1. Write a C program to find the sum of all elements in an array.

#include <stdio.h>

int main() {

int arr[5] = {1, 2, 3, 4, 5};

int sum = 0;

int i;

for (i = 0; i < 5; i++) {

sum += arr[i];

}

printf("The sum of the elements in the array is: %d", sum);

return 0;

}

Test cases:

Input: {1, 2, 3, 4, 5}

Output: The sum of the elements in the array is: 15

Input: {0, 0, 0, 0, 0}

Output: The sum of the elements in the array is: 0

Input: {1, -1, 1, -1, 1}

Output: The sum of the elements in the array is: 1

Input: {10, 20, 30, 40, 50}

Output: The sum of the elements in the array is: 150

Input: {-1, -2, -3, -4, -5}

Output: The sum of the elements in the array is: -15

2) Write a C program to find the largest and smallest elements in an array.

#include <stdio.h>

int main() {

int arr[5] = {5, 2, 7, 1, 8};

int largest = arr[0];

int smallest = arr[0];

int i;

for (i = 1; i < 5; i++) {

if (arr[i] > largest) {

largest = arr[i];

}

if (arr[i] < smallest) {

smallest = arr[i];

}

}

printf("The largest element in the array is: %d\n", largest);

printf("The smallest element in the array is: %d", smallest);

return 0;

}

Test cases:

Input: {5, 2, 7, 1, 8}

Output: The largest element in the array is: 8

The smallest element in the array is: 1

Input: {0, 0, 0, 0, 0}

Output: The largest element in the array is: 0

The smallest element in the array is: 0

Input: {1, -1, 1, -1, 1}

Output: The largest element in the array is: 1

The smallest element in the array is: -1

Input: {10, 20, 30, 40, 50}

Output: The largest element in the array is: 50

The smallest element in the array is: 10

Input: {-1, -2, -3, -4, -5}

Output: The largest element in the array is: -1

The smallest element in the array is: -5

3) Write a C program to reverse the elements of an array.

#include <stdio.h>

int main() {

int arr[5] = {1, 2, 3, 4, 5};

int temp;

int i, j;

for (i = 0, j = 4; i < j; i++, j--) {

temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

printf("The reversed array is: ");

for (i = 0; i < 5; i++) {

printf("%d ", arr[i]);

}

return 0;

}

Test cases:

Input: {1, 2, 3, 4, 5}

Output: The reversed array is: 5 4 3 2 1

Input: {0, 0, 0, 0, 0}

Output: The reversed array is: 0 0 0 0 0

Input: {1, -1, 1, -1, 1}

Output: The reversed array is: 1 -1 1 -1 1

Input: {10, 20, 30, 40, 50}

Output: The reversed array is: 50 40 30 20 10

Input: {-1, -2, -3, -4, -5}

Output: The reversed array is: -5 -4 -3 -2 -1

4) Write a C program to find the second largest element in an array.

#include <stdio.h>

int main() {

int arr[5] = {5, 2, 7, 1, 8};

int largest = arr[0];

int second\_largest = arr[0];

int i;

for (i = 1; i < 5; i++) {

if (arr[i] > largest) {

second\_largest = largest;

largest = arr[i];

} else if (arr[i] > second\_largest && arr[i] != largest) {

second\_largest = arr[i];

}

}

printf("The second largest element in the array is: %d", second\_largest);

return 0;

}

Test cases:

Input: {5, 2, 7, 1, 8}

Output: The second largest element in the array is: 7

Input: {0, 0, 0, 0, 0}

Output: The second largest element in the array is: 0

Input: {1, -1, 1, -1, 1}

Output: The second largest element in the array is: 1

Input: {10, 20, 30, 40, 50}

Output: The second largest element in the array is: 40

Input: {-1, -2, -3, -4, -5}

Output: The second largest element in the array is: -2