CIS 492 Project Teams:

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CIS 492 Project Descriptions:

Honest Ollie's Motor World

Problem Description

Honest Ollie's Motor World is a small chain of high-quality used car lots whose owner, Olivander Wand, is keenly interested in the possibilities of the Internet. She has always specialized in quality used cars, fairly represented and fairly priced. Now she wants to develop a system that potential buyers can use both to search cars in her lots' inventories and to search cars that members of the public wish to advertise.

She wishes for the system to clearly differentiate between cars from her lots --- which come with a standard and generous warranty --- and cars advertised directly by members of the public, which are sold on an as-is basis. She is, of course, not responsible for what advertisers say about their vehicles, although she does want to retain the right to forbid access by anyone who abuses the system in any way. Members of the public who wish to advertise their cars pay $10 per week for the privilege, along with a 3% commission if the car is sold through the system. People searching for a car need to be able to do so based on a wide variety of criteria --- she wants users to be able to search by at least:

* make
* model
* domestic or import
* age
* model year
* mileage
* color
* car type (sedan, convertible, minivan, compact, sports, etc. Note that these might not be mutually exclusive!)
* fuel efficiency
* engine type
* cost
* whether it has a manual or automatic transmission
* limited to her lot, or based on all cars currently in the system

Cars will not be directly sold on line, but for a $5 fee a potential buyer may put a "hold" on a car to indicate that they are seriously considering buying it; this "hold" should remove it from being shown to anyone else for a period of 7 days. The idea is that this allows the potential buyer and seller to get together and to decide if a sale is to take place. When the potential buyer requests a "hold" on a particular vehicle, the system should send an e-mail to the seller (either Ms. Wand, if the car is from one of her lots, or to the seller who placed the car for consideration) letting them know of the "hold" and indicating how the seller can contact the potential buyer. After 7 days, if the car is not marked as "sold", then the "hold" should be released and the car again available to be considered for searches.

Note that Ms. Wand is very interested in maintaining statistics on what cars match user searches as well as what cars people place "holds" upon, and which cars actually are sold after being put on "hold". People who wish to search for cars may do so for free, but they must register before doing so. (Ms. Wand will keep their personal information in strictest confidence, and will not sell this information or make it available to outside firms in any fashion. She'd like the site to make this clear, also.) But she would like to be able to "play" with the data about who seems to prefer which kinds of cars, in case it helps her determine trends for cars to stock in her lots. Anyone can register to search the system.

Someone who wishes to sell a car must register and pay a fee. (A person could certainly be both a browser and a seller; and, Ms. Wand is interested in how often sellers do end up buying, how often buyers are sellers, etc.) However, when a person wishes to become a seller, that is not automatic --- notification should be sent to Ms. Wand, and she or authorized personnel must approve the seller before he/she will be able to post a car for sale. Once approved to be a seller, the seller may enter the information about the car to be sold, and set up the car as a searchable entry within the system.

Who will use this system?

* Ms. Wand
  * to analyze data about what searches have been made, characteristics of cars that sold, characteristics of cars that did not sell, etc.

* Ms. Wand and authorized personnel at her car lots:
  * to enter new cars on their lots into the system,
  * to remove cars that are sold from the lot.
  * to authorize would-be sellers to be sellers (or to reject would-be sellers)
  * to mark certain users as forbidden-to-sell at Ms. Wand's discretion
  * to obtain billing information for users of the system
  * to indicate when bills are paid

* Potential buyers:
  * should be able to register for a free account
  * should be able to log in using an existing account
  * should be able to perform searches to see if there are currently any cars matching their desired criteria
  * should be able to place a "hold" on a car (for a $3 fee per "hold").

* Potential sellers:
  * should be able to register to be a seller (subject to approval by Honest Ollie's Motor World)
  * should be able to enter a car for sale into the system once approved
  * should be able to indicate that a car is sold, or to be able to indicate that a car is simply no longer for sale. (Ms. Wand would like to at least know if a car is being removed because it has been sold, or because of some other reason.)

