

```
1  #include <stdio.h>
2
3  #define NUM_ROWS 5
4  #define NUM_COLUMNS 3
5  #define DEPTH 2
6
7  int main(void)
8  {
9      //variable declaraions
10
11     //IN-LINE INITIALIZATION
12     int iArray[NUM_ROWS][NUM_COLUMNS][DEPTH] = { { { 9, 18 }, { 27, 36 }, { 45, 54 } },
13                                                     { { 8, 16 }, { 24, 32 }, { 40, 48 } },
14                                                     { { 7, 14 }, { 21, 28 }, { 35, 42 } },
15                                                     { { 6, 12 }, { 18, 24 }, { 30, 36 } },
16                                                     { { 5, 10 }, { 15, 20 }, { 25, 30 } } };
17
18     int i, j, k;
19
20     int iArray_1D[NUM_ROWS * NUM_COLUMNS * DEPTH]; // 5 * 3 * 2 ELEMENTS => 30
21     //code
22
23     // ***** DISPLAY 3D ARRAY *****
24     printf("\n\n");
25     printf("Elements In The 3D Array : \n\n");
26     for (i = 0; i < NUM_ROWS; i++)
27     {
28         printf("***** ROW %d *****\n", (i + 1));
29         for (j = 0; j < NUM_COLUMNS; j++)
30         {
31             printf("***** COLUMN %d *****\n", (j + 1));
32             for (k = 0; k < DEPTH; k++)
33             {
34                 printf("iArray[%d][%d][%d] = %d\n", i, j, k, iArray[i][j][k]);
35             }
36             printf("\n");
37         }
38         printf("\n");
39     }
40
41     // ***** CONVERTING 3D TO 1D *****
42     for (i = 0; i < NUM_ROWS; i++)
43     {
44         for (j = 0; j < NUM_COLUMNS; j++)
45         {
46             for (k = 0; k < DEPTH; k++)
```

```
47         {
48             iArray_1D[(i * NUM_COLUMNS * DEPTH) + (j * DEPTH) + k] = iArray[i] ↗
               [j][k];
49         }
50     }
51 }
52
53 // ***** DISPLAY 1D ARRAY *****
54 printf("\n\n\n\n");
55 printf("Elements In The 1D Array : \n\n");
56 for (i = 0; i < (NUM_ROWS * NUM_COLUMNS * DEPTH); i++)
57 {
58     printf("iArray_1D[%d] = %d\n", i, iArray_1D[i]);
59 }
60
61 return(0);
62 }
63
64
```