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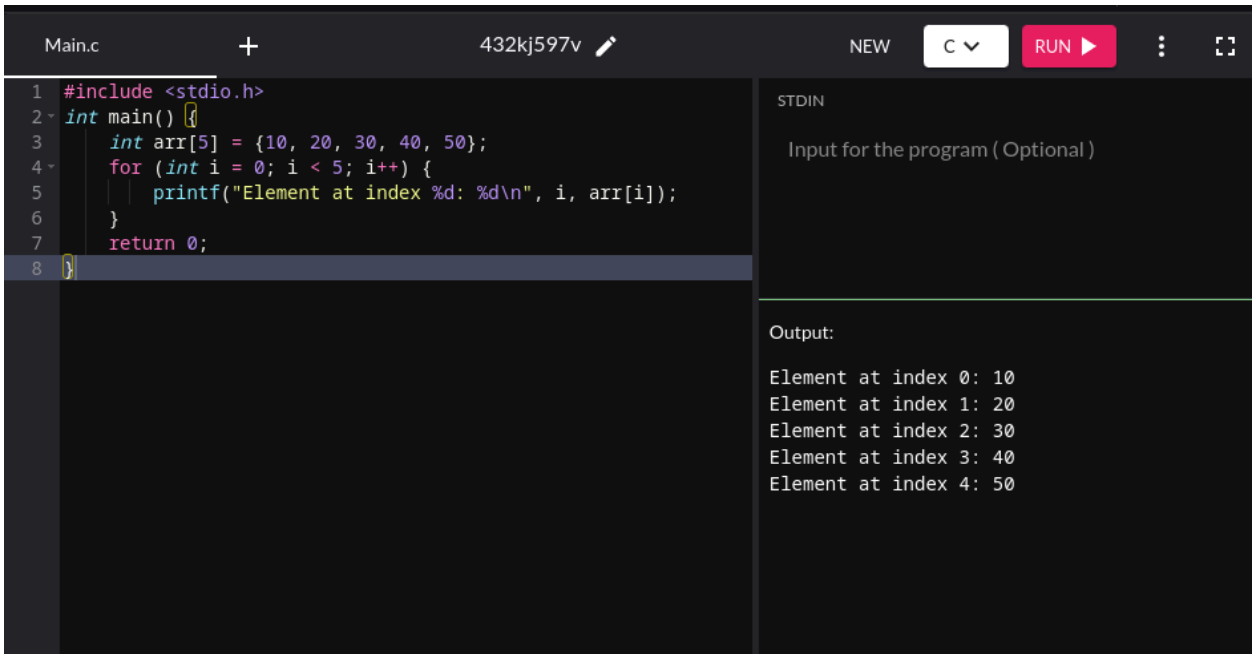
Date	Dec 13 2024	Assignment	3

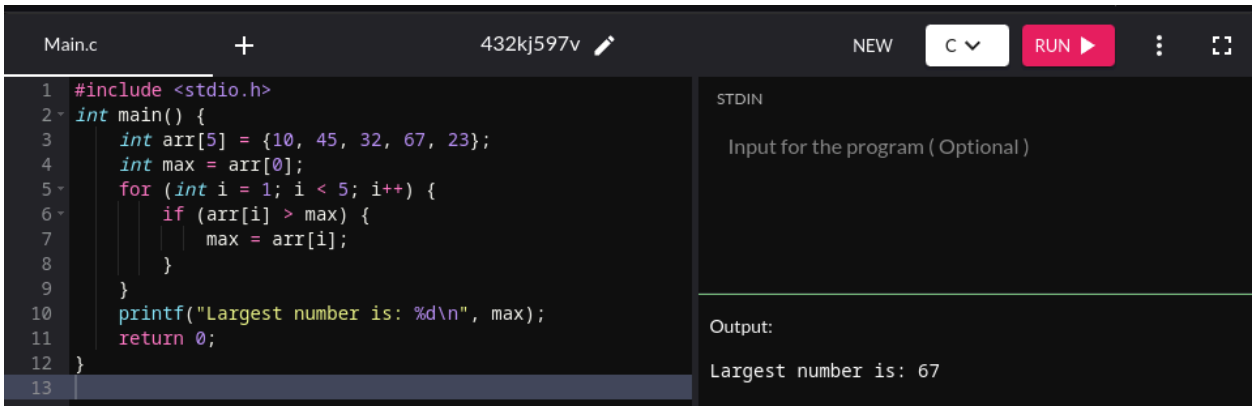
Topic : C Programming Arrays and Functions

