Passing Array to a Function: (1-D)

- → An entine array can be passed as an argument to a function.
- → To pase an array as an argument to a function, the array-name must be specified, without brackets or subscripts, as an actual argument within the function call.
- The converponding formal argument is written in the same manner, though it must be declared as an arriany within the formal argument declaration, the arriany argument declaration, the arriany name is written with a pair of empty square brackets. The size of the arriany is not specified within the formal argument declaration.
- → In function protobypes an empty pain of square brackets must follow the name of each arriay argument, thus indicating that the argument is an arriay.
- If argument declaration names are not included in a function declaration, then are empty pain of square bracket must follow the array argument data type.
- → The program segment tillustriales the Concept of pairing arriay as an argument to a function.

tol largest (int a[], int on); | * Function prototype * |

void main()

int x(100], i, n, max;

max = langest (x,n); /* Function call */
printf (" Langest = 1.d", max);
getch();

int largest (int all, int m) 1x Function definition *1

- → In the main function, the function largest has been called. This function call contains two actual arguments i.e. the one-dimensional integer array x and an integer variable n.
- The function definition contains two formal arguments a and m.

 The formal argument declarations extablish a as one-dimensional integer array and m as integer variable.
- → The function prototype can be written without argument name as;

 tot largest (tota(1. inl); 1x Function prototype */
- The anguments are passed to a function by value when the angument are and analy variables. But to pass an array to a function, the value of the array elements are not passed to the function. Rather the array name is interpreted as the address of the first array element (i.e. the address of the memory location containing the first array element). The address is assigned to the corresponding formal argument when the function is called. This formal argument therefore becomes a pointon to the first array element. Anguments that are passed in this manner are said to be passed by reference mather than by value.

Array paring Examples:

```
/* program to input the values into an array and display them */

# include (sidio.h)

# include (conio.h)

Void print-array (int all, int n);

void main()

int a [io], n, i;

closer();

print ("Enter the no. of elements:");
```

```
Scanf ("1.d", 20);
 for ( 1=0; icn; i++)
     frunt ( " Enter the values of an array: ");
        sconf ("+d", & ali]);
 print-away (a.n);
  getch(); ecture Notes in
void print-array (intall, inta)
  ۶
      in i ini
      printf (" The array elements are: ");
        for (i=0; i<n; i++)
             pruntf ( " 1.d", a(i));
   3
/* write a program using function to find the addition of
    elements to an array *
# include (sldio.h)
# include < conio.h>
                       tureNotes.in
 int sum (int all, int n);
 () nion biov
    in a [100], in; 8;
    chacach;
    praintf ( " Enter the no. of elements: ");
     scanf (" 1.d", &n);
    for (i=0; i<n; i++)
             printf (" Enter the elements of an array : \ri");
              scanf (" 1d", &a[i]);
```

```
8 = Sum(a,n);
 prints (" sum of elements of an array is: 1.d\n", 8);
 gerche);
 int sum ( int all, int n)
   f int t, s=0;
      for (i:0; i<n; i++)
       [ frunt (" /dlt '. a[i]);
            S = S + a[i];
       neturn s ;
  3
1 * write a program to neverse the elements of an array */
 # include < stdio. h)
# include (Conio.h)
       neverse ( int all, int n) ;
 void main ()
    int a[sv] ini
    climen();
    prints (" Enter the no. of elements in an array: ");
     scanf (" 1d", &n);
  prints (" Enter the elements of an array:");
    for(i=0; i<n; i++)
          & scanf ( " 1.d", &a[i]);
   reverse (a.n);
 getch ();
```

```
void neverse ( int all, int n)
   int i, j, temp;
 for ( i=0, j=n-1; i<1; i++.j--)
      ·temp = ali];
      a[i] = a[i];
     a[i] = temp.
 proint (" The neverse of an armay is: ");
    for ( i = 0 ; i < n ; i++ )
         prunt ( " 1d", ali]);
 3
* write a program using function to search an element in an
          by linear search technique */
#include < sidio.h)
# include (conio.h)
void Lsearch (intaff, inta);
void main()
   int across, i. Lecture Notes. in
     chuch();
    print ( " Enler the no. of elements in an armay : ");
      scant (" 1d". 80);
     prontf ( Enter elements of an arriay.");
        fon (1:0; i<n;i++)
              scant (" 1.d", &a(i));
    Lseanch (a.n);
  getch();
3
```

```
void maxmin (tot all, int n)
     int min, max;
       min = max = a[o];
     for ( i=1; i<n; i++)
              if (ali] (min)
                  min = a[i];
            if ( a (1) > max) in
                  max = a[i] :
     printf ("Minimum = 1.d Maximum = 1.d/n", min, max);
  3
1x write a program to soul the elements of an arriay using
    function */
# include < sidio. h>
# include ( conio h )
 void soul ( int all, int n);
 () main()
                  ectureNotes.in
     int a[100], n, i;
     Chacil);
    print( (" Enter the no. of elements in an arriay:");
     scanf (" 1d", 2n);
    print( " Enter the elements of an armay . ");
     for( i = 0; i<n; i++)
          scanf ( " 1d", so[i]) ;
     Sort (a,n);
  getch();
```

```
void sont (intac7, int n)
 int i. j. temp;
    for (1=0; i<n-1; i++)
      for ( )= (+1; )<n; )++)
                  ( [[i]acija)
      LectureNotes.in
                    temp = a[1];
                   a [1] = a[1];
                    a [i] = temp;
printf (" The sorted array is :");
      for ( i = 0; i<n; i++)
           printf (" fd", a [i]);
/ * write a program to search an item in an arracy using
    binary search */reNotes.in
# include <stdio.h>
# include < conio.h>
```

