

## MEMO

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**TO: Bill Cunningham**

**DATE: 12/09/2015**

**SUBJECT: DBAS 1001 Final Project**

### Existing System

The Nova Scotia Community College Institute of Technology Campus has a wide variety of locker types, in a wide variety of locations throughout the building. Student Services is tasked to assign lockers to students. They currently are using a shared Microsoft Excel workbook to assign lockers to students upon request.

At the moment, the Excel workbook simply consists of a single sheet of locker numbers, student IDs and names. The workbook is absent of specifics such as a general description of where the lockers are, the size of the locker and, if the locker is a half sized one, whether it is located on the top or the bottom.

Using this Excel sheet presents several problems. Only one person can use the Excel sheet at a time, making locker assignments at the beginning of the year take longer than they should. Staff in Student Services have to shout across the room to ask if anyone has the Excel sheet open before attempting to use it. Upon assignment, students are issued a sticky note with the locker number hand written on it. Students do not know whether or not they are being assigned a full sized or half sized locker, or in the case of a half sized locker if it is on the top or the bottom. This would cause further demand on the Student Services desk as students unhappy with their assignment would have to return to ask for a different locker.

The locker numbers in the Excel sheet indicate the general location of the lockers via the locker number which consist of wing-floor character pairs prior to the actual number of the locker. Some locker numbers however, do not match the geographical locations that their locker numbers would otherwise suggest they belong to, particularly in the annex corridor.

Another cluster of half-sized lockers are located in an isolated area of the school, at the far end of a corridor without a large bank of lockers. These lockers are difficult to find and are numbered differently in terms of the general odd on the top and even on the bottom scheme that the rest of the half-sized lockers seem to follow.

With an Excel sheet also runs the risk of corruption of the data by user error. Deleting and unintentionally modifying the data in the sheet is a potential issue that could arise in the future.

### Statement of Requirement

#### Client Specifications

Create a better system that can reduce and improve the locker assignment process and better maintain data integrity.

## Final Project Specifications

Fulfill all requirements as provided in the "Your Work" section of the document found at S:\In Faculty\_Student\Bill Cunningham\dbas1001\_IntroDb\assignments\Final\_Project\_guidlines.docx. These guidelines are as follows:

The requirement for this project is to design and implement a database application system that meets the following minimum specifications:

- Based on documented client storage and retrieval requirements;
- Database complexity must include at a minimum the physical implementation of a many to many relationship (three tables, two parents, one child);
- At least five rows of test data in each table;
- An input/edit form for each database table;
- A form that displays data from more than one table, such that the two areas of data display in synchronization with each other;
- A report that displays at least one grouping level and at least one summarization function such as a total or count; and
- An application menu system that allows navigation from a main menu, through submenus, to the application objects described above. The menu system must also be capable of exiting the DBMS.

## Analysis

### Discussion

It is abundantly clear that a better system is needed for managing the lockers, especially one that can better facilitate the sharing of information, and integrity of the data. A Microsoft Access 2013 database is a lightweight and inexpensive means of achieving this.

To use this database users must have a computer with Microsoft Access 2013 installed. To have more than one user using this database simultaneously the database file itself must be placed in a network share in which users have both read and write access. A properly configured default printer is required to print reports and receipts generated by this database.

A survey of the site was performed to catalog all lockers in the building. All lockers should have a corresponding locker and associated location record which is already included with this database.

To start using this database to its maximum efficiency, all that would be required would be an import of student data including, first name, last name and student number. Otherwise the use of the database is as simple as adding a student and then assigning a locker to them.

The requirements of this assignment indicate the creation of a table used to facilitate a many to many relationship. This structure was accomplished in this assignment, however the ability to assign many lockers to many students was removed to fulfill the needs of the client. Should the client decide to extend the quantity of lockers a student can have assigned to them, modification of the database to accommodate this would only require minor changes to two fields, one form and two reports.

Figure 1: Entity Relationship Diagram

The database structure required to achieve the desired results is fairly simple. This ERD includes two un-joined backup tables. These backup tables are not joined to any other table because their contents are simply generated from their respective source tables which already have referential integrity enforced.

