**COSC 4506/ITEC 3506 Projects**

### General

A major component of the course is a software development project, which you will be required to work on throughout the course. The aim of the project is to let you experience several facets of software engineering that will help you appreciate the topics covered in COSC4506/ITEC3506, and will hopefully help you to participate effectively in real-world projects in the future.

For this purpose, during the first two weeks of the course, you will form project teams with 3 members. During the semester, the project team will work together through the full development cycle from understanding the requirements to delivering a functioning product and making a presentation of your work to the "client".

In the following sections, you will find information about starting up your project, the software engineering environment as well as the project assessment scheme.

### Starting up the project

The first thing to do is to read the project descriptions at the end of this document and select your preferred project(s). During the first two weeks, you will be assigned to a team and a project. The information you provide will greatly assist us in forming project teams and assigning them to projects. Despite all the efforts, however, there is no guarantee that you will get your most preferred project or people to work with.

A member from each team will be appointed *contact person*. They will initially make contact with the instructor. The team may choose to have a democratic organization, but they should still have a formal contact person. You can also choose a team leader. The list of teams along with their assigned contact people and projects will be posted on the web.

It is important that you *start working on your project as early as possible*. Delays, even at the start, can cause problems when deadlines approach.

### Project Meetings

You are **required** to hold weekly team meetings. This is where you discuss managerial and technical issues, conduct reviews and so on. The team leader or the contact person should prepare an agenda before the meeting, chair the meeting, arrange someone taking minutes, and should circulate the minutes after the meeting.

The main lab area is generally *not to be used for project meetings* unless they involve only 2-3 people who can discuss things without disturbing other students there.

### Projects

The projects will only concern with **Classic** stream using a traditional, document-based **waterfall** methodology.

As part of the project work, each team *must* produce and hand in the following documents by the given dates. These deadlines must be kept strictly (there is simply not enough time to catch up later if you get behind schedule, and the completion of the project will be in danger).

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| --- | --- | --- | --- |
|  | | | |
|  | **Document name** |  | **Deadline** |
|  |  |  |  |
| D1 | Project Plan (do not hand in) |  | 31 Jan |
| D2: | Requirements and specification |  | 7 Feb |
| D3: | Architecture and User Interface Design |  | 14 Feb |
| D4: | Detailed Design |  | 28 Feb |
| D5: | Implementation |  | 28 Mar |

D6: Testing

Each document is to have an editor who has the final responsibility for turning in the document, sets deadlines for what the other members are to write, and may have to apply pressure on the other team members to do their part. Each team should prepare for a binder.

### Assessment of project

As software development is rarely an individual effort these days, you have to learn the basic skills of working in teams in order to participate successfully in real software engineering projects. We attempt to create an environment that reflects real-life situations to a large extent as well as stimulates cooperation among team members. While software development is a team effort, we also want to acknowledge the fact that individual differences do exist.

As mentioned in the syllabus, a significant part of your final grade comes from your project mark. The project mark has two components: the group mark and the individual modifier. The group mark is how well the project went overall, and will be made up from marks for the individual documents and other related items. Each time when a report is handed in, a Time Recording Log sheet, Project Time/Effort Summary for each team member should be included.

|  |  |
| --- | --- |
|  | |
| **Components** | **Weight** |
| Project Plan (D1) | 0% |
| Requirements and specification (D2) | 10% |
| Architecture design (D3) | 5% |
| User Interface Design (D4) | 5% |
| Detailed design (D5) | 20% |
| Deliverable | 40%  10% |
| Testing  Progress Presentation | 10% |

### Technical environment

Projects will be implemented using C++/Java for Windows.

### Project Progress Presentation and Final Demonstration

There will be one project progress presentation and one final demonstration. The progress presentation will be hold in February, which worth 10% of your project. Towards the last week (probably during the last week, but possibly earlier), each team will demonstrate the program they have developed to the "client(s)". These should be geared towards "selling" the product. These presentations not only are assessed, but also the products on which they are based will be assessed.

### Project Descriptions

**Project 1：Traffic Citation and Reporting System**

Some governmental agency at the provincial level has the responsibility for assembling state-wide information about traffic citations and disseminating it upon request by an appropriate agency such as a sheriff's office or the highway patrol. This same agency also maintains information about vehicles licensed and registered within the province. When an officer makes a traffic stop, s/he wants to be able to ask a dispatcher to query the central agency to determine the status of a vehicle (for instance, registered? stolen? wanted for some reason?), the status of the driver (license suspended? revoked? outstanding warrants?), and the driving record of a particular driver.

