- A 2-dimensional array in C is an array of arrays.
- It allows you to store and access elements in a tabular format with rows and columns.
- The elements in a 2D array are typically referred to using two indices, representing the row and column positions.

Here's the general syntax for declaring and initializing a 2D array in C:

C

```
datatype arrayName[rowSize][columnSize];
```

Here's an example of declaring and initializing a 2D array of integers:

C

```
int matrix[3][4];  // 3 rows and 4 columns
```

You can also initialize the elements of a 2D array during declaration:

C

```
int matrix[3][4] = {
    {1, 2, 3, 4},    // first row
    {5, 6, 7, 8},    // second row
    {9, 10, 11, 12}  // third row
```

```
};
```

To access individual elements in a 2D array, you use the row and column indices:

C

```
int element = matrix[rowIndex][columnIndex];
```

Here’s an example that demonstrates accessing and modifying elements in a 2D array:

C

```
#include <stdio.h>

int main() {
    int matrix[3][4] = {
        {1, 2, 3, 4},
        {5, 6, 7, 8},
        {9, 10, 11, 12}
    };

    printf("Element at matrix[1][2]: %d\n", matrix[1][2]);  //
Accessing element
    matrix[1][2] = 99;                                      //
Modifying element
    printf("Modified element at matrix[1][2]: %d\n", matrix[1][2]);

    return 0;
```

```
}
```

In this example,

- We declared and initialized a 2D array called matrix with 3 rows and 4 columns.
- We then accessed the element at matrix[1][2] (which is 7) and modified it to 99.
- Finally, we printed the modified element.

Remember that the indices in a 2D array start from 0. The first index represents the row number, and the second index represents the column number.

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