LAB ASSIGNMENT 19

Implement C programs for the following problem statements:

Archiving Record in a File System: Assume that there are 20 students in a class. Each student academic information is represented as an individual record. The attributes of the record are as follows:

Reg no – int

Name – char array

Sem – int

Cgpa – float

All the student information records have to be stored in a file grad.bin. You are asked to insert a new record at the last, delete the first record, manipulate the kth (1<= k <= 20)record in the grad.txt. Write a program for the same.

Note: Create a structure for the student record. The structure can be written and or fetched from the file (grad.bin). Use binary files reading and writing operations to deploy the tasks.

```
#include <stdio.h>


struct student{
    int reg;
    char name[50];
    int sem;
    float cgpa;
}stud[21], temp;
```

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```
void insert(struct student stud[]){
int i;

   FILE *fpt=fopen("grad.bin","rb");
   if(fpt==NULL){
      printf("\nUnable to open file");
      return;
   }

   FILE *fptr=fopen("temp.bin","wb");
   if(fpt==NULL){
      printf("\nUnable to open file");
      return;
   }

   for(i=0;i<20;i++){

     fread(&stud[i], sizeof(struct student), 1,fpt);
     fwrite(&stud[i],sizeof(struct student),1,fptr);
   }

   printf("\nEnter student details: ");
   printf("\nName: ");
```

```
    getchar();
    scanf("%[^\n]s",stud[20].name);//we can't calculate no. of lines in
binary files
    //so I'm assuming new student is 21st student since 20 students
are already in class

    printf("\nRegistered number: ");
    scanf("%d",&stud[20].reg);

    printf("\nSemester number: ");
    scanf("%d",&stud[20].sem);

    printf("\nCGPA obtained: ");
    scanf("%f",&stud[20].cgpa);

    fwrite(&stud[20],sizeof(struct student),1,fptr);

    fclose(fpt);
    fclose(fptr);

    remove("grad.bin");
    rename("temp.bin","grad.bin");

    fpt=fopen("grad.bin","rb");
```

```
   printf("\nUpdated Student Archive:");
   printf("\nName\t\tRegistered number\tSemester number\tCGPA\n");
   for(i=0;i<21;i++){
      fread(&stud[i], sizeof(struct student), 1,fpt);

printf("%s\t\t%d\t\t%d\t\t%f\n",stud[i].name,stud[i].reg,stud[i].sem, stud[i].cgpa );
//it's not printing first character of first name, online compiler problem ig
//in codeblocks it's working fine if not present in same directory
   }

   fclose(fpt);

}

void delete(struct student stud[]){
   int del, i;

   FILE *fpt=fopen("grad.bin","rb");
   if(fpt==NULL){
      printf("\nUnable to open file");
      return;
```

```
    }

    FILE *fptr=fopen("temp.bin","wb");
    if(fpt==NULL){
       printf("\nUnable to open file");
       return;
    }

    printf("\nEnter registered number of student whose records need
to be deleted: ");
    //since registered number is supposed to be unique, I'm
considering it to identify student
    scanf("%d",&del);

    for(i=0;i<21;i++){

      fread(&stud[i], sizeof(struct student), 1,fpt);

       if(del!=stud[i].reg)
         fwrite(&stud[i],sizeof(struct student),1,fptr);
    }

    fclose(fptr);
    fclose(fpt);
```

```
    remove("grad.bin");
    rename("temp.bin","grad.bin");

    fpt=fopen("grad.bin","rb");

    printf("\nUpdated Student Archive:");
    printf("\nName\t\tRegistered number\tSemester
number\tCGPA\n");
    for(i=0;i<20;i++){
        fread(&stud[i], sizeof(struct student), 1,fpt);

printf("%s\t\t%d\t\t%d\t\t%f\n",stud[i].name,stud[i].reg,stud[i].sem,
stud[i].cgpa );
//it's not printing first character of first name, online compiler
problem ig
//in codeblocks it's working fine if not in same directory
    }

    fclose(fpt);

}

void modify(struct student stud[]){
    int mod, i;
```

```
   FILE *fpt=fopen("grad.bin","rb");
   if(fpt==NULL){
      printf("\nUnable to open file");
      return;
   }

   FILE *fptr=fopen("temp.bin","wb");
   if(fpt==NULL){
      printf("\nUnable to open file");
      return;
   }

   printf("\nEnter registered number of student whose records need
to be modified: ");
   //since registered number is supposed to be unique, I'm
considering it to identify student
   scanf("%d",&mod);

   for(i=0;i<21;i++){

      fread(&stud[i], sizeof(struct student), 1,fpt);

      if(mod==stud[i].reg)
```

```
    {
        printf("\nEnter details: ");
        printf("\nName: ");
        getchar();
        scanf("%[^\n]s",stud[i].name);

        printf("\nRegistered number: ");
        scanf("%d",&stud[i].reg);

        printf("\nSemester number: ");
        scanf("%d",&stud[i].sem);

        printf("\nCGPA Obtained: ");
        scanf("%f",&stud[i].cgpa);

        fwrite(&stud[i],sizeof(struct student),1,fptr);

    }

    else
    {
        fwrite(&stud[i],sizeof(struct student),1,fptr);
    }
  }
```

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```
    fclose(fptr);
    fclose(fpt);

    remove("grad.bin");
    rename("temp.bin","grad.bin");

    fpt=fopen("grad.bin","rb");

    printf("\nUpdated Student Archive:");
    printf("\nName\t\tRegistered number\tSemester
number\tCGPA\n");
    for(i=0;i<21;i++){
        fread(&stud[i], sizeof(struct student), 1,fpt);

printf("%s\t\t%d\t\t%d\t\t%f\n",stud[i].name,stud[i].reg,stud[i].sem,
stud[i].cgpa );
//it's not printing first character of first name, online compiler
problem ig
//in codeblocks it's working fine if not in same directory
    }

    fclose(fpt);

}
```

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```
int main()
{
   int option, i;
   char ch;
   FILE *fptr;

   fptr=fopen("grad.bin","wb");
   if(fptr==NULL)
   {
      printf("\nCan\'t open file");
      return -1;
   }

   printf("\nEnter details of 20 students: ");
   //this part is not needed if grad.bin already has existing student records
   for (i=0;i<20;i++) {
      printf("\nEnter details of student %d:",i+1);
      printf("\nName: ");
      getchar();
      scanf("%[^\n]s",stud[i].name);

      printf("\nRegistered number: ");
```

```
    scanf("%d",&stud[i].reg);

    printf("\nSemester number: ");
    scanf("%d",&stud[i].sem);

    printf("\nCGPA Obtained: ");
    scanf("%f",&stud[i].cgpa);

    fwrite(&stud[i],sizeof(struct student),1,fptr);
  }

  fclose(fptr);

  printf("\nChoose your option: ");
  printf("\n1.Insert student record");
  printf("\n2.Delete student record");
  printf("\n3.Modify student record");

  printf("\n\nYour choice is: ");
  scanf("%d",&option);

  switch(option){
    case 1:
    insert(stud);
```

```
            break;

        case 2:
        delete(stud);
          break;

        case 3:
        modify(stud);
          break;

        default:
          printf("\nEnter correct option!");
          break;
    }

    return 0;
}
```

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