DSA Week 1 Assignment

By

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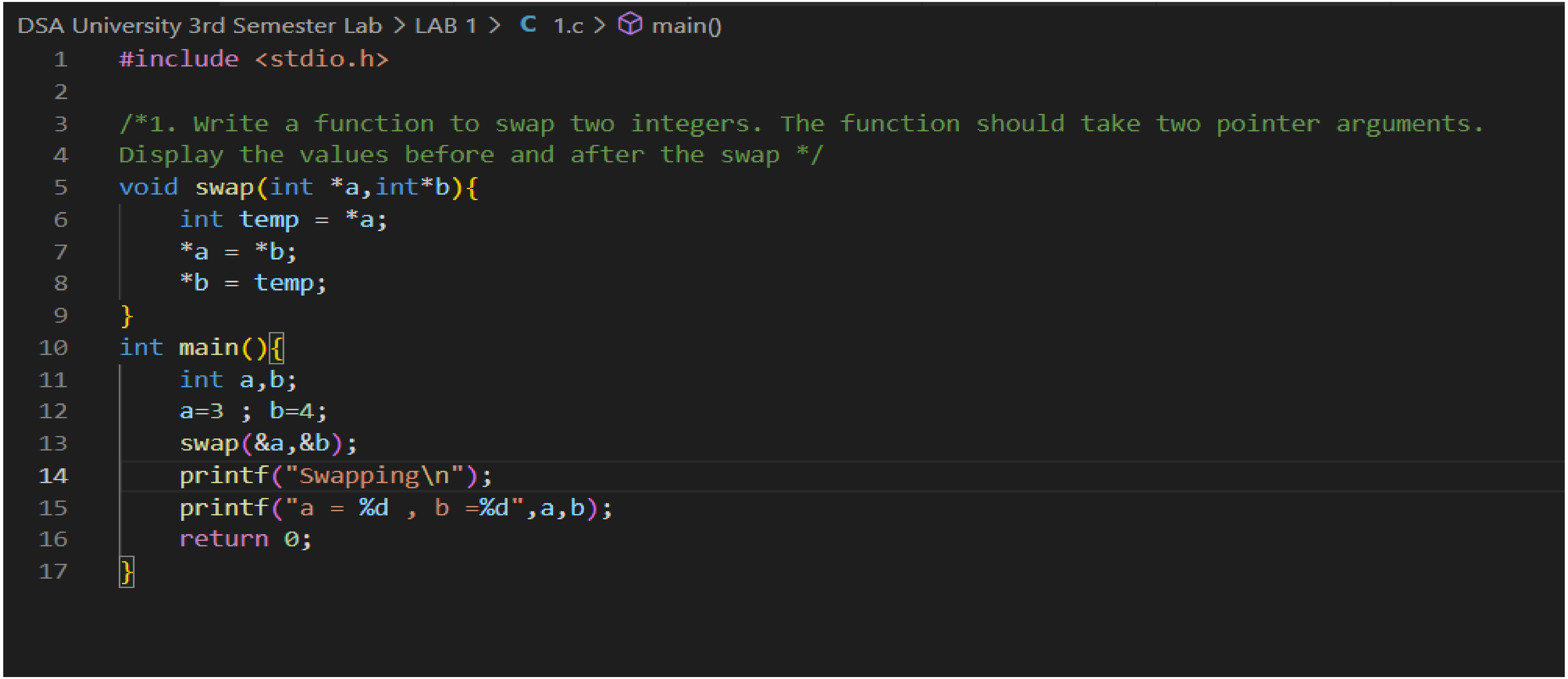
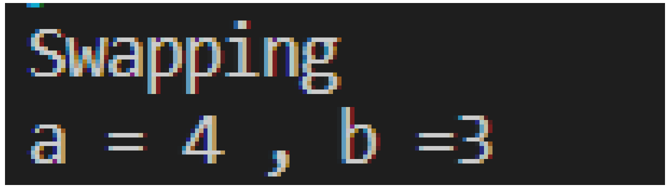
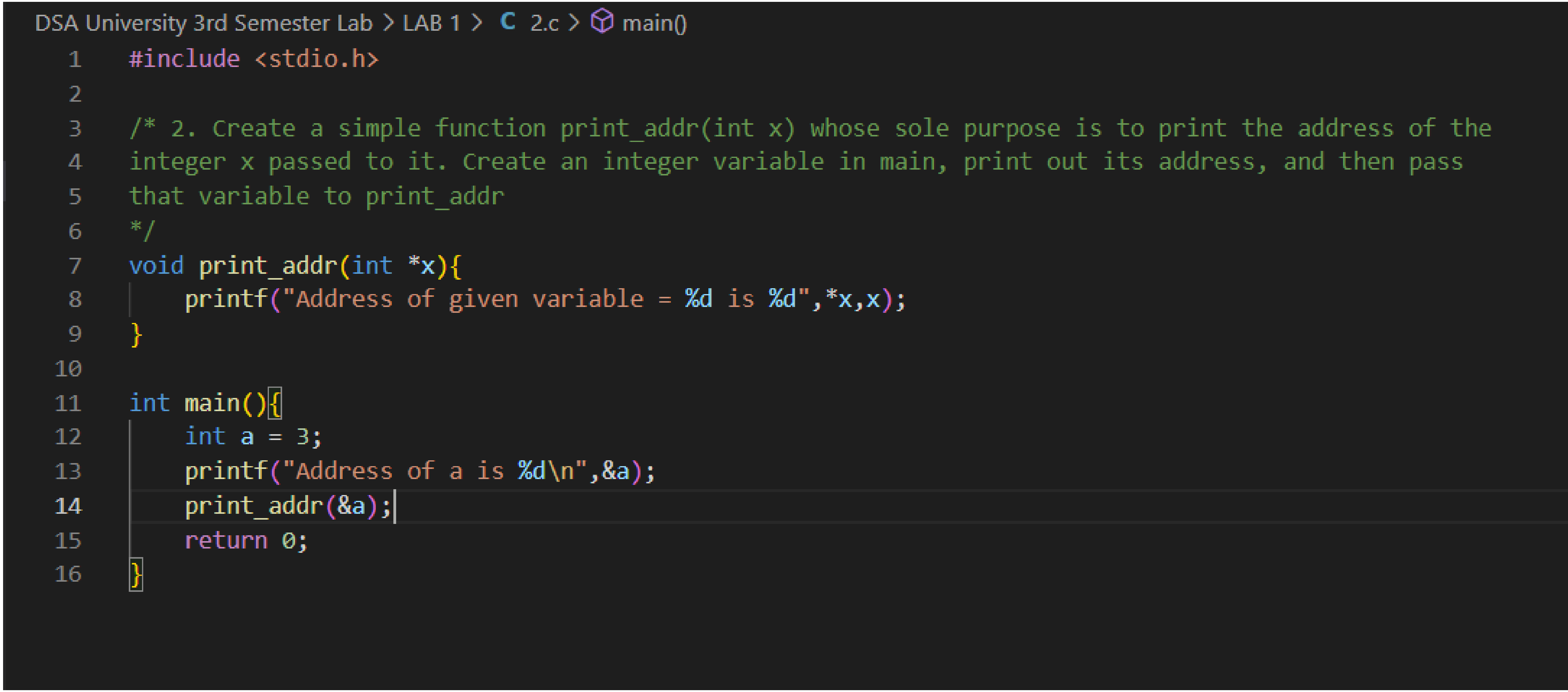


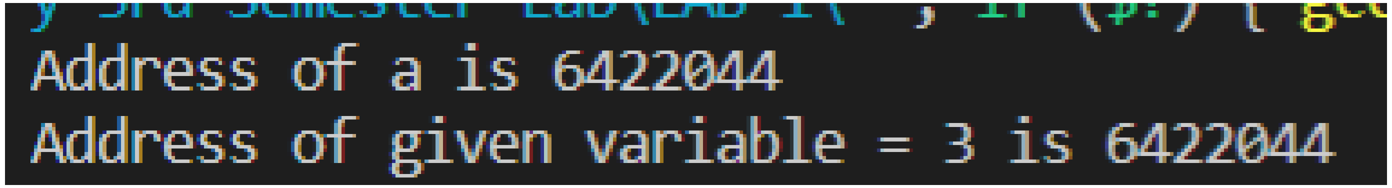
```c
#include <stdio.h>

/*1. Write a function to swap two integers. The function should take two pointer arguments.
Display the values before and after the swap */
void swap(int *a,int*b){
    int temp = *a;
    *a = *b;
    *b = temp;
}
int main(){
    int a,b;
    a=3 ; b=4;
    swap(&a,&b);
    printf("Swapping\n");
    printf("a = %d , b =%d",a,b);
    return 0;
}
```



