

CONTROL STATEMENTS

UNIT-III

WHILE LOOP

Rules for Determining a Leap Year

- Most years that can be divided evenly by 4 are leap years.
(For example, 2012 divided by 4 = 503: Leap year)
Exception: Century years are NOT leap years UNLESS they can be evenly divided by 400. (For example, 1700, 1800, and 1900 were not leap years, but 1600 and 2000, which are divisible by 400, were.)
- Similarly, 2100, 2200, 2300, 2500, 2600, 2700, 2900 and 3000 will not be leap years, but 2400 and 2800 will be.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int year;
clrscr();
printf("enter year");
scanf("%d", &year);
if(year%100==0)
{
    if(year%400==0)
        printf("leap year");
    else
        printf("not leap year");
}
else
```

WAP to find
whether year is
leap year or not.

```
{
    if(year%4==0)
        printf("leap year ");
    else
        printf("not leap year");
}
getch();
}
```

Loops

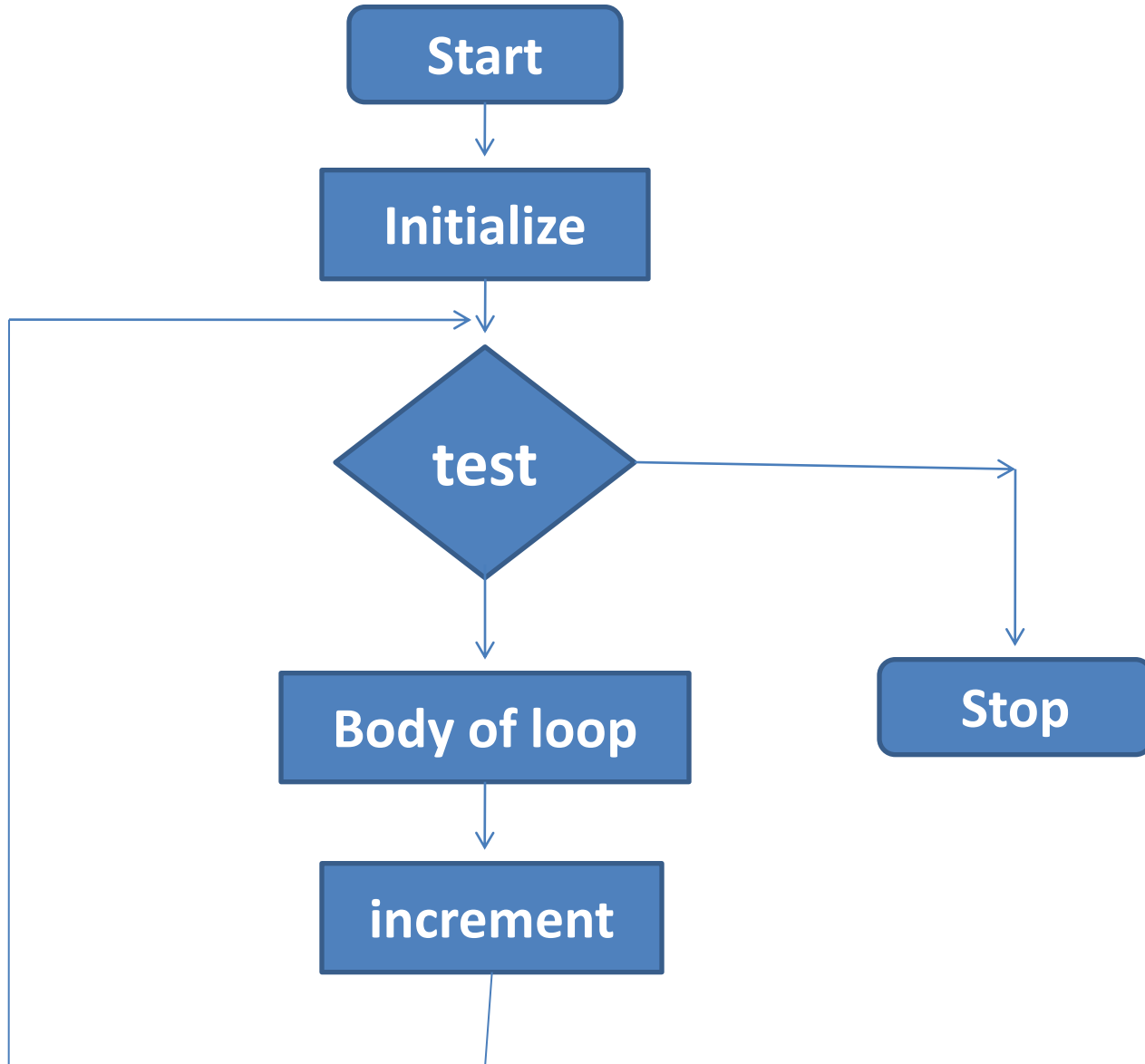
- Loops are used when we want to execute a part of program or block of statements several times.
- For eg.-if we want to print “C is best” 10 times.
- One way to get desired output is –we write 10 printf statements ,which is not preferable.
- Other way out is –use loops.

While loop

Syntax:

```
initialize loop counter;  
while(test loop condition)  
{  
    do this;  
    and this;  
    increment loop counter;  
}
```

While loop



Do while

Syntax:

```
initialize loop counter;  
do  
{  
    do this;  
    and this;  
    increment loop counter;  
}while(condition);
```

WAP to print numbers from 1 to 10 using while and do while loop

```
#include<stdio.h>
#include<conio.h>
void main()
{
int i=1;
while(i<=10)
{
    printf(“%d”,i);
    i=i+1;
}
getch();
}
```

```
#include<stdio.h>
#include<conio.h>
void main()
{
int i=1;
do
{
    printf(“%d”,i);
    i=i+1;
}while(i<=10);
getch();
}
```


WAP to print numbers in reverse order with a difference of 2.

```
#include<stdio.h>
#include<conio.h>
void main()
{
int i=10;
while(i>0)
{
    printf(“%d”,i);
    i=i-2;
}
getch();
}
```

WAP to print the sum of digits of any number

```
#include<stdio.h>
#include<conio.h>
void main()
{
int num, sum=0,rem;
Scanf("%d",&num);
while(num>0)
{
    rem=num%10;
    sum=sum+rem;
    num=num/10;
}
printf("sum of digits=%d",sum);
getch();
}
```

For eg:

Num=2345

Sum of digit=14

WAP to print factorial of any number

```
#include<stdio.h>
void main()
{
int num,fact=1;
printf("enter the number");
scanf("%d",&num);
if(num<0)
    printf("no factorial of (-)ve number");
else
{
    while(n>1)
    {
        fact=fact*n;
        n=n-1;
    }
    printf("factorial:%d",fact);
}
getch();
}
```

Questions

1. WAP to convert binary number to decimal number.
2. An Insurance company follows following rules to calculate premium.
 - (1) If a person's health is excellent and the person is between 25 and 35 years of age and lives in a city and is a male then the premium is Rs. 4 per thousand and his policy amount cannot exceed Rs. 2 lakhs.
 - (2) If a person satisfies all the above conditions except that the sex is female then the premium is Rs. 3 per thousand and her policy amount cannot exceed Rs. 1lakh.
 - (3) If a person's health is poor and the person is between 25 and 35 years of age and lives in a village and is a male then the premium is Rs. 6 per thousand and his policy cannot exceed Rs. 10,000.
 - (4) In all other cases the person is not insured.