

## Code

```
#include <stdio.h>

int main() {
    int x, y, z, i, j, k;
    printf("Enter the dimensions (x y z): ");
    scanf("%d %d %d", &x, &y, &z);
    int A[x][y][z], B[x][y][z], sum[x][y][z], diff[x][y][z], prod[x][y][z];
    printf("Enter elements of first 3D matrix:\n");
    for(i = 0; i < x; i++)
        for(j = 0; j < y; j++)
            for(k = 0; k < z; k++)
                scanf("%d", &A[i][j][k]);
    printf("Enter elements of second 3D matrix:\n");
    for(i = 0; i < x; i++)
        for(j = 0; j < y; j++)
            for(k = 0; k < z; k++)
                scanf("%d", &B[i][j][k]);
    for(i = 0; i < x; i++) {
        for(j = 0; j < y; j++) {
            for(k = 0; k < z; k++) {
                sum[i][j][k] = A[i][j][k] + B[i][j][k];
                diff[i][j][k] = A[i][j][k] - B[i][j][k];
                prod[i][j][k] = A[i][j][k] * B[i][j][k]; // element-wise
            }
        }
    }
    printf("\nAddition of 3D matrices:\n");
    for(i = 0; i < x; i++) {
        for(j = 0; j < y; j++) {
            for(k = 0; k < z; k++)

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        printf("%d ", sum[i][j][k]);
        printf("\n");
    }
    printf("\n");
}

printf("Subtraction of 3D matrices:\n");
for(i = 0; i < x; i++) {
    for(j = 0; j < y; j++) {
        for(k = 0; k < z; k++) {
            printf("%d ", diff[i][j][k]);
            printf("\n");
        }
        printf("\n");
    }
    printf("Multiplication of 3D matrices (element-wise):\n");
    for(i = 0; i < x; i++) {
        for(j = 0; j < y; j++) {
            for(k = 0; k < z; k++) {
                printf("%d ", prod[i][j][k]);
                printf("\n");
            }
            printf("\n");
        }
        printf("Traversal of first 3D matrix:\n");
        for(i = 0; i < x; i++)
            for(j = 0; j < y; j++)
                for(k = 0; k < z; k++)
                    printf("%d ", A[i][j][k]);

printf("\nTraversal of second 3D matrix:\n");

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for(i = 0; i < x; i++)
    for(j = 0; j < y; j++)
        for(k = 0; k < z; k++)
            printf("%d ", B[i][j][k]);

return 0;
}
```

## Output

```
Enter the dimensions (x y z): 2 2 2
Enter elements of first 3D matrix:
1 2
1 2
3 4
5 6
Enter elements of second 3D matrix:
4 5
6 4
8 5
4 5

Addition of 3D matrices:
5 7
7 6

11 9
9 11
```

```
Subtraction of 3D matrices:
-3 -3
-5 -2

-5 -1
1 1

Multiplication of 3D matrices (element-wise):
4 10
6 8

24 20
20 30

Traversal of first 3D matrix:
1 2 1 2 3 4 5 6
Traversal of second 3D matrix:
4 5 6 4 8 5 4 5
```