Lab task – 2

## Assignment – 2

1. Write a program in C to store elements in an array and print them.

#include <stdio.h>

void main()

{

int i,n;

printf("\n\nEnter the size of the array\n");

scanf("%d",&n);

int arr[n];

printf("Input elements in the array :\n");

for(i=0; i<n; i++)

{

printf("element - %d : ",i);

scanf("%d", &arr[i]);

}

printf("\nElements in array are: ");

for(i=0; i<n; i++)

{

printf("%d ", arr[i]);

}

printf("\n");

}

# Output :

Enter the size of the array

3

Input elements in the array :

element 0:5

element 1:9

element 2:0

* Elements in array are: 5 9 0

2. Write a program in C to read n number of values in an array and display them in reverse order.

#include <stdio.h>

// Main function

int main()

{

int i, n, a[100];

// Display a message to the user about the program's purpose

printf("\n\nRead n number of values in an array and display it in reverse order:\n");

printf("------------------------------------------------------------------------\n");

// Prompt the user to input the number of elements to store in the array

printf("Input the number of elements to store in the array :");

scanf("%d", &n);

// Prompt the user to input n elements into the array

printf("Input %d number of elements in the array :\n", n);

for (i = 0; i < n; i++)

{

printf("element - %d : ", i);

scanf("%d", &a[i]); // Read the input and store it in the array

}

// Display the values stored in the array

printf("\nThe values stored in the array are : \n");

for (i = 0; i < n; i++)

{

printf("% 5d", a[i]); // Print each element in the array

}

// Display the values stored in the array in reverse order

printf("\n\nThe values stored in the array in reverse are :\n");

for (i = n - 1; i >= 0; i--)

{

printf("% 5d", a[i]); // Print each element in reverse order

}

printf("\n\n");

return 0;

}

## Output:

Rea n number of values in an array and display it in reverse order:

Input the number of elements to store in the array :2

Input 2 number of elements in the array :

element 0:9

element 1:5

The values stored in the array are:

9

5

The values stored in the array in reverse are:

5

9

3. Write a program in C to find the sum of all elements of the array

#include <stdio.h>

// Main function

int main()

{

int a[100]; // Declare an array of size 100 to store integer values

int i, n, sum = 0; // Declare variables to store array size, loop counter, and sum

// Display a message to the user about the program's purpose

printf("\n\nFind sum of all elements of array:\n");

printf("--------------------------------------\n");

// Prompt the user to input the number of elements to be stored in the array

printf("Input the number of elements to be stored in the array :");

scanf("%d", &n);

// Prompt the user to input n elements into the array

printf("Input %d elements in the array :\n", n);

for (i = 0; i < n; i++)

{

printf("element - %d : ", i);

scanf("%d", &a[i]); // Read the input and store it in the array

}

// Calculate the sum of all elements in the array using a for loop

for (i = 0; i < n; i++)

{

sum += a[i]; // Add each element to the sum

}

// Display the sum of all elements stored in the array

printf("Sum of all elements stored in the array is : %d\n\n", sum);

return 0;

}

## Output:

Find sum of all elements of array:

Input the number of elements to be stored in the

array :4

Input 4 elements in the array:

element 0:0

element1:9

element 2:5

element 3:3

Sum of all elements stored in the array is: 17

4. Write a program in C to count the total number of duplicate elements in an array

#include <stdio.h>

// Main function

int main()

{

int arr[100]; // Declare an array of size 100 to store integer values

int n, mm = 1, ctr = 0; // Declare variables to store array size, mm (unused), and duplicate counter

int i, j; // Declare loop counters

// Prompt the user to input the number of elements to be stored in the array

printf("Input the number of elements to be stored in the array :");

scanf("%d", &n);

// Prompt the user to input n elements into the array

printf("Input %d elements in the array :\n", n);

for (i = 0; i < n; i++)

{

printf("element - %d : ", i);

scanf("%d", &arr[i]); // Read the input and store it in the array

}

// Check for duplicate elements in the array using nested loops

for (i = 0; i < n; i++)

{

for (j = i + 1; j < n; j++)

{

if (arr[i] == arr[j])