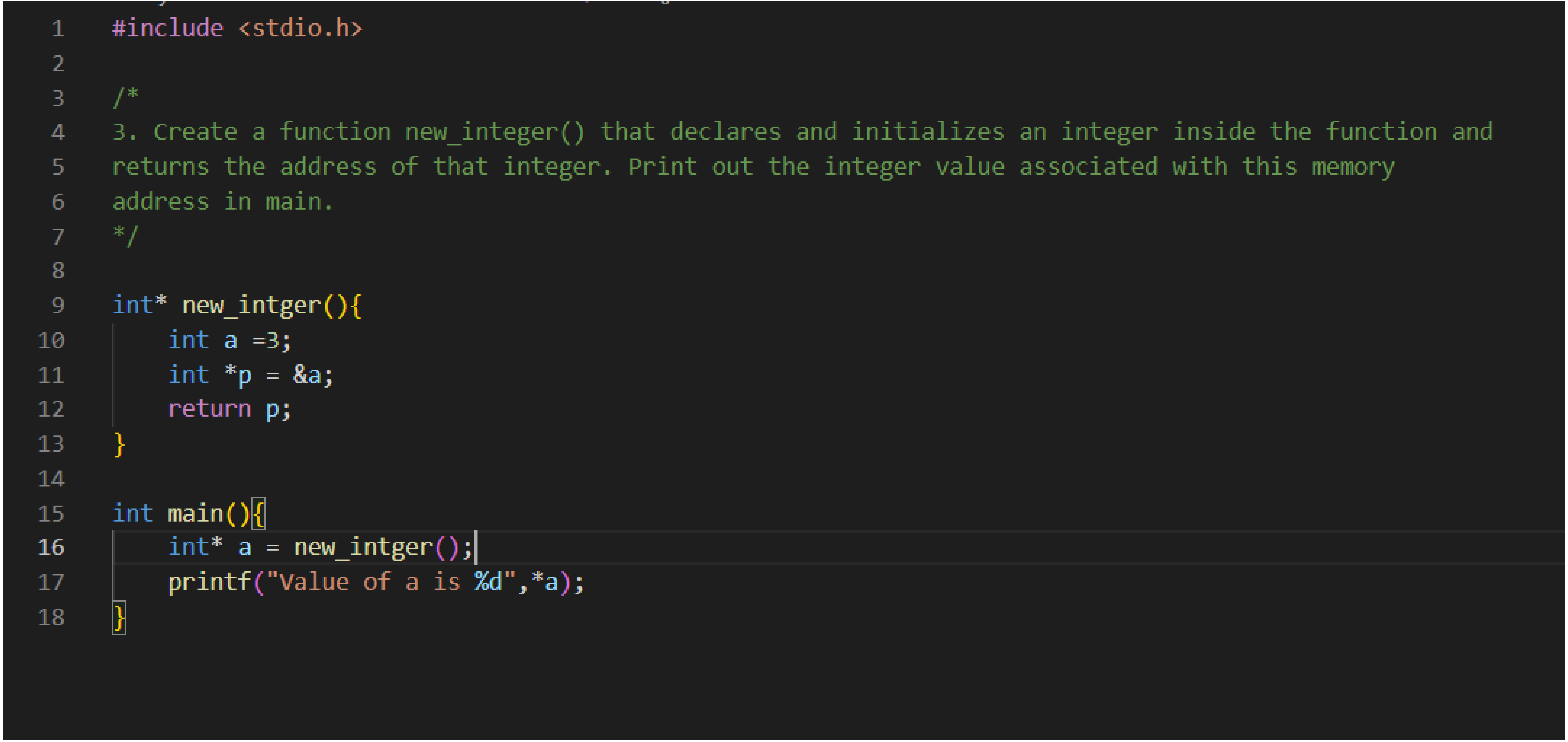
```
Swapping
a = 4 , b =3
```



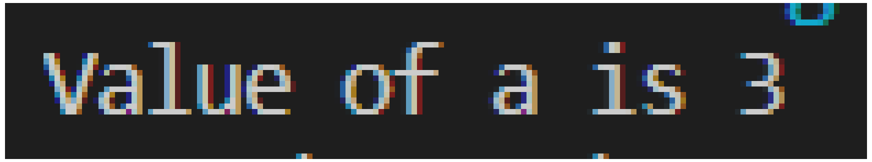
```c
#include <stdio.h>

/* 2. Create a simple function print_addr(int x) whose sole purpose is to print the address of the
integer x passed to it. Create an integer variable in main, print out its address, and then pass
that variable to print_addr
*/
void print_addr(int *x){
    printf("Address of given variable = %d is %d",*x,x);
}

int main(){
    int a = 3;
    printf("Address of a is %d\n",&a);
    print_addr(&a);
    return 0;
}
```



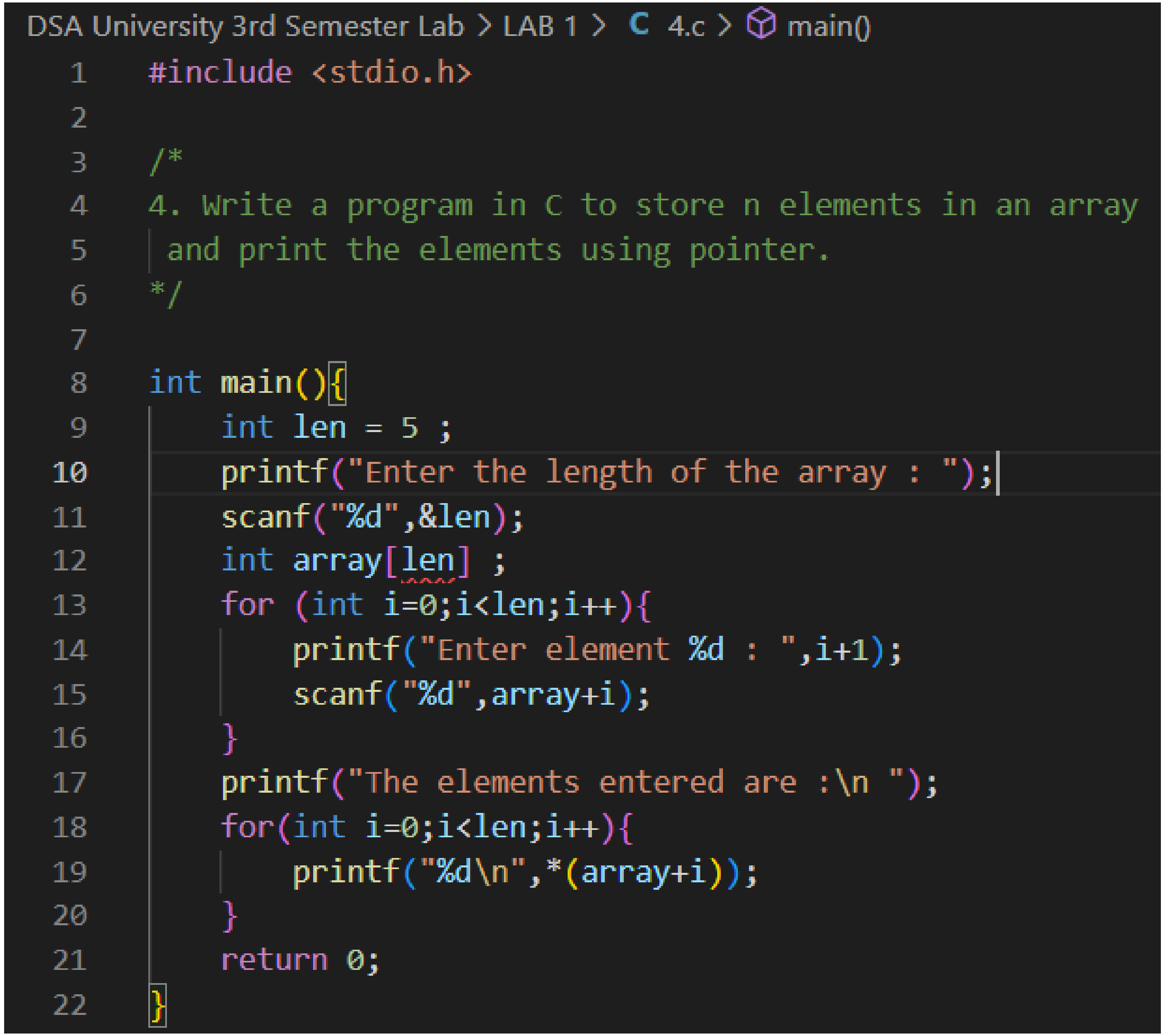
```
Address of a is 6422044
Address of given variable = 3 is 6422044
```



