Problem statements:

File IO Assignment

1: Count the number of time the word 'the' is present in the file?

2: Count the number of words that has 'a' in them?

3: Count the number of words that start with 'e'?

4: Count the number of words that end with 's'?

5: Write a cpp program that shows a menu:
        1: enter student detail
        2: find student

  If the user selects 1: then it will ask for some details like:
  ID, student name, branch, Location. Save all these information
  in the file. Each student's details will be stored in one line.

  If the user selects 2: ask for the ID from the user that is needed
  to be searched. Then look for this id in the file (database).
  If it is available then return all the information about the
  particular student. If the ID is not available, then print some
 error message.

Note: Make sure to use exception handling concepts here and think of
what could go wrong and put proper try-throw-catch setup in place.

Program 1:

```cpp
//prog.1 :count the number of words 'the' that has present in the file.
#include <iostream>
#include <fstream>
#include <string.h>
using namespace std;
int main ()
{
  fstream fin;
  fin.open ("data.txt");
  int count = 0;

  char word[15];
  if (!fin)

    {
      cout << "file didn't open" << endl;
    }
  else
    {
      while (!fin.eof ())
        {
          fin >> word;
      if(!strcmp(word,"the"))
            count++;
        }
    }
  cout << "Total 'the' words: " << count << endl;

   fin.close();
}
```

```
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ cat data.txt
my name is rahuls solankis , trainee at the einfochips electronics.
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ g++ prog1.cpp
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ ./a.out
Total 'the' words: 1
```

Program 2:

```cpp
//prog.2 :count the number of words that has'a' character.
#include <iostream>
#include <fstream>
#include <string.h>
using namespace std;
int main ()
{
  fstream fin;
  fin.open ("data.txt");
  int count = 0;

  char word[20];
  if (!fin)

    {
      cout << "file didn't open" << endl;
    }
  else
    {
      while (!fin.eof ())
        {
          fin >> word;
          if(strlen(word)>1)
            {
          for(int i=0;i<word[i];i++)
              if(word[i]=='a')
                  count++;
                  continue;


          }
          else
          {
              continue;
          }
        }
    }
  cout << "Total no of words that have character 'a': " << count << endl;

    fin.close();
}
```

```
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ cat data.txt
my name is rahuls solankis , trainee at the einfochips electronics.
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ g++ prog2.cpp
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ ./a.out
Total no of words that have character 'a': 5
```

Program 3:

```cpp
//prog.3 :count the number of words that start with 'e' character.
#include <iostream>
#include <fstream>
#include <string.h>
using namespace std;
int main ()
{
  fstream fin;
  fin.open ("data.txt");
  int count = 0;

  char word[20];
  if (!fin)

    {
      cout << "file didn't open" << endl;
    }
  else
    {
      while (!fin.eof ())
        {
          fin >> word;
          if(strlen(word)>1)
          {

            if(word[0]=='e')
                count++;



          }
          else
          {
              continue;
          }
        }
    }
  cout << "Total no of words that start with character 'e': " << count << endl;

  fin.close();
}
```

```
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ cat data.txt
my name is rahuls solankis , trainee at the einfochips electronics.
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ g++ prog3.cpp
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ ./a.out
Total no of words that start with character 'e': 3
```

Program 4:

```cpp
//prog.4 :count the number of words that ends with 's' character.
#include <iostream>
#include <fstream>
#include <string.h>
using namespace std;
int main ()
{
  fstream fin;
  fin.open ("data.txt");
  int count = 0;

  char word[20];
  if (!fin)

    {
      cout << "file didn't open" << endl;
    }
  else
    {
      while (!fin.eof ())
        {
          fin >> word;
          if(strlen(word)>1)
          {

            if(word[strlen(word)-1]=='s')
                count++;



          }
          else
          {
              continue;
          }
        }
    }
  cout << "Total no of words that have end character 's': " << count << endl;

    fin.close();
}
```

```
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ cat data.txt
my name is rahuls solankis , trainee at the einfochips electronics.
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ g++ prog4.cpp
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ ./a.out
Total no of words that have end character 's': 4
```