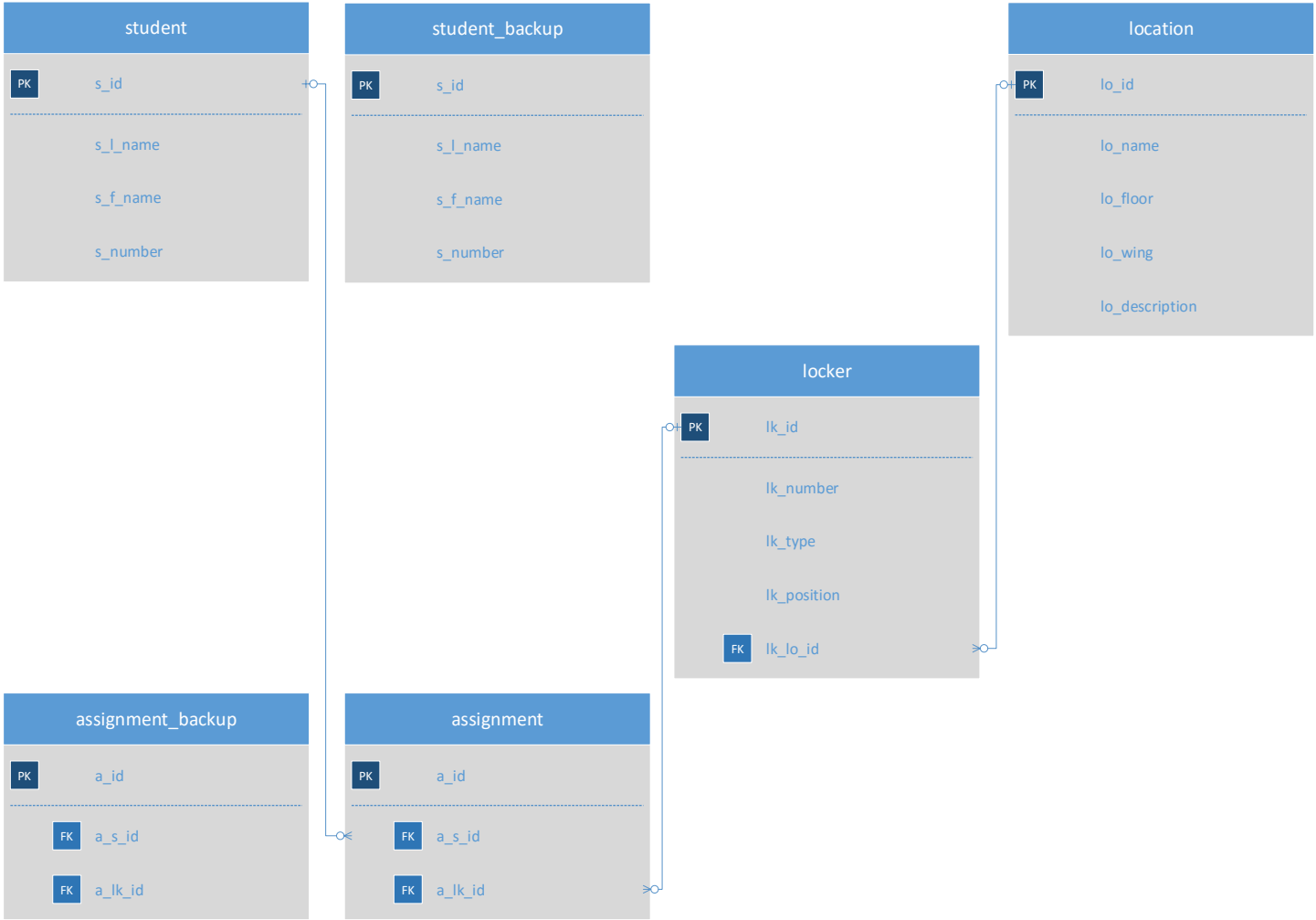


Figure 2: Data Dictionary

Object Name	Object Type	Datatype	Methods	Notes
student	table	N/A	PK	The scenario dictates a need to track information on students. Students must be uniquely identified.
s_id	field	INTEGER (AUTONUMBER)	PK	Required to uniquely identify students.
s_l_name	field	VARCHAR(15)		The client requires the tracking of last names. The length specification for the field is 15 to accommodate typical and longer last names.
s_f_name	field	VARCHAR(15)		The client requires the tracking of first names. The length specification for the field is 15 to accommodate typical and longer first names.

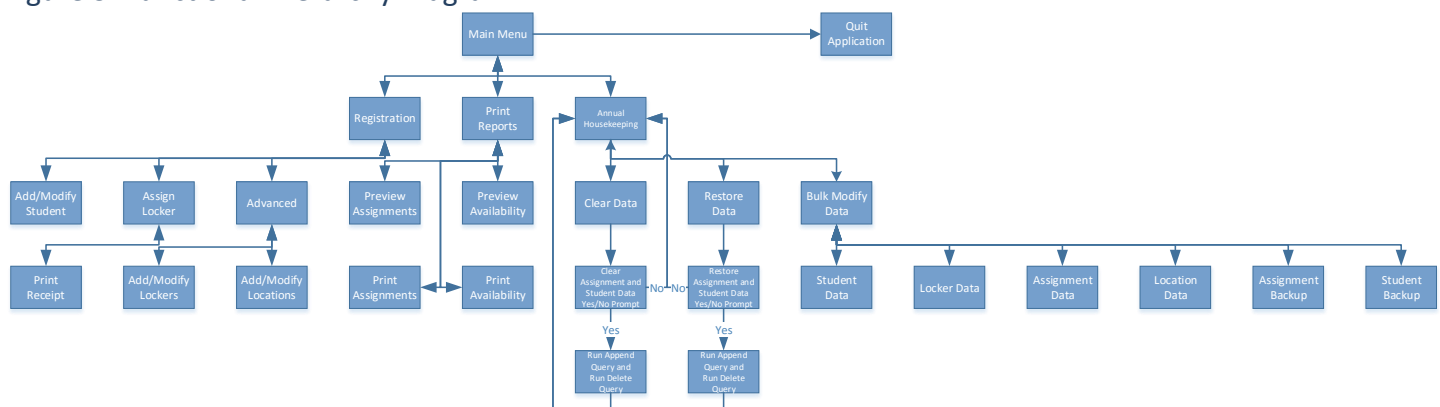
Object Name	Object Type	Datatype	Methods	Notes
s_number	field	VARCHAR(7)		The client requires the tracking of student numbers. The length specification for the field is 7 to match the total length of the student id numbers issued to students by the institution. The field is also a VARCHAR instead of INTEGER because math should not be performed with this field and to allow for the inclusion of the 'W' that proceeds the student number.
location	table	N/A	PK	The scenario dictates a need to track information on general locker locations. Locker locations must be uniquely identified.
lo_id	field	INTEGER (AUTONUMBER)	PK	Required to uniquely identify general locker locations.
lo_name	field	VARCHAR(20)		The client requires the tracking of location names/vicinities. The length specification for the field is 20 to accommodate longer names such as 'soft seating area'.
lo_floor	field	VARCHAR(1)		The client requires the tracking of the floor in which the general location is located. The length specification for the field is 1 because the maximum height of any part of the building is 3 floors. The field is also a VARCHAR instead of INTEGER because math should not be performed with this field.
lo_wing	field	VARCHAR(1)		The client requires the tracking of the wing in which the general location is located. The length specification for the field is 1 because the maximum number of characters to identify a wing is only a single letter.
lo_description	field	VARCHAR(70)		The client requires a description of the general location to supply better clarity where the general locker location is. The length