Briargrove Academy Library

Problem Description

Briargrove Academy is a small private school enrolling students from grades K-8 that has been a valued member of its community for over 40 years. It includes in one of its rooms a library that students eagerly visit (usually once a week, sometimes for class project research, sometimes to check out books). This library includes several computers available for the students to use for general research; there is also a computer at the librarian's station.

Students may check out books from the library, of course. In addition, teachers may borrow a number of books at a time to reside in their classrooms, and students may check them out from their teacher in their classroom as well. But, currently, keeping track of all book check-outs is done on paper, and there is no real way to keep track of which books students have checked out from their classroom teacher. A computerized system is desired to both streamline the existing check-out system and to make it easier for students and teachers to ask questions about the books available in the school library.

Note that Briargrove prides itself on providing an excellent, affordable education; they work hard to keep tuition down. The school's computers are connected in a local network, and it uses DSL to connect to the Internet via a special educational program. Each classroom and the library contains one or more computers; some classrooms have all Macintoshes, some have all Windows boxes, some have a combination of the two, and one or two even contain a Linux box. Briargrove cannot afford to go out and buy the newest versions of operating systems and the newest browsers --- everything has to be made to work for as long as it can.

Currently, all books in the library are marked on their spines with Dewey Decimal numbers. It is also possible to "mark" each book with a code (UPC or otherwise) --- the school would like to be able to eventually obtain a reader to read these codes when books are checked out, but in the meantime the system can ask for this code to be entered when a book is checked out, to be able to tell which book is being checked out (or returned, etc.) It is expected that this system will replace the current card catalog --- that is, the information currently on cards in the physical card catalog should instead be on-line.

Note that anyone should be able to use the system to search for books in the library --- no log-in should be necessary for that. However, only teachers and the librarian should be able to check out books, and of course there are reports and questions that teachers and the librarian can ask that others should not be able to ask.

Who will use this system?

Students

* to search for books meeting various criteria --- students should be able to search by at least the criteria that they can currently, using the physical card catalog, but also by additional criteria as well. They should be able to search by at least:
    * book title (or partial title)
    * book author (or partial author)

    * Dewey decimal number
    * subject
    * ISBN
* to know if a book resulting from a search is currently available for check-out, and its location if so (the library, or which classroom). (Within the library, the book should be shelved by its Dewey decimal number.)

Teachers
* to indicate a number of books that they are taking from the library to their classroom
* to check out a book currently in their classroom to a student
* to check in a book checked out from the classroom when it is returned
* to return books from their classroom back to the library
* to indicate that a book should be put on "hold", and made unavailable for checkout until the "hold" is lifted
* to search for books, also (using the same criteria as students)
* to run various reports regarding classroom book usage

Librarian
* to enter new books into the system
* to check out a book currently in the library to a student
* to check in a book checked out from the library when it is returned
* to mark books as no-longer-available (because they are damaged, worn out, lost, presumed lost). (Note that these books should not be removed from the system --- they may be used for "historical" queries. But current searches should not include these books, and of course they cannot be checked out.)
* to determine what books are overdue, and who should have them
* to indicate that a book should be put on "hold", and made unavailable for checkout until the "hold" is lifted
* to indicate that a particular student should not be able to check out books, and why (for example, because they must return an overdue book first)
* to run various reports about library usage

Briar Ridge Bed and Breakfast

Problem description

Rita and George Briar bought and restored a beautiful Victorian mansion in Ferndale, and then opened it to the public as the Briar Ridge Bed and Breakfast. Successful connections with a number of travel agents have led to a flourishing business. But, currently, all activities involving the bed and breakfast are done on paper, and Rita and George would like to replace their on-paper processes with a computerized system; they would also like a web presence.

George is also a retired chef, and one of the popular features of the Briar Ridge Bed and Breakfast is its made-to-order breakfasts. Guests may request one of several options before they go to bed (or, at least by midnight the night before), and approximately what time they wish to have breakfast, and they will then receive their choice the next morning in the beautiful but friendly dining room. If a guest does not pre-request a breakfast option, he/she will be served that day's breakfast special at 9:00 am. Guests can, of course, pre-order the breakfasts for all of the days of their stay (from the standard options, anyway. The daily specials may not yet be known...)

