School of Electrical Engineering & Computing
SENG2130-Systems Analysis and Design

Due: Week 12, 2020

Assignment 2: System and Object Design (35%)

Pearly Gates Cemetery and Crematorium

You will continue working with the Pearly Gates Cemetery and Crematorium Management System (see below for a reminder) and extend your requirements model to a **design specification**. Since you are designing a new system, you are now working in **the solution domain**.

You do not need to implement the system. However, your design specification should be detailed enough so that it can be used as the basis for an implementation.

You will design detailed Class diagrams and Sequence diagrams. As with the requirements modelling in Assignment 1, there are no limits to how far the design and analysis might go. However, complexity, coverage and correctness of the elements will be taken into account in the assessment of the submitted work.

Introduction

Pearly Gates is a medium size, suburban lawn cemetery situated peacefully on the side of a grassy hill and nestled among a grove of trees. There are no major roads nearby so domestic noise is kept to a minimum making Pearly Gates an ideal and tranquil place to remember and pay respects to those who have gone on before you.

Our services include burials and cremations, services, and care of your loved one's final resting place.

Burial: Burial may be accompanied by a service either at graveside or in our non-denominational chapel. Our rate offers a plot along with the option of a plaque (if no plaque is ordered, a simple cross is placed) and care packages (see below).

Cremation: The crematorium is located adjacent to the chapel so that service may be held directly before cremation itself. Cremation may be held privately for those who prefer to hold a memorial service off site. Ashes may be removed from site or interred on site in a niche wall with plaque.

Urns: A range of urns is available from the disposable box if the ashes are to be scattered through to metal or ceramic urns for display in niche wall or private home.

Service: Our staff are experienced in working with the major religions to organise services. We are also able to manage a non-denominational service in conjunction with your wishes. On site services may be held at graveside or in the chapel.

Flowers: We have an extensive greenhouse and are able to provide most flowers and arrangements even out of season. Be aware that orders of exotic blooms may require extra time for delivery.

Perpetual Care: With our perpetual care package, you can be sure that your loved ones final resting place will always be looked after and be presentable. We keep lawn and edges trimmed, remove weeds

and any rubbish from around site and maintain the plaque should it subside or be damaged. If no care package is required we still keep the lawns mown and gravesite areas rubbish free.

Simplicity: In such a time of grief, it is difficult to account for all details of funerals and interment. We are experienced in dealing with all local funeral directors and will work with them to help you at this sad time.

Prices: Prices for burial or cremation, as well as services, perpetual care packages and incidentals (urns, flowers etc) are available on request.

Business Functions

1. The main business is providing for and arranging burials, cremations and services. Burials require a grave to be dug, provision of slings (coffin lowering devices) and marquis for mourners. Cremations are simpler, requiring just a scheduling of the furnace and return of ashes to the bereaved. Both burials and cremations may be held in conjunction with a service in the chapel. Sometimes the chapel is booked for a memorial service, which is a stand alone event with no burial or cremation.
2. All communication with clients is by phone or in person (sometimes by letter). All schedules and appointments are registered in an appointment book.
3. Staff arranging burials and cremations deal with funeral directors or undertakers.
4. The general public may rent space in the wall of remembrance (niche wall) for the storage and display of urns (containing ashes). The general public can arrange perpetual care contracts for gravesites by contacting office staff.
5. The major sales to the public are flowers. Nearly all services request floral arrangements and these can be quite elaborate, sometimes needing the import of exotic or out-of-season blooms. The public can also arrange to purchase urns for containment of ashes. (Purchase of coffins is generally done through the funeral director and do not involve Pearly Gates).
6. Maintenance is a major expense. The business provides for an office staff of 4 (including manager) and ground staff of 15. The office staff handle all scheduling, arrangements and sales. The ground staff are responsible for keeping grounds (including parking spaces) tidy, digging graves, erecting tents (for graveside services), cleaning the chapel, maintaining perpetual care, servicing the crematorium and all other machinery (diggers, vehicles and garden equipment). Maintenance records are entered by hand into a maintenance log book.

A Word from Management:

Pearly Gates is a service oriented organisation. Our clients are often in a fragile emotional state and going through a distressing time. One thing that will upset them is things going wrong. It is important to us that all our business functions run smoothly. That is why we feel the need for a new management system and that is why you and your team are here.

Objective of the project

The main objective of the project is to develop a new, efficient information system. Schedules can change rapidly and with little notice. We have to be able to incorporate changes (even if they are unreasonable) smoothly and efficiently.

1. Currently all work is channelled through the main office meaning that grave diggers, florists, metal workers, ground staff and cleaners must contact the office for the day's work and must be contactable if there are changes.
2. Graveside services must be scheduled as they require grave to be dug, slings (coffin lowering device), marquis for mourners and parking spaces be available. Cremations must also be scheduled as there is only one crematorium.
3. Before scheduling a service, staff need to make sure that machinery needed is available (not double booked or undergoing maintenance). Currently there is no simple way of doing this apart from ringing the work-shed and asking.
4. Staff liaising with funeral directors need real time information of availability of graves, crematorium, chapel or services. Currently they must contact main office for this information.

Tasks

The system definition above is used for both assignments in this course. For this assignment, you will proceed to the analysis and development stages of the system. Your system should be consistent with the requirements gathered in Assignment 1 as you move from the application domain to the solution domain. Specially, you should now populate the class diagram by including attributes and operations, design appropriate sequence diagrams, formulate a deployment strategy and prototype a user interface for the use case involving a boundary object.

If you need to make any significant changes to the model as outlined in Assignment 1 make sure these are noted. Also note any reasonable assumptions you feel are necessary.

The main deliverable of this assignment is a report to be submitted via Blackboard (**by midnight on Friday of Week 12**). The submission must include a completed cover sheet. The names of all group members should be on the cover sheet.

Deliverables: (Total Marks: 100)

1. **Use case diagrams and intermediate descriptions** (flow of events) for use cases on which you are basing your design models (**15 marks**).
2. **Detailed class diagrams** (**30 marks**) that include:
    a. All classes to be implemented (including the interface objects and any controller objects).
    b. All private, public and protected attributes for each class.
    c. All private, public and protected methods (operations), including the input parameters and return types for each class.
3. **Sequence diagrams** explaining how each use case is realized (NOTE: This should be consistent with the flow of events from Part 1). (**35 marks**).
4. Brief **deployment strategy** including Architecture of the system (**5 marks**).
5. Design a **user interface** for ONE of your use cases (**5 marks**).
6. Marks will be allocated for a **professionally presented report**. That is, marks will be subtracted for spelling errors, multiple typos, grammatical errors and poor layout. (**10 marks**).
7. **A complete set of meeting minutes** for the second assignment should be attached. There should be **at least FIVE such documents** with the earliest dating from not before 10th April (this allows for 1 meeting per week during the post Easter term). No marks will be awarded for these but 5 marks will be subtracted for each meeting less than five, submitted. That is, submission of minutes for 5 or more meetings will result in no meeting penalty.