

# Unit-3

**Course Name: BCA**

**Subject Code : 1CS1010101**

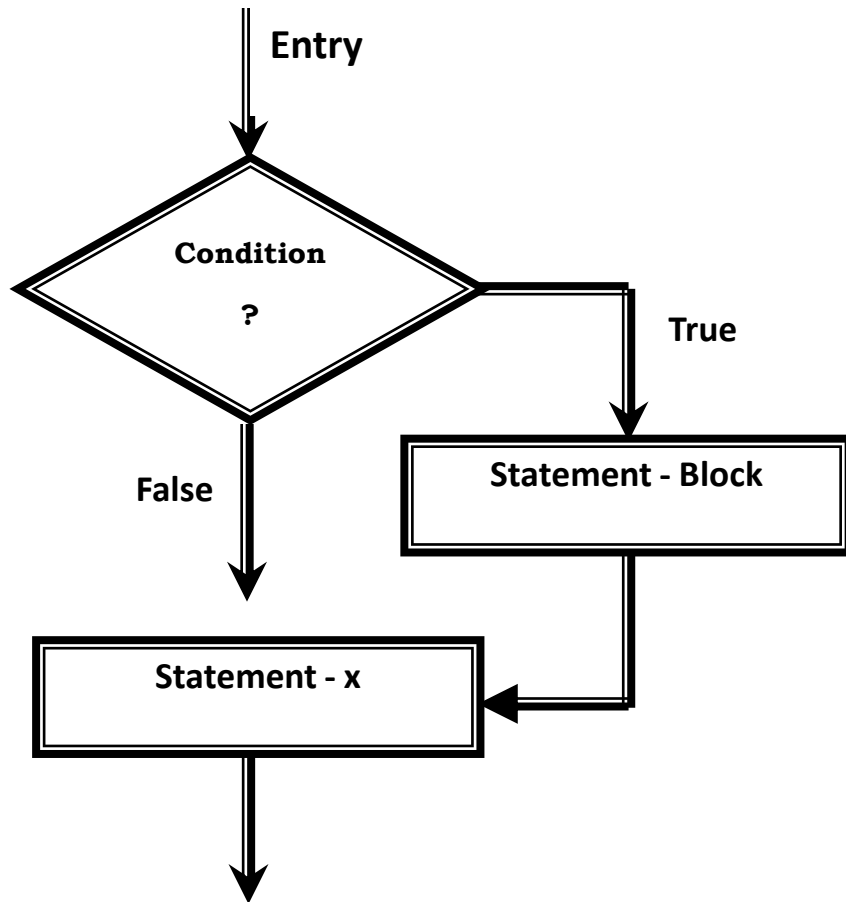
**Subject Name: FUNDAMENTALS OF COMPUTER PROGRAMMING**

**Created By: Dr. Ronak Patel, I/C Principal, Shri C J Patel College of Computer Studies, Sankalchand Patel University, Visnagar.**

# Decision Making and Branching

1. Simple IF Statement
2. The IF-ELSE Statement
3. Nesting of IF...ELSE Statements
4. The ELSE-IF Ladder
5. The Switch Statement

# Simple IF Statement



- General Syntax of If Statement

```
if(Condition)
{
    Statement – Block
}
Statement-x
```

# Simple IF Statement

- In if Statement, If the Condition is true then statement block will be executed; otherwise the statement-block will not be executed and direct statement-x is executed.
- Statement block may be single or a group of statements.

# Sample programs for Simple IF Statement

## Program to find maximum from two given values

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int x,y;
    clrscr();
    printf("Enter two values\n");
    scanf("%d%d",&x,&y);
    if(x>=y)
    {
        printf("max=%d\n",x);
    }

    if(y>x)
    {
        printf("max=%d\n",y);
    }
    getch();
}
```

### **Output :**

```
Enter two values
100
200
max=200
```

# Sample programs for Simple IF Statement

## program to find value is positive , negative or zero

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int x;
    clrscr();
    printf("Enter any value\n");
    scanf("%d",&x);
    if(x>0)
    {
        printf("%d is positive value\n",x);
    }
    if(x<0)
    {
        printf("%d is nagative value\n",x);
    }
    if(x==0)
    {
        printf("value is zero\n");
    }
    getch();
}
```

