

9. Write a C program to search a number using Binary Search method


```
#include <stdio.h>

int main() {
    int arr[100], n, i, key, low, high, mid, found = 0;
    printf("Enter number of elements in the array: ");
    scanf("%d", &n);
    printf("Enter %d elements in sorted 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 (index %d).\n", key, mid + 1, mid);
            found = 1;
            break;
        }
        else if (arr[mid] < key) {
            low = mid + 1;
        }
        else {
            high = mid - 1;
        }
    }
    if (!found) {
        printf("Element %d not found in the array.\n", key);
    }
}
```

}

return 0;

}

main.c	Run	Output
<pre>1 #include <stdio.h> 2 int main() { 3 int arr[100], n, i, key, low, high, mid, found = 0; 4 printf("Enter number of elements in the array: "); 5 scanf("%d", &n); 6 printf("Enter %d elements in sorted order:\n", n); 7 for (i = 0; i < n; i++) { 8 scanf("%d", &arr[i]); 9 } 10 printf("Enter the element to search: "); 11 scanf("%d", &key); 12 low = 0; 13 high = n - 1; 14 while (low <= high) { 15 mid = (low + high) / 2; 16 if (arr[mid] == key) { 17 printf("Element %d found at position %d (index %d).\n", 18 key, mid + 1, mid); 19 found = 1; 20 break; 21 } 22 else if (arr[mid] < key) { 23 low = mid + 1; 24 } 25 else { 26 high = mid - 1; 27 } 28 } 29 if (!found) {</pre>		<pre>Enter number of elements in the array: 5 Enter 5 elements in sorted order: 12 23 25 56 48 Enter the element to search: 56 Element 56 found at position 4 (index 3). === Code Execution Successful ===</pre>