Practice these questions

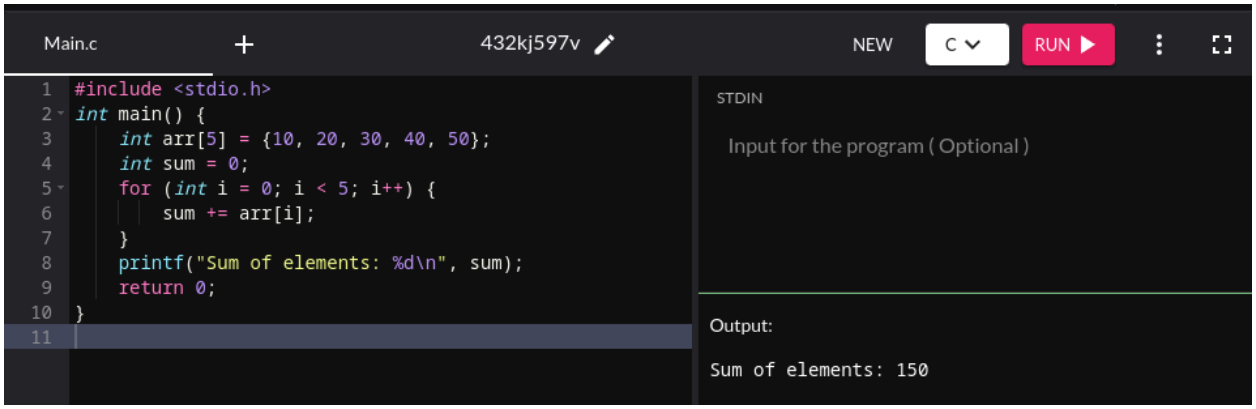
- **Write a program to initialize and print the elements of an integer array.**



- **Write a program to find the largest number in an array.**



- **Write a program to find the sum of all elements in an array.**




```
#include <stdio.h>
int main() {
   int arr[5] = {10, 20, 30, 40, 50};
   int sum = 0;
   for (int i = 0; i < 5; i++) {
      sum += arr[i];
   }
   printf("Sum of elements: %d\n", sum);
```