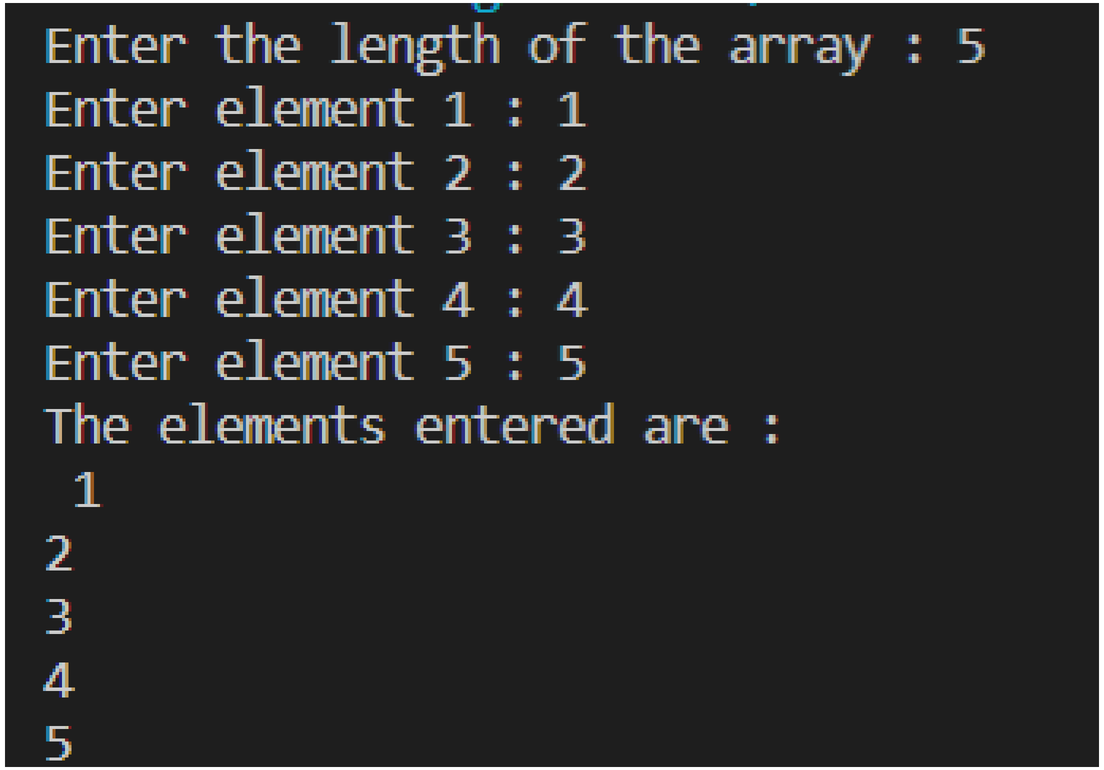
```c
#include <stdio.h>

/*
3. Create a function new_integer() that declares and initializes an integer inside the function and
returns the address of that integer. Print out the integer value associated with this memory
address in main.
*/

int* new_intger(){
    int a =3;
    int *p = &a;
    return p;
}

int main(){
    int* a = new_intger();
    printf("Value of a is %d",*a);
}
```



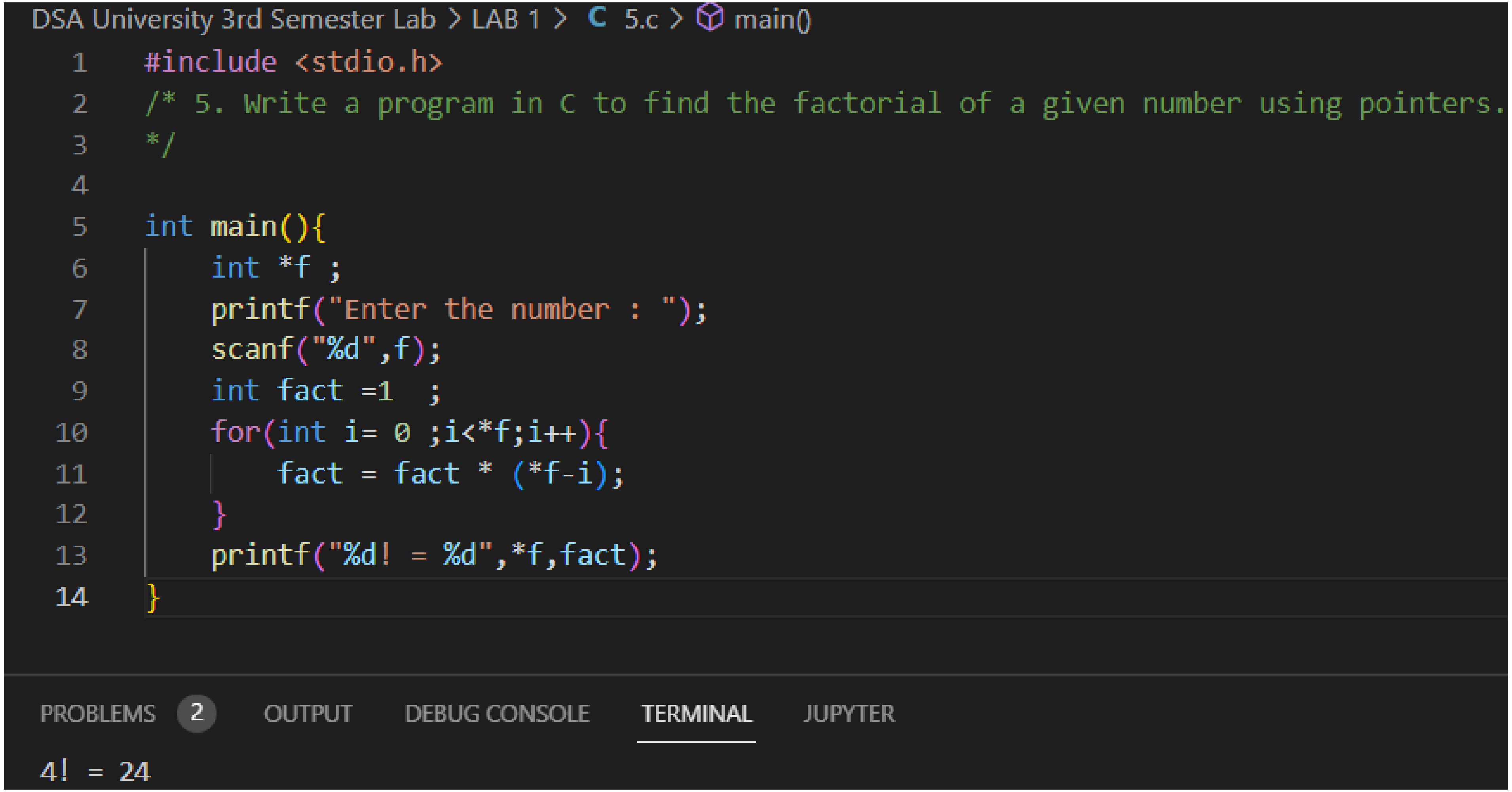
```
Value of a is 3
```



```c
#include <stdio.h>

/*
4. Write a program in C to store n elements in an array
 and print the elements using pointer.
*/

int main(){
    int len = 5 ;
    printf("Enter the length of the array : ");
    scanf("%d",&len);
    int array[len] ;
    for (int i=0;i<len;i++){
        printf("Enter element %d : ",i+1);
        scanf("%d",array+i);
    }
    printf("The elements entered are :\n ");
    for(int i=0;i<len;i++){
        printf("%d\n",*(array+i));
    }
    return 0;
}
```

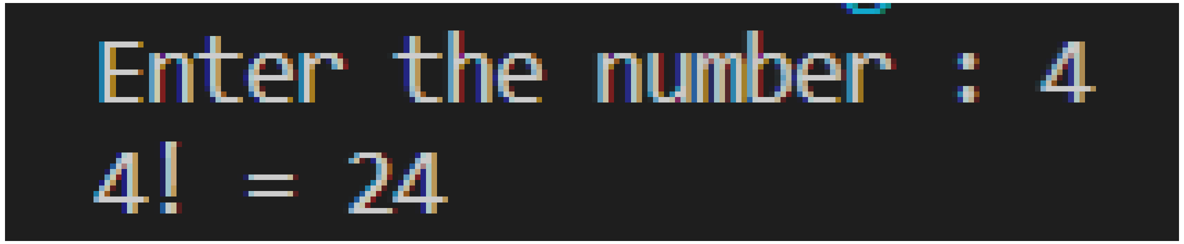


```
Enter the length of the array : 5
Enter element 1 : 1
Enter element 2 : 2
Enter element 3 : 3
Enter element 4 : 4
Enter element 5 : 5
The elements entered are :
 1
2
3
4
5
```