## Output:

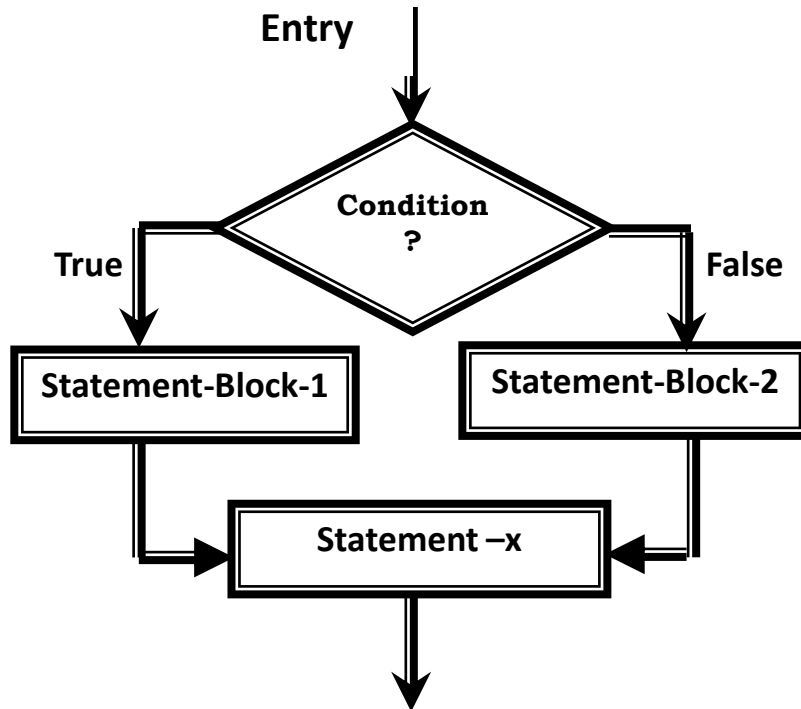
**Enter any value**

**100**

**100 is positive value**

# The IF-ELSE Statement

- **General Syntax of If Statement**



```
if(Condition)
{
Statement – Block-1
}
else
{
Statement – Block-2
}
Statement-x
```

# The IF-ELSE Statement

- In if-else Statement, If the Condition is true then statement block-1 will be executed; otherwise the statement-block-2 will be executed and then statement-x is executed.
- Statement block may be single or a group of statements.



# Sample programs for if-else Statement

## program to find maximum from two given values

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int x,y;
    clrscr();
    printf("Enter two values\n");
    scanf("%d%d",&x,&y);
    if(x>=y)
    {
        printf("Max=%d\n",x);
    }
    else
    {
        printf("Max=%d\n",y);
    }
    getch();
}
```

**Output:**

**Enter two values**

**100**

**200**

**Max=200**

# Sample programs for if-else Statement

## program to find value is positive or negative

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

```
void main(void)
{
    int x;
    clrscr();
    printf("Enter any value\n");
    scanf("%d",&x);
    if(x>0)
    {
        printf("%d is positive value\n",x);
    }
    else
    {
        printf("%d is nagative value\n",x);
    }
    getch();
}
```

## Output:

**Enter any value**

**100**

**100 is positive value**

# Sample programs for if-else Statement

## program to find value is odd or even

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
int x;
clrscr();
printf("Enter any value\n");
scanf("%d",&x);
if(x%2==0)
{
printf("%d is even\n",x);
}
else
{
printf("%d is odd\n",x);
}
getch();

}
```

