

# EE 2905

Dr. Johnson

## Program 5

No capabilities beyond those  
discussed in class or in the notes  
are allowed

Write a program to request a size and values for a 1-D array. Repeat the inputs, reverse the array, and find the largest and smallest values

Use the following function prototypes (declarations)

```
// function prototypes
void fill_array(int the_ary[], int num);
void print_array(const int the_ary[], int num);
void reverse_array(int the_ary[], int num);
int minmax_array(const int the_ary[], int num, char size);
```

→ 'S' or 'L'  
returns smallest or largest

Turn in your code, and screenshots for values of

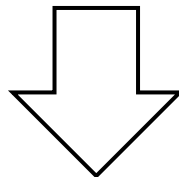
size = 6

values: 2 3 4 5 6 7

-1 2 -3 4 -5 6

size = 12

values: 10 20 40 35 50 60 70 87 72 100 400 300



```

////////////////////////////////
/
/ program_5 project
/
/ created 8/12/21 by tj
/ rev 0
/
////////////////////////////////
/ Program to practice with arrays
/
/ inputs: # of elements, values
/ outputs: print array, reversed, largest, smallest
/
////////////////////////////////

include "mbed.h"
include <stdio.h>           // only needed when printing

/ function prototypes
oid fill_array(int the_ary[], int num);
oid print_array(const int the_ary[], int num);
oid reverse_array(int the_ary[], int num);
nt minmax_array(const int the_ary[], int num, char size);

nt main(void){
    setbuf(stdout, NULL); // disable buffering when printing

    // splash
    printf("\n\nprogram_5\n");
    printf("Using Mbed OS version %d.%d.%d\n",
           MBED_MAJOR_VERSION, MBED_MINOR_VERSION, MBED_PATCH_VERSION);
    printf("Welcome to my array program\n");

    int N;
    int tmp;

    printf("How large an array would you like? ");
    scanf("%d", &N);

    int ary1[N];

    // infinite loop
    while(1){
        // fill the int array
        fill_array(ary1, N);

        // ack
        printf("you entered: ");
        print_array(ary1, N);

        // reverse
        printf("The array reversed is: ");
        reverse_array(ary1, N); // modifies the original array
        print_array(ary1, N);

        // min/max
        tmp = minmax_array(ary1, N);
        printf("The largest value in your array is: %i\n", tmp);
        tmp = minmax_array(ary1, N);
        printf("The smallest value in your array is: %i\n", tmp);

        printf("\n");
    } // end while

    return 0;
} // end main

```

```

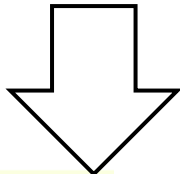
// fill the int array
void fill_array(int the_ary[], int num)
{
    for(int i = 0; i < num; i++)
        the_ary[i] = rand() % 100;
}

// print array
void print_array(const int the_ary[], int num)
{
    for(int i = 0; i < num; i++)
        printf("%d ", the_ary[i]);
    printf("\n");
}

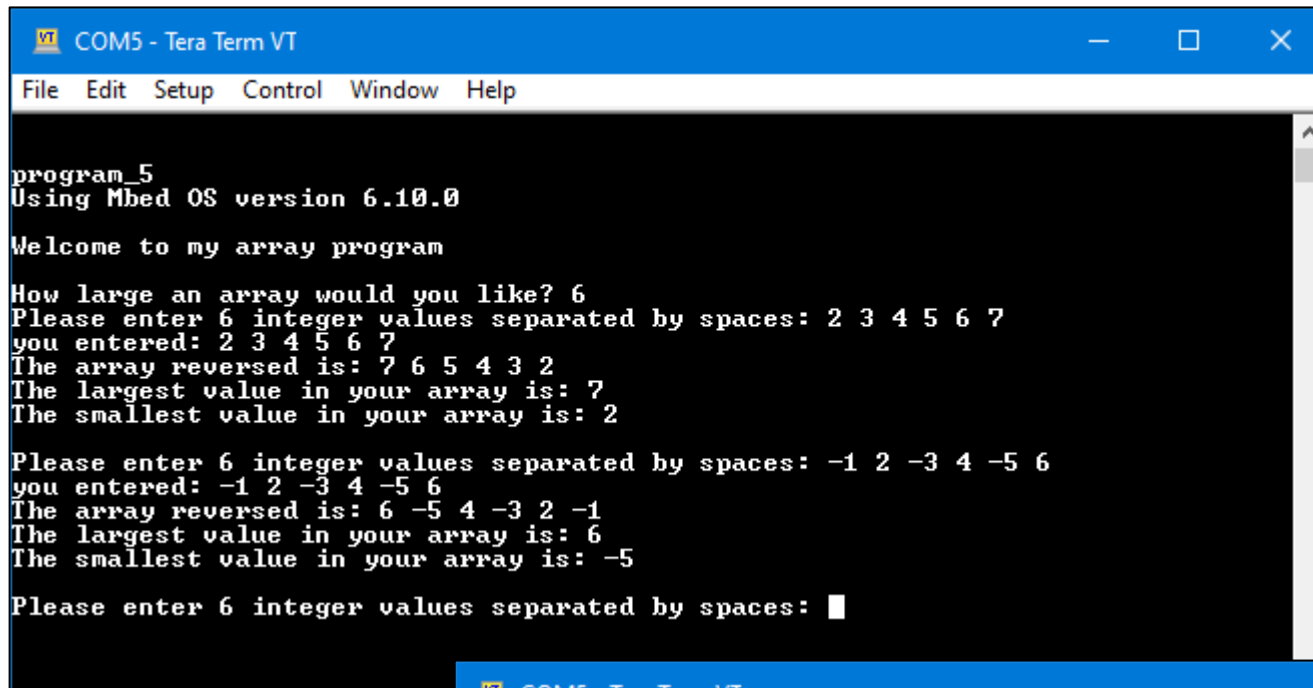
// reverse array
void reverse_array(int the_ary[], int num)
{
    for(int i = 0; i < num/2; i++)
        swap(&the_ary[i], &the_ary[num-i-1]);
}

// min/max
int minmax_array(const int the_ary[], int num, char size)
{
    int min = INT_MAX;
    int max = INT_MIN;
    for(int i = 0; i < num; i++)
    {
        if(the_ary[i] < min) min = the_ary[i];
        if(the_ary[i] > max) max = the_ary[i];
    }
    return min;
}

