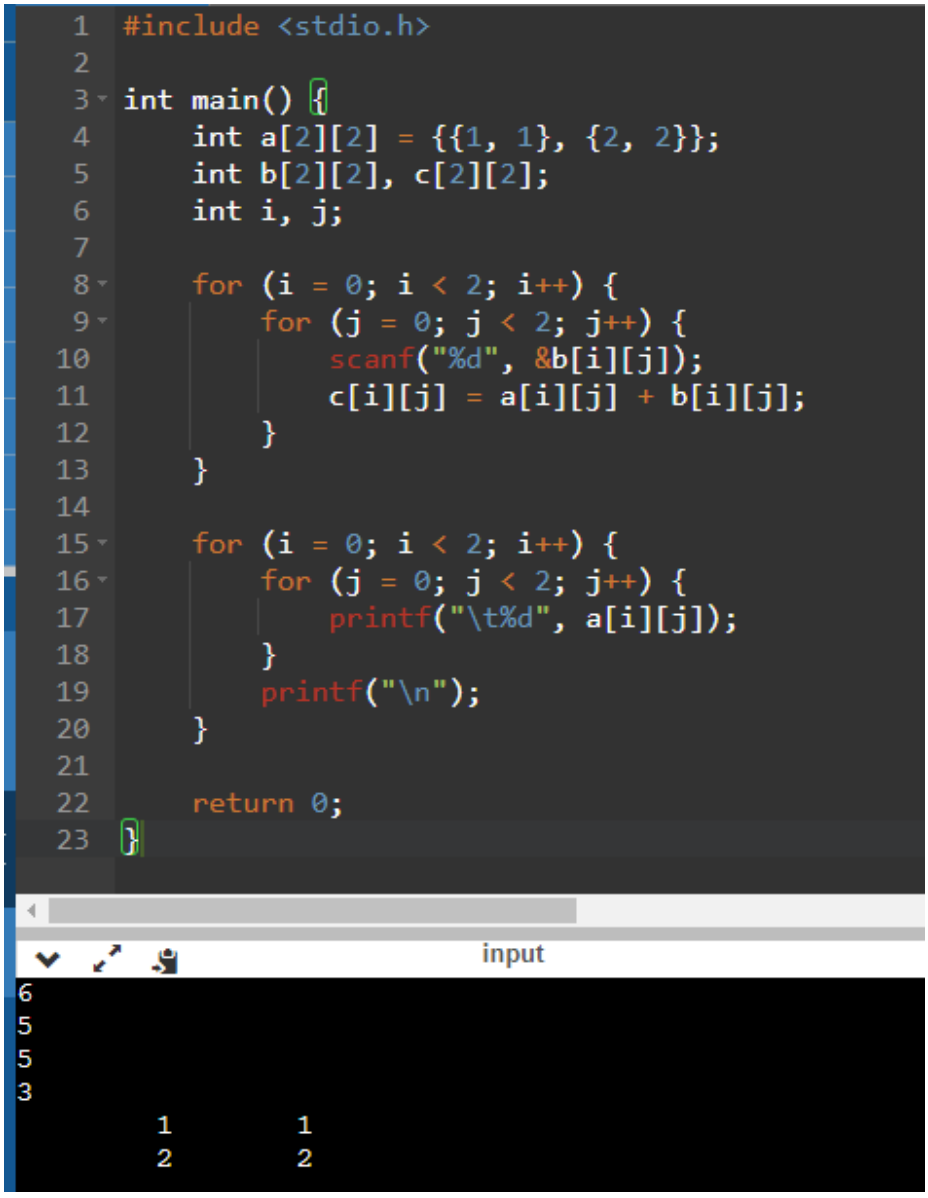
two dimensional arrays

1. addition of two matrices in c



```c
#include <stdio.h>

int main() {
    int a[2][2] = {{1, 1}, {2, 2}};
    int b[2][2], c[2][2];
    int i, j;

    for (i = 0; i < 2; i++) {
        for (j = 0; j < 2; j++) {
            scanf("%d", &b[i][j]);
            c[i][j] = a[i][j] + b[i][j];
        }
    }

    for (i = 0; i < 2; i++) {
        for (j = 0; j < 2; j++) {
            printf("\t%d", a[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

```
input
6
5
5
3
        1       1
        2       2
```

dry run:

1. Declare and initialize variables: - `i` = 0 - `j` = 0 - `a` = 0

2. Loop while `i` is less than or equal to 2: - Enter nested loop while `j` is less than or equal to 2: - Calculate the value of `a` by multiplying `i` and `j`. - Print the value of `a`.

3. Increment `j` by 1.

4. If `j` is still less than or equal to 2, go back to step 2.

5. Increment `i` by 1.

6. If `i` is still less than or equal to 2, go back to step 2.

2. multiplicatiion of two matrices in c

```c
#include <stdio.h>

int main() {
    int a[3][2] = {{1, 2}, {3, 4}, {5, 6}};
    int b[2][3] = {{7, 8, 9}, {10, 11, 12}};
    int c[3][3] = {0};
    int i, j, k;

    for (i = 0; i < 3; i++) {
        for (j = 0; j < 3; j++) {
            for (k = 0; k < 2; k++) {
                c[i][j] += a[i][k] * b[k][j];
            }
        }
    }

    for (i = 0; i < 3; i++) {
        for (j = 0; j < 3; j++) {
            printf("%d ", c[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

input

```
27 30 33
61 68 75
95 106 117
```

1. Declare and initialize matrices `a`, `b`, and `c`.

2. Start the first loop with `i` from 0 to 2: -

Start the second loop with `j` from 0 to 2: -

Start the third loop with `k` from 0 to 1: -

Calculate the value of `c[i][j]` by multiplying `a[i][k]` with `b[k][j]` and adding it to the existing value of `c[i][j]`.

3. Print the elements of matrix `c` using nested loops.