Lecture Notes.in

```
Passing 2-D Armay to a Function
→ The argument of 2-D averay can be passed to a function in the
   same way 1-0 arrays are raised.
→ 9n 2-D Annay. Function prototype is written as;
       function-type function-name (intx[][10], int P);
 For example: (n) diagonal-sum (inlx[][10], infr);
1 * write a program to find the addition of two matrices wing
   function * 1
# include (sidio-h)
void addition ( tota [][10], intr. int c , int b[][10], intp, intq);
# include < conio h>
void main()
   tol a[10][10], b[10], [10], n. c. p. q, i, i;
   (Imani);
   printf (" Enter the row & column of matrix a:");
     scout ( .. 49 49 ... 8 4 . 8 c) 5.
  printf (" Enter the 14 values to matrix a:
      for ( (= 0; i< n; i++)
           for():0; 3<c; 3++ ) ectureNotes.in
                 scanf (" -1.d', & a [i](i]);
  printf (" Enten the order of matrix b:");
    scanf ("1d 1d", & p, 29);
   printf (" Enlen 1/d values to matrix b : ", p +q);
          for (1=0; i<p; i++)
                 for ( )=0; 1<9; j++)
                      scanf (" 1d", & b[i][i]);
```

```
prinif (" Elements of matrix a: (n");
          for (i=0; i<n; i++)
                for ( j= 0 ; j < c ; j + +)
                      proint ("1d/t", aci)(1));
               printf ("In").
          Lecture Notes.in
     printf ( " Elements of matrix b: In");
         for (1=0; ix P; i++)
1
                for ( 3=0; j<q; j++)
                     print ( ' 1 d/t", 6(17(17));
              prinif ("In") ;
      addition (a, n,c, b, p,q);
      getch();
     void addition (intalling, inta, inta, intelling, inter, intal
      3
          (n) t.i. A. d(10)(10);
       il ( n = = p && c = = 9)
                                ecture Notes.in
                for ( (= 0 ; (< n ; i++)
                      { for (1=0; ) < q; ) ++)
                             d [ [ [ [ ] [ ] ] + [ [ ] [ ] ] = [ ] [ ] [ ] ] ;
        printl (" The nexultant matrix is: \n");
             for ( i = 0; i< 9; i++)
```

```
for ( 5:0; )<9; j++)
       ; ([[[]]]b ," 1/b+") print();
     print ( " (n");
3 3
       presnif ("nddition is not possible in");
 else
 3
1* write a program to find the sum of the principal diagonal
   of a matrix */
# include < stdio h>
# include (conio h)
int diagonal-sum ( intalling, int p, int q);
 void main()
   int a [10] [10] [1, q, i, j, sum;
  printf (" Enter the row and column of a matrix a: );
    scanf (" 1d 1.d", 2p, 2q);
   pruntf ( " Enter the 1d value to matrix a: ", pxq);
     for (1:0; icp, i++)
         for (j=0; j<q;j++)
              scanf (" 1d", & acincin); Notes.in
    printf ( " Elements of matrix a is: 10");
        for (1=0; icp; i++)
           for ():0; jeq; j++)
                ¿ print ("+dll", alillis);
          } . Printf ("In");
```

```
if ( P1 = 9)
     printf (" sum of diagonal of the matrix is not possible");
  else
           sum = diagonal-sum (a. p. a);
        preintf ( diagonal sum is 1/d /n , sum);
 विवादमा;
      Lecture Notes in
tot diagonal-sum (tot as 7 [10], int p. int 9)
   ş
      int i, j, s = 0;
     for ( i = 0; i < p; i++)
          for (j=0; j<q; j++)
                 (( = = i ) 7;
                    5 = s + a[i][i];
        return s;
1* write a program using function to find the multiplication of two
    matrices of cture Notes.in
# include < sidio h)
# include ( conio h)
void multiplication ( tot [][], int, int, int[][], int. int);
void main()
   int a[10][10], b[10][10], C[10][10];
   int i.j. p.q. m.n ;
   clauch (),
   praintf (" Enten the order of matrix a :"):
    scanf ("1d 1d", &m, &n);
```

```
print ( " Enter the order of matrix b: "):
scanf ("1d 1d", 2p. 29);
if (n! = P)
     print ( " Addit Multiplication is not possible"):
else
     ş
        prints (" Enter the elements of matrix a:");
           for( i=0; icm; i++)
                 for (j=0; j<n; j++)
                    scanf ( " /d', & a [i][j]);
prints ("Enten the elements of matrix b:);
     for (i=0; icr; i++)
            for ( 1=0; 3<9; j++)
                scanf ("1d", & b[i][i]).
  prints (" Elements of matrix a is:");
     for (i=0; i(m; i++)= Notes.in
        for (1=0; j<0; j++)
                 ; ([i][i]a, "Hby") iming
            print (" 10");
 printf (" Elements of matrix b is:").
       for ( i=0; i<p; i++)
               fon ( )= 0; j<q; j++)
                 ; ([[[][]]d , "Hb4") Thring
            burl ( " /v.);
        3
```

```
multiplication (a, m, n, b, p, a);
 getch();
void multiplication ( int a [][10], int m, int n, int be [][10], int p, int q
{
   thl t, j, K, C[10][10];
   prunif ( " The as resultant matrix is : ");
    for ( i = 0; i < m ; i++ )
            Ba (1=0; i<q; j++)
                   ccij(j) = 0 ;
             for (K=0; K<P; K++)
            c[i][i] = (a[i][k] * b[k][i]) + c[i][i];
   for (i=o; (sm; i++)
          for (1=0; )<q; j++)
             8 prints ( 1.4. c (17617) $ . 11
           printf(" \n");
```