**Programming Fundamentals Project List**

All projects must be

1. done in groups
2. coded in C++ programming language,
3. properly modularized,
4. should have proper error handling,
5. involve file handling.

**The list of projects is:**

1. **Mini FileSystem: Grp 1**
2. **Mini Database Management System: Grp 2**
3. **Time Table Management System: Grp 3**
4. **Event Scheduling: Grp 4**
5. **Admission Enquiry: Grp 5**
6. **Library Management System: Grp 6**
7. **Hospital Management System**

**Details of projects**

**A Mini FileSystem**

This project should be a simulation of file system. Assuming the disk size is 1000KB, and it is divided into fixed sized blocks of say 10KB, we need to create several files in this disk space. Also assume that a file can be of size 40KB ie.. can use at most 4 blocks. At every time it should be known which blocks are free and which have data. The block allocation for a file may be non-contiguous. The system must provide the following functions to the user:

1. Create and write to a new file.
2. Read/Write an already existing file

**A Mini Database Management System**

This project is a simulation of the database management system, where a database consists of several related tables. Following functions must be provided to the user:

1. Create a table for example student for which he will specify the fields of the table along with their data type
2. Insert data into the table
3. Delete data from the table
4. Retrieve complete data from table
5. Retrieve values of some desired fields from the table

**Time Table Management System**

This project is a simulation of the time table management system for the teachers and the classes. There are 3 courses with 5 subjects each. There is one teacher available per subject.

Course Subject

Science Physics, Chemistry, Computer Sc., Maths, English

Commerce Economics, Business Studies,

Humanities History, Political Science,

The classes run from 8 to 2.30, Monday to Saturday with a 30 min break at 11. The number of sections for each course, number of lectures per subject for each course will be entered by user. The system must make and display the time table for the teachers and each section. Every subject must be taught at least thrice to every section.

**Event Scheduling**

This project intends to schedule events for a week for a complex hosting 5 conference rooms. 3 rooms are AC and have projector facility available, whereas the other 2 do not.

The user may then enter details of a new conference to be scheduled, if the slot is occupied then he must be prompted for another slot. He may give preference for the AC room. The user may also cancel a conference.

**Admission Enquiry**

This project intends to help students to enquire if they can be admitted to a particular course run in any of the colleges under the university. Every course has an associated number of seats and eligibility criteria (may be different for females or reserved categories) given by each college. For example to be admitted to computer sc which has 60 seats, PCM must be greater than equal to 80%. So, the marks of the student in PCM must be used to calculate his percentage and if seats are left he may be given admission. Also some colleges may be for girls. The list of colleges in which the student may be admitted should be displayed to the user. The students must be prompted to know in which college they would take admission and the number of seats for that course in the college should be reduced by one.

**Library Management System**

The system maintains information of the various books in the library, their number of copies, some issued and some still available. Records are kept for the copies issued and id of student to whom it is issued. Every student may be issued 2 books for 1 week. The user may be given option to

1. Add new books and their number of copies
2. Issue books to the students and record the transaction
3. Return books
4. Display availability details for a specified book and it’s issuance details

In case a book is returned after 1 week, then the student is marked defaulter and no books are issued to him further.

**Hospital Management System**

The system maintains information about resources present in the hospital like doctors, nurses, medicines, rooms, ICU etc. Patient records are also mentioned. The system is used to maintain patient records, schedule appointments and other resources as per requirements generated. Every patient is assigned a priority and necessary resources needed for the patient. The resources are provisioned to a patient according to patient priority. Proper record of each resource is maintained, for instance, number of rooms available, medical stock etc.