BRANCH CONTROL STATEMENTS =>

800

720

400

-> if

-> if else

-> nested if

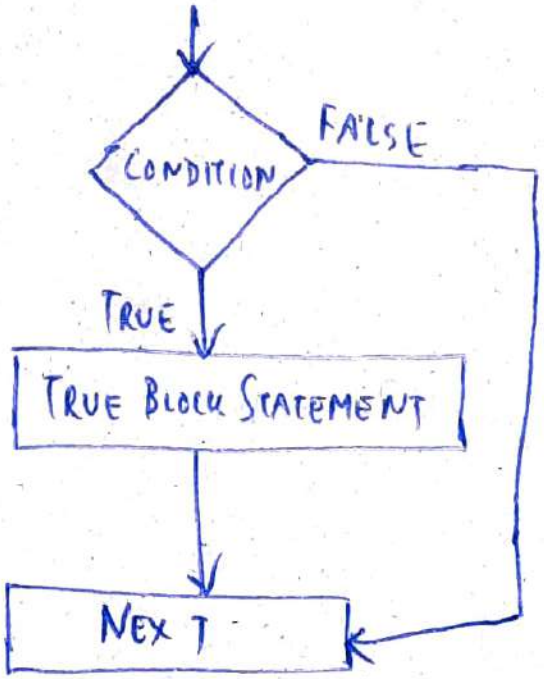
-> else if ladder

1. if :-

SYNTAX :-

```
- - - -
- - - -
- - - -
if (condition)
{
- - - - -
True Block statements
- - - -
}
- - - -
- - - -
- - - -
```

FLOW CHART :-



EX:-

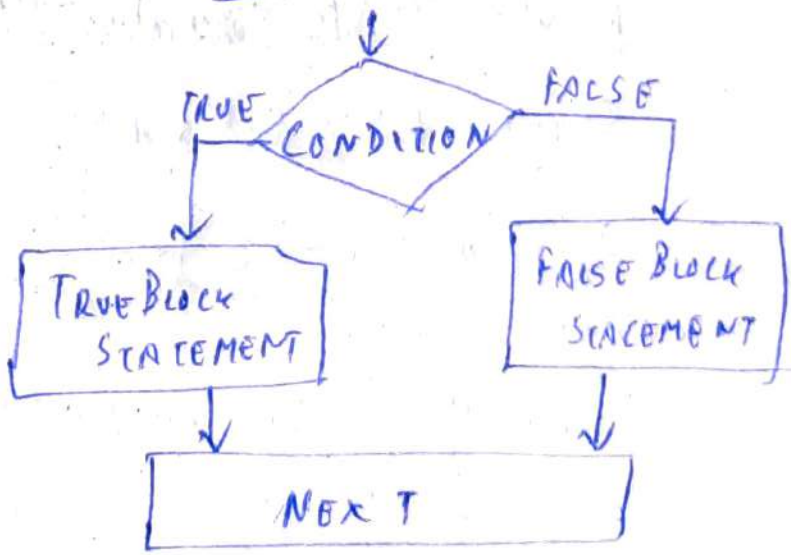
```
main ()
{ float a, d=0;
- printf ("enter amount : ");
  scanf ("%.f", &a);
    if (a > 500)
    {
      d = 0.1;
    }
  a = a* - a* d;
  printf ("%.f", a);
}
```

2. if - else :-

SYNTAX :-

```
if (condition)
{
  True Block Statements
}
else
{
 False Block Statements
}
```

FLOW CHART :-



EVEN / ODD :-

```
-> main ()
{
  int a;
  printf ("enter number : ");
  scanf ("%d", &a);
  if (a %. 2==0)
  {
    printf ("even No");
  }
}
```

```
if (a %. 2 != 0)
{
  printf ("odd No");
}
```

```
-> main ()
{ int a;
  printf ("Enter number : ");
  scanf ("%d", &a);
  if (a %. 2 ==0)
  {
    printf ("even No");
  }
  else
  { printf ("odd No");
  }
}
```

```
{
printf ("%d is an
        even No", &a);
}
else
{printf ("%d is an
        odd No", &a);
}
```