## Output:

**Enter any value**

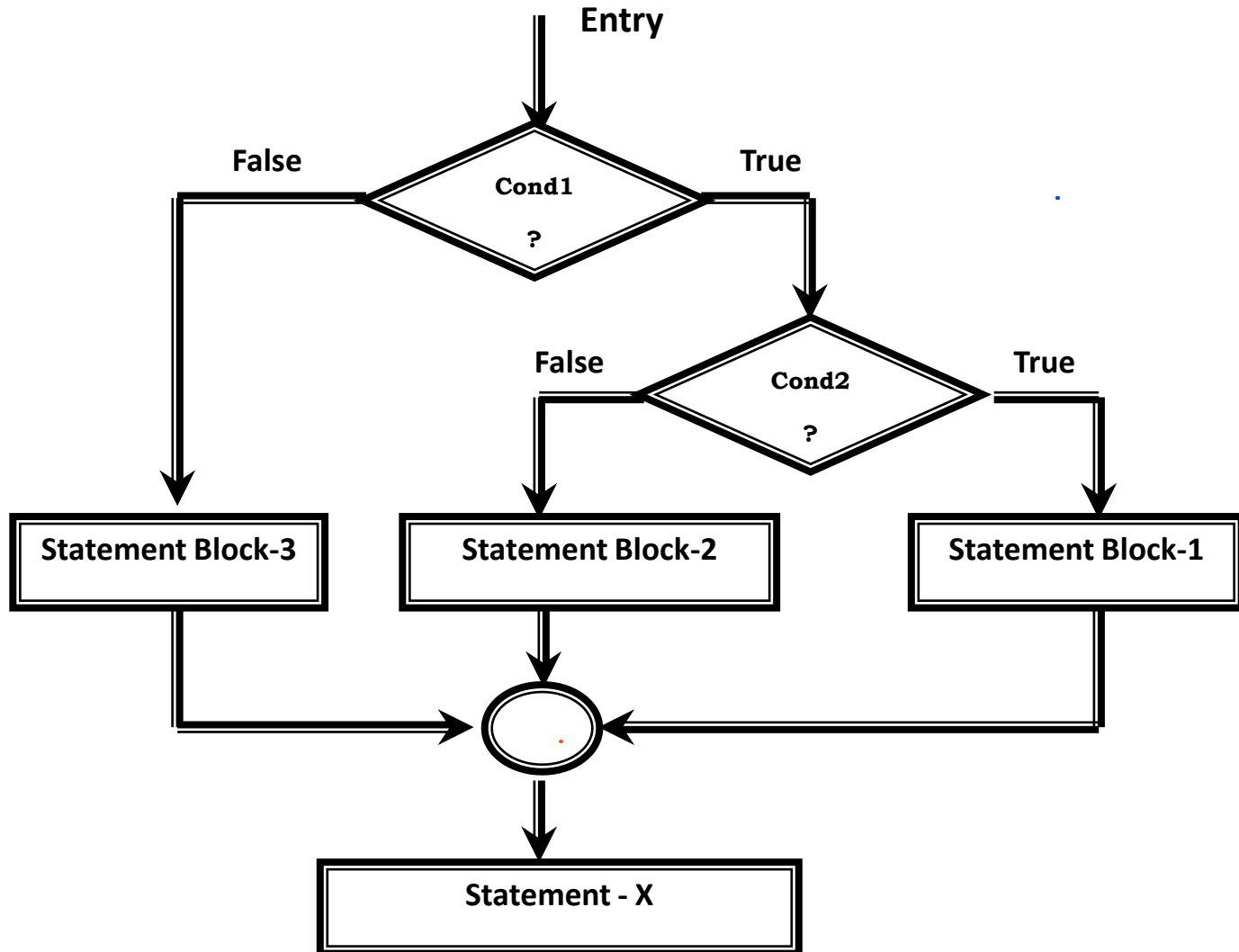
**100**

**100 is even**

# Nested if- else statement general Syntax

```
if(Condition-1)
{
    if(Condition-2)
    {
        Statement-Block -1;
    }
    else
    {
        Statement-Block- 2;
    }
}
else
{
    Statement-Block- 3;
}
Statement-x;
```

# Nested if- else statement Graphical Representation



# Nested if- else statement

- Here, if condition-1 and condition-2 is true then statement block-1 is executed but if condition-1 is true and condition-2 is false then statement block-2 is executed similarly if condition-1 is false then statement block-3 is executed.
- When there are more two choice then nested if else statement is used.

# Sample programs for nested if-else Statement

## program to find maximum from three given values

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int x,y,z;
    clrscr();
    printf("Enter three values\n");
    scanf("%d%d%d",&x,&y,&z);
    if(x>=y)
    {
        if(x>=z)
        {
            printf("%d is max",x);
        }
        else
        {
            printf("%d is max",z);
        }
    }
}
```

