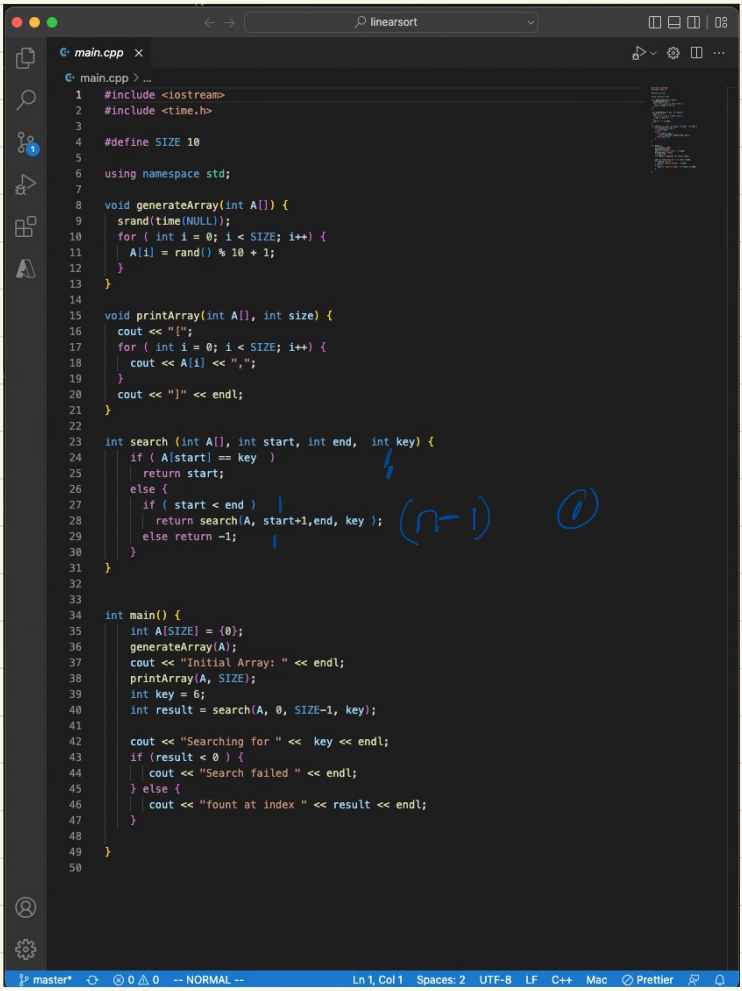
Question 4



```cpp
#include <iostream>
#include <time.h>

#define SIZE 10

using namespace std;

void generateArray(int A[]) {
  srand(time(NULL));
  for ( int i = 0; i < SIZE; i++) {
    A[i] = rand() % 10 + 1;
  }
}

void printArray(int A[], int size) {
  cout << "[";
  for ( int i = 0; i < SIZE; i++) {
    cout << A[i] << ",";
  }
  cout << "]" << endl;
}

int search (int A[], int start, int end,  int key) {
    if ( A[start] == key  )
      return start;
    else {
      if ( start < end )
        return search(A, start+1,end, key );
      else return -1;
    }
}


int main() {
    int A[SIZE] = {0};
    generateArray(A);
    cout << "Initial Array: " << endl;
    printArray(A, SIZE);
    int key = 6;
    int result = search(A, 0, SIZE-1, key);

    cout << "Searching for " <<  key << endl;
    if (result < 0 ) {
        cout << "Search failed " << endl;
    } else {
        cout << "fount at index " << result << endl;
    }

}
```

(1) (n-1) (1)

(1)

$$T(n) = T(n-1) + 4$$

$$= T(n-1) + O(4)$$

$$= T(n-1) + O(1) \simeq O(n)$$