Ex: a, b, c nested - if

2

```
main ()
{ int a, b, c;
  printf ("Enter a, b, c");
  scanf ("%d %d %d", &a, &b, &c);
   if (a > b)
    {  if (a > c)
       { printf ("a is big");
       }
       else
       { printf ("c is big");
       }
    }
   else
    {  if (b > c)
       { printf ("b is big");
       }
       else
       { printf ("c is big");
       }
    }
}
```

a b c

```
-> main ( )
{ int a, b, c;
  printf ("enter a, b, c");
  scanf ("%d %d %d", &a, &b, &c);
   if (b > c)
     {
       if (b > a)
       { printf ("b is big");
       }
       else
       { printf ("a is big");
       }
     }
   else
     {
       if (a > c)    c > a
       { printf ("a is big");
       }
       else
       { printf ("c is big");
       }
     }
}
```

a b c

```
-> main ()
{
  int a, b, c;
  printf ("enter a, b, c");
  scanf ("%d %d %d", &a, &b, &c);
   if ( a > c )
     {
       if ( a > b )
        { printf ("a is big");
        }
       else
        {
          printf ("b is big");
        }
     }
   else
     {
       if ( b > c )
        { printf ("b is big");
        }
       else
        { printf ("c is big");
        }
     }
}
```

if - statement EXAMPLES =>

1.
```
main ()
{
  int a, b;
  printf ("Enter the value of a: ");
  scanf ("%d", &a);
  printf ("Enter the value of b: ");
  scanf ("%d", &b);
  if (a > b)
    {
      printf ("a is greater than b");
    }
  if (a < b)
    {
      printf ("b is greater than a");
    }
  if (a == b)
    {
      printf ("a is equal to b");
    }
}
```

2.
```
main ()
{
  int a;
  printf ("Enter the Value of a: ");
  scanf ("%d", &a);
  if (a > 0)
    {
      printf ("%d is a positive number \n", a);
    }
}
```

if - else :-

1.
```
main ()
{
  int a;
  printf ("Enter the Value of a:");
  scanf ("%d", &a);
   if ( a > 0)
    { printf ("%d is a positive number \n", a );
    }
   else
    { printf ("%d is not a positive number \n", a);
    }
}
```

2. Leap Year:-

```
main ()
{ int a;
  printf ("Enter a year:");
  scanf ("%d", &a);
   if (( a % 4 == 0 && a % 100 != 0) || (a % 400 == 0))
   { printf ("%d is a leap year \n", ~~year~~ a);
   }
   else
   { printf ("%d is not a leap year \n", a);
   }
}
```

Nested-if :-

1.
```
main ( )
{
  int a;
  printf ("Enter the value of a : ");
  scanf ("%d", &a);
  if (a > 0)
  {
    if (a % 2 == 0)
    { printf ("%d is an even number \n", a);
    }
    else
    { printf ("%d is an odd number \n", a);
    }
  } else
    {
      printf ("%d is not a positive number \n", a);
    }
}
```

if else :-

1.
```
main ( )
{
  char ch;
  printf ("Enter a character : ");
  scanf ("%c", &ch);
  if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' ||
      ch == 'u' || ch == 'A' || ch == 'E' || ch == 'I' ||
      ch == 'O' || ch == 'U')
  { printf ("%c is a vowel \n", ch);
  }
  else
  { printf ("%c is a constant \n", ch);
  }
}
```

AeiouAeiou

Nested - if :-

1.
```
main()
{ int year;
  printf("Enter year: ");
  scanf("%d", &year);
  if (year %4 == 0)
  {
    if (year %100 != 0)
    {
      if (year %400 == 0)
      {
        printf("%d is a leap year \n", year);
      }
      else
      {
        printf("%d is not a leap year \n", year);
      }
    }
    else
    {
      printf("%d is a leap year \n", year);
    }
  }
  else
  {
    printf("%d is not a leap year \n", year.);
  }
}
```

