

Detail :-

- ❖ The jumping statements are used to transfer the program control.
- ❖ There are following jumping statements available in C.
 - (i)Break
 - (ii)Continue
 - (iii)Goto

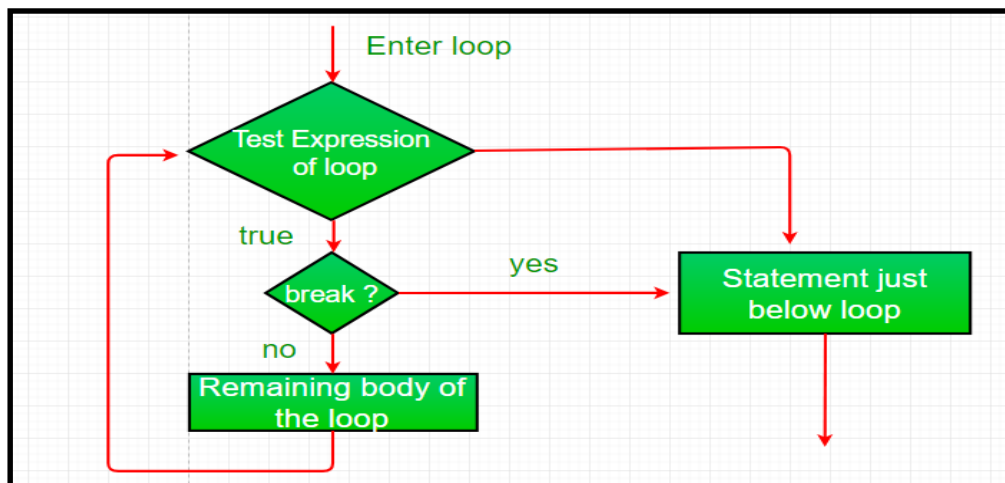
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(i) break Statement:

- Sometimes it is necessary to stop execution of the program.
- The break statement is unconditional statement.
- Break statement is used for terminating the loop or jump out from the loop.



Syntax:

Break;

Example:

```
int i=1;
clrscr();
While(i<=10)
{
    if(i==5)
    {
        break;
        printf("%d",i); // 5 times only
    }
}
```



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(ii) continue Statement:

- ❖ The continue statement is used to pass the control to next iteration(loop).
- ❖ It is also unconditional statement.
- ❖ Continue does not terminate the loop but only skip the statement followed by if.

Syntax:

Continue;

Example:

```
int i;  
Clrscr();  
For(i=1;i<=10;i++)  
{  
  
        If(i>4)  
        {  
                Continue;  
        }  
        Else  
  
        {  
                Printf("*\n");  
        }  
}
```

(iii) Goto Statement:

- ❖ Goto statement is also unconditional statement.
- ❖ Goto is used to transfer the control (cursor) from one point to another point in the program.
- ❖ The goto statement is marked by label.
- ❖ The label is variable name followed by colon(:).

