Lecture – 16

Two dimensional arrays: Say, int a[4][5];

	0	1	2	3	4
0					
1					
2					
3					

Example 1:

```
void main()
{
        int a[3][4], i, j ;
        for( i = 0; i < 3 ; i ++)
                for( j = 0 ; j < 4 ; j ++)
                        scanf("%d", &a[i][j]
                                );
        for( i = 0; i < 3 ; i ++){
                for( j = 0 ; j < 4 ; j ++)
                        printf("%d", a[i][j] );
                printf("\n");
        }
}
```

Example 2:

```
void main()
{
        int i, j, row, col, *p;
        scanf("%d%d",&row,&col);
        p = (int *) malloc ( row * col * sizeof(int));
        for( i = 0; i < row ; i ++)
                for( j = 0 ; j < col ; j ++)
                        scanf("%d", (p + i * col + j ) );
        for( i = 0; i < row ; i ++){
                for( j = 0 ; j < col ; j ++)
                        printf("%4d", *(p + i * col + j ) );
                printf("\n");
        }
}
```

Example 3:

```
void main()
{
        int *a[3], dim, i, j, b[3];
        for( i = 0; i < 3; i ++){
                scanf("%d",&dim);
                a[i] = (int *) malloc(dim * sizeof(int));
                b[i] = dim;
                for( j = 0; j < dim; j ++)
                        scanf("%d", (a[i] + j));
        }
        for( i = 0; i < 3; i ++){
                for( j = 0; j < b[i]; j ++)
                        printf("%4d",*(a[i] + j));
                printf("\n");
        }
}
```

Three dimentional array: Say, int a[3][4][5];

Example 4:

```
void main()
{
        char ch[2][3][10], i, j, k ;
        for( i = 0; i < 2 ; i ++)
                for( j = 0 ; j < 3 ; j ++)
                        for( k = 0; k < 10; k ++)
                                scanf("%c", &ch[i][j][k] );
        for( i = 0; i < 2 ; i ++){
                for( j = 0 ; j < 3 ; j ++){
                        for( k = 0; k < 10; k ++)
                                printf("%c", ch[i][j][k] );
                        printf("\n");
                }
                printf("\n");
        }
}
```

Array initialization:

```
int a[2] = {1, 2};
char b[4] = {'a','b','c','\0'};
char a[] = "abc"; char
*p = "hellow"; char
c[10] = "hellow";
int x[2][2] = {{1, 2}, {3}};
```