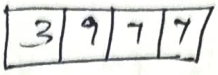
printf ()

printf ("control string", var1, ... varn);

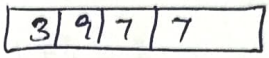
field width

printf("%d", 3977)

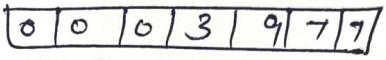


%5d, 3977

%-5d, 3977

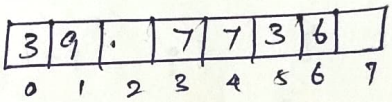


%07d, 3977

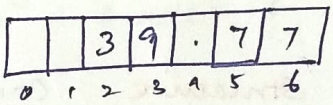


a = 39.7736

%7.4f, a



%7.2f, a



Decision Making

Control statements.

* pgm - all stmts are executed sequentially.
* No repetition cases.
* Repetition / Execution order of stmts is changed based on conditions.

"Conditional / ctrl stmts".

4 types of ctrl structures:

1. Sequential
2. Selection
3. Iteration
4. Encapsulation

① Sequential Structure. instn executed in a sequence

```
i = i+1 ; j = j+1 ;
```

② Selection structure sequence of instn are executed by deciding upon the condition.

```
if (x > y)
        i = i+1;
else
        j = j+1;
```

③ Iteration structure stmts are repeatedly executed.

```
for (i=1; i<=5 ; i++)
{
    i = i+1;
}
```

④ Encapsulation structure Compound structure.

Decision Making Statements:

① if stmt

Control the flow of execution of stmts. Condition

Syntax:

```
if (condition)
{
    stmts;
}
```

Example: (i) Check whether the number is less than 5 (ii) check equivalance of two nos. if (m-n==0).

(ii) Swap two values when first no. is greater than two (2nd no). (iii) Print no. b/w 10 & 15

```
int a, b, c;
if (a > b)
{
    c = a;
    a = b;
    b = c;
}
```

2 variables

```
a = a+b
b = a-b
a = a-b
```

a	b	c
10	5	
5		10
5	10	

if - else stmt.

Two way decision making used in conjunction with Condtn.

* Test & then take decision

Syntax:

```
If (condition)
{
    stmts ; }
else { stmts ; }
```

Example: Even / odd, Leap year

③ Nested if ... else stmt.

Example:

```
Void main()
{
    int a;
    printf (" Enter a number ");
    Scanf ("%d", &a);
    if (a == 10)
        printf (" A Grade ");
    else
    {
        if (a == 8)
            printf (" B Grade ");
        else
            printf (" c Grade ");
    } getch();
}
```

Looping & Branching.

Repetition - set of instn in specified no. of times

↳ loop control structure.

"Block of stmts which are repeatedly executed for certain no. of times".

* Body of loop
* Control stmt

looping stmts : Initialization
Test the ctl stmt
Executing the body of loop
Updating Condtn Variable.

op structures: while, do-while, for.

① While loop.

Repetitive control structure, executes the stmts until the cndtn becomes false.

Syntax:
```
while (condition)
{
    ...
    body of loop;
    ...
}
```

Example: Sum of n numbers,

```
main()
{
    int i=1, n, sum=0;
    printf("Enter n");
    scanf("%d", &n);
    while (i <= n)
    {
        sum = sum + i;
        i++;
    }
    printf("%d", sum);
}
```

Find SI using while loop.

```
int p, n, count = 1;
float r, si;
while (count <= 3)
{ pf
  sf
  si = (p*n*r)/100;
  pf("%f", si);
  count++;
}
getch();
```

② do-while loop

Syntax:
```
do
{
    ...
    body of loop;
    ...
} while (condition);
```

Example:
```
Void main()
{   int i = 1;
    clrscr();
    do
    {
        printf("Sample");
        i++;
    } while (i <= 5);
    getch();
}
```

Difference b/w while & do-while loop.

while	do-while
① Top tested loop	① Bottom tested loop.
② loop will not be executed when cndtn is false	② loop is executed even though cndtn is false.

③ for loop.

Syntax:

```
for ( intialization ; condition ; incr/dec counter )
{
    . . .
    body of the loop;
    . . .
}
```

Example:

(i) print n numbers.

```
#include <stdio.h>
#include <conio.h>
Void main()
{   int i,s;
    clscr();
    Printf("\n Enter s ");
    scanf ("%d", &s);
    for (i=1 ; i<=s; i++)
    {
        printf ("%d", i);
    }
    getch();
}
```

(ii) Sum of n numbers.

```
Void main()
{
    int i, n, Sum = 0;
    clrscr();
    printf (" Enter n ");
    scanf ("%d", &n);
    for (i = 1 ; i <= n ; i++)
    {
        Sum = Sum + i ;
        printf ("%d", Sum);
    }
    getch();
}
```