Paper 102: Programming & Problem solving through C

Lecture-03:Unit-I
C Fundamentals

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Standard output library function: scanf()

The scanf function can be used to enter any combination of numerical values, single characters and strings.

scanf("control string",arg1,arg2…,argn);

Control string or format specifier contains format information

arg1,arg2,…,argn represents the individual input data items.

Commonly Used Conversion Characters for Data Input

Conversion Character	Meaning
c	data item is a single character
d	data item is a decimal integer
e	data item is a floating-point value
f	data item is a floating-point value
g	data item is a floating-point value
h	data item is a short integer
i	data item is a decimal, hexadecimal or octal integer
o	data item is an octal integer
s	data item is a string followed by a whitespace character (the null character \0 will automatically be added at the end)
u	data item is an unsigned decimal integer
x	data item is a hexadecimal integer
[...]	data item is a string which may include whitespace characters

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```
int a;

float b;

scanf("%d",&a);

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

Using maximum field width

1. It can be specified by preceding the conversion character by an unsigned integer.

2. The data item may be composed of fewer characters than the specified field width, but should not exceed the specified field width

3. Any characters that extend beyond the specified field width will not be read.

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```c
#include <stdio.h>

void main()

{

    int a,b;

    scanf(%2d %2d",&a,&b);

    printf("a=%d b=%d",a,b);

}
```

Inputs:

1   2

Outputs:

 a=1 b=2

Inputs:

23 45

Outputs:

 a=23 b=45

Inputs:

2345

Outputs:

 a=23 b=45

Inputs:

234 567

Outputs:

 a=23 b=4

Control Instructions

- Decision making statements
    1. if statement
    2. if-else statement
    3. switch statement
- Loop constructs
    1. for loop
    2. while loop
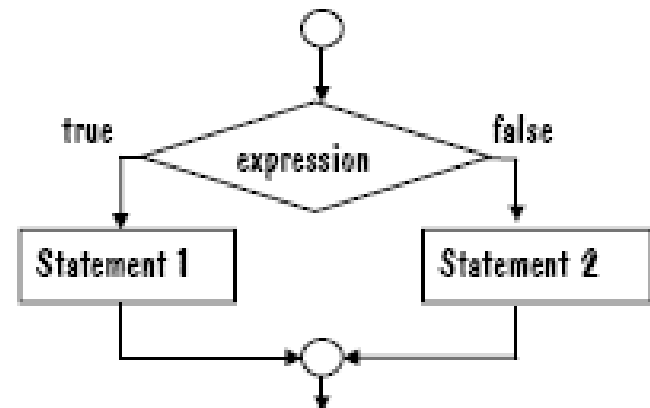   3. do-while loop

if statement and if - else statement

□ The if ——— else statement can be used with or without the else. The two forms are:

        if (expression)
            statement1

        if (expression)
            statement1
        else
            statement2

□ In both cases, when the expression is true, then statement1 is executed. If the expression is false, then, in the first case, statement1 is skipped (not executed), and, in the second case, statement2 after the else is executed.


```
if (a >= 3) a = a - 3;
if (a == 3) a = a * 3;
else a = a * 5;
```

```
if (a >= 3) { a = a - 3;
if ( a == 3) a = a * 3;}
else a = a * 5;
```

Nested if-elses

```c
#include <stdio.h>

void main()
{
        int i;
        printf("enter either 1 or 2");
        scanf("%d",&i);
        if(i==1)
                printf("you would go to heaven");
        else
        {
                if(i==2)
                        printf("Hell was created with you in mind");
                else
                        printf("How about mother Earth!");
        }
}
```

Classroom assignment

1. Write a program to check if an integer input by the user is positive or negative.

2. Write a program to input three numbers and find out the
   - biggest among them
   - smallest among them

3. Write a program to input the emp no., basic pay of an employee. Compute the DA-50% of bp, Pf-10% of bp, gross salary, net salary. Display the pay slip in the form:

   Emp no.   Basic pay   DA   PF   GS   NS