Object Name	Object Type	Datatype	Methods	Notes
				specification for the field is 70 so that a brief yet, descriptive sentence can be provided.
locker	table	N/A	PK, FK	The scenario dictates a need to track information on lockers. Lockers must be uniquely identified.
lk_id	field	INTEGER (AUTONUMBER)	PK	Required to uniquely identify lockers.
lk_number	field	VARCHAR(6)		The client requires the tracking of numbers printed on the lockers. The length specification for the field is 6 to exactly match the maximum length of a printed locker number.
lk_type	field	VARCHAR(4)		The client requires the tracking of locker size types. The length specification for the field is 4 to match the name of the two sizes of lockers. (Half and Full)
lk_position	field	VARCHAR(6)		The client requires the tracking of locker positions, particularly in the case of half sized lockers. The length specification for the field is 6 to match the maximum size of the three options for this field. (N/A, Top, Bottom)
lk_lo_id	field	INTEGER	FK	This field is required to uniquely identify which location(lo_id) is connected to this locker(lk_id). The INTEGER datatype is used to match the AUTONUMBER generated by location(lo_id).
assignment	table	N/A	PK, FK	The scenario requires tracking of the assignment of lockers to students. Each locker assignment must be uniquely identified.
a_id	field	INTEGER (AUTONUMBER)	PK	Required to uniquely identify the assignment.
a_s_id	field	INTEGER	FK	This field is required to uniquely identify which student(s_id) is connected to this assignment(a_id). The INTEGER datatype is used to match the AUTONUMBER

Object Name	Object Type	Datatype	Methods	Notes
				generated by student(s_id).
a_lk_id	field	INTEGER	FK	This field is required to uniquely identify which locker(lk_id) is connected to this assignment(a_id). The INTEGER datatype is used to match the AUTONUMBER generated by the locker(lk_id).
student_backup	table	N/A	PK	The scenario dictates a need to backup the contents of the student table while emptying the contents of the student table to add an extra layer of protection from accidental data loss.
s_id	field	INTEGER (AUTONUMBER)	PK	Required to uniquely identify students.
s_l_name	field	VARCHAR(15)		The client requires the tracking of last names. The length specification for the field is 15 to accommodate typical and longer last names.
s_f_name	field	VARCHAR(15)		The client requires the tracking of first names. The length specification for the field is 15 to accommodate typical and longer first names.
s_number	field	VARCHAR(8)		The client requires the tracking of student numbers. The length specification for the field is 8 to match the total length of the student id numbers issued to students by the institution. The field is also a VARCHAR instead of INTEGER because math should not be performed with this field and to allow for the inclusion of the 'W' that proceeds the student number.
assignment_backup	table	N/A	PK, FK	The scenario dictates a need to backup the contents of the assignment table while emptying the contents of the assignment table to add an extra layer of protection from accidental data loss.
a_id	field	INTEGER (AUTONUMBER)	PK	Required to uniquely identify the assignment.
a_s_id	field	INTEGER	FK	This field is required to

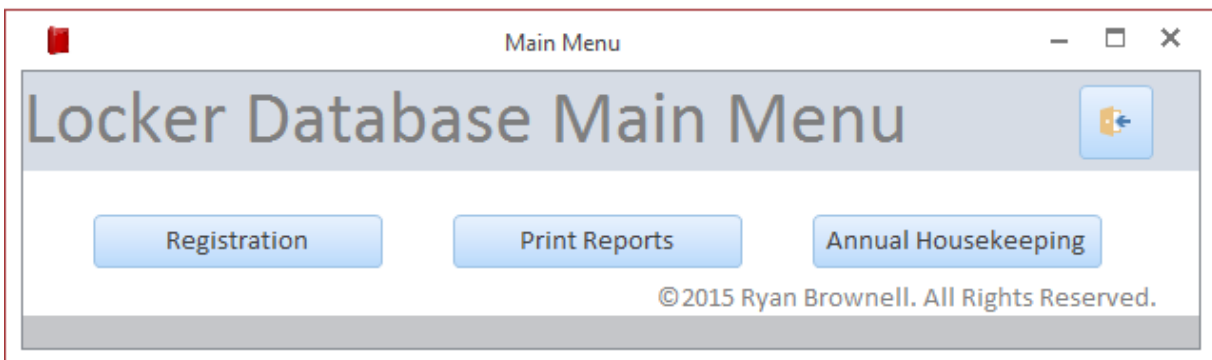
Object Name	Object Type	Datatype	Methods	Notes
				uniquely identify which student(s_id) is connected to this assignment(a_id). The INTEGER datatype is used to match the AUTONUMBER generated by student(s_id).
a_lk_id	field	INTEGER	FK	This field is required to uniquely identify which locker(lk_id) is connected to this assignment(a_id). The INTEGER datatype is used to match the AUTONUMBER generated by the locker(lk_id).

Figure 3: Functional Hierarchy Diagram



The above FHD outlines all of the various menus, forms, reports and prompts used in the graphical user interface of this database.