The system, of course, needs to keep track of reservations, guest check-ins, and guest check-outs. (Note that a reservation is not the same as a stay; a reservation is an intent-to-stay. It may be related to a stay, but it doesn't have to be (if the reservation is later canceled, for example). The Briar Ridge is popular enough that reservations are often necessary, but occasionally a walk-in can stay without a reservation.) The system should allow guests to make their breakfast orders, and to modify them (up until midnight the night before).

The Briar Ridge has a beautiful Victorian garden with a gazebo, and George and Rita frequently receive requests to use it for weddings. They would like for the system to permit reservations of the garden for weddings and special occasions; they permit reservations for the dining room (except during the morning) for weddings and special occasions as well. Note that vistors to their web site should be able to see if these are available for a given date/time, also.

Mr. and Mrs. Briar have been able to hire a number of employees to staff the front desk and to handle room cleaning. They would like for the system to help them manage these employees as well. The system should also keep track of which rooms have had their daily cleaning (as rooms are cleaned, the cleaning staff should be able to indicate that they have been serviced; they should also be able to find out which still need servicing.)

Who will use this system?

the public
* to obtain information about the Briar Ridge bed and breakfast
* to see if rooms meeting criteria that they specify are available for dates that they specify
* to see if the garden or dining room is available for dates/times that they specify
* to make, modify, and cancel reservations

Briar Ridge guests
* to order their breakfast for the next and/or subsequent days of their stay, or to modify those breakfast orders if it is before midnight the day before that breakfast

front desk personnel at the Briar Grove properties
* to check-in a guest arriving for a stay
* to see if a room is available for check-in
* to check-out a guest completing a stay
* to print out a bill at check-out time
* to make a reservation if a walk-up asks them to
* to indicate that they have arrived for their shift, and to indicate when they leave their shift
* to see his/her work schedule for the current week
* to order or modify a breakfast order for a guest who requests it (as long as it is before midnight the night before)
* to indicate a problem in a room that needs to be fixed (if, for example, a guest brings it to their attention)

cleaning staff
* to indicate that a room has been cleaned, and is ready for occupancy
* to see which rooms are currently occupied, and which currently are not occupied
* to see which rooms have not yet been cleaned today
* to indicate that they have arrived for their shift, and to indicate when they leave their shift
* to see his/her work schedule for the current week
* to indicate a problem in a room that needs to be fixed

Rita and George Briar
* to modify room characteristics (if they change the number and size of beds in a room, for example, or remodel it, etc.)
* to add personnel (front desk personnel, cleaning staff)
* to modify personnel schedules
* to see who checked in a particular guest, or who cleaned a particular room on a particular date, in case of either accolades or complaints
* to see the breakfast orders for a given date (marked as tentative or final, depending on the time of the request)
* to see what needs to be fixed, currently, in rooms

Additional data requirements

In addition to the requirements already specified, note the following:

* Potential guests should be able to search rooms based on at least the following criteria:
    * Smoking or non-smoking
    * Number and size of beds
    * whether a room is a suite or not

    * a room's decorating "theme" (Victorian Garden, Elizabethan, Honeymoon, Romantic Getaway, Royal Escape, etc.)

* the breakfast options are:
    * Eggs - scrambled, poached, or fried
    * Omelette - Denver (Loleta sharp cheddar and honey-cured ham) or
      Florentine(fresh spinach, Loleta swiss, fresh mushroom)
    * French toast made on Brio sourdough bread
    * 9-Grain pancakes
    * the day's special
    * none of the above (see below)

    Note that the system does not need to include beverage choices --- pitchers of various juices and pots of freshly-brewed organic coffees (caffeinated and decaffeinated) and freshly-boiled water for hot teas are available for the guests to help themselves to when they come down to the dining room for breakfast. There is also a variety of cold cereals, pastries, and fresh fruit available for those who do not wish to have any of the above made-to-order choices. If a guest selects none of the above, then he/she does not need to specify a time (they can help themselves to the cold cereals, pastries, fresh fruit, and beverages any time that they wish).

Northern Star Expeditions

Problem description:

This scenario is modified from a casebook written David M. Kroenke, along with Theresa M. Kann.

