MA 511: Computer Programming

Lecture 13

http://www.iitg.ernet.in/psm/indexing_ma511/y08/index.html

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Mon 10:00-10:55 Tue 11:00-11:55 Fri 9:00-9:55 Class: 1G2

MA512 Lab : Wed 14:00-16:55

A function can pointer to an array

Example:

```
void  func(int *p);
main(){
    static int a[5]={10,20,30,40,50};
    func(a + 3);
}
void func(int *p){
    int i, sum = 0;
    for(i=0; i<3; i++)
            sum += *(p+i);
    printf("sum = %d", sum);
return;
}
```

A function can return a pointer

Example:

```
int *func(int *p);
main(){
    static int a[5]={10,20,30,40,50};
    int *ptrmax;
    ptrmax = func(a);
    printf("max=%d", *ptrmax);
}
int *func(int *p){
    int i, imax, max = 0;
    for(i=0; i<5; i++){
       if(*(p+i) > max){
                    max =*(p+i);
                    imax = i;
       }
    }
return(p+imax);
}
```

Pointer & multidimensional arrays

x: 2-D array having 10 rows 20 columns

declare as:

int (*x)[20]; a ptr to a group of contiguous one dimensional, 20-element integer array.

which is same as

int x[10][20];

Similarly:

int (*b)[20][30]; a ptr to a group of contiguous two dimensional, 20 X 30 integer arrays.

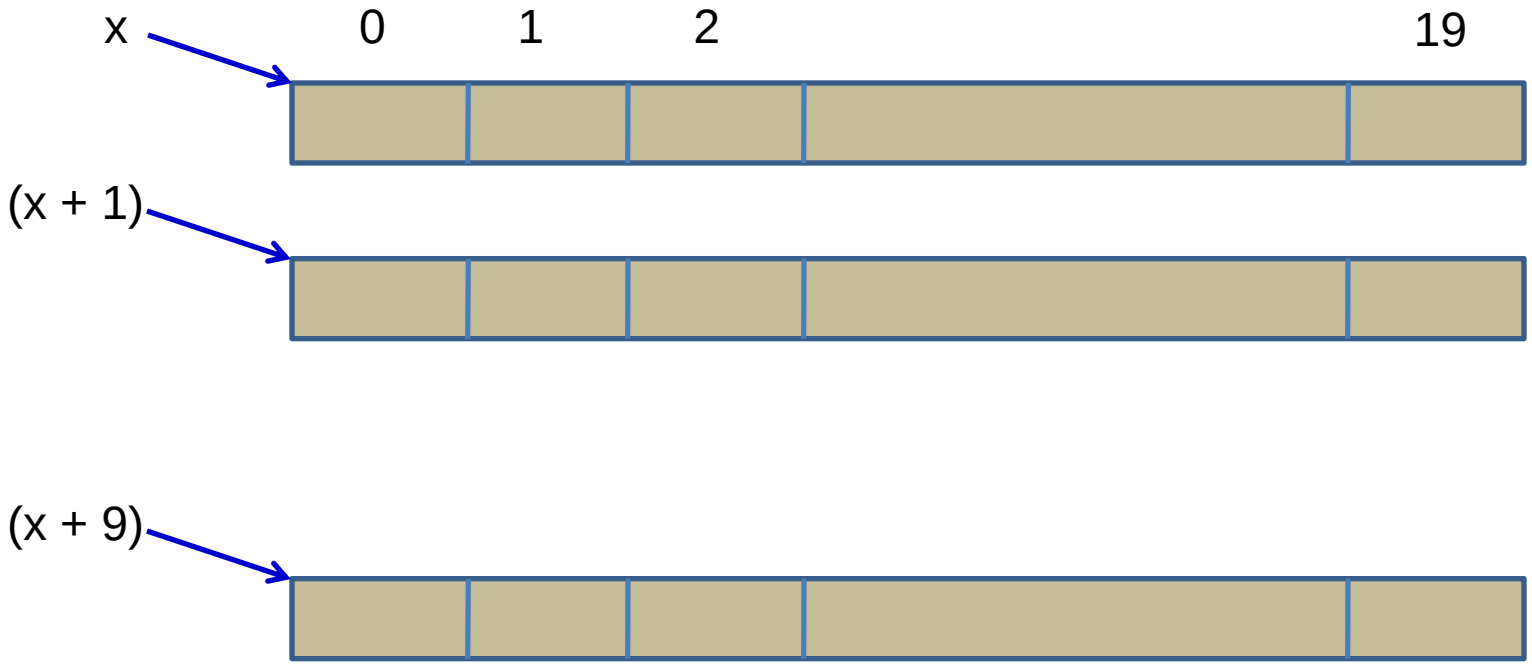
which is same as

int b[10][20][30];

Pointer & multidimensional arrays

int (*x)[20]; a ptr to a group of contiguous one dimensional, 20-element integer array.