2. // Grading System Using nested-if

```
int main()
{
    float marks;
    printf("Enter your marks: ");
    scanf("%f", &marks);

    if (marks >= 95)
    {
        printf("Grade: O \n");
    }
    else if (marks >= 90)
    {
        printf("Grade: A \n");
    }
    else if (marks >= 80)
    {
        printf("Grade: B \n");
    }
    else if (marks >= 70)
    {
        printf("Grade: C \n");
    }
    else if (marks >= 60)
    {
        printf("Grade: D \n");
    }
    else
    {
        printf("Grade: F \n");
    }
}
```

3. sorting 3 numbers using nested if ( )

-> int main ( )

```
{ int num1, num2, num3;
  printf ("Enter num 1: ");
  scanf ("%d", &num1);
  printf ("Enter num 2: ");
  scanf ("%d", &num2);
  printf ("Enter num 3: ");
  scanf ("%d", &num3);

  if (num1 >= num2)
  {
    if (num1 >= num3)
    { printf ("largest no is : %d \n", num1);
    }
    else
    { printf ("largest no is : %d \n", num3);
    }
  }
  else
  {
    if (num2 >= num3)
    { printf ("largest no is : %d \n", num2);
    }
    else
    { printf ("largest no is : %d \n", num3);
    }
  }
}
```

07-05-24

if-else:-

```
-> main()
{
   int a, b, c, d;
   printf("Enter a, b, c");
   scanf("%d %d %d", &a, &b, &c);
   d = b*b - 4*a*c;
     if (d==0)
      {
        printf("Real & Equal");
      }
     else
      {
        if (d>0)
        {printf("Real & Not equal");
        }
        else
        {printf("imaginary");
        }
      }
}
```

```
   if (d>=0)
    {
      if (d==0)
      {
        printf("Real & Equal");
      }
      else
      {
        printf("Real & Not equal");
      }
    }
   else
    {
      printf("imaginary");
    }
}
```

```
-> main ( )
{
  int gen, age;
  float dist, charge;
  printf ("Enter 1 for male 2 for female : ");
  scanf ("%d", &gen);
  printf ("enter age");
  scanf ("%d", &age);
  printf ("enter dist to travel");
  scanf ("%f", &dist);
    if (gen == 1)
    {
      if (age > 12)
      {
        charge = 1;
      }
      else
      {
        charge = 0.5;
      }
    }
    else
    {
      charge = 0;
    }
    charge = charge * dist;
    printf ("charge is = %f", charge);
}
```

-> main ()

{

int gen, age;

float dist, charge;

printf ("Enter 1 for male 2 for female ");

Scanf ("%d", &gen);

printf ("enter age");

scanf ("%d", &age);

printf ("enter dist to travel");

scanf ("%f", &dist);

if (gen == 2)

{

if (age > 12)

{

charge = 1;

}

else

{

charge = 0.5;

}

}

else

{

charge = 0;

}

charge = charge * dist;

printf ("charge is = %f", charge);

}

gen = 1 -> charge = 0

gen = 2 ->

limit-20

charge = dist * 5;

200 >

200

if (gen == 1)

{

if

→ main ()

```
{ int units, RC
  float charge;
  printf (" Enter no of units : ");
  scanf (" %d", & units);
  printf (" Enter 1 for WRC 2 for no WRC ");
  scanf (" %d", & RC);
  if (WRC == 1)
  {
    if (units > 200)
    {
      charge = (unit - 200) * 5;
    }
    else
    {
      charge = 0;
    }
  }
  else
  {
    charge = units * 5 ;
  }
  printf ("%f", charge);
}
```

```
-> main()
{
int units, WRC;
float charge;
printf("Enter no of units! ");
scanf("%d", &units);
printf("Enter 1 for WRC 2 for no WRC");
scanf("%d", &RC);
{
  if (WRC = 1)
  {
    if (units > 200)
    {
      charge = (units - 200) * 5;
    }
    else
    {
      charge = 0;
    }
  }
  else
  {
    charge = units * 5;
  }
printf("%f", charge);
}
}
```

charge = (units - 200) * 5
200 >
NO WRC
charge = units * 5

~~WRC~~
M F | WRC
M
cost = 1000/-
F
cost: 500 [WRC]
cost = 1000 [NO WRC]

