AIM

To write a C program to implement array operations such as Insertion, Deletion, and Display.

ALGORITHM

1. Start
2. Read the size of the array and elements.
3. Present a menu with options:
   - 1. Insert
   - 2. Delete
   - 3. Display
   - 4. Exit
4. Insertion:
   - Read the position and the element.
   - Shift elements to the right from that position.
   - Insert the new element.
   - Increase size by 1.
5. Deletion:
   - Read the position to delete.
   - Shift elements left from that position.
   - Decrease size by 1.
6. Display:
   - Print all elements in the array.
7. Repeat until Exit is chosen.
8. End

CODE:

```
#include <stdio.h>

int main() {
    int arr[100], n, choice, pos, i, elem;
```

```c
printf("Enter number of elements in the array: ");
scanf("%d", &n);

printf("Enter %d elements:\n", n);
for (i = 0; i < n; i++) {
    scanf("%d", &arr[i]);
}

do {
    printf("\n--- Menu ---\n");
    printf("1. Insert\n2. Delete\n3. Display\n4. Exit\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);

    switch (choice) {
        case 1:
            printf("Enter position to insert (1 to %d): ", n + 1);
            scanf("%d", &pos);
            printf("Enter element to insert: ");
            scanf("%d", &elem);

            if (pos < 1 || pos > n + 1) {
                printf("Invalid position!\n");
            } else {
                for (i = n; i >= pos; i--) {
                    arr[i] = arr[i - 1];
                }
                arr[pos - 1] = elem;
```

```c
            n++;
            printf("Element inserted successfully.\n");
        }
        break;

    case 2:
        printf("Enter position to delete (1 to %d): ", n);
        scanf("%d", &pos);

        if (pos < 1 || pos > n) {
            printf("Invalid position!\n");
        } else {
            for (i = pos - 1; i < n - 1; i++) {
                arr[i] = arr[i + 1];
            }
            n--;
            printf("Element deleted successfully.\n");
        }
        break;

    case 3:
        printf("Array elements are: ");
        for (i = 0; i < n; i++) {
            printf("%d ", arr[i]);
        }
        printf("\n");
        break;
```

```c
            case 4:
                printf("Exiting program...\n");
                break;

            default:
                printf("Invalid choice! Try again.\n");
        }
    } while (choice != 4);

    printf("\nProgram executed successfully - Array operations done.\n");
    return 0;
}
```

INPUT AND OUTPUT

```
Enter number of elements in the array: 4
Enter 4 elements:
5
8
5
6

--- Menu ---
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 4
Exiting program...

Program executed successfully - Array operations done.


=== Code Execution Successful ===
```

RESULT:

The C program to implement Array operations (Insert, Delete, and Display) was successfully executed and the expected output was obtained