```
else
{
    if(y>=z)
    {
        printf("%d is max",y);
    }
    else
    {
        printf("%d is max",z);
    }
}
getch();
}
```

### **Output:**

Enter three values

100

200

300

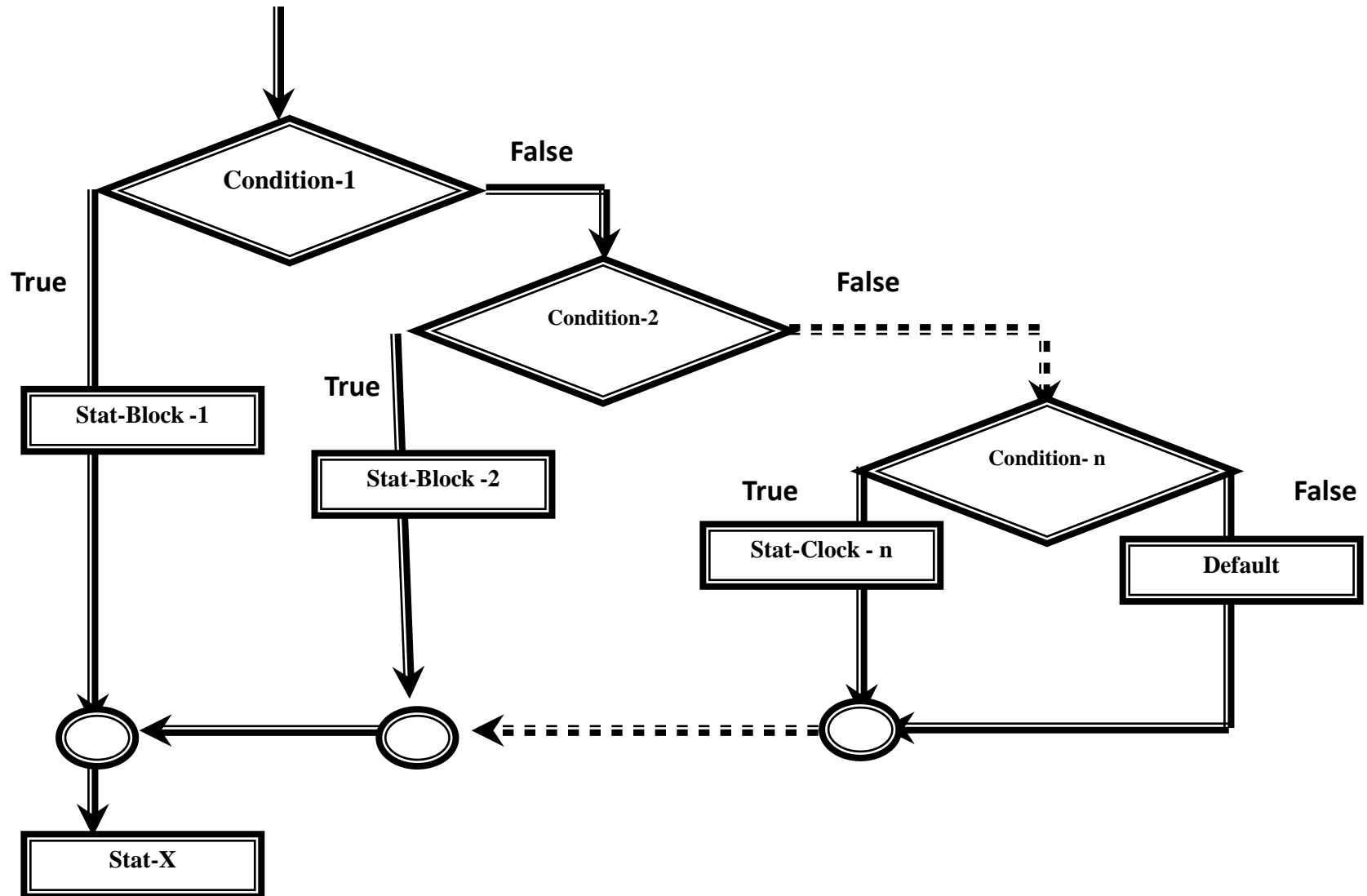
300 is max

## **Else-If ladder. General Syntax**

```
if(condition-1)
{
Statement block-1;
}
else if(condition-2)
{
Statement block-2;
}
:
:
:
else if(condition-n)
{
Statement block-n;
}
else
{
Default statement Block;
}
Statement-x;
```



# Else-If ladder. Graphical Representation



### **Else-If ladder.**

- Here, if condition-1 is true than statement block-1 is executed but if condition-1 is false then it will check condition-2 and if it is true then statement block-2 is executed similarly if it is false it will check for next condition and if all the conditions are false then Default-Satement block(else part) is executed.
- When there are more two than choice and if you want to choose one from them then you should use else if ladder.

# Sample programs for Else-If ladder

## program to find maximum from three given values

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int x,y,z;
    clrscr();
    printf("enter three values\n");
    scanf("%d%d%d",&x,&y,&z);
    if(x>=y && x>=z)
    {
        printf("%d is max\n",x);
    }
    else if(y>=x && y>=z)
    {
        printf("%d is max\n",y);
    }
    else
    {
        printf("%d is max\n",z);
    }
    getch();
}
```