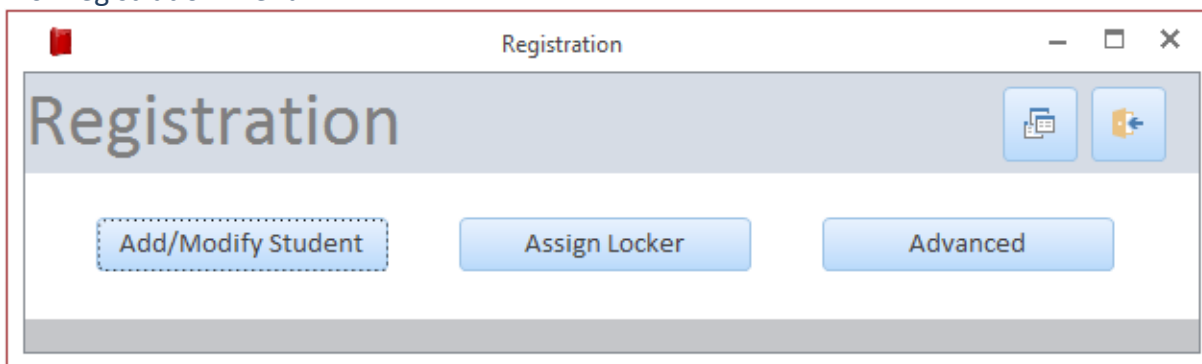
Figure 4.0.0: Main Menu



This menu is accessed when the database is first opened or by clicking on the Main Menu button (🖱️) which can be found in every form and menu of the database.

Upon the opening of the database, the main menu is the first item that is displayed to the user. The main menu separates the various aspects of the program into three parts. The Registration section will be the section that is used the most as this is where users can add students and assign lockers to them. The Print Reports section which may not be used as frequently, contains reports about the current locker assignments and vacancies. The Annual Housekeeping section is only intended to be used once a year when the database needs to be reset when the academic calendar restarts in late August. Annual Housekeeping also contains tools that allow for mass manipulation of the database including the ability to import data from an external source such as an Microsoft Excel document.

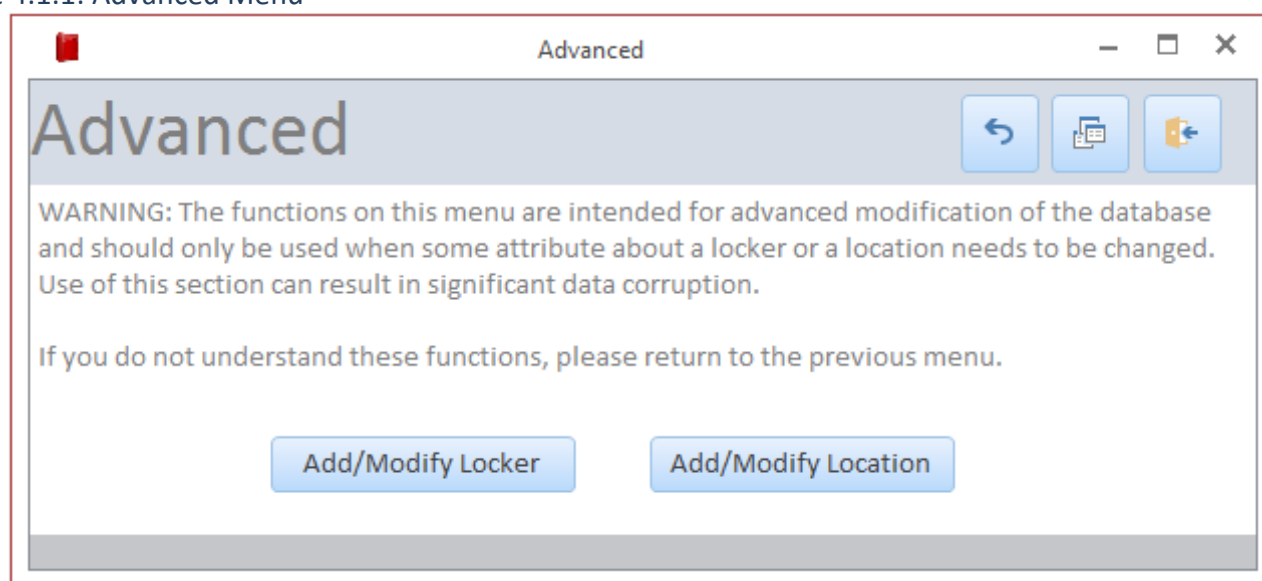
Figure 4.1.0: Registration Menu



*This menu is accessed by clicking on Registration in the Main Menu.*

The Registration menu shows options to Add or Modify Students, Assign Lockers or go to the Advanced menu.

Figure 4.1.1: Advanced Menu



*This menu is accessed by clicking on Advanced in the Registration Menu.*

The contents of the Advanced menu should generally be left alone unless if some sort of change occurred to the physical lockers themselves or their locations. Here users can add or modify lockers and add or modify locations.

