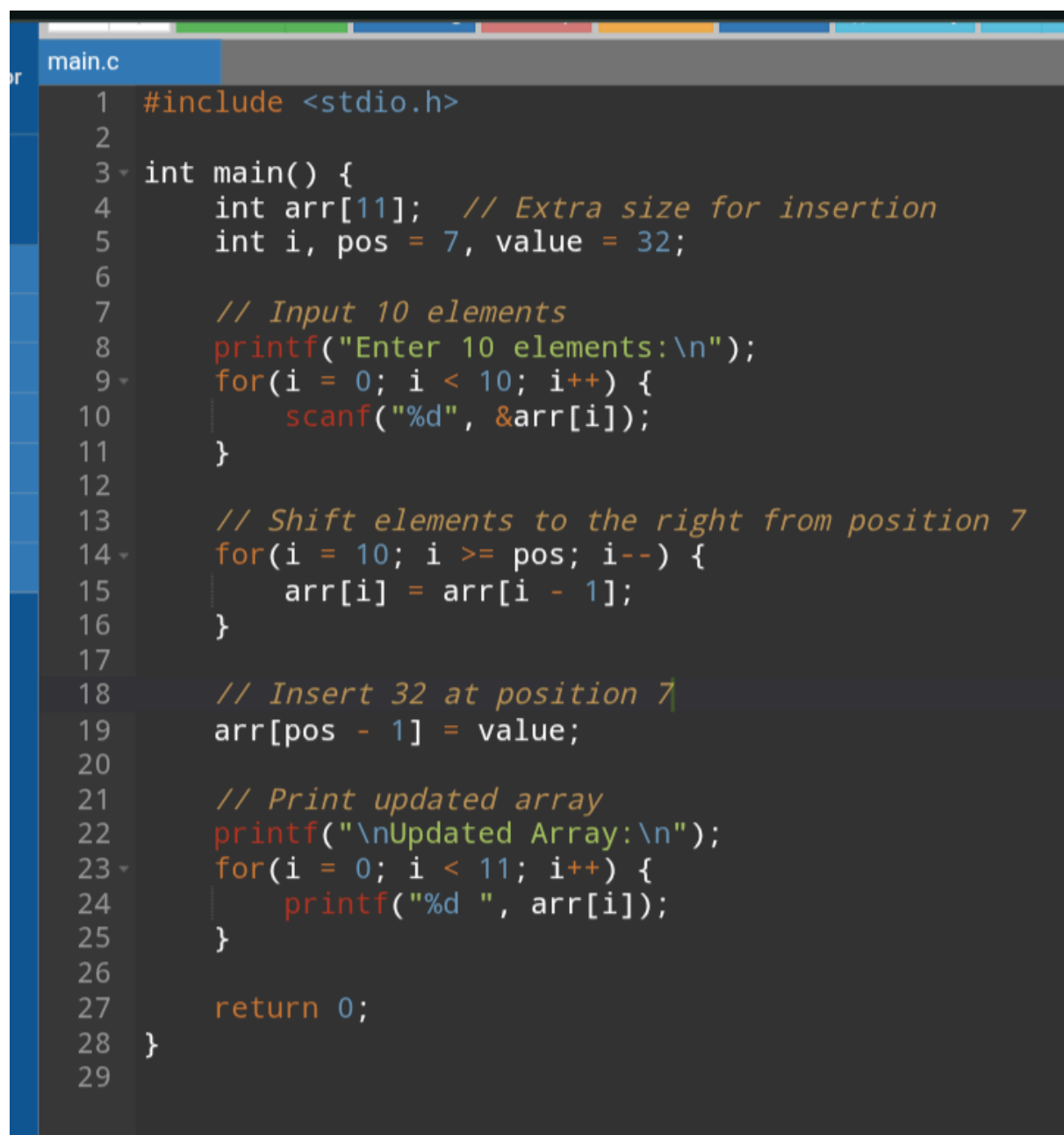**Experiment No.:** 03

Experiment Name: Insertion in Array

Objective: To learn how to insert a new element into an array by shifting elements and updating the array.

Task No: 01

Problem Statement: Take an array of size 10 from user input. Insert 32 at position 7and print the updated array.

Source Code (C):

```c
#include <stdio.h>

int main() {
    int arr[11];   // Extra size for insertion
    int i, pos = 7, value = 32;

    // Input 10 elements
    printf("Enter 10 elements:\n");
    for(i = 0; i < 10; i++) {
        scanf("%d", &arr[i]);
    }

    // Shift elements to the right from position 7
    for(i = 10; i >= pos; i--) {
        arr[i] = arr[i - 1];
    }

    // Insert 32 at position 7
    arr[pos - 1] = value;

    // Print updated array
    printf("\nUpdated Array:\n");
    for(i = 0; i < 11; i++) {
        printf("%d ", arr[i]);
    }

    return 0;
}
```

