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COURSE NAME: DATA STRUCTURES FOR MODERN COMPUTING SYSTEMS

COURSE CODE: CSA0302

Experiment 4: 3D Matrix Mul

Code:

```c
#include <stdio.h>
int main() {
    int a[3][3][3] = {
        {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}},
        {{2, 2, 2}, {3, 3, 3}, {4, 4, 4}},
        {{5, 5, 5}, {6, 6, 6}, {7, 7, 7}}
    };
    int b[3][3][3] = {
        {{10, 1, 2}, {1, 2, 3}, {4, 1, 2}},
        {{2, 3, 4}, {5, 1, 2}, {3, 2, 1}},
        {{1, 1, 2}, {2, 3, 1}, {4, 1, 3}}
    };
    int mul[3][3][3];
    int i, j, k;
    for (i = 0; i < 3; i++) {
        for (j = 0; j < 3; j++) {
            for (k = 0; k < 3; k++) {
                mul[i][j][k] = a[i][j][k] * b[i][j][k];
            }
        }
    }
    printf("Result of 3D Array Multiplication:\n");
    for (i = 0; i < 3; i++) {
        printf("\nLayer %d:\n", i);
        for (j = 0; j < 3; j++) {
```

```c
        for (k = 0; k < 3; k++) {

            printf("%d\t", mul[i][j][k]);

        }

        printf("\n");

    }

  }

  return 0;

}
```

Output:

```
Result of 3D Array Multiplication:

Layer 0:
10  2   6
4   10  18
28  8   18

Layer 1:
4   6   8
15  3   6
12  8   4

Layer 2:
5   5   10
12  18  6
28  7   21


=== Code Execution Successful ===
```