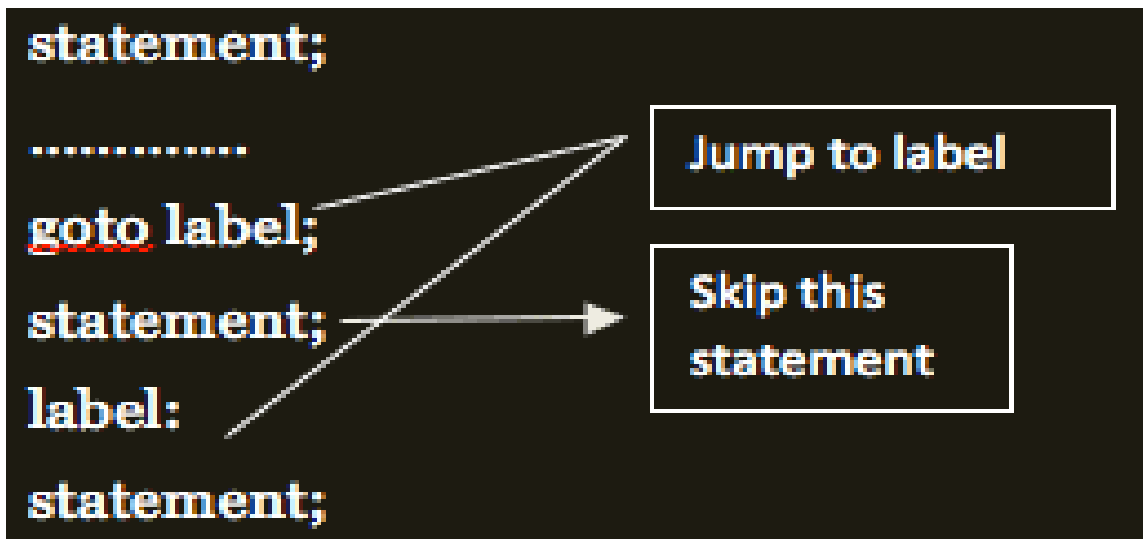


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Syntax:

Goto <variable name>;

Example:

```
int i=10,j=20;
Clrscr();
if(i>j)
{
    goto i;
}
else
{
    goto j;
}
i: printf("I is max");
j: printf("j is max");
Continue;
}
else
```



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```
{  
    Printf("**\n");  
}
```

1 Word Question – Answer

SR.NO.	QUESTION	ANSWER
1	How many jumping statements available in c?	3(Break ,Continue,Goto)
2	_____statement is used to terminate from the loop.	Break
3	_____statement is used to pass control to the next iteration.	Continue
4	_____statement is used to jump from one point to another point.	Goto

Q-8 Give difference between While loop & Do .. While loop.

While Loop	Do..While Loop
1)While loop is known as EntryControlled Loop.	1)Do..While loop is known as Exitcontrolled Loop.
2) In While loop if condition become false then no any output will be given.	2)n Do..While loop if the condition become true than atleast one loop will be execute & output will be display.
3)There is no terminating semicolon(;) atthe end of loop.	3)There is terminating semicolon(;) at theend of do..while loop.



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4)Syntax : While (<condition> { <Statements> }	4)Syntax : do { <Statements> } While (<condition>;
--	--

Q-9 Give difference between While loop & For loop.

While Loop	For Loop
1)While loop is bit slower than for loop.	1)For loop is faster than while loop.
2) While loop is not suitable for simpleinitialization.	2)For loop is more suitable when there issimple initialization.
3)Syntax : While (<condition> { <Statements> }	3)Syntax : For(<Initialization>;<Condition>; <Inc./Dec.>) { <Statements> }

Q-10 Give difference between Break & Continue.

Break	Continue
1)Break is used to terminate the block &get the control out of the loop.	1)Continue is used to get the control tothe next iteration of theloop.
2) Break statement can be used in bothswitch case & loop.	2)Continue statement can be only usedwith looping statement.
3)Syntax : <break>;	3)Syntax : <continue>;



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SUMMARY QUESTIONS OF CHAPTER -2

ONE - MARK QUESTIONS

- ✓ What is Loop?
- ✓ What is Conditional Statement?
- ✓ Which Loop is known as Entry controlled Loop?
- ✓ Which Loop is known as Exit controlled Loop?
- ✓ Which Statement is used to Stop the execution of Program or Loop from middle of Iteration?
- ✓ If no any case value match with given condition then the statement following will be execute automatically in Switch Case.
- ✓ Which Statement is also Known as Jumping Statement?
- ✓ How many cases you can create within single Switch Statement?
- ✓ List out different UnConditional Statements in C Language.
- ✓ Any Lable of GoTo Statement can be followed by _.

TWO - MARK QUESTIONS

- ✓ Explain If....Else Statement with example.
- ✓ Write down Syntax for ifElse if...Else Statement.
- ✓ Write down Syntax of For Loop.
- ✓ Write down Syntax for Switch Case Statement.
- ✓ Explain GoTo Statement in brief.
- ✓ Write note on Conditional(Ternary) Operator.

THREE - MARK QUESTIONS

- ✓ Explain Nested If with Suitable Example.
- ✓ Give difference between While and Do While.
- ✓ Give difference between Break and Continue.
- ✓ Explain If...Else if Ladders with Example.



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FIVE - MARK QUESTIONS

- ✓ List out different Looping Statements(Iterative Statements) and Explain any two with Example.
- ✓ Explain Switch Case with Example.
- ✓ List out different Conditional Statements(Control Structure) and Explain any one with Example.
- ✓ Write note on Break , continue and GoTo.