214189E – SENARATHNA G.G.P.C.
➔ MULTIDIMENSIONAL ARRAYS.

Exercises,

01)
a)
```c
#include <stdio.h>
int main() {
    int arr[3][3] = {2,3,5,1,8,9,6,7,0};

    printf("3*3 Metrix is:\n");
    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            printf("%d ", arr[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

b)
```c
#include <stdio.h>
int main() {
    int n,m;
    printf("Input the number of rows and colomns:\n");
    scanf("%d%d", &n,&m);

    int arr[n][m];
    printf("Input the number of elements in %d*%d Metrix:\n", n,m);

    for(int i = 0;i < n;i++) {
        for(int j = 0;j < m;j++) {
            scanf("%d", &arr[i][j]);
        }
    }
    for(int i = 0;i < n;i++) {
        for(int j = 0;j < m;j++) {
            printf("%d ", arr[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

02)

a)
```c
#include <stdio.h>
int main() {
    int arr [3][3] = {2,3,5,1,8,9,6,7,0};

    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            printf("%d ", arr[i][j]);
        }
        printf("\n");
    }
    for(int i = 0;i < 3;i++) {
        int sum = 0;
        for(int j = 0;j < 3;j++) {
            sum = sum + arr[i][j];
        }
        printf("summation of %d row:%d\n", (i+1),sum);
    }

    return 0;
}
```

b)
```c
#include <stdio.h>

void arr(int r,int c);

int main() {
    int n,m;
    printf("Input the number of rows & colomns:\n");
    scanf("%d%d", &n, &m);

    arr(n,m);

    return 0;
}

void arr(int r,int c) {
    int arr[r][c];
    printf("Input the number of elements in %d*%d Metrix:\n", r,c);
    for(int i = 0;i < r;i++) {
        for(int j = 0;j < c;j++) {
            scanf("%d", &arr[i][j]);
        }
    }
    for(int i = 0;i < r;i++) {
        for(int j = 0;j < c;j++) {
            printf("%d ", arr[i][j]);
        }
        printf("\n");
    }
    for(int i = 0;i < r;i++) {
        int sum = 0;
        for(int j = 0;j < c;j++) {
```

```
            sum = sum + arr[i][j];
        }
        printf("summation of %d row: %d\n", (i+1),sum);
    }
}
```

03)

```c
#include <stdio.h>
int main() {
    int sum_d1 = 0,sum_d2 = 0;
    int arr [3][3] = {2,3,5,1,8,9,6,7,0};

    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            printf("%d ", arr[i][j]);
        }
        printf("\n");
    }
    for(int i = 0;i < 3;i++) {
        int sum = 0;
        for(int j = 0;j < 3;j++) {
            sum = sum + arr[i][j];
        }
        printf("summation of %d row:%d\n", (i+1),sum);
    }
    printf("\n");
    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            if(i == j) {
                sum_d1 = sum_d1 + arr[i][j];
            }
            if(i + j == 2) {
                sum_d2 = sum_d2 + arr[i][j];
            }
        }
    }
    printf("summation of d1 & d2:%d %d", sum_d1,sum_d2);

    return 0;
}
```

04)

```c
#include <stdio.h>
int main() {
    int arr[3][3];
    printf("Enter the number of elements in 3*3 Metrix:\n");

    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            scanf("%d", &arr[i][j]);
        }
    }
    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            printf("%d ", arr[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```

05)

```c
#include <stdio.h>
int main() {
    int arr1[2][2],arr2[2][2],arr3[2][2];

    printf("Input number of elements in 2*2 Metrix 01:\n");
    for(int i = 0;i < 2;i++) {
        for(int j = 0;j < 2;j++) {
            scanf("%d", &arr1[i][j]);
        }
    }
    printf("Input number of elements in 2*2 Metrix 02:\n");
    for(int i = 0;i < 2;i++) {
        for(int j = 0;j < 2;j++) {
            scanf("%d", &arr2[i][j]);
        }
    }
    printf("Addition of Metrix 01 & Metrix 02:\n");
    for(int i = 0;i < 2;i++) {
        for(int j = 0;j < 2;j++) {
            arr3[i][j] = arr1[i][j] + arr2[i][j];
            printf("%d ", arr3[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```

06)

```c
#include <stdio.h>
int main() {
    int Met_01[3][3] = {2,2,3,3,2,4,1,3,4};
    int Met_02[3][3] = {3,5,7,4,2,1,3,2,1};
    int Met_00[3][3];

    printf("Metrix 01:\n");
    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            printf("%d ", Met_01[i][j]);
        }
        printf("\n");
    }

    printf("Metrix 02:\n");
    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            printf("%d ", Met_02[i][j]);
        }
        printf("\n");
    }
    printf("Multiplication of Metrix 01 & Metrix 02:\n");
    for(int i = 0;i < 3;i++) {
        for(int j = 0;j < 3;j++) {
            int sum = 0;
            for(int k = 0;k < 3;k++) {
                sum = sum + Met_01[i][k] * Met_02[k][j];
            }
            Met_00[i][j] = sum;
            printf("%d ", Met_00[i][j]);
        }
        printf("\n");
    }
    return 0;
}
```