ME 172

C Programming Language Sessional
Lecture 6

Syntax of the switch statement

• Switch case statement is used to make a decision from multiple choices
• Default is optional.

```
The syntax of the switch statement is

    switch (expression)
    {
        case constant 1:
                statements;
                        break;
        case constant 2:
                statements;
                        break;
        case constant 3:
                statements;
                        break;
        case constant 4:
                statements;
                        break;
        default:
                statements;
                        break;
    }
```

Example 1

```c
#include<stdio.h>

void main()
{
char ch;
printf("Enter the option:");
scanf("%c",&ch);
switch(ch)
{
case 'a':
            printf("I am in case a\n");
            break;
case 'b':
            printf("I am in case b\n");
            break;
case 'c':
            printf("I am in case a\n");
            break;
default:
            printf("Try again\n");
             break;
}}
```

Example 2

```c
#include<stdio.h>

void main()
{
int i;
printf("Enter the option:");
scanf("%d",&i);
switch(i)
{
case 1:
case 2:
case 3:
          printf("I am in case 1-3\n");
          break;
case 4:
          printf("I am in case 4\n");
          break;
case 5:
          printf("I am in case 5\n");
          break;
default:
          printf("Try again\n");
          break;
} }
```
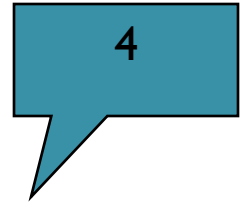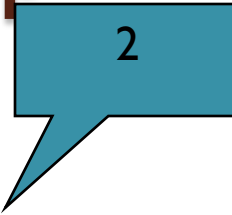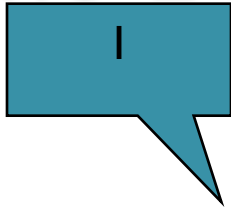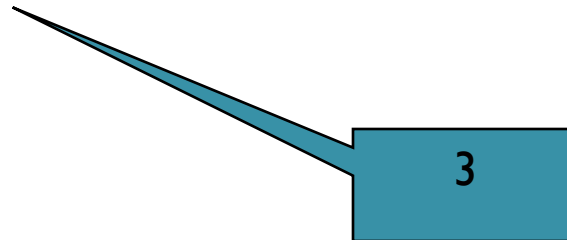
The *for* Loop

```
for (init'n; condition; increment)
{
    statements...;
}
```

1

2

4

3

Example 3

-Program to find factorial of an integer:

```c
#include<stdio.h>
void main()
{
int num, i, j;
printf("Enter the value for finding the factorial:");
scanf("%d",&num);
j = 1;
for(i =1; i<=num;i++)
{
j = j*i;
}
printf("Factorial of %d is =%d",num,j);
}
```

Example 4

Write a program to evaluate the following series using for loop :

$$y = x + x^2 / 8 + x^3 / 27 + x^4 / 64 + \ldots\ldots\ldots 20^{th} \text{ term}$$

Solution of Example 4

```c
#include<stdio.h>
#include<math.h>
 void main()
 {
  double sum,i,x,n;
  printf("Enter the value of x:");
  scanf("%lf",&x);
  printf("\nEnter the no. of terms:");
  scanf("%lf",&n);
  sum = 0;
  for(i=1;i<=n;i++)
  {
   sum = sum + (pow(x,i)/pow(i,3));
  }

  printf("\nThe result upto %.0lf is %.6lf\n",n,sum);
 }
```

Syntax of while Loop

- The simplest of all looping structures is the while statement.
- The while loop is an entry controlled loop.

While loop syntax

```
while(test condition)
{
    body of the loop ;
}
```

Example 5

Program to evaluate the following series using for loop :

$$y = 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + \dots\dots\dots\dots\dots\dots\dots\dots\dots n^{th} \text{ term}$$

```c
#include<stdio.h>

void main()
{
 int sum,n;
 sum = 0;
 n = 1;
 while(n<=10)
 {
          sum = sum +n*n;
          n = n+1;
 }
 printf("sum = %d\n",sum);

}
```

Infinite Loop

Try to avoid always infinite loop

```c
#include<stdio.h>

void main()
{
 int i=1;

 while(i)
 {
    printf("Infite loop makes you dizzy");
 }
}
```

```c
#include<stdio.h>

void main()
{
 int i=1;

 for( ; ; )
 {
    printf("Infite loop makes you dizzy");
 }
}
```

Nested for loop

NAMTA

```c
#include<stdio.h>

void main()
{
    int i,n,r;
            printf("\nEnter value for N:=");
            scanf("%d",&n);
            printf("\n************************************************\n");
            printf("\n  Multiplication Table  ");
            printf("\n************************************************\n");
            for(i=1;i<=n;i++)
            printf("  %4d",i);
    printf("\n************************************************\n");
            for(r=1;r<=n;r++)
    {
            printf("\n%d|",r);
              for(i=1;i<=n;i++)
                    {
                      printf("%6d",r*i);
                }
            printf("\n");
} }
```

Exercise 1

Write a program that will take a character as input and determine whether the character is a numeric or alphabetic. If it is an alphabetic character also check whether it is vowel or consonant.

Use switch statement.

Exercise 2

Write a program to sum first 10 terms of the following series

$$y = x + x^3/2! + x^5/3! + \ldots\ldots$$

take value of x as input and print the value of y.

Use while loop.

Exercise 3

Write a program to find the first ten Fibonacci number . Use while loop

That's all about today….