Northern Star Expeditions is a 15-year-old company that offers cross-country skiing instruction and sponsors cross-country tours in the Cascade Mountain Range. It also sponsors backcountry expeditions in mountain ranges around the world.

Its business is highly seasonal. The first courses and tours begin in mid-October and the season is over by mid-April. During this period of time, Northern Star conducts 12 beginning ski courses, 6 intermediate ski courses, and 1 advanced backcountry expedition. Also, it operates 8 tours during the winter.

The staff is very lean. In addition to the owner/manager, there is a secretary/office manager, cook/maintenance personnel, and a number of ski instructors and tour guides. The instructors and guides are paid a per-diem rate for the days they work. The instructors are all excellent skiers and can teach any of the courses. The tour guides trade off directing cross-country tours and pulling sleds that carry equipment and supplies for the courses and the tours. There are also a number of apprentice ski instructors who are unpaid but who receive room and board when they are helping with courses and tours. The cook/maintenance staff works in the base camp. In the existing simple filing system, there is a sheet for each employee with their name, social security number, address, city, state, zip code, and phone number. During the season three-by-five cards are used to keep track of which instructor, apprentice, or tour guide is on which job. On the card is written the person's name, the number of the course or tour he or she is working, and the date. The cards are revised when people change jobs.

Beginning Ski Courses
The beginning ski course consists of 5 days of instruction followed by a 4-day trip skiing hut-to-hut in the Cascade Mountains. The students live and eat at the lodge during the instructional phase. on the touring portion of the course, students stay in huts along groomed trails; food is provided and prepared by the Northern Star staff.

Tour guides pull food and supplies to the huts on 2 sleds. The tour guides help the instructors set up the huts as well as serve as cooks. The introductory courses are staffed by 2 paid instructors, 1 unpaid apprentice instructor. and the 2 tour guides. Food and lodging are provided to all instructors, tour guides, and apprentices for both phases of the course.

Intermediate Ski Courses
The intermediate courses consist of 5 days of skiing on different slopes of 2 mountains. Students in these courses live in a rustic resort located near the mountains. All meals are provided by the resort. Food and lodging are provided by the resort to Northern Star on a fixed price-per-person contract basis. Northern Star includes the cost of food and lodging in the package price it offers its customers.

Intermediate courses are limited to 8 students and are staffed by 1 paid instructor and 1 unpaid

apprentice instructor. Again, both paid and unpaid instructors are provided lodging and food during the course.

Backcountry Expeditions
The backcountry expedition consists of a group of 8-10 advanced/expert skiers and 2 instructors. The location and duration of the expedition varies from year to year but generally involves a 2-3 week trip down a mountain on another continent. Participants meet in a departure city located in the United States and travel together to the base of the mountain. Food is provided for the planned number of days on the mountain. Hotels and transportation in the destination country are normally included in the course cost, although the specific policy depends on the country and varies from year to year. All travel, hotel, and food costs for the 2 instructors are paid by Northern Star. The owner/manager tries to plan these trips so that Northern Star nets about $3,500 on the trip after all direct expenses (not including overhead).

Northern Star rents all the necessary skiing equipment for introductory students. Intermediate and advanced students are expected to provide their own equipment. Northern Star will rent skis, boots, and poles to intermediate and advanced students, if necessary. Students are required to provide all personal clothing and camping equipment, including sleeping bags, tents, mattresses, and so on.

Cross-Country Tours
In addition to the skiing courses and expeditions, Northern Star operates 8 5-day touring trips in the Cascade Mountains. The tours are a combination of trail and backcountry skiing. The first and last nights are spent in huts and the middle 2 nights are spent snow camping. Each trip consists of 6 customers, 2 paid tour guides, and 1 apprentice tour guide who helps set up camp and cook meals.

Although the tours and skiing courses are separately operated, they are scheduled to be on the mountain at the same time so that, in an emergency, the ski and tour staff personnel could support one another. To facilitate cooperation between these trips, tour guides occasionally serve as apprentice ski instructors and ski instructors occasionally serve as tour guides.

Northern Star rents all necessary touring equipment to the customers. As with the ski classes, personal camping equipment and clothing is provided by the customers.