Figure 4.2.0: Print Reports Menu

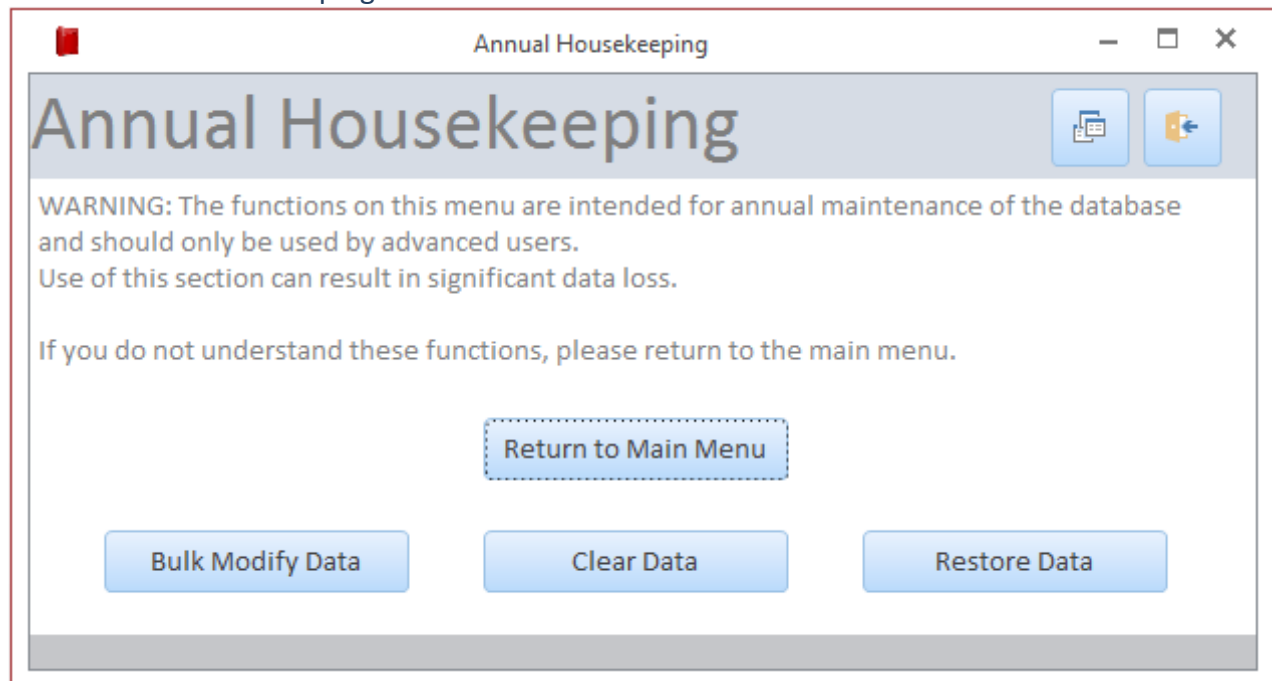


*This menu is accessed by clicking on Print Reports in the Main Menu.*



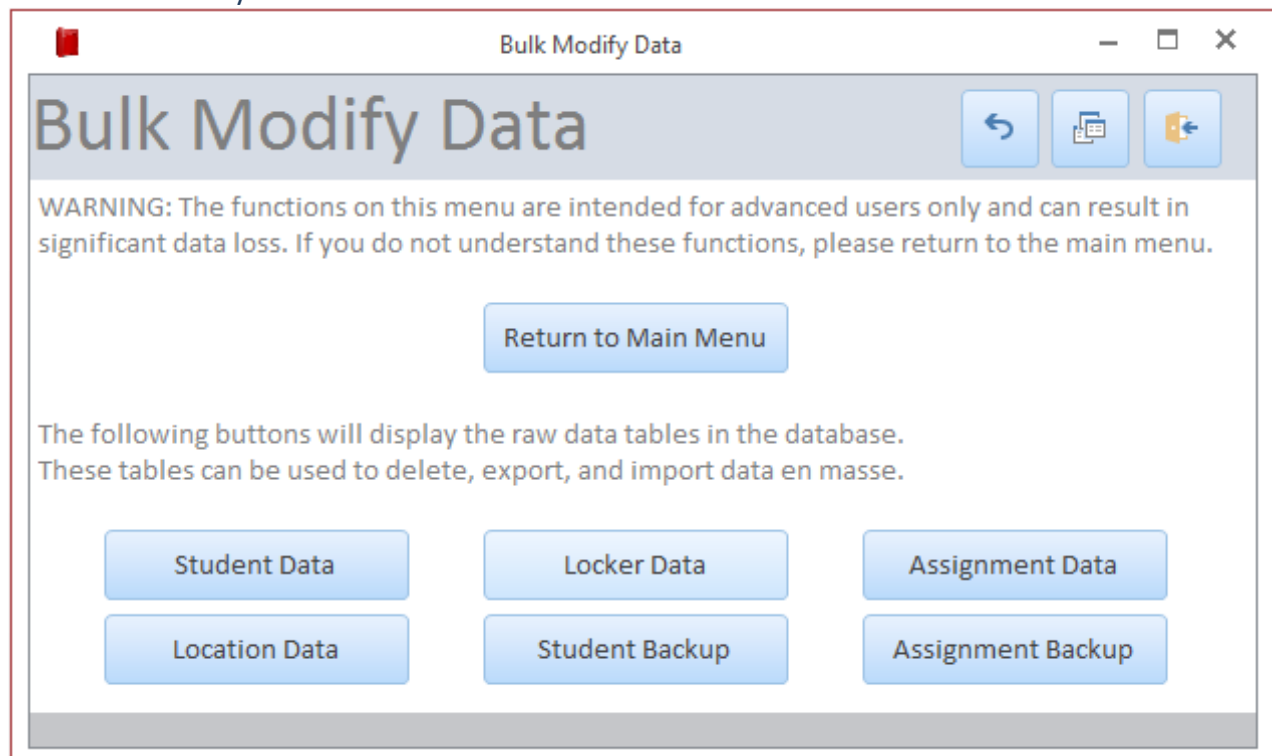
The Print Reports menu shows options to both preview and print reports showing locker assignments and locker availability, both of which are grouped by location and in ascending order by locker number.

Figure 4.3.0: Annual Housekeeping Menu



*This menu is accessed by clicking on Annual Housekeeping in the Registration Menu.*  
The contents of the Annual Housekeeping menu should generally be left alone except for the annual resetting of the students and the locker assignments. Here users can reset the database, import data into the database and modify the database on a larger scale than one record at a time.

