

Worksheet 9

9.1 Try to walkthrough the following program and write down the expected results. Key-in the program and compare the results after execution. This program helps you to understand the use of two-dimensional arrays.

```
/* This program finds the dot product of two one-dimensional arrays
of real numbers. */

#include <stdio.h>
#include <math.h>
#define NumOfWeekdays 5
#define NumOfPeriods 7

void PrintTable(int Place[ ][NumOfPeriods]);

int main (void)
{
    int Day, Period, Room;
    int Lecture;
    int NumberLectures;
    int Place[NumOfWeekdays][NumOfPeriods]={0};
    char Choice;

    do
    {
        printf("\nThe program displays a time table showing the ");
        printf("\nDay, Period and Room for the Lectures entered.");
        printf("\n\nHow many lectures do you want to enter ? ");
        scanf("%d", &NumberLectures);
        printf("\n");

        for (Lecture = 1; Lecture <= NumberLectures; Lecture++)
        {
            printf("Please enter the day, period and room for lecture %d\n", Lecture);
            printf("Day (1 - 5) : ");
            scanf("%d", &Day);
            printf("Period (1 - 7) : ");
            scanf("%d", &Period);
            printf("Room (101 - 411) : ");
            scanf("%d", &Room);
            Place[Day-1][Period-1] = Room;
        }
        PrintTable(Place);

        printf("\n\nDo you want to try again (y/n)? ");
        scanf(" %c", &Choice);
    } while ((Choice == 'y') || (Choice == 'Y'));

    printf("\nEnd of Program");
    printf("\n");

    return 0;
}
```

```

void PrintTable(int Place[ ][NumOfPeriods])
{
    int i, j;
    printf("\n\n");
    printf("%32s\n", "Period");
    printf("%44s\n", " 1  2  3  4  5  6  7");
    printf("%45s\n", "-----");
    for (i = 1; i <= NumOfWeekdays; i++)
    {
        switch (i)
        {
            case 1 : printf("%10s", "Mon");
                    break;
            case 2 : printf("%10s", "Tue");
                    break;
            case 3 : printf("%10s", "Wed");
                    break;
            case 4 : printf("%10s", "Thu");
                    break;
            case 5 : printf("%10s", "Fri");
                    break;
            default : break;
        }
        printf("%1s", " ");
        for (j = 1; j <= NumOfPeriods; j++)
            if (Place[i-1][j-1] == 0)
                printf("%5s", " ");
            else printf("%4d ", Place[i-1][j-1]);
        printf("\n");
    }
}

```

Sample running :

The program displays a time table showing the Day, Period and Room for the Lectures entered.

How many lectures do you want to enter ? **6**<CR>

Please enter the day, period and room for lecture 1

Day (1 - 5) : **1**<CR>

Period (1 - 7) : **1**<CR>

Room (101 - 411) : **101**<CR>

Please enter the day, period and room for lecture 2

Day (1 - 5) : **1**<CR>

Period (1 - 7) : **2**<CR>

Room (101 - 411) : **202**<CR>

Please enter the day, period and room for lecture 3

Day (1 - 5) : **3**<CR>

Period (1 - 7) : **4**<CR>

Room (101 - 411) : **101**<CR>

Please enter the day, period and room for lecture 4

Day (1 - 5) : **4**<CR>

Period (1 - 7) : **5**<CR>

Room (101 - 411) : **203**<CR>

Please enter the day, period and room for lecture 5

Day (1 - 5) : **5**<CR>

Period (1 - 7) : **3**<CR>

Room (101 - 411) : **111**<CR>

Please enter the day, period and room for lecture 6

Day (1 - 5) : **5**<CR>

Period (1 - 7) : **7**<CR>

Room (101 - 411) : **404**<CR>

Task : Try to modify the program so that the data are read from a data file.