Program 5:

```cpp
//prog.5 : student database operation using file IO operation
#include<iostream>
#include<fstream>
using namespace std;
//function prototype
void options();
void menu();
void search();
void add();

//class creation
class Student
{
    //attributes of class
    int ID;
    char name[20];
    char branch[20];
    char loc[20];

    public:
    void getdata();
    void display();
    int getno() {return ID;}
}s;//end of class
```

```cpp
//to get the data from user/keyboard
void Student::getdata()
{
    cout<<"Enter ID : ";
    cin>>ID;
    cout<<"Enter Name     : ";
    cin>>name;

    cout<<"Enter Branch      : ";
    cin>>branch;

    cout<<"Enter Location      : ";
    cin>>loc;

    // cin.getline(name,20);
    // gets(name);

}

//display data of Student
void Student::display()
{
    cout<<"=============================================\n";
    cout<<"ID : "<<ID<<"\tName   : "<<name<<"\n";
    cout<<"Branch    : "<<branch <<"\tLocation : "<<loc<<"\n";
    cout<<"=============================================\n";
}

//main body
int main()
{
    int id;
    fstream fp("stud.dat",ios::in|ios::out|ios::binary);//IO stream creation
    //calling menu function
    menu();

    return 0;
}//end of main
```

```cpp
//choices
void options()
{
    cout<<"\t1: enter Student detail\n";
    cout<<"\t2: find Student\n";
    cout<<"\nEnter Your Choice  : ";
}

//menu function starts here...
void menu()
{
    int ch;
    options();
    cin>>ch;
    while(ch)
    {
        switch(ch)
        {
            case 1:
                    add(); break;
            case 2:
                    search(); break;
            default:
                        //try-throw-catch
                        try
                        {
                            throw ch;
                        }
                        catch(int)
                        {
                            cout << "Caught an exception -- value is: ";
                            cout << ch << "\n";
                            cout<<"Wrong Input please enter the correct value...."<<endl;
                        }
        }

        options();
        cin>>ch;
    }
}
```

```cpp
//search specfic Student data by using ID
void search()
{
    ifstream fin("stud.dat",ios::in|ios::binary);
    int ID,i=0;
    char found='n';
    cout<<"\nEnter ID to be searched : ";
    cin>>ID;
    //read from file
    while(fin.read((char*)&s,sizeof(s)))
    {
        if(s.getno()==ID)
        {
            s.display();
            found='y';
        }
        i++;
    }
    if(found=='n') cout<<"\nThe ID "<<ID<<" is not in the file...\n";
    fin.close();
}

//to add the student data into file
void add()
{
        char ch='y';
        ofstream fout("stud.dat",ios::out|ios::app|ios::binary);//out stream
        while(ch=='y'||ch=='Y')
        {
            s.getdata();
            fout.write((char*)&s,sizeof(s));
            cout<<"\nDo you want to add more : ";
            cin>>ch;
        }
        cout<<"\nData Appended and Transferred to file...\n";
        fout.close();
}
```

```
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$ ./a.out
        1: enter Student detail
        2: find Student

Enter Your Choice  : 1
Enter ID : 1
Enter Name     : rahul
Enter Branch     : EC
Enter Location     : surat

Do you want to add more : y
Enter ID : 2
Enter Name     : mayank
Enter Branch     : IC
Enter Location     : ahmedabad

Do you want to add more : y
Enter ID : 4
Enter Name     : ronak
Enter Branch     : CS
Enter Location     : bombay

Do you want to add more : n

Data Appended and Transferred to file...
        1: enter Student detail
        2: find Student

Enter Your Choice  : 2

Enter ID to be searched : 3

The ID 3 is not in the file...
        1: enter Student detail
        2: find Student

Enter Your Choice  : 2

Enter ID to be searched : 2
==================================================
ID : 2  Name  : mayank
Branch     : IC  Location : ahmedabad
==================================================
        1: enter Student detail
        2: find Student
```

```
ID : 2  Name  : mayank
Branch     : IC  Location : ahmedabad
==================================================
        1: enter Student detail
        2: find Student

Enter Your Choice  : 2

Enter ID to be searched : 1
==================================================
ID : 1  Name  : rahul
Branch     : EC  Location : surat
==================================================
==================================================
ID : 1  Name  : rahul
Branch     : EC  Location : surat
==================================================
        1: enter Student detail
        2: find Student

Enter Your Choice  : 2

Enter ID to be searched : 3

The ID 3 is not in the file...
        1: enter Student detail
        2: find Student

Enter Your Choice  : 2

Enter ID to be searched : 4
==================================================
ID : 4  Name  : ronak
Branch     : CS  Location : bombay
==================================================
        1: enter Student detail
        2: find Student

Enter Your Choice  : 4
Caught an exception -- value is: 4
Wrong Input please enter the correct value....
        1: enter Student detail
        2: find Student

Enter Your Choice  : 0
rahul@rahul-VirtualBox:~/Desktop/Embedded C/C++/Assignment_file_IO$
```