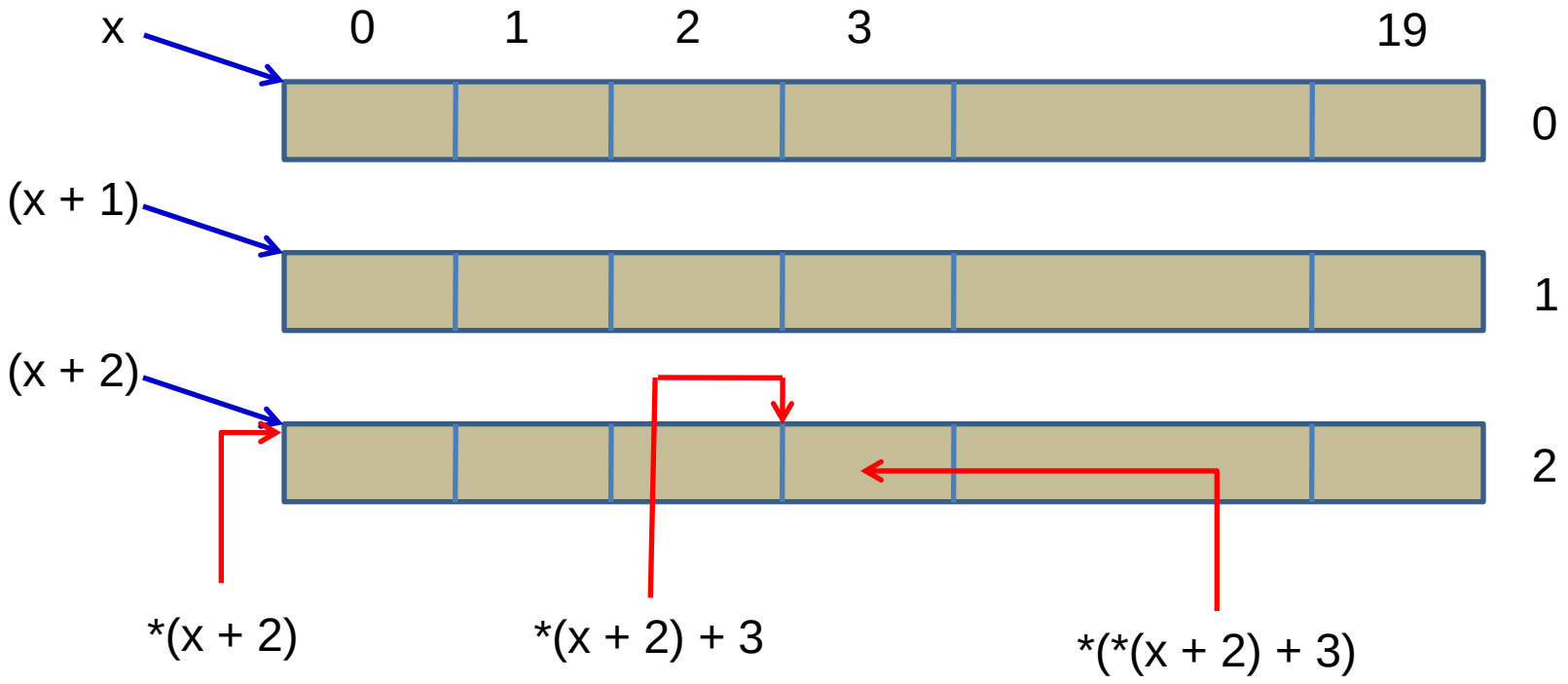
Or int x[10][20];



Pointer & multidimensional arrays

How to access the **item** in row 2 and column 3

x[2][3] or *(*(x+2) + 3)



Exercise

1. int X[8] ={10, 12, 14, 15, 16, 17, 18, 19}; What is
    a) X
    b) (x+2)
    c) *x
    d) *x+2
    e) *(x+2) ?

2. Float T[2][3] = { {1.1, 1.2, 1.3} {2.1, 2.2, 2.3} }; What is
    a) table,
    b) (table +1)
    c) *(table +1)
    d) (*table +1) + 1
    e) (*(table) +1)
    f) *(*(table +1)+1
    g) *(*(table +1))
    h) *(*(table) +1) + 1?