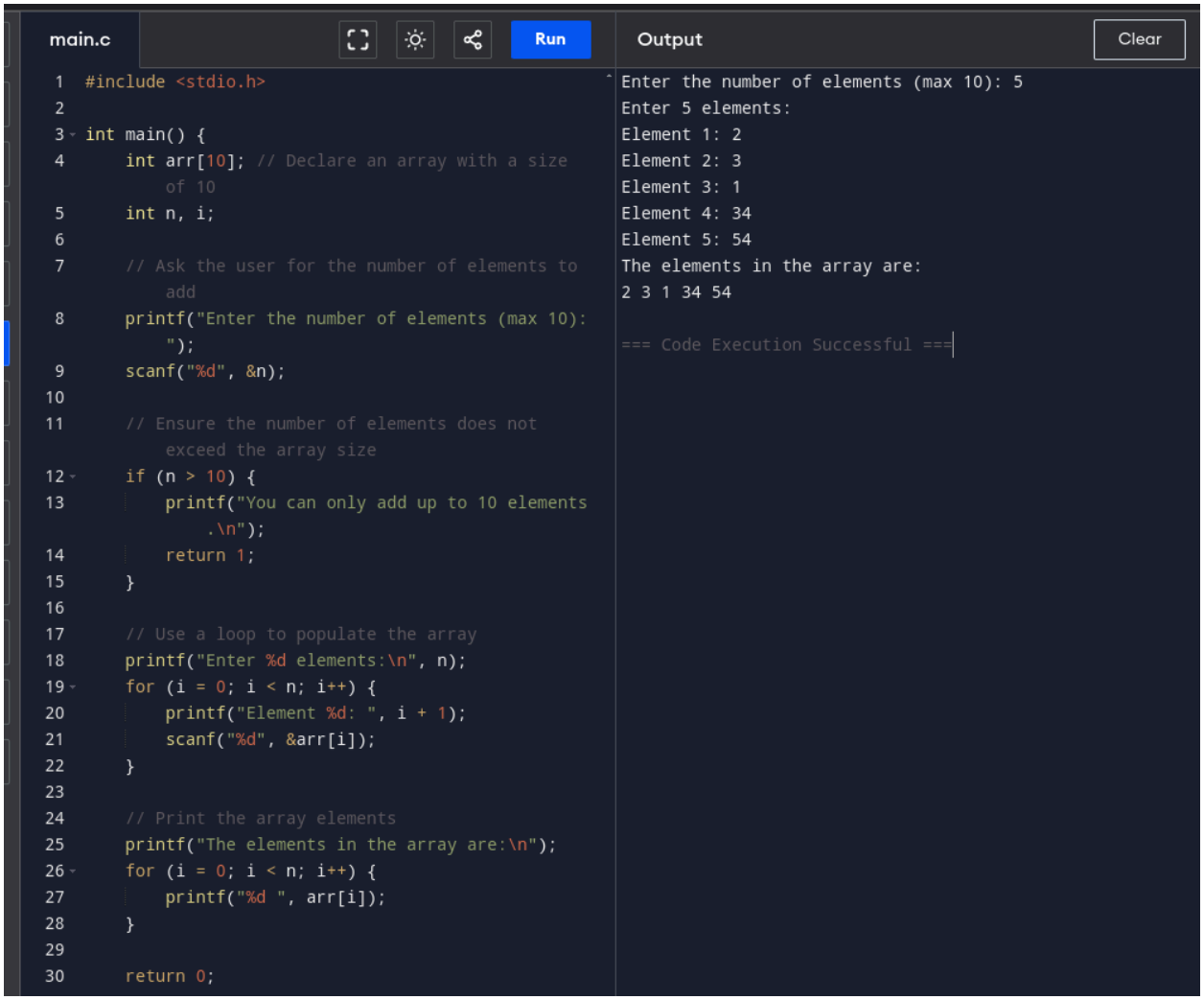
```
    return 0;
}
```

- **Write a C program to perform the following tasks:**

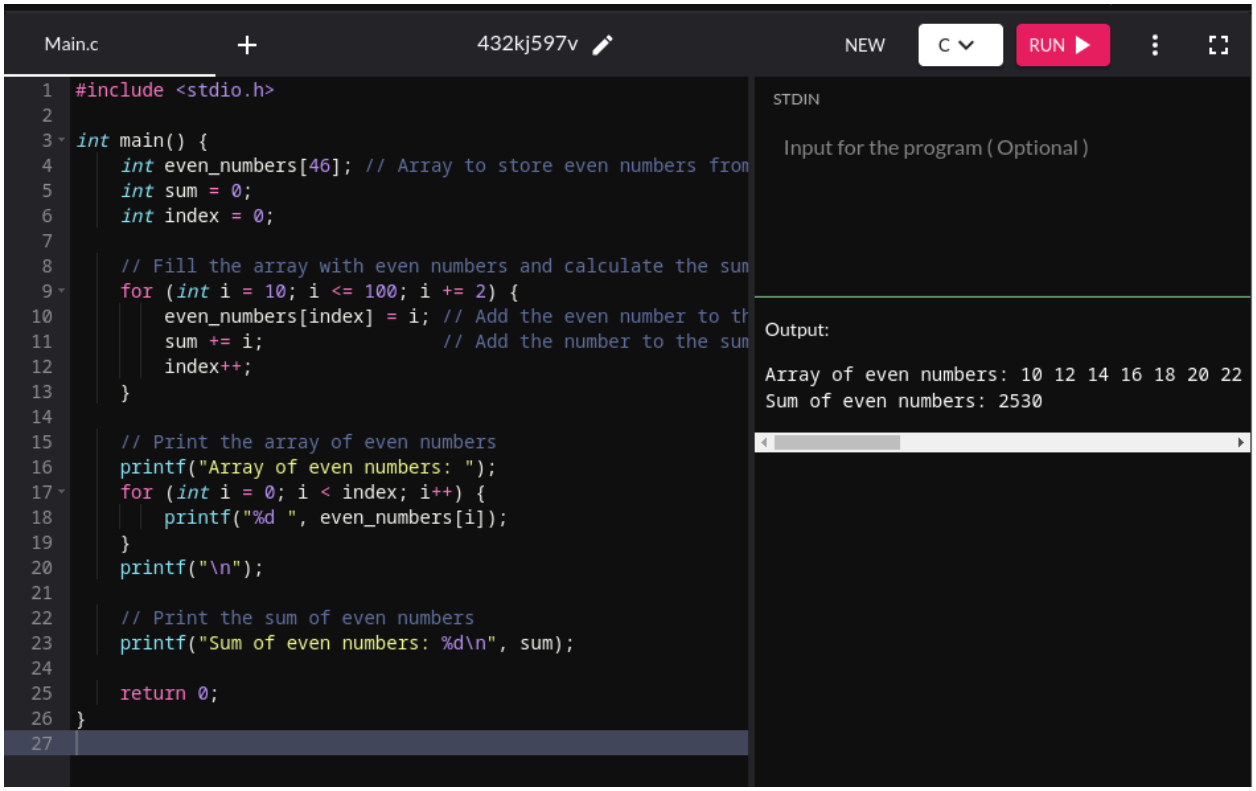
1. Initialize an empty array that can hold a maximum of 10 integers.
2. Prompt the user to input the number of elements they want to add to the array (ensure it does not exceed the maximum size of 10).
3. Use a loop to accept the user inputs and store them in the array.
4. After all elements are entered, display the elements of the array using another loop.

