

# Array

Comp 102 computer programming

# Array

```
int x ;  
x = 5 ;  
x = 10 ;  
printf ( "\n x = %d", x ) ;
```

How can we store more than one value at a time in a single variable?

- is a sequence of data in memory
- All data of same type are placed in physically adjacent location.
- array items may be int, float, char.
- must declare before use.

# Array declaration

- Integer array

```
int a[64];
```

Data type

Array Dimension /  
array size

- Character array

```
char alpha[10];
```

- Float array

```
float num[5];
```

# Assigning value to array

```
int a[4];  
a[0]=50;  
a[1]=60;  
a[2]=20;  
a[3]=10;
```

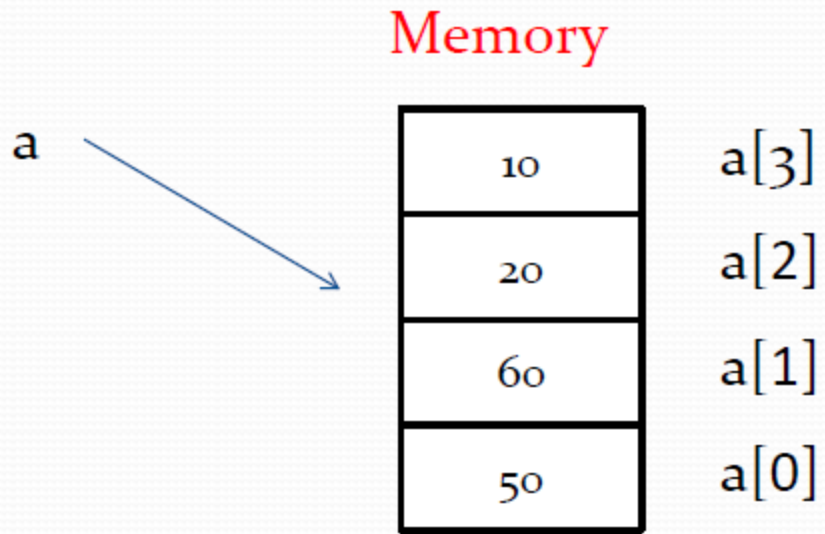
- Note :-Elements of array has a name which is called array index

# Assigning value to array

- `int a;`  
`a=100;`



- `int a[4];`  
`a[0]=50;`  
`a[1]=60;`  
`a[2]=20;`  
`a[3]=10;`



# Entering Data into an Array

```
int marks[64];  
int i;  
for ( i = 0 ; i <= 63 ; i++ )  
{  
    printf ( "\n Enter marks for number %d :", i ) ;  
    scanf ( "%d", &marks[i] ) ;  
}
```

# Reading Data from an Array

```
for ( i = 0 ; i <= 63 ; i++ )  
{  
    printf ( "\n Marks of no %d : %d" , i , marks[i]) ;  
}
```

- This will print marks of all 64 students



# Initializing An Array

- Initializing integer

```
int a=10;
```

- Initializing array

```
int a[4]={50,60,10,40};
```

```
int n[ ] = { 2, 4, 12, 5, 45 } ;
```

Program reads 5 array elements and calculate their sum and average

```
#include<stdio.h>
void main()
{
    int a[5], i,sum=0,n;
    float avg;
    printf("Enter the array elemtns\n");
```

```
for (i=0;i<5;i++)  
scanf("%d",&a[i]);
```

```
for (i=0;i<5;i++)  
{
```

```
sum=sum+a[i];
```

```
    avg=(float)sum/5;  
}
```

```
printf("\n sum of array elements ===%d",sum);
```

```
printf("\n average of array elements === %f",avg);
```

```
}
```

Write a program to find the largest and smallest element of the array

```
#include<stdio.h>
int main()
{
    int a[50],size,i,big,small;

    printf("\nEnter the size of the array: ");
    scanf("%d",&size);
```

```
printf("\nEnter %d elements in to the array: ",  
size);  
    for(i=0;i<size;i++)  
        scanf("%d",&a[i]);  
big=a[0];  
for(i=1;i<size;i++){
```

```
    if(big<a[i])
```

```
        big=a[i];
```

```
    }
```

```
printf("Largest element: %d",big);
```

```
small=a[0];
```

```
for(i=1;i<size;i++){
```



```
    if(small>a[i])
        small=a[i];
}
printf("Smallest element: %d",small);

return 0;
}
```

# Static Array

```
main()
{
    int a[2];
    static int b[2];
    printf("a : %d and %d",a[0],a[1]);
    printf("b : %d and %d",b[0],b[1]);

}
```

# String

- Strings are arrays of character.
- They are enclosed with in quotes.
- Initializing strings

```
char month[5]={‘J’, ‘u’, ‘l’, ‘y’};
```

```
char month[]=”July”;
```

```
char month[5]={‘J’, ‘u’, ‘l’, ‘y’, ‘\0’};
```

Character string is  
terminated by null  
character ‘\0’

J	a[0]
u	a[1]
l	a[2]
y	a[3]
\0	a[4]

# Reading string

- Read a sentence and count the total number of characters excluding space

# String

- Write program to count number of vowels
- Write program to count number of words in a sentence

# Program to count number of vowels

```
char myarray[100];  
int i=0, count=0;
```

```
while((myarray[i]=getchar())!='\n' && i<99) {  
    if(myarray[i]=='a' || myarray[i]=='A' ||  
        myarray[i]=='e' || myarray[i]=='E' ||  
        myarray[i]=='i' || myarray[i]=='I' ||  
        myarray[i]=='o' || myarray[i]=='O' ||  
        myarray[i]=='u' || myarray[i]=='U')
```

# Program to count number of vowels

```
{  
count++;  
}  
i++; }  
  
printf(" %s\n ", myarray); printf("Number of  
words :%d \n ",count);
```

# Program to count number of words in a sentence

```
char myarray[100];  
int i=0, count=0;
```

```
while((myarray[i]=getchar())!='\n' && i<99)  
{  
    if(myarray[i]==' ')  
        count++;  
    i++;  
}
```



# Program to count number of words in a sentence

```
count++;  
myarray[i]='\0';  
printf(" %s\n ", myarray); printf("Number of  
words :%d \n ",count);
```