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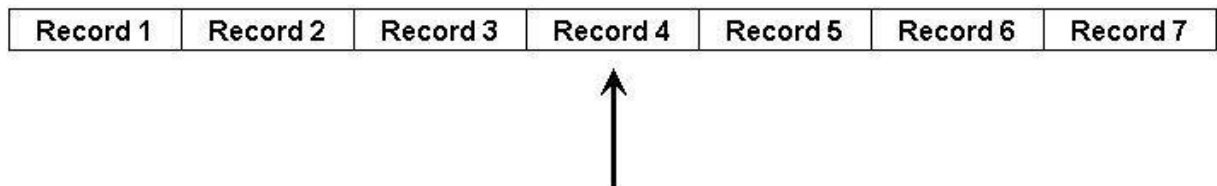
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4. **Write a c++ program to write student objects with variable-length records using any suitable record structure and to read from this file a student record using RRN.**

RRN(relative record number)

- RRN is an ordinary number that gives the distance of current record from first record. Using RRN, Direct access allows individual records to be read from different locations in the file without reading intervening records.

- When we are using fixed length record, we can calculate the byte offset of each record using the fallowing formula

- ByteOffset = (RRN - 1) × RecLen
  - o RRN: relative record number(starts fron 0) o RecLen: size of fixed lenth record

Direct Access

Record 1	Record 2	Record 3	Record 4	Record 5	Record 6	Record 7

File_structure4.ccp

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
#include<stdlib.h>
#include<iostream.h>
#include<fstream.h>

class student
{
     private:
          char
     buf[40],name[10],sem[10],branch[10],extra[40]; public:
          void read()
          {
               cout<<"Name: "<<endl;
               cin>>name;
               cout<<"Semester: "<<endl;
               cin>>sem;
               cout<<"Branch: "<<endl;
               cin>>branch;
          }

          void insert(fstream &ofile,char rrn[])
          {
               read();
               strcpy(buf,"");
               strcat(buf,rrn);
               strcat(buf,"|");
               strcat(buf,name);
               strcat(buf,"|");
               strcat(buf,sem);
               strcat(buf,"|");
               strcat(buf,branch);
               strcat(buf,"|");
               strcat(buf,"\n");
               ofile.write(buf,strlen(buf));
          }

          int search(fstream &ifile,char key[])
          {
               char rrn[10];
               while(!ifile.eof())
               {
                    ifile.getline(rrn,10,'|');
                    ifile.getline(name,10,'|');
                    ifile.getline(sem,10,'|');
                    ifile.getline(branch,10,'|');
                    ifile.getline(extra,40,'\n');
```

```
                                        if(strcmp(key,rrn)==0)
                                        {
                                                cout<<"Record found and details are:"<<endl;
                                                cout<<"Name: "<<name;
                                                cout<<"Semester: "<<sem;
                                                cout<<"Branch: "<<branch;
                                                return 1;
                                        }
                                }
                                return 0;
                        }
};

void main()
{
        int n,i,ch,k=0;
        char key[10];
        student stu;
        fstream ofile;
        ofile.open("student2.txt",ios::trunc|ios::app);
        ofile.close();
        clrscr();
        for(;;)
        {
                cout<<"1.Insert\n2.Search\n3.Exit\n";
                cout<<"Enter your choice: ";
                cin>>ch;
                switch(ch)
                {
                        case 1: fstream ofile;
                                ofile.open("student2.txt",ios::out|ios::app);
                                cout<<"Enter the no. of students: ";
                                cin>>n;
                                for(i=0;i<n;i++)
                                {
                                        itoa(++k,key,10);
                                        stu.insert(ofile,key);
                                }
                                ofile.close();
                                break;
                        case 2: cout<<"Enter the RRN to search: ";
                                cin>>key;
                                fstream ifile;
                                ifile.open("student.txt",ios::in);
                                if(stu.search(ifile,key)==0)
                                cout<<"Record not found\n";
                                ifile.close();
                                break;
                        default:exit(0);
```

```
                }
        }
}
```

Output:
```
1.Insert
2.Search
3.Exit
Enetr your choice:1
Enter the no. of students:2
name = ajay
sem = 6
branch = ise

name = rahul
sem = 6
branch = cse

1.Insert
2.Search
3.Exit
Enetr your choice:2
Enter the RRN to search:1

Record found and details are:"<<
rahul              6            cse
1.Insert
2.Search
3.Exit
Enetr your choice:2
Enter the RRN to search:5
Record not found
```