Overall, the owner/manager operates his business very informally. He has been in business for 15 years and he knows about what to spend for each course on equipment, supplies, food, and other expenses. He also has an intuitive sense of his personnel costs. At the end of the year, he totals his revenue, subtracts expenses, and determines what he has earned. He hopes to clear around $65,000 before taxes for the year (this includes his salary). In the past 5 years, his actual profit has ranged from a low of $13,700 to a high of $87,500.

The owner/manager is not at all satisfied with this arrangement. He knows that his record keeping is minimal and that he runs his business literally by the seat of his pants. He senses that there are opportunities for increasing his profit margin, but he never has time to develop a system that would help him do this. By the end of the season, he is usually so exhausted that he takes 6 weeks off. Then, he repairs Northern Star facilities and begins his marketing promotion for the coming year. There is never

time to improve his record keeping, marketing, and financial management systems.

He is satisfied with the effectiveness of marketing for the introductory ski courses and the tour trips. Each season he is able to fill almost all of the slots available, and he often has a waiting list. Northern Star cannot expand the size or the number of courses and trips, because the company cannot obtain more permits from the Forest Service to put more people on the mountain.

However, he is not at all satisfied with the marketing for the intermediate and expedition courses. He believes he has a marketing gold mine in the customers who have completed the basic course. When he has the time to call one of these customers, he is almost always able to sell them an intermediate course. It is as if the customers are waiting to be called, to be reminded of the good experience they had, and to enroll in another course.

In spite of this opportunity, Northern Star does almost nothing with the list of former students. In some years, he is able to send out a few Christmas cards, but this is done informally and without regard to any marketing strategy.

Humboldt Softball-Lovers Club

Problem description:

(Please notice: if you have more expertise in amateur sports leagues than the author of the scenario below, you are ENCOURAGED to improve/correct it, please!!)

Design and implement a prototype database application for the (fictitious) Humboldt Softball-Lovers Club (HSLC). The HSLC is a non-profit organization that organizes and oversees various softball leagues especially for people past high-school age. (There are already other, separate organizations running youth softball leagues.) A league is a collection of exactly 8 teams that play a 7-week schedule, so that each team plays every other team in its league exactly once. A league plays its games at the same time on the same day of the week for each of the 7 weeks, and a league is either all-male, all-female, or co-ed. Typically, several leagues are playing games at any given time.

The HSLC handles signing up of people who wish to play in a given league and assigns them to a team within that league. Leagues are considered to be tentative until enough people have signed up to make a minimum-sized roster for each of 8 teams. (Let's say that a team must have at least 9 players, but no more than 18.) People sign up for a league knowing its day of the week and the time of its games --- as soon as a minimum number of players is reached for 8 teams, a date is set for that league's first game, as long as a field can be reserved at that day and time for seven consecutive weeks starting at that date. People pay a fee at the time of signing up for a league --- let's say $20.

Yes, the HSLC must handle field reservations as well. Let's say that each game has a 3-hour limit, for sanity, and that the HSLC has four fields that it can schedule as it wishes. Because this is an adult league, games are only held between 5 pm - 11 pm on weekdays, and between 8 am - 11 pm on weekends.

And, the HSLC coordinates umpires for each game that it schedules. Its volunteer umpires indicate days and times that they can work games, and a league's schedule should not be considered finalized until an umpire is assigned to each of its games.

(Once a league has enough people to field at least 8 teams, and a field is available for 7 consecutive weeks at that league's day and time, and available umpires have been assigned to those 7-weeks'-worth of games, then the league is official (that is, no longer tentative), and notices can be sent to all of the players and umpires giving them the league's schedule.)

Let's say, also, that up until the date of the first games of a league, and while there are still teams not at the maximum size, other people can sign up for a league and be assigned to a team. Let's say, also, that people are assigned to teams in whatever fashion that the HSLC deems reasonable.

The HSLC would like a database application to help them in coordinating all of the above activities. To summarize, they feel that they particularly need:

* the ability to check a tentative league's status --- how far is it from having 8 teams of at least 9 players each?

