AIM

To write a C program to search for a given number in an array using the Binary Search method.

ALGORITHM

1. Start
2. Read the number of elements `n` and store them in an array (sorted in ascending order).
3. Read the element to be searched `key`.
4. Initialize `low = 0`, `high = n-1`.
5. Repeat while `low <= high`:
    - Compute `mid = (low + high) / 2`.
    - If `arr[mid] == key`, element is found at position `mid+1`.
    - If `arr[mid] > key`, set `high = mid - 1`.
    - Else, set `low = mid + 1`.
6. If the loop ends and element is not found, print “Element not found”.
7. End

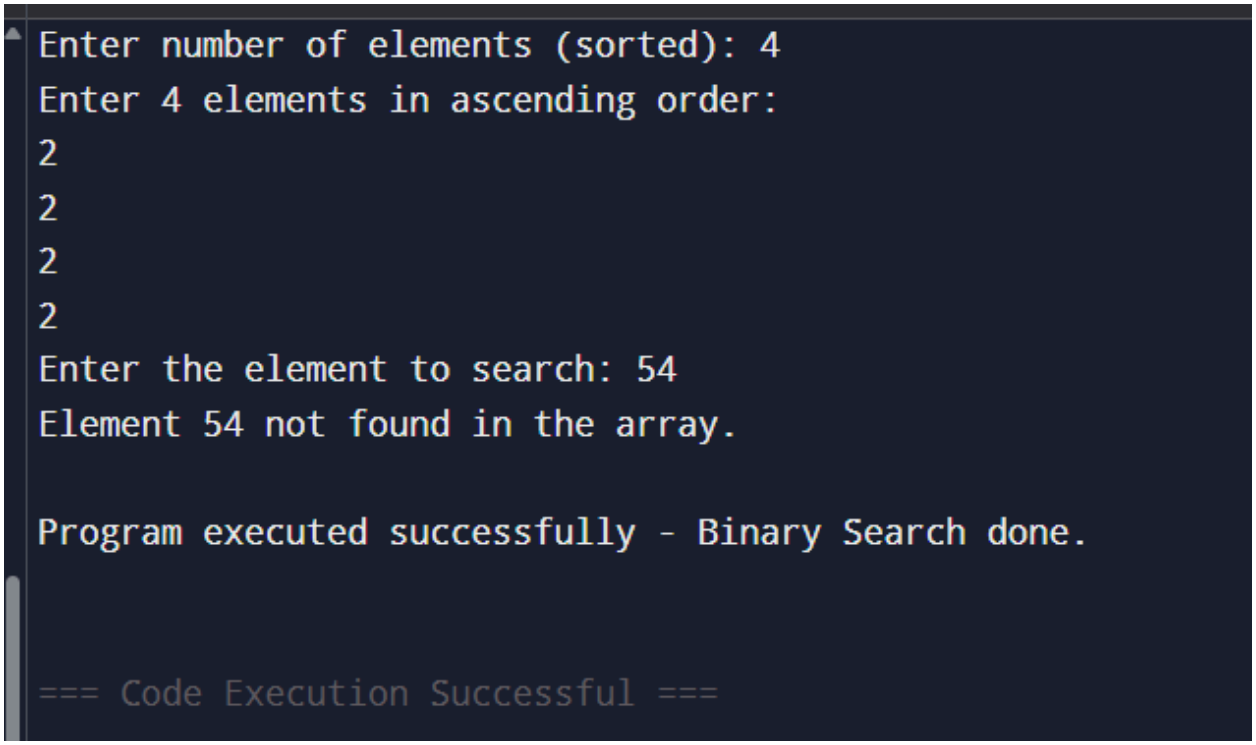
CODE:

```
#include <stdio.h>

int main() {
    int arr[100], n, key, i;
    int low, high, mid, found = 0;

    printf("Enter number of elements (sorted): ");
    scanf("%d", &n);

    printf("Enter %d elements in ascending order:\n", n);
    for (i = 0; i < n; i++) {
```

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

printf("Enter the element to search: ");
scanf("%d", &key);

low = 0;
high = n - 1;

while (low <= high) {
    mid = (low + high) / 2;

    if (arr[mid] == key) {
        printf("Element %d found at position %d.\n", key, mid + 1);
        found = 1;
        break;
    } else if (arr[mid] > key) {
        high = mid - 1;
    } else {
        low = mid + 1;
    }
}

if (!found) {
    printf("Element %d not found in the array.\n", key);
}

printf("\nProgram executed successfully - Binary Search done.\n");
```

```
    return 0;
}
```

INPUT AND OUTPUT



RESULT:

he C program to search a number using the Binary Search method was successfully executed and the expected output was obtained.