

1.main.c

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
#include "header.h"
```

```
int main(){
```

```
    array a;
```

```
    init(&a, 5);
```

```
    append(&a, 5);
```

```
    append(&a, 8);
```

```
    append(&a, 9);
```

```
    append(&a, 2);
```

```
    append(&a, 3);
```

```
    printf("Unsorted array: \n");
```

```
    print_array(&a);
```

```
    bubble_sort(&a);
```

```
    printf("Sorted array: \n");
```

```
    print_array(&a);
```

```
    return 0;
```

```
}
```

2.header.h

```
typedef struct{
```

```
    int *A;
```

```
    int size;
```

```
    int len;
```

```
}array;
```

```
void init(array *arr, int size);
```

```
void append(array *arr, int d);
```

```
void bubble_sort(array *arr);
```

```
void print_array(array *arr);
```

3.logic.c

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
#include "header.h"
```

```
void init(array *arr, int size){
```

```
    arr -> A = (int *)malloc(sizeof(int) * size);
```

```
    arr -> size = size;
```

```
    arr -> len = 0;
```

```
}
```

```
void append(array *arr, int d){
```

```
    if(arr -> len < arr -> size){
```

```
        arr -> A[arr -> len++] = d;
```

```
    }
```

```
}
```

```
void bubble_sort(array *arr){
```

```
    int temp;
```

```
    for(int i = 0; i < arr->len - 1; i++){
```

```
        for(int j = 0; j < arr->len - 1 - i; j++){
```

```
            if(arr -> A[j] > arr -> A[j+1]){
```

```
                temp = arr -> A[j];
```

```
                arr -> A[j] = arr -> A[j + 1];
```

```
                arr -> A[j + 1] = temp;
```

```
            }
```

```
        }
```

```
    }
```

```
}
```

```
void print_array(array *arr) {  
    for (int i = 0; i < arr->len; i++) {  
        printf("%d ", arr->A[i]);  
    }  
    printf("\n");  
}
```

Output:

```
PS D:\COEP\DSA\Serious\Assignments\Assignment7\BubbleSort> gcc -Wall main.c logic.c  
PS D:\COEP\DSA\Serious\Assignments\Assignment7\BubbleSort> ./a  
Unsorted array:  
5 8 9 2 3  
Sorted array:  
2 3 5 8 9  
PS D:\COEP\DSA\Serious\Assignments\Assignment7\BubbleSort> |
```