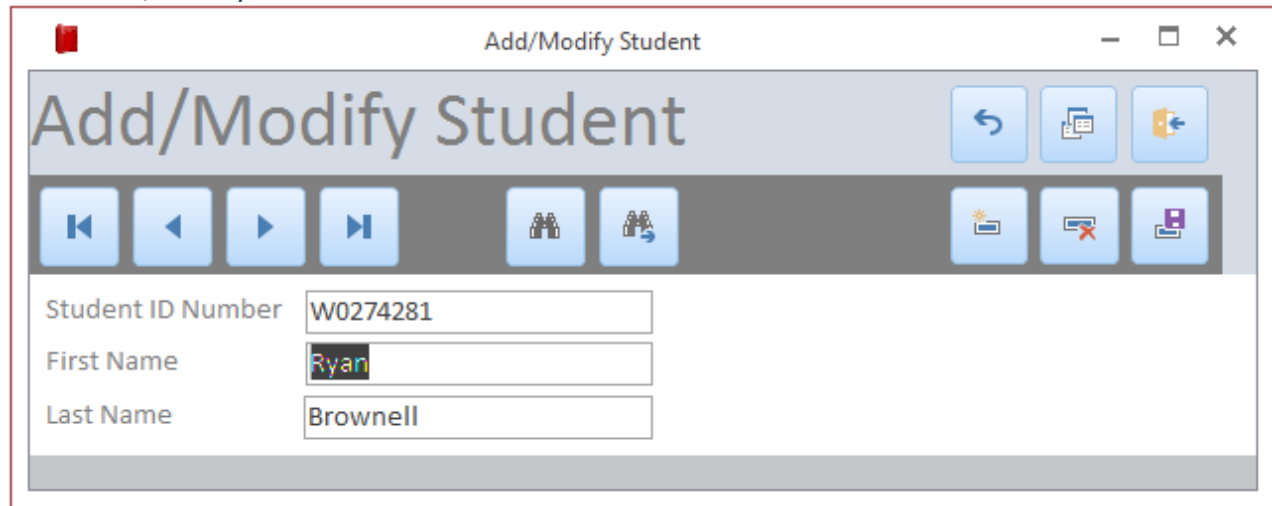
Figure 4.3.1: Bulk Modify Data Menu



*This menu is accessed by clicking on Bulk Modify Data in the Annual Housekeeping Menu.*

The contents of the Bulk Modify Data menu should only be used by users familiar with Microsoft Excel and Microsoft Access as the use of this section has the potential to irrevocably damage the database. All tables, including the backup tables can be modified enmasse via the options in this menu.

Figure 5.1.1: Add/Modify Student Form



The screenshot shows a software window titled "Add/Modify Student". The window has a standard Windows-style title bar with a red close button, a grey maximize button, and a grey close button. Below the title bar, there is a header bar with the text "Add/Modify Student" in a large, bold, sans-serif font. To the right of the header bar, there are three small, square buttons: a blue button with a white circular arrow (refresh), a blue button with a white document icon (print), and a blue button with a white document icon and a blue arrow (export). Below the header bar, there is a dark grey bar containing several navigation buttons: four blue buttons with white arrows (back, previous, next, forward), two blue buttons with white icons of a group of people (list, add), and three blue buttons with white icons (refresh, delete, save). Below the dark grey bar, there are three input fields. The first field is labeled "Student ID Number" and contains the text "W0274281". The second field is labeled "First Name" and contains the text "Ryan". The third field is labeled "Last Name" and contains the text "Brownell".

*This form is accessed by clicking on Add/Modify Student in the Registration submenu.*

The Add/Modify Student form can be used to browse through all students in the database by using the Record Browsing buttons (⏮ ⏪ ⏩ ⏭). Records can also be found by name or student id number using the Search buttons (🔍 🔍). To edit a student, simply navigate to the appropriate record using the provided buttons and edit the fields. To save the changes click on the save button (💾). To create a new student, click on the New Record button (➕), fill out the form and then click on the Save button (💾). To delete a student click on the Delete button (🗑). Please note: To successfully delete a student record, you must first delete any locker assignments that the respective student has first. (See Figure 5.1.2)

Figure 5.1.2: Assign Locker Form

Assign Locker

Student ID Number: W0212297

First Name: Mel

Last Name: Thibault

Current Assignment: D2-034

Type: Full Pos: N/A Wing: D Floor: 2

New Assignment: [Dropdown] Save

This form is accessed by clicking on Assign Locker in the Registration submenu.

The Assign Locker form is used to assign lockers to students. This is done in a two-step process: find the student, then select the locker. Finding students can be done by either using the Record Browsing buttons ( [Previous] [First] [Last] [Next] ) or by searching for the name or student id number using the Search buttons ( [Search Name] [Search ID] ). Once the student is found, click on the New Assignment dropdown box. The Assignment Dropdown box will display a list of available lockers. This list includes details such as: what wing and floor of the building the locker is located, what size type the locker is and in the case of a half sized locker, the position of the locker relative to its counterpart. Once a suitable locker has been selected, click on the Save button ( [Save] ). Once a locker has been assigned, a receipt for the assignment can be issued (see Figure 7.1.1) by clicking on the Print Receipt button ( [Print] ).