08-05-24

→ main ()

```
{ int gender, WRC, cost;
  printf ("Enter 1 for male 2 for female");
  scanf ("%d", &gen);
  printf ("Enter 1 for WRC 2 for no WRC");
  scanf ("%d", &WRC);
    if (gen ==1)
    {
        if (WRC ==1)
        {
          cost = 1000;
        }
        else
        {if (gen ==2)
          {
            if (WRC ==1)
            {
              cost = 500;
            }
            else
            {
              cost = 1000;
            }
          }
        printf ("%d", cost);
    }
}
```

```
-> main ( )
{
  int gender, rc;
  float charge = 0;
  printf ("Enter 1 for male 2 for female");
  scanf ("%d", & gender);
  printf ("Enter 1 for WRC 2 for no WRC");
  scanf ("%d", & rc);
     if (gender == 1)
      {
        charge = 1000;
      }
      else
       {
         if (rc = 1)
         {
           charge = 500;
         }
         else
         {
           charge = 1000;
         }
       }
  printf (" charge is = %f", charge);
}
```

-> main()

```
{
  int n;
  printf("enter a no: ");
  scanf("%d", &n);
    if (n==1)
    {
      printf("one");
    }
    else
    { if (n==2)
      { printf("two");
      }
      else
      { if (n==3)
        { printf("three");
        }
        else
        { if (n==4)
          { printf("four");
          }
          else
          { if (n==5)
            { printf("five or above");
            }
```

}

Else - if Ladder ;-

SYNTAX =>

```
if (condition 1)
{
   True Block Statement
}
else if ( con 2)
     {
       T B S
     }
     else if (con 3)
          {
            TBS
          }
          else if (con 'n')
            { {
                TBS
              }
```

Ex:-

```
main ( )
{ int n;
  printf ( "enter a no ");
  scanf ( "%d", &n);
    if (n == 1)
       printf ("one");
    else if (n == 2)
       printf ("two");
    else if (n == 3)
       printf ("three");
       else if (n == 4)
         printf ("Four");
else
  printf ("5 or above");
}
```

else-if ladder :-

```
main ()
{ int n;
  printf ("Enter a no: ");
  scanf ("%d", &n);
    if (n == 1)
      printf ("Monday");
    else if (n == 2)
      printf ("Tuesday");
    else if (n == 3)
      printf ("Wednesday");
    else if (n == 4)
      printf ("Thursday");
    else if (n == 5)
      printf ("Friday");
    else if (n == 6)
      printf ("saturday");
    else
      printf ("Sunday");
}
```

-> main()

a, b, c, +, -, *, /

c = a + b
a - b

{

int a, b, c, choice;

printf ("Enter a, b : ");

scanf ("%d %d", &a, &b);

printf ("Enter your choice from 1 for add 2 for sub
3 for mul 4 for div ");

scanf ("%d", &choice);

write in ;- & nested if & if

if (choice == 1)

{

c = a + b;

printf ("%d", c);

}

else if (choice == 2)

{

c = a - b;

printf ("%d", c);

}

else if (choice == 3)

{

c = a * b;

printf ("%d", c);

}

else if (choice == 4)

{

c = a / b;

printf ("%d", c);

}

else

{

printf ("Invalid choice");

}

}

1. using if statements :-

```
int main ()
{
  int n;
  printf ("Enter a number: ");
  scanf ("%d", &n);
  if (n == 1)
  {
    printf ("Monday \n");
  }
  if (n == 2)
  {
    printf ("Tuesday \n");
  }
  if (n == 3)
  {
    printf ("Wednesday \n");
  }
  if (n == 4)
  {
    printf ("Thursday \n");
  }
  if (n == 5)
  {
    printf ("Friday \n");
  }
  if (n == 6)
  {
    printf ("Saturday \n");
  }
  if (n == 7)
  {
    printf ("Sunday \n");
  }
  if (n < 1 || n > 7)
  {
    printf ("Invalid number \n");
  }
}
```

2. Using Nested if statement :-

->
```
int main()
{
  int n;
  printf("Enter a number: ");
  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("Invalid number\n");
                        }
  }  }  }  }  }  }
```