{

ctr++; // Increment the duplicate counter if a duplicate is found

break; // Exit the inner loop as soon as a duplicate is found

}

}

}

// Display the total number of duplicate elements found in the array

printf("Total number of duplicate elements found in the array: %d\n", ctr);

return 0; // Return 0 to indicate successful execution

}

## Output:

Input the number of elements to be stored in the array :7

Input 7 elements in the array:

element 0:7

element 1:6

element 2:7

element 3:1

element 4:0

element 5:0

element 6:1

Total number of duplicate elements found in the array: 3

5. Write a program in C to print all unique elements in an array.

#include <stdio.h>

// Main function

int main()

{

int arr1[100], n, ctr = 0; // Declare an array to store integer values, n for array size, and ctr for counting duplicates

int i, j, k; // Declare loop counters

// Prompt the user to input the number of elements to be stored in the array

printf("\n\nPrint all unique elements of an array:\n");

printf("------------------------------------------\n");

printf("Input the number of elements to be stored in the array: ");

scanf("%d", &n);

// Prompt the user to input n elements into the array

printf("Input %d elements in the array :\n", n);

for (i = 0; i < n; i++)

{

printf("element - %d : ", i);

scanf("%d", &arr1[i]); // Read the input and store it in the array

}

// Print unique elements in the array

printf("\nThe unique elements found in the array are: \n");

for (i = 0; i < n; i++)

{

ctr = 0; // Reset the counter for each element

for (j = 0, k = n; j < k + 1; j++)

{

/\* Increment the counter when the search value is duplicate. \*/

if (i != j)

{

if (arr1[i] == arr1[j])

{

ctr++;

}

}

}

if (ctr == 0)

{

printf("%d ", arr1[i]); // Print the unique element

}

}

printf("\n\n");

return 0; // Return 0 to indicate successful execution

}

## Output:

Print all unique elements of an array:

Input the number of elements to be stored in the

array: 10

Input 10 elements in the array:

element 0:7

element 1:9

element 2:1

element 3:3

element 4:5

element 5:0

element 6:2

element 7:4

element 8:6

element 9:8

The unique elements found in the array are: 7 9 1 3 5 2 4 6 8

6. Write a program in C to insert an element into an array at a specified Position

#include <stdio.h>

int main()

{

int arr[100] = { 0 };

int i, x, pos, n = 10;

// initial array of size 10

for (i = 0; i < 10; i++)

arr[i] = i + 1;

// print the original array

for (i = 0; i < n; i++)

printf("%d ", arr[i]);

printf("\n");

// element to be inserted

x = 50;

// position at which element

// is to be inserted

pos = 5;

// increase the size by 1

n++;

// shift elements forward

for (i = n - 1; i >= pos; i--)

arr[i] = arr[i - 1];

// insert x at pos

arr[pos - 1] = x;

// print the updated array

for (i = 0; i < n; i++)

printf("%d ", arr[i]);

printf("\n");

return 0;

}

## Output:

1 2 3 4 5 6 7 8 9 10

1 2 3 4 50 5 6 7 8 9 10

7. Write a program in C to delete the element at the given index

#include <stdio.h>

#include <stdlib.h>

int main(void)

{

int i, n, index, arr[10];

printf("Enter the size of the array: ");

scanf("%d", &n);

printf("Enter the elements of the array: \n");

for (i = 0; i < n; i++)

{

printf("arr[%d] = ", i);

scanf("%d", &arr[i]);

}

printf("Enter the index of the element to be deleted: ");

scanf("%d", &index);

if (index >= n+1)

{

printf (" \n Deletion is not possible in the array.");

}

else

{

for (i = index; i < n - 1; i++)

arr[i] = arr[i + 1];

printf("The array after deleting the element is: ");

for (i = 0; i < n - 1; i++)

printf("%d ", arr[i]);

return 0;

}

}

## Output:

Enter the size of the array: 6

Enter the elements of the array:

arr[0] = 1

arr[1] = 0

arr[2] = 8

arr[3] = 6

arr[4] = 4

arr[5] = 8

Enter the index of the element to be deleted: 8

Deletion is not possible in the array.