## Output:

**Enter three values**

**100**

**200**

**300**

**300 is max**

# Sample programs for Else-If ladder program to find value is positive, negative or zero

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int x;
    clrscr();
    printf("Enter any value\n");
    scanf("%d",&x);
    if(x>0)
    {
        printf("%d is positive value\n",x);
    }
    else if(x<0)
    {
        printf("%d is nagative value\n",x);
    }
    else
    {
        printf("value is Zero");
    }
    getch();
}
```

## Output:

Enter any value

100

100 is positive value

# Sample programs for Else-If ladder program to find result of student

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int clang,office,co,cs,total,per;
    clrscr();
    printf("Enter the marks of four subjects\n");
    scanf("%d%d%d%d",&clang,&office,&co,&cs);
    total=clang+office+co+cs;
    per=total/4;
    if(clang>=35&&office>=35&&co>=35&&cs>=35)
    {
        printf("Per=%d\n",per);
        if(per>=70)
        {
            printf("Distinction");
        }
        else if(per>=60 && per<70)
        {
            printf("First Class");
        }
        else if(per>=50 && per<60)
        {
            printf("Second class");
        }
        else
        {
            printf("Pass Class");
        }
    }
    else
    {
        printf("Fail");
    }
    getch();
}
```

## Output:

```
Enter the marks of four subjects
50
60
70
80
Per=65
First Class
```

# Sample programs for Else-If ladder

program that display week day according to inputted number

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int n;
    clrscr();
    printf("Enter any no\n");
    scanf("%d",&n);
    if(n==1)
    {
        printf("Monday\n");
    }
    else if(n==2)
    {
        printf("Tuesday\n");
    }
    else if(n==3)
    {
        printf("Wednesday\n");
    }
    else if(n==4)
    {
        printf("Thursday\n");
    }
```

```
    else if(n==5)
    {
        printf("Friday\n");
    }
    else if(n==6)
    {
        printf("saturday\n");
    }
    else if(n==7)
    {
        printf("Sunday\n");
    }
    else
    {
        printf("please enter value between 1 to 7");
    }
    getch();
}
```

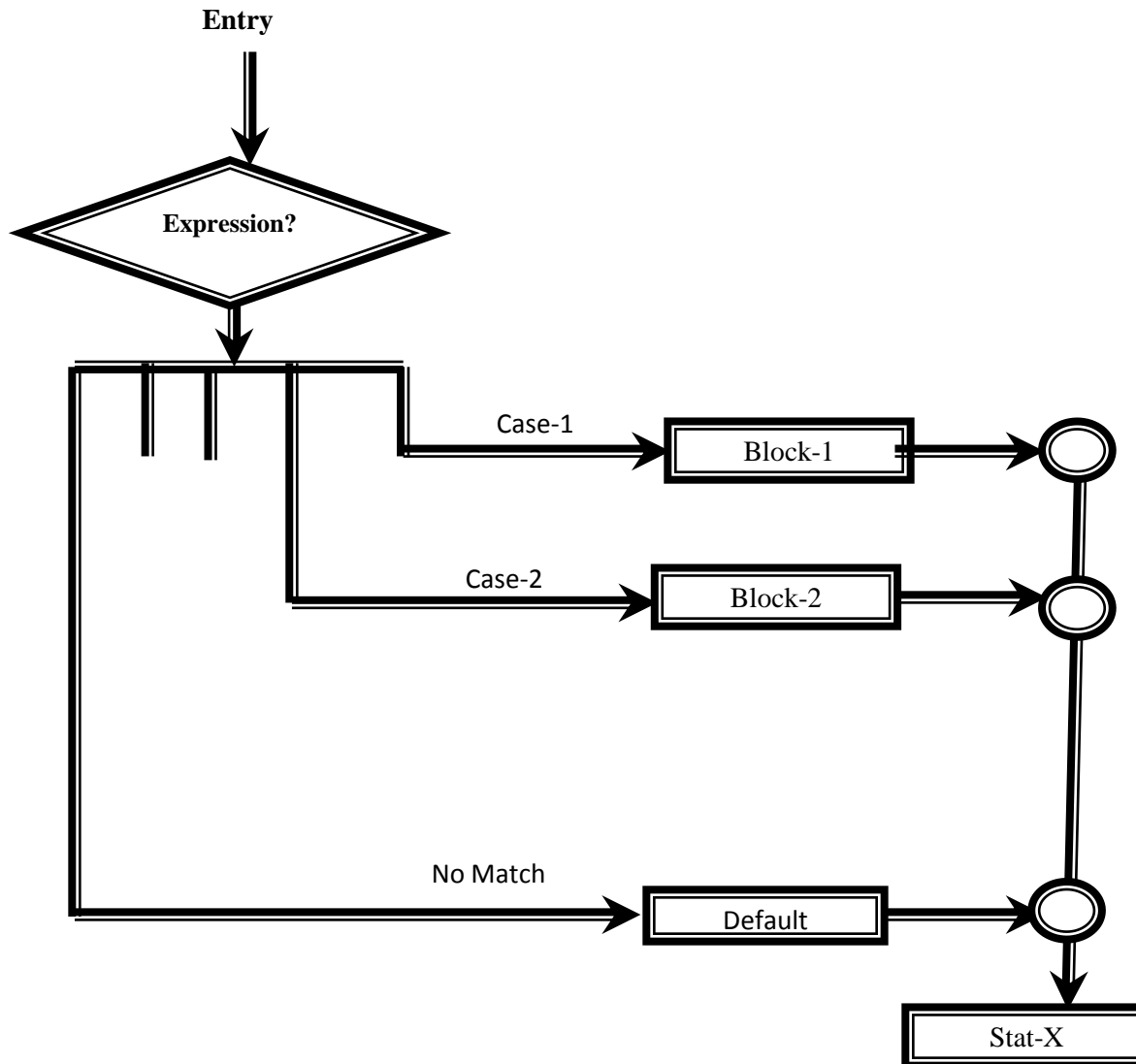
## Output:

Enter any no  
4  
Thursday

## Switch Statement. General Syntax