```



End up with something like this – check your values!



```
COM5 - Tera Term VT
File Edit Setup Control Window Help

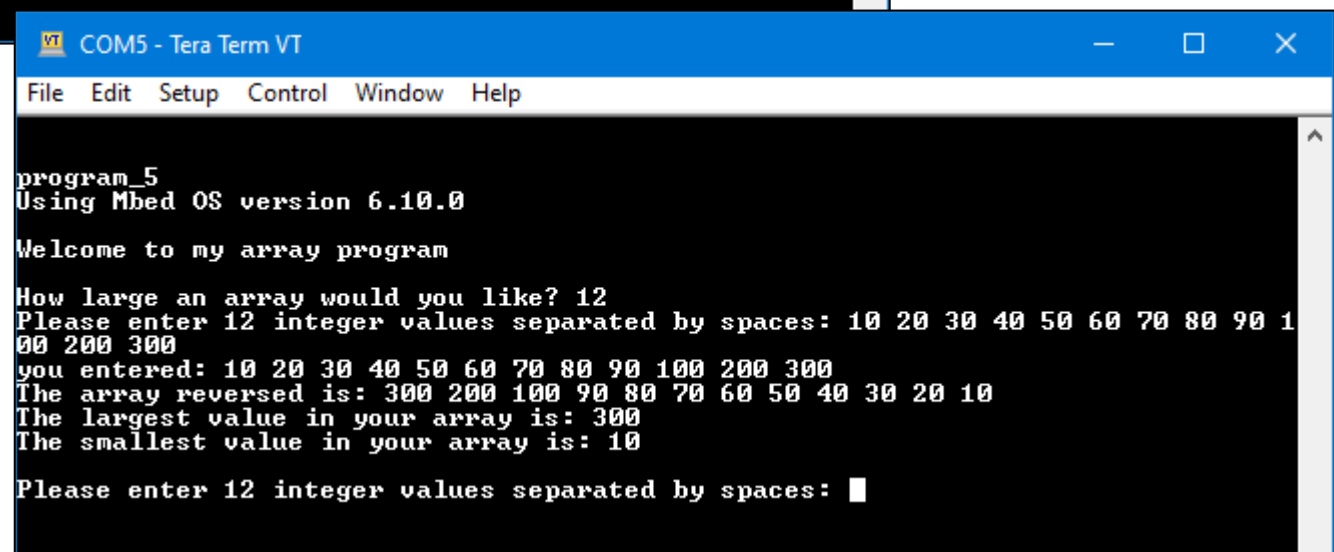
program_5
Using Mbed OS version 6.10.0

Welcome to my array program

How large an array would you like? 6
Please enter 6 integer values separated by spaces: 2 3 4 5 6 7
you entered: 2 3 4 5 6 7
The array reversed is: 7 6 5 4 3 2
The largest value in your array is: 7
The smallest value in your array is: 2

Please enter 6 integer values separated by spaces: -1 2 -3 4 -5 6
you entered: -1 2 -3 4 -5 6
The array reversed is: 6 -5 4 -3 2 -1
The largest value in your array is: 6
The smallest value in your array is: -5

Please enter 6 integer values separated by spaces: █
```



```
COM5 - Tera Term VT
File Edit Setup Control Window Help

program_5
Using Mbed OS version 6.10.0

Welcome to my array program

How large an array would you like? 12
Please enter 12 integer values separated by spaces: 10 20 30 40 50 60 70 80 90 100 200 300
you entered: 10 20 30 40 50 60 70 80 90 100 200 300
The array reversed is: 300 200 100 90 80 70 60 50 40 30 20 10
The largest value in your array is: 300
The smallest value in your array is: 10

Please enter 12 integer values separated by spaces: █
```