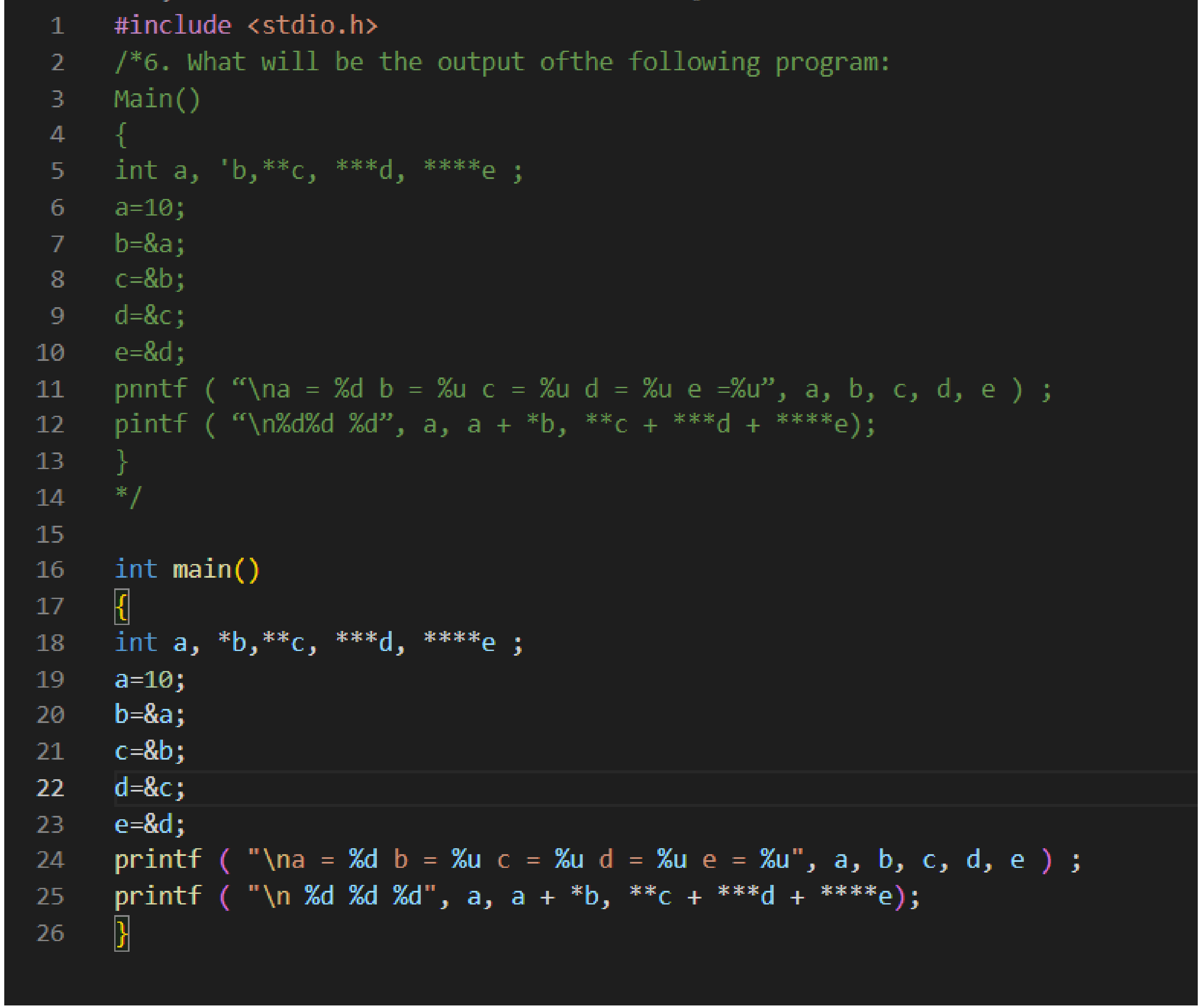


```c
#include <stdio.h>
/* 5. Write a program in C to find the factorial of a given number using pointers.
*/

int main(){
    int *f ;
    printf("Enter the number : ");
    scanf("%d",f);
    int fact =1  ;
    for(int i= 0 ;i<*f;i++){
        fact = fact * (*f-i);
    }
    printf("%d! = %d",*f,fact);
}
```

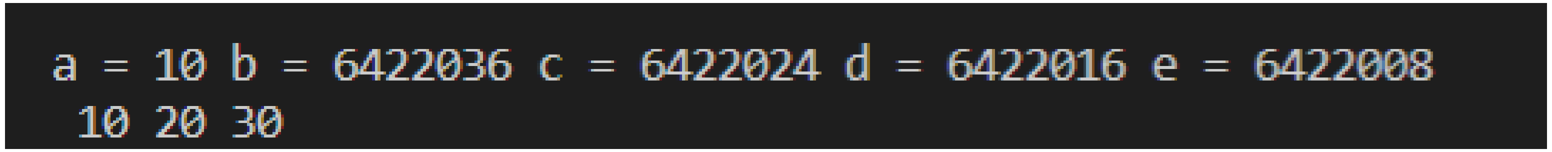
```
4! = 24
```



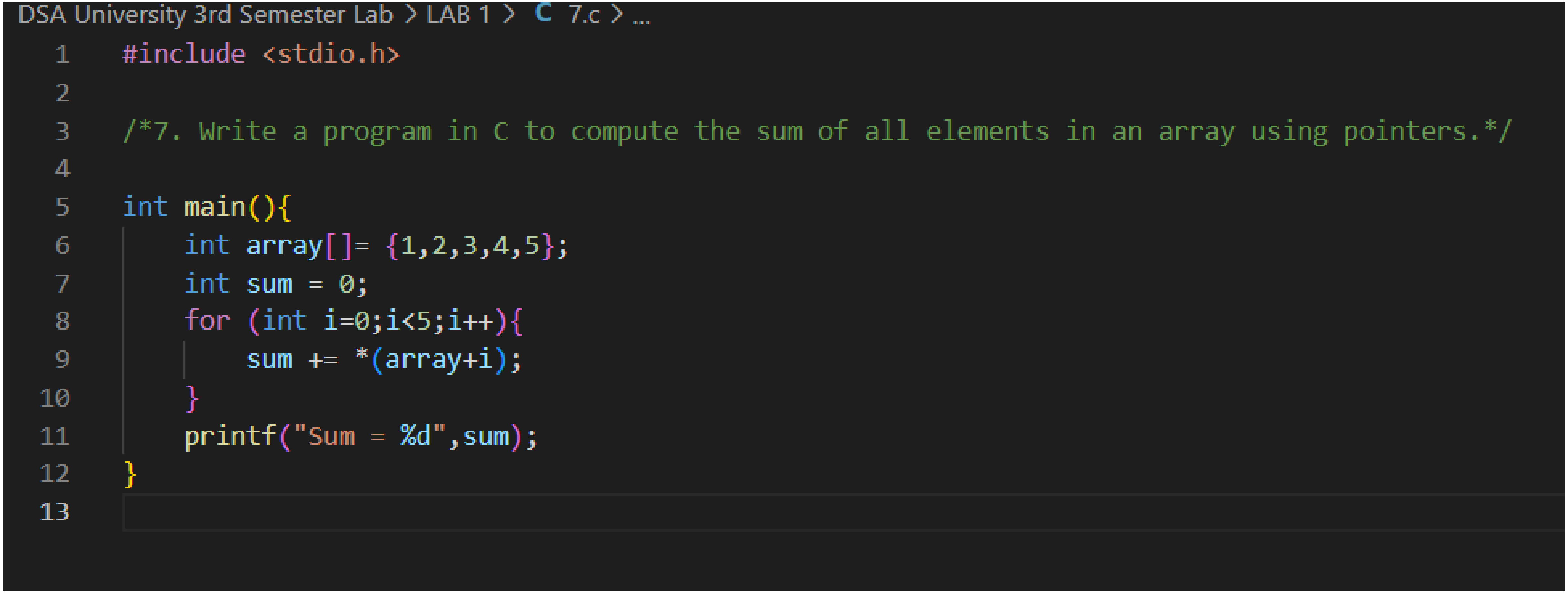
```
Enter the number : 4
4! = 24
```



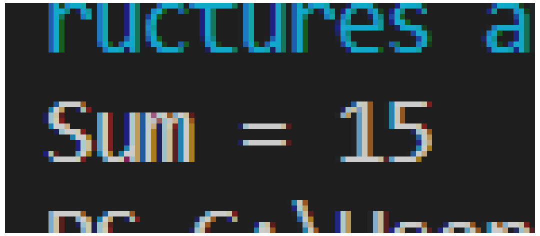
```
#include <stdio.h>
/*6. What will be the output ofthe following program:
Main()
{
int a, 'b,**c, ***d, ****e ;
a=10;
b=&a;
c=&b;
d=&c;
e=&d;
pnntf ( “\na = %d b = %u c = %u d = %u e =%u”, a, b, c, d, e ) ;
pintf ( “\n%d%d %d”, a, a + *b, **c + ***d + ****e);
}
*/

int main()
{
int a, *b,**c, ***d, ****e ;
a=10;
b=&a;
c=&b;
d=&c;
e=&d;
printf ( "\na = %d b = %u c = %u d = %u e = %u", a, b, c, d, e ) ;
printf ( "\n %d %d %d", a, a + *b, **c + ***d + ****e);
}
```



