CSP 740, CSE, IIT Jammu

Software Engineering at BTech III (6^{th} semester)
Lab Assignment No 6

SPRING Semester 2018-19

Instructions:

1. *The date of submission:* 25^{th} *April 2019 - 1.00 pm onwards. Every batch will present the work carried out as per the template that will be circulated later. At the end of the presentation, they will demonstrate the working prototype of the application that has been assigned to the batch.*
2. *For the each of the applications assigned, the respective students in the batch must analyze the application, identify the requirements and design a prototype using the language/tool of their choice. The assignments are to be carried out in the groups of two students that are assigned as shown here.*
3. *At the end of the presentation, each batch must also discuss the strengths and weaknesses of the tool they have used. They must analyze the features of the tool - some of which could be requirement definition, requirements storage, requirements retrieval, change management, or requirements traceability management, etc.*
4. ***Maximum Points 100.***

Problem Description : Outline

1. **A Library Automation System** : A library requires a completely integrated automated system which handles book ordering, cataloguing, book issue and recall. It is intended that the catalog be accessible by library users and that users should be able to access this remotely via dialup lines. Users should also be able to request books which are currently on loan by marking that book in the library catalogue. Minimal Factors which should be taken into account are:

   - Users of the library may have no specific computer experience. However, the requirements for remote catalog browsing means that a textbased interface is required.
   - Book ordering depends on a buying budget. If this is exhausted, no books may be ordered.
   - There may be multiple book purchase budgets to be administered.
   - The system should be able to generate reports about books on order, loan frequency etc. for library staff.
   - Books are marked with a bar code when purchased and this is read to issue the book.
   - Library users also have identification cards incorporating a bar code.

2. **A museum information system**: A museum requires an automated information system for use by visitors which helps them locate items in the museum and to find out more about items which are on display. The system is intended for use in a computer museum which contains many old computers, modern machines running simulations, books and audio recordings of pioneers of computer development. Minimal Factors which should be taken into account are as follows:

   - The system must be a *walk up and use* system for visitors who have no training whatsoever in computer system use.
   - You will need to be able to manage floor plan of the museum and the location of items on that floor plan. Information about specific items should be accessible by indicating their location.
   - The system will have to manage multimedia information sound, images and video.
   - It must be possible for museum staff to change the information in the system and to add information about new exhibits.
   - When you give people information about where to find an item, they respond best to simple instructions made with reference to prominent landmarks rather than maps which they often find difficult to read.

3. **A Newspaper delivery system** : This system is intended to manage the delivery of newspapers and magazines in some small town or area of a larger town. It is intended for use by newsagents who are only casual users of computer systems and should run on a PC or similar hardware. Factors which should be taken into account in specifying and designing this system are:

   - For each delivery person, the system must print, each day, the publications to be delivered to each address.
   - The system should also print, for the newsagent, a summary of who received what publications each day.
   - Once a month, bills are delivered to customers along with their newspapers. These bills should be computed automatically by the system.
   - Customers come and go and may be away temporarily on holiday or on business.
   - Not all customers necessarily have a delivery every day.

4. **A system to maintain results of sport tournaments** :The system is to maintain the information for a sports tournament. Use the Wimbledon, the French open and the ICC World Cup Cricket 2019 as a reference to think about the requirements. Some of the requirements that need to be taken care off are as follows:

   - to explore generality and reusability (can the system be adapted to different sports?).
   - many different rules that may be applicable to different tournaments e.g. there are single-elimination an double-elimination tournaments; round robin tournaments or combinations (e.g. in the World Cup soccer tournament, there is a round robin phase among different groups; the top two teams from each group advance to a single-elimination phase).
   - is there any pre-qualifying round to enable a team *enter* the tournament.