A governmental agency at some local level is involved in peace-keeping efforts which include jurisdiction over traffic codes. Therefore, officers of this agency can issue citations for parking violations (issued to a particular vehicle), moving vehicle code violations (issued to a particular driver), moving vehicle code warnings (issued to a particular driver), fix-it tickets (issued to a vehicle), etc. This agency needs to be able to report the number and category of citations issued by a particular officer in a particular time period, the names of individuals for whom arrest warrants are in effect because they have not paid their citation fine or been found innocent of the violation, the license numbers of vehicles with outstanding (unpaid) parking or fix-it tickets, and similar related information. This agency also reports moving vehicle citations to the state agency, and also reports warrants for particular vehicles (for instance, for unpaid parking fines, for being reported stolen, for being reported involved in the commission of some crime, etc.)

Sometimes, in addition to paying a fine for a moving vehicle violation, an offender can pay to attend traffic school, which has the effect of preventing the reporting of the citation to the central agency. Traffic school requires that an offender attend eight hours, which can be scheduled for an eight-hour day, or four two-hour periods in the evening, or any other way the agency chooses to schedule the sessions. If an individual chooses to attend traffic school, s/he must register for a particular session and attend the entirety of that session, however it is scheduled, in order for his/her citation to be non-reported.

**Project 2: Local Area Network Office Messaging System:**

Design an office messaging system, like a compact messenger system, which will allow staff members to send messages to each other that can be retained, deleted, archived, and organized by both the sender and receiver. The system can function on a peer-to-peer basis, or through a centralized message server. It will utilize the office LAN – ensuring that messages do not leave the office environment. Individuals can be assigned to one or more groups, allowing messages to be sent to a single individual, several individuals, one or more groups, or broadcast to the entire office.

As a minimum, the messaging system should provide the following features:

* Identify all members of the messaging system
* Indicate the status of each member (ie. Offline or Connected)
* Ability of the user to set individual status (ie, online, away, busy, etc…)
* Provide a facility for the creation of short messages (you must decide on the feasible size)
* Display a pop-up message to recipient upon arrival of message
* Store all incoming messages in message Inbox.
* Store copies of all sent messages
* Once read, messages can be retained or removed from the Inbox.
* Backup and restore capabilities

Some additional features of the system which should be considered in it design might be:

* Sound notification option when a new message arrives
* More advanced status settings such as: Online, Busy, Out to Lunch, On the Phone, Away from Desk
* Deferred messaging to offline users that will be delivered when the recipient comes online.
* Creation of groups to which users can be assigned to facilitate group messaging
* Office wide message broadcasting that can be directed to all users or just users online.
* Out-of-Office return messages providing details such as “at meeting ABC until…”
* Long-term message archive where messages are removed from the primary storage to a secondary archive for long-term storage
* Categorization of messages based on Projects, Clients, or other Users.

Please note: this is not intended to be a chat system but rather a short message delivery system. In an office, chatting can be more efficiently handled using the office phone system or simply meeting at the water cooler.

**Project 3：COSC Club Event Management System**

An application that allows the COSC Club Management Team (CCMT) to perform and track all the tasks and functions necessary to meet their responsibilities as the governing body of undergraduate students. CCMT will be able to create events, manage membership, and get up to the minute financial information for their club. The system will be able to advertise events via email and provide tracking for event attendance and expenditures. The application will allow the CCMT to create reports detailing club and event activity to assist in their interactions with the department for budgeting concerns.

The scope of this project will be to provide a system that allows the CCMT to:

1. manage undergraduate clubs

2. manage undergraduate events

3. manage financial transactions of these undergraduate clubs

4. manage system users

You can think additional functionalities and add them to the list.

Project 4：Employment Application Review System

EARS is an intranet-based Employment Application Review System for the Department of Math and Computer Science in Algoma University.  The system is designed so that department faculty members can review applicants and collaborate asynchronously in order to find the best applicant for a given job opening. This system reduces the overhead of the process and lightens the workload for the search chairperson.