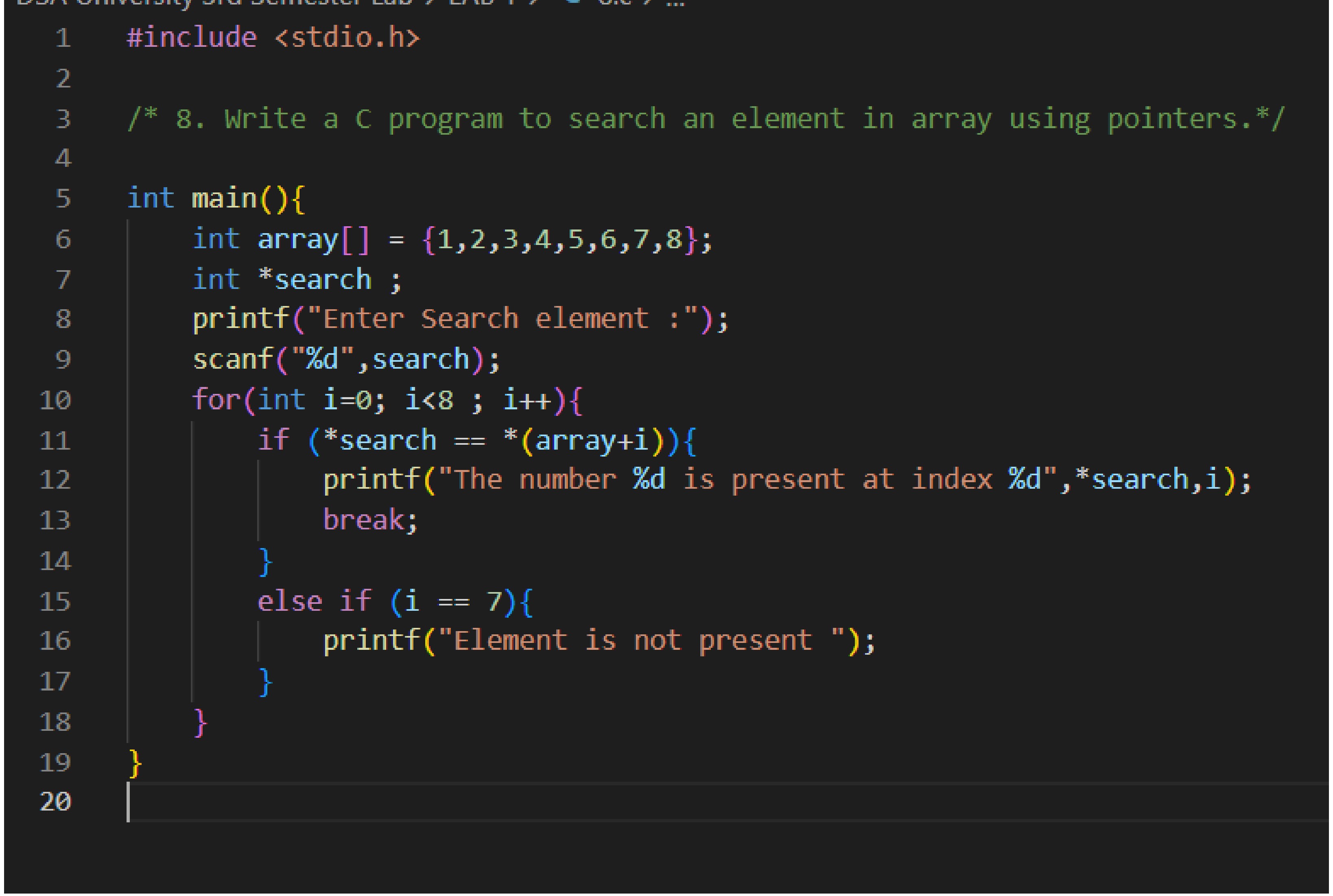
```
a = 10 b = 6422036 c = 6422024 d = 6422016 e = 6422008
 10 20 30
```



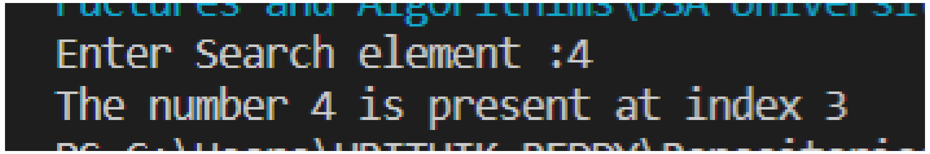
```c
#include <stdio.h>

/*7. Write a program in C to compute the sum of all elements in an array using pointers.*/

int main(){
    int array[]= {1,2,3,4,5};
    int sum = 0;
    for (int i=0;i<5;i++){
        sum += *(array+i);
    }
    printf("Sum = %d",sum);
}