New Assignment: D2-040 [Save]

Number	Wing	Floor	Type	Position
D2-040	D Wing	Floor 2	Full	N/A
D2-041	D Wing	Floor 2	Full	N/A
D2-042	D Wing	Floor 2	Full	N/A
D2-043	D Wing	Floor 2	Full	N/A
D2-044	D Wing	Floor 2	Full	N/A
D2-045	D Wing	Floor 2	Full	N/A
D2-046	D Wing	Floor 2	Full	N/A
D2-047	D Wing	Floor 2	Full	N/A
D2-048	D Wing	Floor 2	Full	N/A
D3-001	D Wing	Floor 3	Half	Top
D3-003	D Wing	Floor 3	Half	Top
D3-004	D Wing	Floor 3	Half	Bottom
D3-005	D Wing	Floor 3	Half	Top
D3-006	D Wing	Floor 3	Half	Bottom
D3-007	D Wing	Floor 3	Half	Top

Figure 5.1.2A: The New Assignment Dropdown Box

Figure 5.1.3: Add/Modify Locker Form

Add/Modify Locker

Locker Number: D2-011

Type: Full

Position: N/A

Location: Wing: D Floor: 2 - Soft Seating Area

This form is accessed by clicking on Add/Modify Locker in the Registration/Advanced submenu. Unless something has changed physically with a locker or its location it is best to avoid this form. This form can be used to browse through all lockers in the database by using the Record Browsing buttons ( [Previous] [First] [Last] [Next] ).







). Records can also be found by locker number using the Search buttons (). To edit a locker, simply navigate to the appropriate record using the provided buttons and edit the fields. To save the changes click on the save button (). To create a new locker, click on the New Record button (), fill out the form and then click on the Save button (). To delete a locker click on the Delete button (). Please note: To successfully delete a locker record, you must first delete or modify any student locker assignments that refer to the respective locker first. (See Figure 5.1.3)

Figure 5.1.4: Add/Modify Location Form

*This form is accessed by clicking on Add/Modify Location in the Registration/Advanced submenu.*







Unless something has changed physically with a locker or its location, it is best to avoid this form. This form can be used to browse through all locations in the database by using the Record Browsing buttons (). Records can also be found by location name, wing or floor number using the Search buttons (). To edit a location, simply navigate to the appropriate record using the provided buttons and edit the fields. To save the changes click on the save button (). To create a new location, click on the New Record button (), fill out the form and then click on the Save button (). To delete a location click on the Delete button (). Please note: To successfully delete a location record, you must first delete or modify any lockers assigned to the location first. (See Figure 5.1.3)

Figure 5.3.1: Bulk Modify Students Form

*This form is accessed by clicking on Student Data in the Annual Housekeeping/Bulk Modify Data submenu.*

This table should only be used to import the student list on an annual basis. It should not be used to delete students from the database as locker assignments will cause the system to reject the deletion request. Instead, use the Clear Data option in the Annual Housekeeping menu. Data can be copied into this form from Microsoft Excel. Data should be formatted such that rows start with an empty column, followed by columns for the last name, first name, and student number. The s\_id field will automatically be populated during the import.

**Bulk Modify Students**

### Edit Raw Student Data

WARNING: The data on this table should generally not be modified except for the annual import of the student list. It is strongly suggested that you close the database and manually make a copy of it before proceeding.

Data can be copied and pasted into this table from Microsoft Excel provided it is formatted and positioned correctly.

Numbers in the s\_id field are automatically generated by the database. When importing data, leave a blank column for this field to avoid problems and conflicts.

s_id	s_l_name	s_f_name	s_number
2	Brownell	Ryan	W0274281
3	Thibault	Mel	W0212297
4	Cochrane	Alex	W0185697
5	Beauchamp	Emily	W0292081
6	Covey	Alistair	W0290873
7	MacKeil	Trent	W0295640
*	(New)		

Record: 1 of 6

Figure 5.3.2: Bulk Modify Lockers Form

*This form is accessed by clicking on Locker Data in the Annual Housekeeping/Bulk Modify Data submenu.*

This table should only be used to import locker data in the event of a change to a large number of lockers. It can be used to delete lockers from the database provided there are no associated locker assignments. Data can be copied into this form from Microsoft Excel. Data should be formatted such that rows start with an empty column, followed by columns for the locker number, locker type (full/half), position (N/A, Top, Bottom) and the location id (see Bulk Modify Locations Form). The lk\_id field will be automatically populated during the import.

**Bulk Modify Lockers**

### Edit Raw Locker Data

WARNING: The data on this table should generally not be modified except for when the lockers are changed. It is strongly suggested that you close the database and manually make a copy of it before proceeding.

Data can be copied and pasted into this table from Microsoft Excel provided it is formatted and positioned correctly.

Numbers in the lk\_id field are automatically generated by the database. When importing data, leave a blank column for this field to avoid problems and conflicts.

lk_id	lk_number	lk_type	lk_position	lk_lo_id
1	D2-011	Full	N/A	1
2	D2-012	Full	N/A	1
3	D2-013	Full	N/A	1
4	D2-014	Full	N/A	1
5	D2-015	Full	N/A	1
6	D2-016	Full	N/A	1
7	D2-017	Full	N/A	1
8	D2-018	Full	N/A	1
9	D2-019	Full	N/A	1
10	D2-020	Full	N/A	1
11	D2-021	Full	N/A	1
12	D2-022	Full	N/A	1
13	D2-023	Full	N/A	1
14	D2-024	Full	N/A	1
15	D2-025	Full	N/A	1
16	D2-026	Full	N/A	1
17	D2-027	Full	N/A	1
18	D2-028	Full	N/A	1
19	D2-029	Full	N/A	1

Record: 1 of 796

Figure 5.3.3: Bulk Modify Assignments Form

This form is accessed by clicking on Assignment Data in the Annual Housekeeping/Bulk Modify Data submenu.

This table should generally not be used at all. It can be used to delete assignments from the database provided there are no associated locker assignments. Though possible, data should generally not be imported into this table because Microsoft Access is set up to automatically build this table upon the creation of a locker assignment.

**Bulk Modify Assignments**

### Edit Raw Assignment Data

WARNING: The data on this table should generally not be modified. It is strongly suggested that you close the database and manually make a copy of it before doing anything with the data below.

Data can be copied and pasted into this table from Microsoft Excel provided it is formatted and positioned correctly.