II.
1. using if statement :-

-> int main()
{ float a, b, c, choice;
printf ("Enter a: ");
scanf ("%f", &a);
printf ("Enter b: ");
scanf ("%f", &b);
printf ("1- Addition \n");
printf ("2- subtraction \n");
printf ("3- Multiplication \n");
printf ("4- Division \n");
printf ("Enter your choice: ");
scanf ("%f", &choice);
if (choice == 1)
{ c = a+b;
printf ("Addition is: %f \n", c);
}
if (choice == 2)
{ c = a-b;
printf ("subtraction is: %f \n", c);
}
if (choice == 3)
{ c = a*b;
printf ("Multiplication is: %f \n", c);
}
if (choice == 4)
{ c = a/b;
printf ("Division is: %f \n", c);
}
if (choice < 1 || choice > 4)
{ printf ("INVALID choice \n");
}
}

Using Nested if statement :-

```
-> int main()
{
  float a, b, c, choice;
  printf ("Enter a: ");
  scanf ("%f", &a);
  printf ("Enter b: ");
  scanf ("%f", &b);
  printf ("1- Addition \n");
  printf ("2 - Subtraction \n");
  printf ("3 - Multiplication \n");
  printf ("4 - Division \n");
  printf ("Enter your choice : ");
  scanf ("%f", &choice);

  if (choice == 1)
  {
    c = a+b;
    printf ("Addition is: %f \n", c);
  } else {
    if (choice == 2)
    {
      c = a-b;
      printf ("Subtraction is: %f \n", c);
    }
    else {
      if (choice == 3)
      {
        c = a*b;
        printf ("Multiplication is: %f \n", c);
      }
      else {
        if (choice == 4)
        {
```

```
        c = a / b;
        printf("Division is: %.f\n", c);
        }
        else {
            printf("INVALID CHOICE\n");
            }
        }
    }
}
```

09-05-2024

```
main()
{
  int S1, S2, S3, S4, S5, avg;
  printf("enter 5 sub marks: ");
  scanf("%d %d %d %d %d", &S1, &S2, &S3, &S4, &S5);
  avg = (S1+S2+S3+S4+S5)/5;
  if (avg >= 70)
  printf("dist");
 elseif (avg >= 60)
   printf("first");
 elseif (avg >= 50)
   printf("second");
  elseif (avg >= 40)
   printf("third");
      else
       printf("Fail");
}
```

By using only "if"

```
if (avg >= 70)
printf("dist");
if (avg < 70 && avg >= 60)
printf("first");
if (avg < 60 && avg >= 50)
printf("second");
if (avg < 50 && avg >= 40)
printf("third");
if (avg < 40);
printf("Fail");
```

08-05-2024

Quadratic equation :-

if - else =>

$d = b^2 - 4ac$

```
-> main ()
{
    int a, b, c, d;
    printf ("Enter values a, b, c : ");
    Scanf (" %d %d %d ", &a, &b, &c);
    d = b * b - 4 * a * c;
    if (d == 0)
    {
        printf (" Real & Equal ");
    }
    else
    {
        if (d > 0)
        {
            printf (" Real & Not equal ");
        }
        else
        {
            printf (" imaginary ");
        }
    }
}
```

```
-> main ()
{
    int a, b, c, d;
    printf ("Enter values a, b, c");
    scanf ("%d %d %d", &a, &b, &c);
    d = b*b - 4*a*c;
      if (d >= 0)
      {
        if (d == 0)
        {
          printf ("Real & equal");
        }
        else
        { printf ("Real & Not equal");
        }
      }
      else
      {
        printf ("imaginary");
      }
}
```

if - else if

```
main()
{
  int a, b, c, d;
  printf("Enter values a, b, c: ");
  scanf("%d %d %d", &a, &b, &c);
  if(a>b && a>c)
  printf("a is big");
  else if(b>c)
  printf("b is big");
  else
  printf("c is big");
}
```

if

```
main()
{
  int a, b, c, d;
  printf("Enter values a, b, c:");
  scanf("%d %d %d", &a, &b, &c);
  if(a>b && a>c)
  {
    printf("a is big");
  }
  if(b>a && b>c)
  {
    printf("b is big");
  }
  if(c>a && c>b)
  {
    printf("c is big");
  }
}
```