5. **Car Rental Management System**: This system is designed for a Car Rental Co. (CRC). The information required includes a description of cars, subcontractors (i.e. garages), company expenditures, company revenues and customers. Cars are to be described by such data as: make, model, year of production, engine size, fuel type, number of passengers, registration number, purchase price, purchase date, rent price and insurance details. Factors which should be taken into account in specifying and designing this system are:

   - It is the company policy not to keep any car for a period exceeding one year.
   - All major repairs and maintenance are done by subcontractors (i.e. franchised garages), with whom CRC has long-term agreements.
   - Some garages require payments immediately after a repair has been made; with others CRC has made arrangements for credit facilities.
   - Company expenditures are to be registered for all outgoings connected with purchases, repairs, maintenance, insurance etc. Similarly the cash inflow coming from all sources - car hire, car sales, insurance claims - must be kept of file.
   - CRC maintains a reasonably stable client base. For this privileged category of customers special credit card facilities are provided.
   - These customers may also book in advance a particular car. These reservations can be made for any period of time up to one month.
   - Casual customers must pay a deposit for an estimated time of rental, unless they wish to pay by credit card. All major credit cards care accepted.

6. **A Progress Monitoring System** : A system is to be designed for a college to monitor students' progress throughout their course of study. The students are reading for a degree (such as B.tech, M.tech, PhD, MS, etc) within the framework of the modular system. Factors which should be taken into account in specifying and designing this system are:

   - The college provides a number of subjects, each being characterised by its code, title, credit value, subject coordinator, teaching staff and the department they come from.
   - A subject is co-ordinated by a subject co-coordinator who shares teaching duties with one or more lecturers. A lecturer may teach (and be a subject leader for) more than one subjects.
   - Students are free to choose any subject they wish but the following rules must be observed: some subjects require pre-requisites subjects and some degree programmes have compulsory subjects.

- The database is also to contain some information about students including their numbers, names, addresses, degrees they read for, and their past performance (i.e.subjects taken and examination results).

7. **Hospital management system**:Design a system for General Hospital which consists number of specialized wards (such as Maternity, Paediatry, Oncology, etc). Each ward hosts a number of patients, who were admitted on the recommendation of their own GP and confirmed by a consultant employed by the Hospital.

    - On admission, the personal details of every patient are recorded.
    - A separate register is to be held to store the information of the tests undertaken and the results of a prescribed treatment. A number of tests may be conducted for each patient. Each patient is assigned to one leading consultant but may be examined by another doctor, if required. Doctors are specialists in some branch of medicine and may be leading consultants for a number of patients, not necessarily from the same ward.

8. **Recruitment Management System**: Design a system to maintain vacancy recording, selection process, application forms, applicant details, pre-employment / applicant checks, immigration compliance, applicant selection, applicant tracking, letter production, convert applicant to employee, e-recruitment and selection, reports, integrated links, statistics and volumes

9. **Attendance management system** : Design a system to maintain absence details, annual leave (holiday) entitlement, leave tracking, maternity adoption and paternity leave, other authorised and unauthorised absences, sickness recording / certificates and statements, absence cost, absence reporting, e-absence, integrated links, statistics and volumes.

10. **Appointment Management cum Scheduling management System**: Design a system to maintain individual appointment calendars, for example for members of an academic department. The system allows an individual to schedule meetings that involve several individuals.

Student Project Allocation Schedule

Sr No	Group No	Assigned Problem No	Name
1	1	1	Akhshit Kansra
2	1	1	Ashish Dagar
3	2	2	Vaibhav Vashisht
4	2	2	Rishabh Kumar
5	3	3	Ankit Mahlawat
6	3	3	Rahul Nirania
7	4	4	Kunal Parihar
8	4	4	Abhishek Yadav
9	5	5	Sahil
10	5	5	Aman Pawar
11	6	6	Dwij Upadhyay
12	6	6	Shaikh Tabish Jamil
13	7	7	Aakar Sharma
14	7	7	Abhishek Gupta
15	8	8	Deepak Rai
16	8	8	Thaisnang Reang
17	8	8	Shivam Kumar
18	9	9	Vikas Gola
19	9	9	Pratik Parmar
20	10	10	Pratirth Mehra
21	10	10	Atul Rai