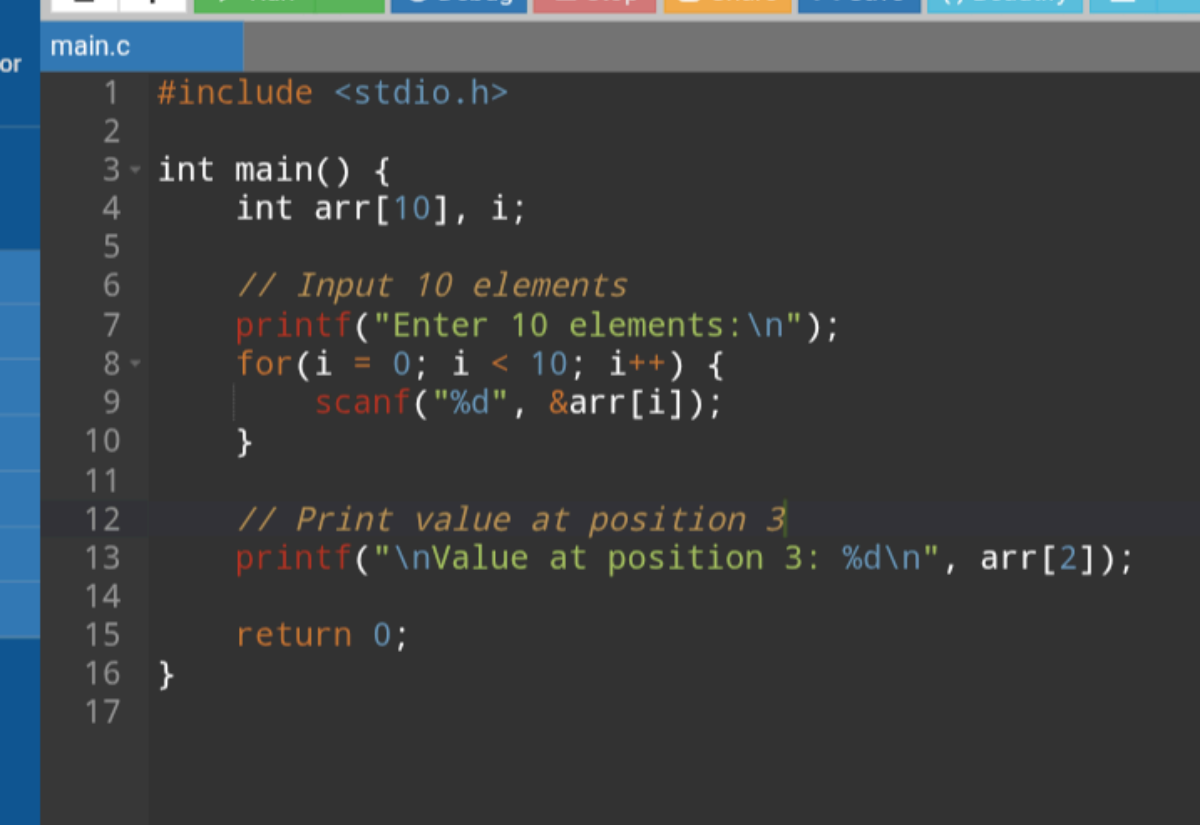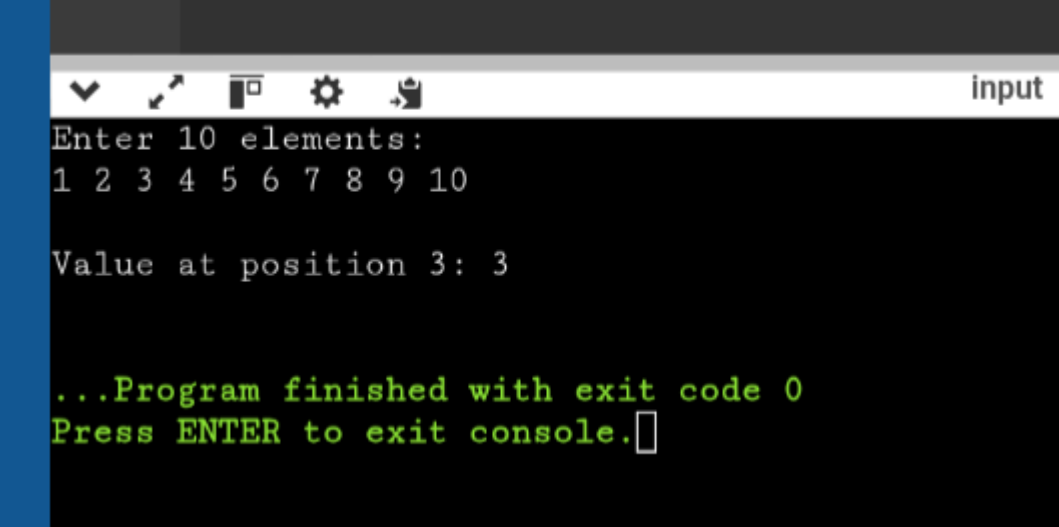**Figure 01:** Input Array & Insert 32 at Position 32

Output:

Figure 02: Output of Task 01

Task No: 02

Problem Statement: Print the value from the array at position 3.

Source Code (C):


```c
#include <stdio.h>

int main() {
    int arr[10], i;

    // Input 10 elements
    printf("Enter 10 elements:\n");
    for(i = 0; i < 10; i++) {
        scanf("%d", &arr[i]);
    }

    // Print value at position 3
    printf("\nValue at position 3: %d\n", arr[2]);

    return 0;
}
```

Figure 03: Input Array & Print Position 3

Output:

Figure 04: Output of Task 02

Discussion: This experiment has given me a clear and practical understanding of how insertion works in arrays. By carefully shifting the elements to the right, I was able to create space for the new value 32 at position 7 without losing any data. This highlighted the importance of indexing and the structured nature of arrays. Furthermore, accessing the value at position 3 strengthened my confidence in working with both zero-based and one-based indexing. I also realized how crucial these basic operations are, as they form the foundation for advanced data structures. Overall, this task not only improved my coding skills but also enhanced my logical thinking and efficiency in solving array-related problems.