```
Switch(expression)
{
    Case value-1:
    Statement-Block-1;
    break;
    Case value-2;
    Statement-Block-2;
    break;
    .....
    .....
    default:
    Default-block;
    break;
}
Statement-x;
```

# Switch Statement Graphical Representation





## **Switch Statement**

- **In the switch statement, expression value is match with case-value-1,if it is match then statement block-1 is executed but if it does not match then expression value is match with case-value-2 and if it is match then statement block 2 is executed. this process is further carried out until the match is not found.**
- **if expression value does not match with any of the case values then default statement block will be executed.**
- **So, here also one of the statement block is executed from the n number of choice.**

# Sample programs for switch statement

## program that display week day according to inputted number

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int n;
    clrscr();
    printf("Enter any value\n");
    scanf("%d",&n);
    switch(n)
    {
        case 1:
            printf("Monday\n");
            break;
        case 2:
            printf("Tuesday\n");
            break;
        case 3:
            printf("Wednesday\n");
            break;
        case 4:
            printf("Thursday\n");
            break;
```

```
        case 5:
            printf("Friday\n");
            break;
        case 6:
            printf("Saturday\n");
            break;
        case 7:
            printf("Sunday\n");
            break;
        default:
            printf("Please enter the value between 1 to 7\n");
            break;
    }
    getch();
}
```

### Output:

Enter any value

4

Thursday

# Sample programs for switch statement

## program that display the Result of student

```
#include<stdio.h>
#include<conio.h>
void main(void)
{
    int clang,co,net,cs,total,per;
    clrscr();
    printf("Enter the marks of 4 subjects\n");
    scanf("%d%d%d%d",&clang,&co,&net,&cs);
    total=clang+co+net+cs;
    per=total/4;
    printf("Per=%d\n",per);
    switch(per/10)
    {
        case 0:
        case 1:
        case 2:
            printf("Grade D\n");
            break;
        case 3:
        case 4:
        case 5:
            printf("Grade C\n");
            break;
```

```
        case 6:
        case 7:
            printf("Grade B\n");
            break;
        case 8:
        case 9:
        case 10:
            printf("Grade A\n");
            break;
        default:
            printf("Per must be between 1 to 100");
            break;
    }
    getch();
}
```

### Output:

Enter the marks of 4 subjects

50

60

70

80

Per=65

Grade B

Thank You