```



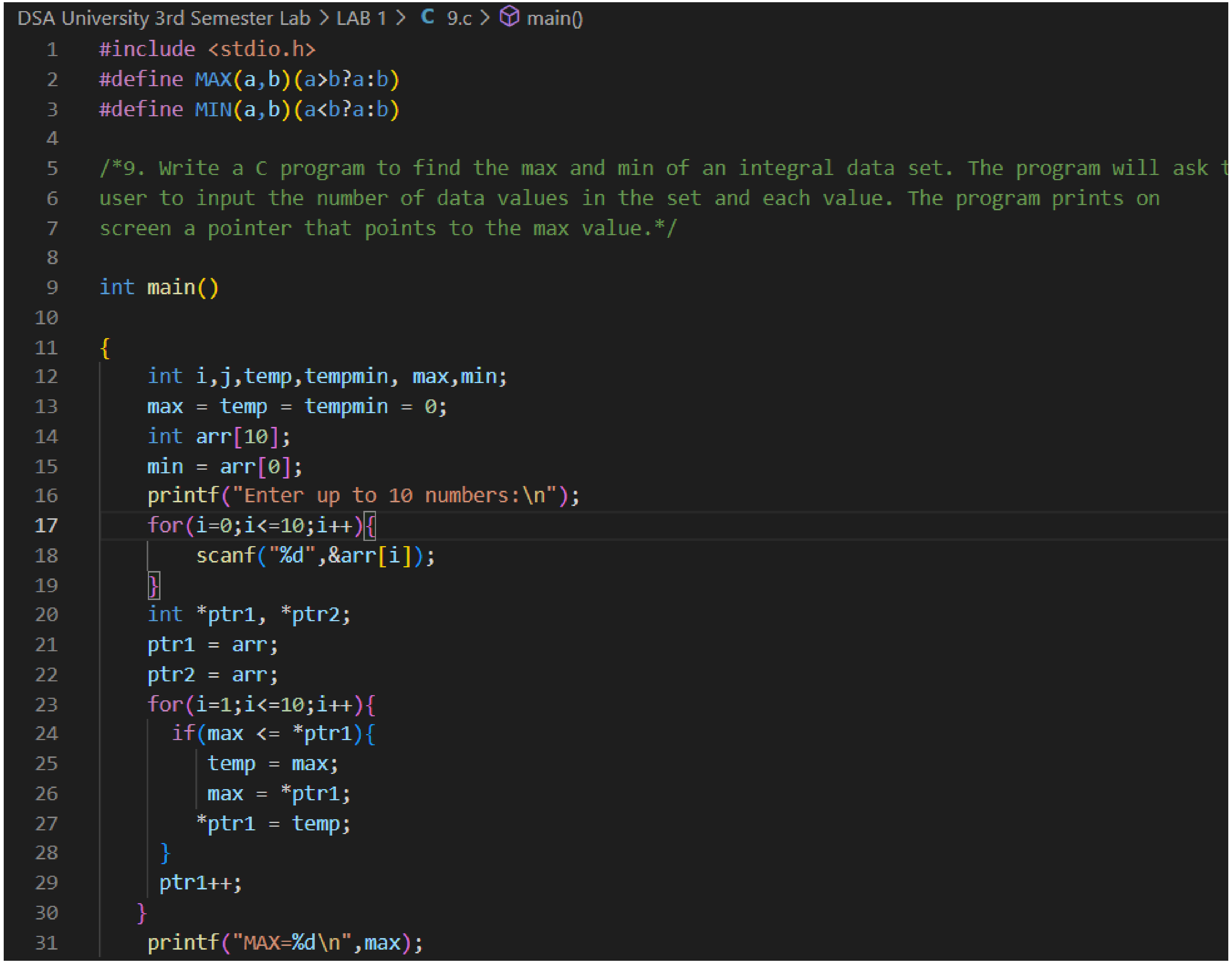
```
ructures a
Sum = 15
PS C:\User
```



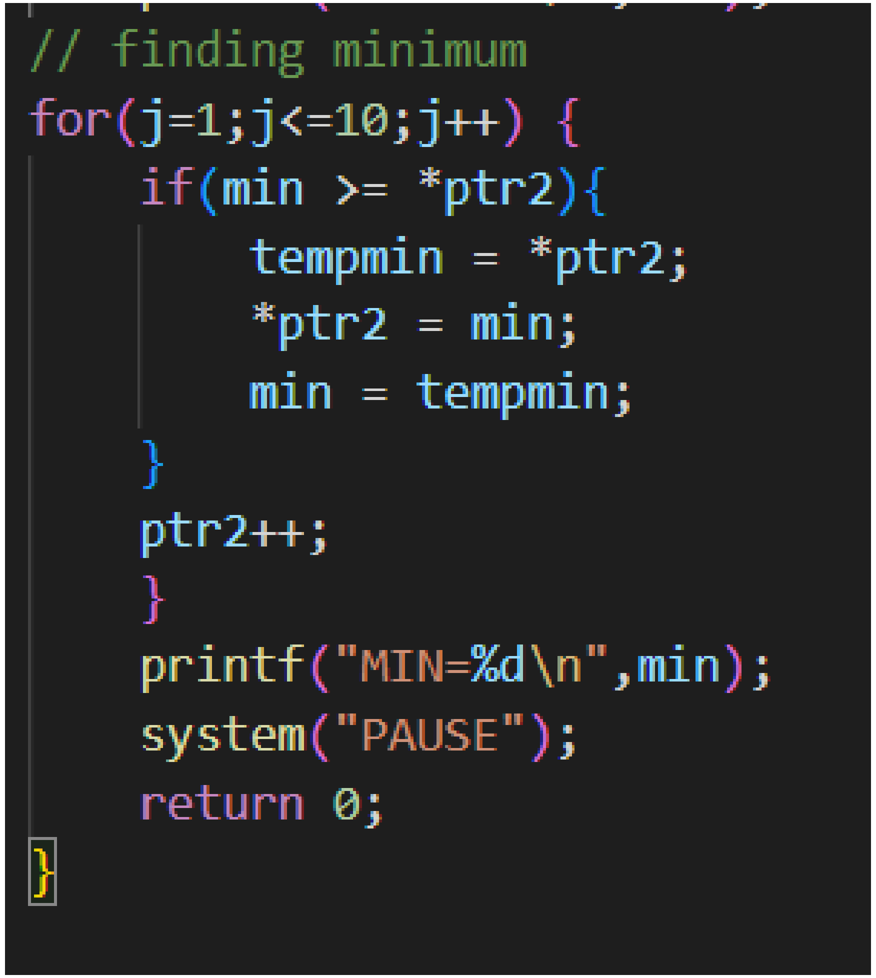
```c
#include <stdio.h>

/* 8. Write a C program to search an element in array using pointers.*/

int main(){
    int array[] = {1,2,3,4,5,6,7,8};
    int *search ;
    printf("Enter Search element :");
    scanf("%d",search);
    for(int i=0; i<8 ; i++){
        if (*search == *(array+i)){
            printf("The number %d is present at index %d",*search,i);
            break;
        }
        else if (i == 7){
            printf("Element is not present ");
        }
    }
}

```



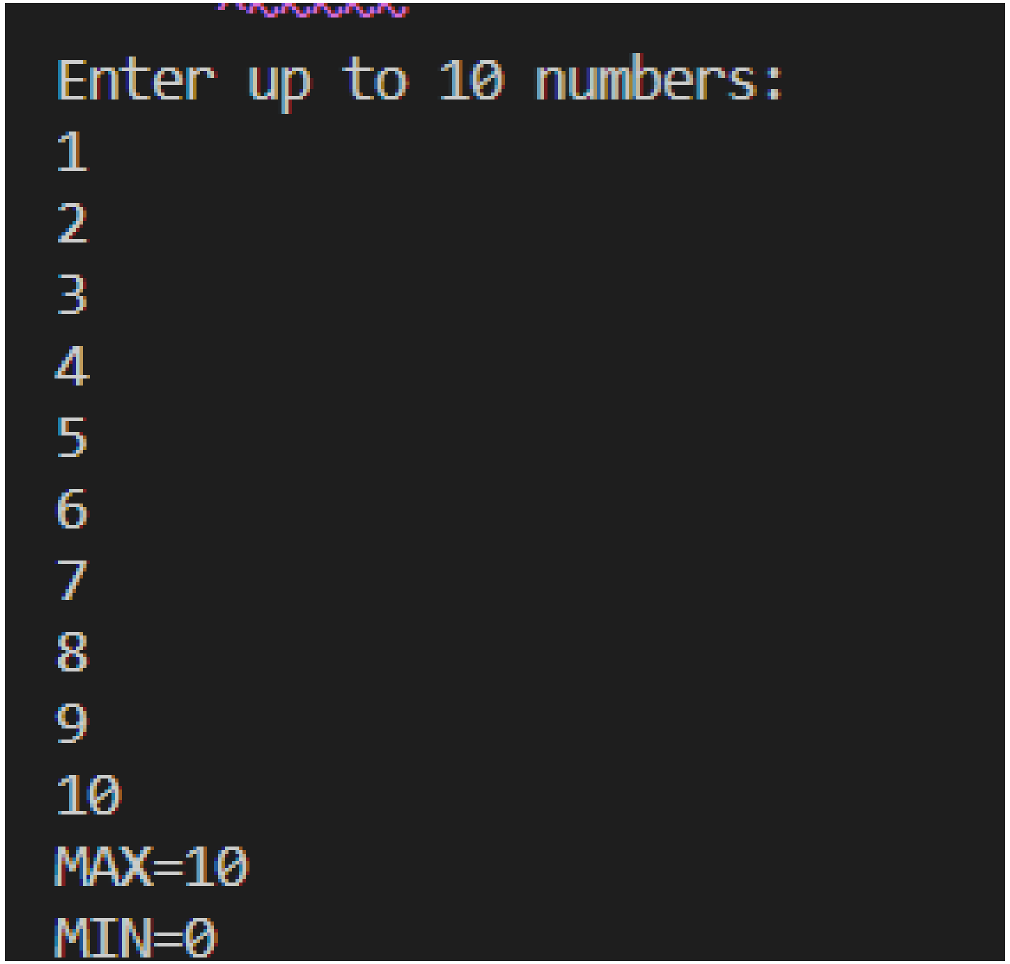
```
Enter Search element :4
The number 4 is present at index 3
```



