T. MANONMANI M.Sc., M.Phil.,

Asst. Professor of Physics

Bon Secours College for Women

Thanjavur.

ARRAY INTRODUCTION

- ***Array is collection of data of same type, and each element of the array can be accessed by index number.***

- ***Also, array has contiguous memory location for it’s elements; where first element has the lowest address of memory, and the last number has the highest address of memory .***

ARRAY

- *An array - sequence of objects all which have the same type.*
- *The objects are called the elements of the array - numbered consecutively 0,1,2,3 etc., These numbers are called index values or subscripts of the array.*
- *The term " subscript " is used - mathematical sequence - an array would be written with subscripts :a0,a1,a2 etc.,*

- ***If the name of the array is a[0] is the name of the element that is in position 0***
- ***a[1] is the name of the element that is in position 1,etc.***
- ***In general, the ith elements is in position i-1.***
- ***Array has n elements, their names are a[0],a[1],a[2]...a[n-1].***

The syntax for an array declaration is

type array-name [array-size];

PROCESSING ARRAYS

- ***An array is a composite object - it is composed of several elements with independent values.***
- ***An ordinary variable of a primitive type is called a scalar object.***

USING DIRECT ACCESS ON ARRAYS

```
int main ()
{ double a[3];
  a[2]=55.55;
  a[0]=11.11;
  a[1]=33.33;
cout <<"a[0]="<<a[0]<< end];
cout <<"a[1]="<<a[1]<< end];
cout <<"a[2]="<<a[2]<< end];
}
a[0] =11.11
a[1] =33.33
a[2] =55.55
```

PRINTING A SEQUENCE IN ORDER

The program reads five numbers and then prints them in reverse order :

```
int main ()
{ const int SIZE=4:// defines the SIZE N for 4 elements
 double a[SIZE]: // declares the array's elements as type double
cout<<"Enter"<< SIZE << " numbers :\t";
 for (int i=0; i<SIZE; i++ )
      cin >>a[i];
 cout <<"In reverse order :";
  for (int i=SIZE-1;i>=0; i--)
   cout <<"\t"<< a[i];
}
Enter 4 numbers:11.11 33.33 55.55 77.77
In reverse order: 99.99 77.77 55.55 33.33
```

INITIALIZATION AN ARRAY

In C++ an array can be initialized with an optional initializer list, like this:

```
float  a[ ]={ 22.2, 44.4, 66.6 };
```

```
int main ()
{ float a[ ]={ 22.22, 44.44, 66.66 };
 int size =sizeof(a)/ sizeof  (float);
for (int i=0; i<size; i++)
 cout  <<"\ta["<< i <<" ]="<< a[i] << end];
}
```

```
a[0]=22.2
a[1]=44.4
a[2]=66.6
```

USING ARRAYS WITH ENUMERATION TYPES

```
int main ()
{ enum Day { SUN,  MON,  TUE,  WED,  THU,  SAT  };
float high [SAT+1]={33.20, 33.90, 34.85, 33.25, 32.90, 32.55, 31.95 };
for ( int day=SUN; day<= SAT; day++ )
  cout <<" The high temperature for day "<< day<<" was "<< high [
      day ] << endl;
}
```

```
The high temperature for day 0 was 32.20
The high temperature for day 1 was 33.90
The high temperature for day 2 was 34.85
The high temperature for day 3 was 33.25
The high temperature for day 4 was 32.90
The high temperature for day 5 was 33.55
The high temperature for day 6 was 31.95
```

CONCLUSION

- *Arrays are intended to hold reasonable amounts of data for a short period of time.*

- *On the other hand, because arrays are held in memory, they are easy to handle and quick to manipulate.*

THANK YOU