

CO222: Programming Methodology

Lab: 08

E/18/022

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Discussion

1. How much memory (in bytes) is allocated for your Array with 5 data elements inserted? Show your calculation.

```
3 //creating a structure to store student records
4 ▾ typedef struct _{
5     int batch;
6     int regNo;
7     char firstName[20];
8     char lastName[20];
9     float cGPA;
10 } student_t;
```

int (batch) = 4 bytes

int (regNo) = 4 bytes

char array (firstName[20]) = 20 bytes

char array (lastName[20]) = 20 bytes

float (cGPA) = 4 bytes

Sum is (4x3 + 20x2) 52 bytes

Since there are 100 elements in my array total size should be 52x100 = 5200 bytes

2. At what stage of your program, this memory allocation has happened and when the memory is freed?

- This memory allocation happens when the program is run and the memory is freed when the program ends.

3. Explain how deleting values is implemented?

```
145 //this function is used to delete a given student information form array
146 student_t* Delete(student_t arr[], int i){
147     char c1,c2,c3;
148     int regNum, batch, flag = 0;
149     printf("Enter the Registration Number: ");
150     scanf(" %c%c%i%c%i", &c1,&c2,&batch,&c3,&regNum); //read input(format is E/XX/YYYY where XX is batch and YYY is reg no) from
the user
151     //checking whether array is contain input student data
152     for(int j = 0; j < i; j++){
153         if(arr[j].batch == batch && arr[j].regNo == regNum && c1 == 'E' && c2 == '/' && c3 == '/'){
154             flag = 1;
155             for(int k = j; k < i; k++){
156                 arr[k] = arr[k+1]; //in here if student found in the array, it will remove
157             }
158             break;
159         }
160     }
161     if(flag == 1){
162         printf("Delete Successful!\n");
163     }else{
164         printf("No student with the given Registration Number!\n");
165     }
166     printf("\n");
167     return arr;
168 }
```

Line: 159 Col:

Initially move to the specified location which user want to remove in array. If specified location is found copy the next element to the current element of array ($\text{arr}[i] = \text{arr}[i+1]$) else it prints no record founded in array.

4. Can we add an unlimited amount of student data to this program? If no what is the limitation?

- No, we can't store unlimited data to this program. It is limited by length of student array(in my program it is 100).