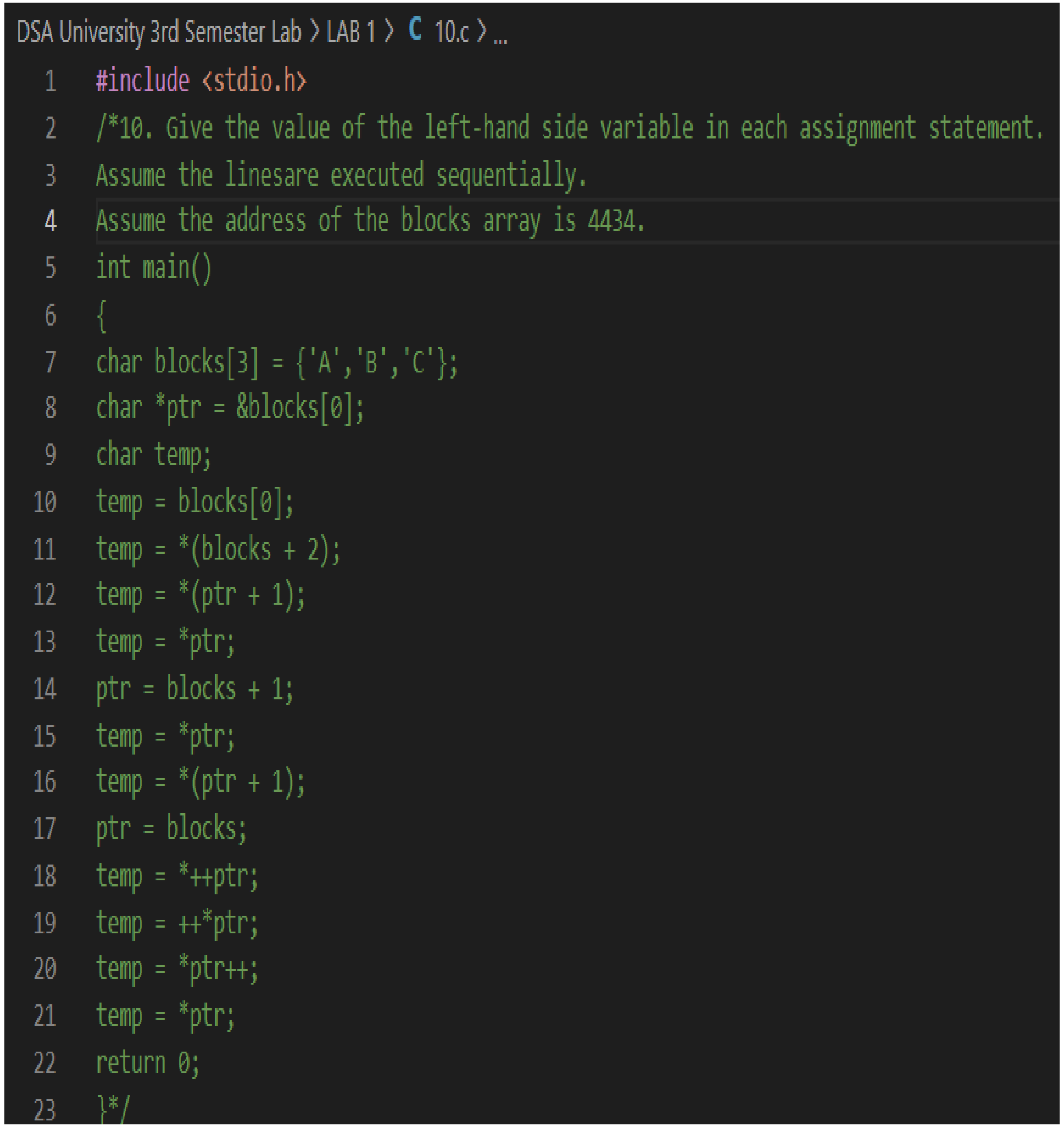
```c
#include <stdio.h>
#define MAX(a,b)(a>b?a:b)
#define MIN(a,b)(a<b?a:b)

/*9. Write a C program to find the max and min of an integral data set. The program will ask t
user to input the number of data values in the set and each value. The program prints on
screen a pointer that points to the max value.*/

int main()

{
    int i,j,temp,tempmin, max,min;
    max = temp = tempmin = 0;
    int arr[10];
    min = arr[0];
    printf("Enter up to 10 numbers:\n");
    for(i=0;i<=10;i++){
        scanf("%d",&arr[i]);
    }
    int *ptr1, *ptr2;
    ptr1 = arr;
    ptr2 = arr;
    for(i=1;i<=10;i++){
      if(max <= *ptr1){
         temp = max;
         max = *ptr1;
        *ptr1 = temp;
     }
     ptr1++;
   }
    printf("MAX=%d\n",max);
```



```
// finding minimum
for(j=1;j<=10;j++) {
    if(min >= *ptr2){
        tempmin = *ptr2;
        *ptr2 = min;
        min = tempmin;
    }
    ptr2++;
    }
    printf("MIN=%d\n",min);
    system("PAUSE");
    return 0;
}
```

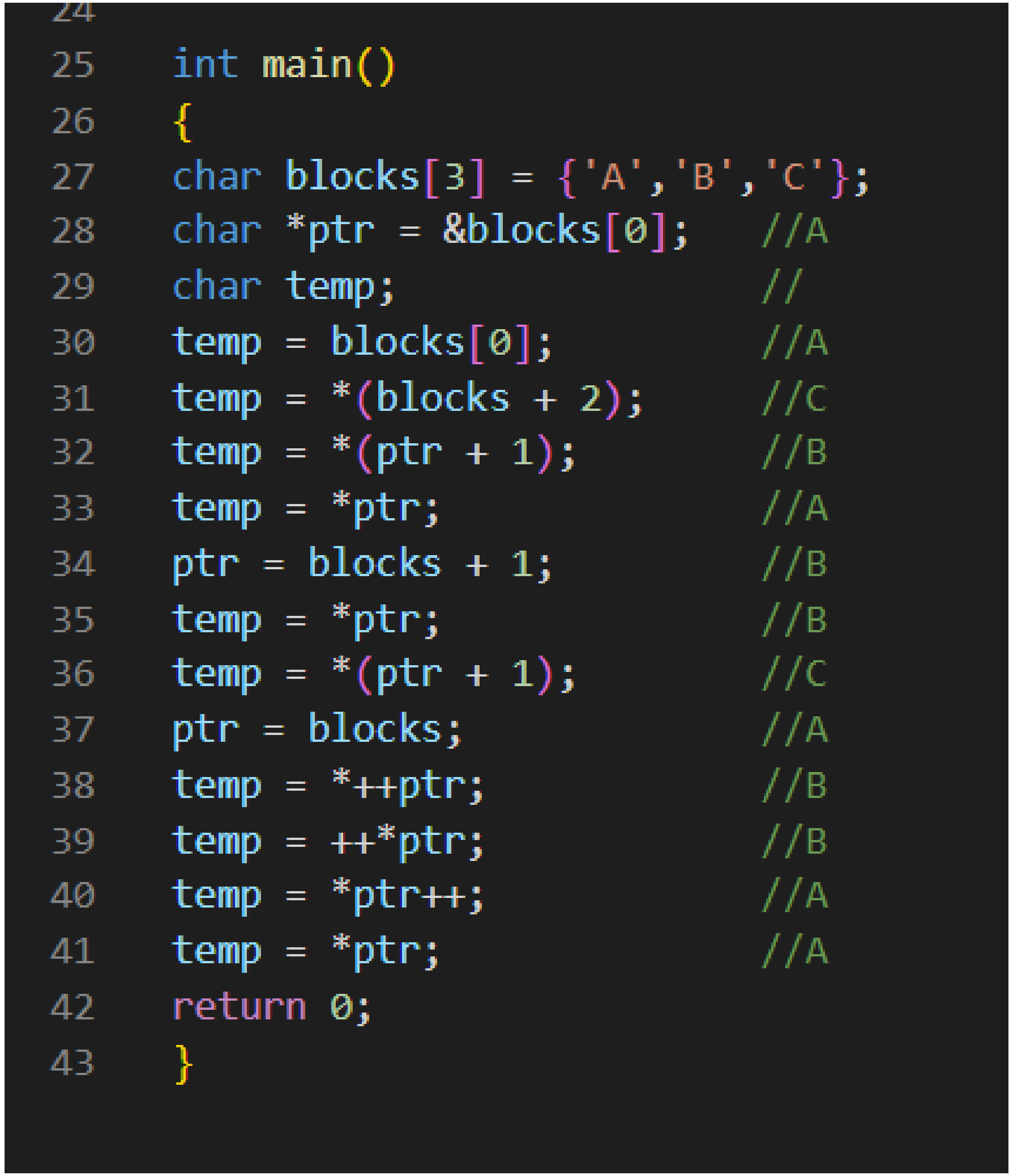


```
Enter up to 10 numbers:
1
2
3
4
5
6
7
8
9
10
MAX=10
MIN=0
```