Constraints:

- The maximum number of elements that can be added to the array is 10.
- Input validation is required to ensure the user does not enter more than 10 elements.



- **Create an array of all even numbers from 10 to 100 and calculate their sum:**



Program

```
#include <stdio.h>

int main() {
   int even_numbers[46]; // Array to store even numbers from 10 to 100
   int sum = 0;
   int index = 0;

   // Fill the array with even numbers and calculate the sum
   for (int i = 10; i <= 100; i += 2) {
      even_numbers[index] = i; // Add the even number to the array
      sum += i;               // Add the number to the sum
      index++;
   }

   // Print the array of even numbers
   printf("Array of even numbers: ");
   for (int i = 0; i < index; i++) {
      printf("%d ", even_numbers[i]);
   }
```

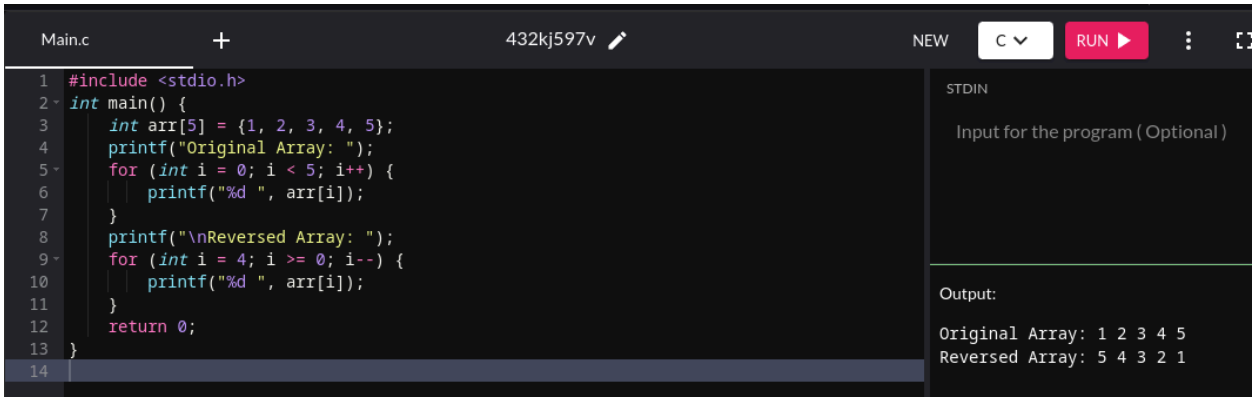
```
    printf("\n");

    // Print the sum of even numbers
    printf("Sum of even numbers: %d\n", sum);

    return 0;
}
```

Output:

Array of even numbers: 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100
Sum of even numbers: 2530

- **Write a program to reverse the elements of an array.**

```
#include <stdio.h>
int main() {
    int arr[5] = {1, 2, 3, 4, 5};
    printf("Original Array: ");
    for (int i = 0; i < 5; i++) {
        printf("%d ", arr[i]);
    }
    printf("\nReversed Array: ");
    for (int i = 4; i >= 0; i--) {
        printf("%d ", arr[i]);
    }
    return 0;
}
```



Questions to try :

Arrays

1. What is an array, and how is it different from a regular variable?
2. How do you declare and initialize an array in your preferred programming language? Provide an example.
3. Write a program to find the largest number in a given array.
4. Write a program to calculate the sum of all elements in an array.
5. How do you access the first and last elements of an array?
6. What happens if you try to access an element outside the bounds of an array?
7. Write a program to reverse the elements of an array.
8. How can you check if an array is empty?
9. Write a program to count the number of even and odd numbers in an array.
10. Explain the difference between a one-dimensional and a two-dimensional array. Provide examples.

Functions

1. What is a function, and why is it used in programming?
2. Write a function to calculate the square of a number.
3. How do you pass arguments to a function? Explain with an example.
4. What is the difference between passing arguments by value and by reference?
5. Write a function to check if a given number is prime.
6. What is a return statement, and how is it used in functions?
7. Can a function return multiple values? If yes, how? Provide an example.
8. What is the difference between a function declaration and a function call?
9. Write a function to find the factorial of a given number.
10. How can you call a function inside another function? Provide an example.

END