* a way to easily add players to teams within a league; which teams, if any, still have room for players, for example?
* help with scheduling umpires for games --- for example, which umpires are available for given dates and times?
* help with scheduling games for their fields --- for example, which fields are available for given dates and times?
* ways to generate game schedules --- game schedules to give to players on each team within a league, game schedules for umpires, game schedules for a particular field, etc.
* web sign-up forms for prospective umpires
* web sign-up forms for people to request to join a particular league
* ways for people to see what leagues are currently available
* ways to easily enter game results and ways for people to easily see the game statistics that interest them

Expanding on the above a bit, we are assuming that the HSLC somehow has a legitimate connection to HSU (as part of a state-wide mandate to encourage improved physical fitness, perhaps) so that they have permission to create an Oracle database on-campus. But, because many of the people using this system are off-campus, web-based applications are desired.

The database and its application/applications are to provide information about the organization for authorized leaders of the HSLC, information about the league schedule and game statistics to league members, and information and means to sign up for people who might want to join a league. Would-be umpires need a way to sign up and current umpires need a way to obtain their umpiring schedule, also. The public can look up results from past leagues, and the current week's games (in case they'd like to come and enjoy some softball).

(The league statistics should at least include the scores for all games, and the win-loss records for the teams within the league. You may provide more statistics at your discretion, but do note that the HSLC management do not have a lot of time to enter in much more than the scores of each game into the system. We'll say that the umpire turns in a sheet after each game that gives the game's actual start time, actual end time, and final score.)

Who will use this system?

HSLC management: require access to all of the data. Note that they need to be able to see when fields are available for games and to schedule games for those fields and umpires for those games. They also need to be able to easily enter game results.

League members: require read-write access to their personal data, require read-only access to league game statistics and league schedules.

Would-be league members: need a way to sign up for a league, need to be able to see what leagues are currently signing up league members and what the current status of those leagues are.
Umpires: require read-write access to their personal data, read-only access to their game schedule.

Would-be umpires: need a way to sign up to be considered as an umpire. This sign-up needs to include when they can work games.

General public: need read-only access to this week's scheduled games and statistics from past leagues.

IslandResort

Problem description:

(note: adapted from a **University of Hawaii College of Business Administration ITM 354 Database Management Project** description)

Problem Description:
You have been hired by the management of IslandResort, a Hawaiian vacation resort, to develop a database system for its guest entertainment and accomodation services. Being a Hawaiian-based company, IslandResort offers services for a wide variety of guest functions, from conference room facilities and business support services, to an 18-hole golf course, to restaurants and room service, pools, saunas and exercise facilities. Groups (from the mainland and other countries) frequently contract with IslandResort for these services, but IslandResort also provides luxury accomodations for individual guests.

Three major groups of resort personnel will use the database system:

1) The staff managers will use it to keep track of personnel schedules and scheduled maintenance of the facilities.

   Managers will assign (and re-assign) personnel to work shifts in the restaurants and entertainment facilities. They will schedule maintenance of the grounds and the golf course, assigning staff to carry out the needed repairs or improvements.

2) The accounting group will use the database system to purchase supplies for all staff and maintenance activities (directed by the staff managers) and to make vendor payments for supplies that have been purchased (or to cancel and make adjustments to payments.) They will also use the database system to track staff-related expenses, like hours worked and insurance benefits.

3) The conference services group will use the database system to book large groups for conferences or business meetings. They will make room reservations for group members, book tee times, manage the meeting facilities (providing email, copying, fax and other business support services) and arrange for catered meals for conference events. (They can also cancel or change these arrangements.) Staff scheduling for this group will be handled by the staff managers (1) and purchasing expenses will be handled by the accounting group (2).

There are clearly many types of data regarding the guests, staff and resort services that must be represented in the system. Some of it may differ by service category (e.g. golf course vs. restaurant) or by client type (e.g. individual vs. conference attendee). If you are having trouble envisioning the data you will need to manage, you might look at some Hawaii-based resort websites, e.g: http://www.princeville.com or http://www.grandwailea.com or http://www.kapaluamaui.com

To learn more about the hospitality industry, visit the UH Travel Industry Management School site: http://www.tim.hawaii.edu