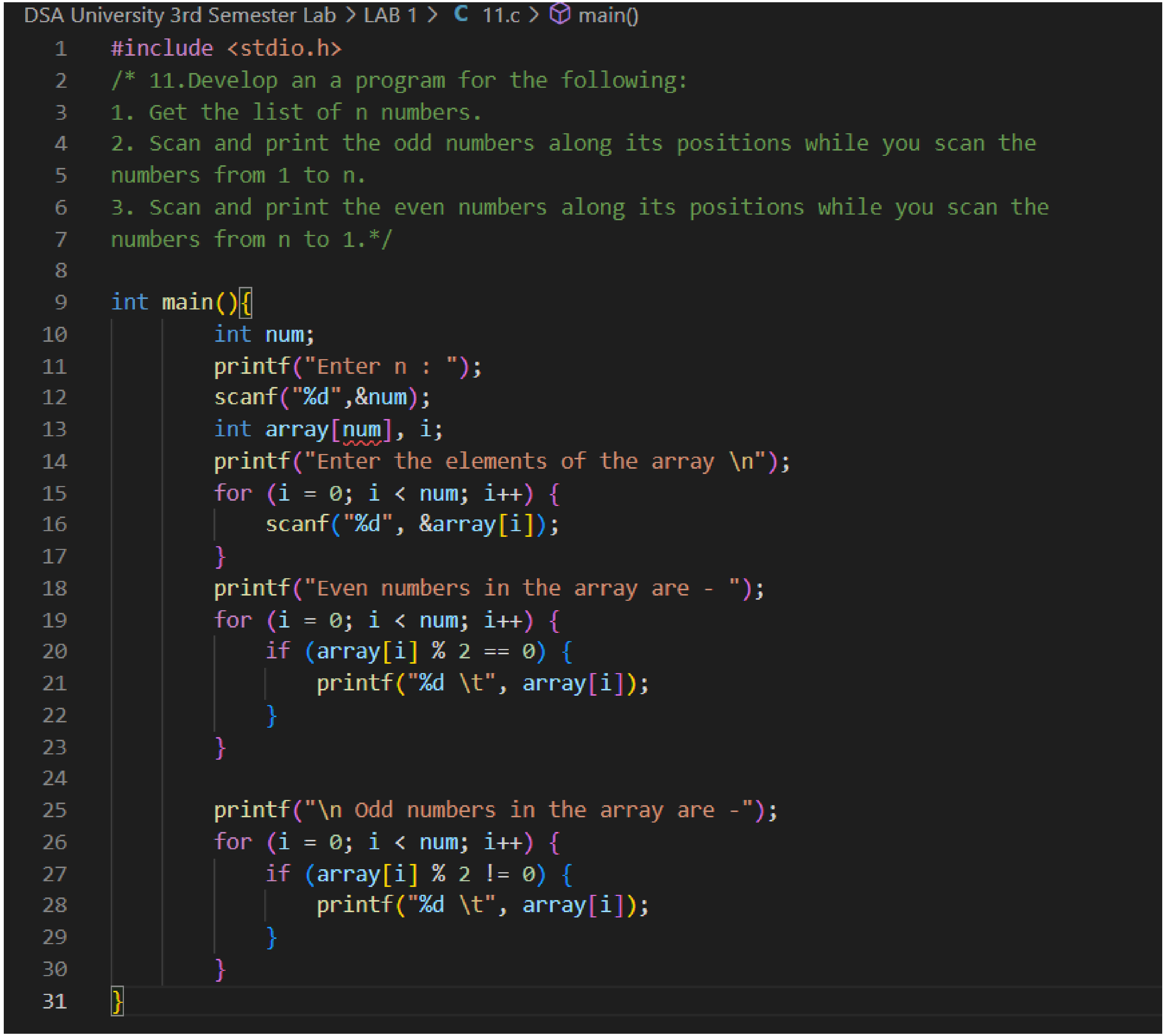


DSA University 3rd Semester Lab > LAB 1 > C 10.c > ...

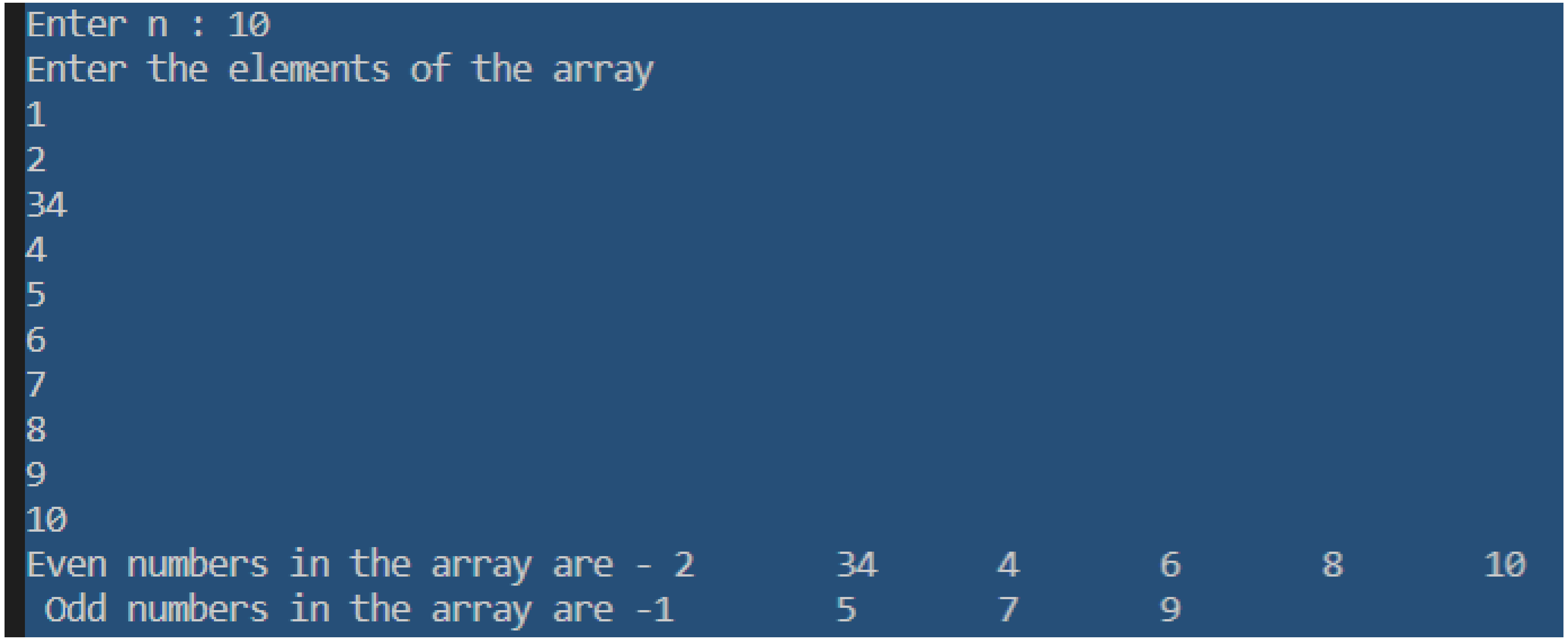
```c
#include <stdio.h>
/*10. Give the value of the left-hand side variable in each assignment statement.
Assume the linesare executed sequentially.
Assume the address of the blocks array is 4434.
int main()
{
char blocks[3] = {'A','B','C'};
char *ptr = &blocks[0];
char temp;
temp = blocks[0];
temp = *(blocks + 2);
temp = *(ptr + 1);
temp = *ptr;
ptr = blocks + 1;
temp = *ptr;
temp = *(ptr + 1);
ptr = blocks;
temp = *++ptr;
temp = ++*ptr;
temp = *ptr++;
temp = *ptr;
return 0;
}*/
```



```c
int main()
{
char blocks[3] = {'A','B','C'};
char *ptr = &blocks[0];    //A
char temp;                 //
temp = blocks[0];          //A
temp = *(blocks + 2);      //C
temp = *(ptr + 1);         //B
temp = *ptr;               //A
ptr = blocks + 1;          //B
temp = *ptr;               //B
temp = *(ptr + 1);         //C
ptr = blocks;              //A
temp = *++ptr;             //B
temp = ++*ptr;             //B
temp = *ptr++;             //A
temp = *ptr;               //A
return 0;
}
```



```c
#include <stdio.h>
/* 11.Develop an a program for the following:
1. Get the list of n numbers.
2. Scan and print the odd numbers along its positions while you scan the
numbers from 1 to n.
3. Scan and print the even numbers along its positions while you scan the
numbers from n to 1.*/

int main(){
        int num;
        printf("Enter n : ");
        scanf("%d",&num);
        int array[num], i;
        printf("Enter the elements of the array \n");
        for (i = 0; i < num; i++) {
            scanf("%d", &array[i]);
        }
        printf("Even numbers in the array are - ");
        for (i = 0; i < num; i++) {
            if (array[i] % 2 == 0) {
                printf("%d \t", array[i]);
            }
        }

        printf("\n Odd numbers in the array are -");
        for (i = 0; i < num; i++) {
            if (array[i] % 2 != 0) {
                printf("%d \t", array[i]);
            }
        }
}
```



```
Enter n : 10
Enter the elements of the array
1
2
34
4
5
6
7
8
9
10
Even numbers in the array are - 2       34      4       6       8       10
 Odd numbers in the array are -1        5       7       9
```

Github Code