The scope of this project will be to provide a system that allows the CCMT to:

1. log-in EARS system

2. manage system users (add new accounts)

3. add a new faculty search (committee chair, members, position, search starting date and ending date, add new committee members)

4. List and review applications (view profile, post comments on applicants, change applicants’ statues, perform a faculty review, assign faculty review)

5. set account’s settings (email, name, title, password)

**Project 5：Animal Lovers Society**

**Problem Description**

Design and implement a prototype database application system for the Animal Lovers Society (ALS). ALS is a non-profit, charitable organization that is concerned with the welfare of animals in Sault Ste Marie. It accepts donations from individuals. It also sells products that are of interest to animal lovers. A percentage of the sales price supports ALS. ALS uses this money to support education programs, lobby government, investigate illegal activities related to animal welfare and pay employee expenses. The database is to provide access to information about donors, employees, products for sale, society programs and related activities.

The following groups of people will use the system.

* ALS management - require access to all data.
* ALS staff - require access to most data, but not to private or sensitive data, e.g., employee salaries.
* ALS members - allow access to consumer information about products available for sale (item description, quantity on hand, sales price).

Enforcing integrity of the data is important, as is performance of the system.

**Data Requirements**

A partial list of the data requirements is given below. Additional entities and attributes may be required also, of course.

Donors: We want to record at least the name, address and gender (if known) of each donor. A donor is someone who has donated money within the last 5 years. We do \*not\* have the donor’s social security number. When identifying the key for this entity, keep in mind that a person’s name may change (for example, if they get married) and that people move. Anyone who donates more than $100 in a calendar year is a member and is eligible to receive the ALS magazine called Animal Lover’s News.

Donations: People donate cash (check or money order) many times throughout the year. For each donation, we want to record at least the donor, the amount, and the date the donation was received.

Products: ALS sells products of interest to animal lovers. This includes books, video tapes, T-shirts, animal sculptures, bumper stickers, and similar items. For each item, we want to record at least the sales price, the amount of profit (for ALS) from the sale of the item, and the quantity of the item available for sale. For T-shirts and other clothing items, we want to record the sizes and colors available. For animal sculptures, we want to record the weight and height of the item. A person may buy products even if they have not made a donation previously.

Sales: We want to record the purchases made by people. This includes people who have not made cash donations. For each purchase, we want to record at least the person’s name, address, and the products purchased.

Employees: We want to track at least employee ID, name, job title, salary, department, supervisor, and the projects on which they work. Department managers work on all the projects under their control. An employee works for one department at a time, but may work on many projects controlled by that department.

**Examples of some required capabilities of the system**

\* ability to enter data about donations as they are made

\* ability to generate donor mailing lists using various subcategories of donors, as well as to generate address labels for the magazine

\* ability to make corrections to donor data

\* ability to sell items from product inventory, to order items to replenish product inventory, to add new items to product inventory, and to delete items from product inventory

\* ability to generate employee lists of various types (for example, by project, or by department, or by seminar, etc.)

\* ability to add new employee information, to modify employee information, and to handle employees' moving on.

\* ability to see what seminars are available, and to sign up for seminars on a space-available basis.

\* ability to see information about current projects.

Project 6：Conference Room Scheduling

**Background:**

An organization has several dozen conference rooms, which it allows its employees to schedule for meetings. Currently, to schedule a conference room, an employee has to know which secretary is in charge of scheduling that room. S/he must then reach the secretary by phone or in person, and make the request. The secretary keeps track of the schedule for that room, and can confirm the reservation or deny it. Furthermore, many employees use the conference rooms on an ad hoc basis, for emergency meetings or to eat lunch or just to work quietly. They have no way of knowing what the room's schedule is unless they approach the responsible secretary and convince him/her to share the day's schedule.

This is a time-consuming process for everyone. It is particularly inefficient when the requester decides not to use the facility when s/he has reserved it, because it is so troublesome to release the reservation.

**Proposed New System:**

The organization wants an on-line conference room scheduler which anyone can use to schedule the facilities. Users should be able to make a request for a particular room at a particular day and time, or to make a request for any room at a particular day and time, or to make a request for a particular room and then after reviewing its availability ask for a particular day and time. Requests cannot be made more than a year in advance. No facility can be scheduled retroactively, but historic usages are meaningful, so users should be able to see the schedule for a particular room yesterday or last week. The system should print the daily schedule for each conference room on a nightly basis. Reservations can still be made, but they will not appear on the room's daily schedule after the printing occurs.