Numbers in the a\_id field are automatically generated by the database. When importing data, leave a blank column for this field to avoid problems and conflicts.

a_id	a_s_id	a_lk_id
10	3	24
11	4	23
12	2	30
13	5	251
13	7	242
*(New)	0	0

Record: 1 of 5 | No Filter | Search

Figure 5.3.4: Bulk Modify Locations Form

This form is accessed by clicking on Location Data in the Annual Housekeeping/Bulk Modify Data submenu.

This table should generally not be used at all. This table should only be used to import location data if a large quantity of changes to the location data is required. It can be used to delete locations from the database provided there are no associated lockers. Data can be copied into this form from Microsoft Excel. Data should be formatted such that rows start with an empty column, followed by the location name, floor, wing, and a brief description of where the locker can be found. The lo\_id field will be automatically populated during the import.

**Bulk Modify Locations**

### Edit Raw Location Data

WARNING: The data on this table should generally not be modified except for when the building and/or locker locations are changed. It is strongly suggested that you close the database and manually make a copy of it before proceeding.

Data can be copied and pasted into this table from Microsoft Excel provided it is formatted and positioned correctly.

Numbers in the lo\_id field are automatically generated by the database. When importing data, leave a blank column for this field to avoid problems and conflicts.

lo_id	lo_name	lo_floor	lo_wing	
1	Soft Seating Area	2	D	In the general vicinity
2	Corridor	2	C	In the C wing corridor
3	Elevator	2	C	In the general vicinity
4	Soft Seating Area	3	D	In the general vicinity
5	Elevator	3	C	In the general vicinity
6	East Stairwell	3	C	In the general vicinity
7	Corridor	1	C	In the C wing corridor
8	Elevator	1	C	In the general vicinity
9	Central Stairwell	1	D	In the general vicinity
10	Corridor	1	S	In the annex corridor
11	Corridor	2	B	In the B wing east corridor
*(New)				

Record: 1 of 11 | No Filter | Search

*This form is accessed by clicking on Student Backup in the Annual Housekeeping/Bulk Modify Data submenu.*

*This form is accessed by clicking on Assignment Backup in the Annual Housekeeping/Bulk Modify Data submenu.*

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Figure 6.3.1: Clear Data Warning Dialog

This dialog box is accessed by clicking on Clear Data in the Annual Housekeeping Data submenu. This dialog box warns the user of the operation they are about to perform. Clicking Yes deletes all entries in the student and assignment backup, copies all entries currently in the student and assignment tables to the student and assignments backup, and then deletes all of the entries in the student and assignment tables.

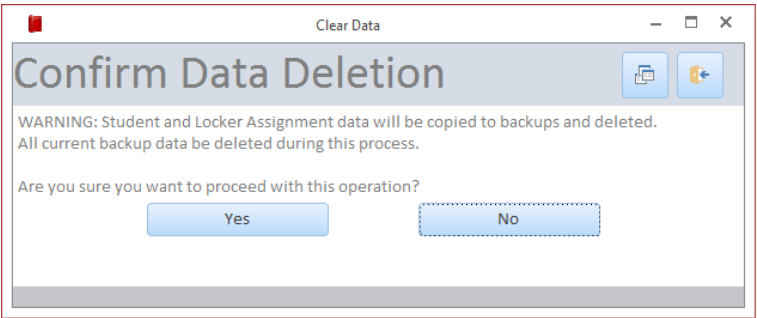


Figure 6.3.2: Restore Data Warning Dialog

This dialog box is accessed by clicking on Restore Data in the Annual Housekeeping Data submenu. This dialog box warns the user of the operation they are about to perform. Clicking Yes deletes all entries in the student and assignment tables, and copies all entries currently in the student and assignment backup to the student and assignment tables.

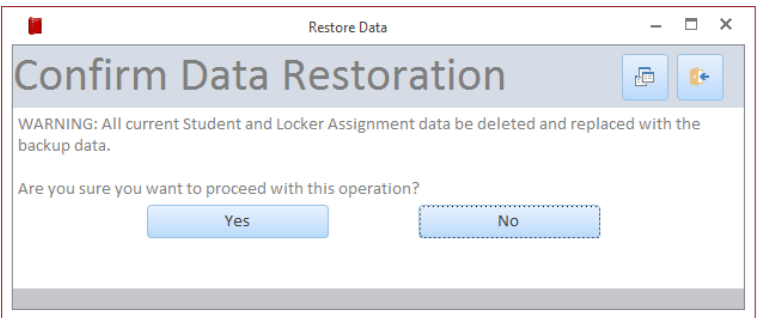


Figure 7.1.1: Locker Assignment Receipt Report

This report can be printed by clicking on the Print Receipt button in the Assign Locker form. This report displays the student's name and id number. It also displays the locker number, the type of locker, the position of the locker, the name of the location of the locker, the wing and floor in which it is located and some general direction to the location.

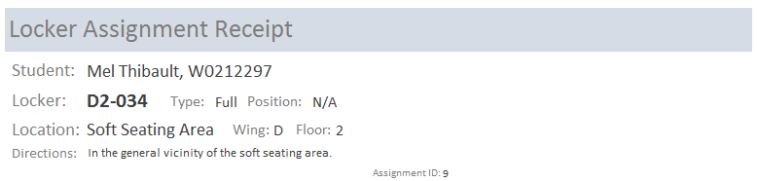




Figure 7.2.1: Locker Assignments by Location Report

*This report can be viewed by clicking on the Preview Assignments button in the Print Reports menu. It can be printed by clicking on the Print Assignments button in the Print Reports Menu.*

This report displays current locker assignments grouped by wing floor and area name. Each row is then sorted by locker number and displays the name of the student and the student number.

Locker Assignments by Location

Locker Assignments by Location

Wing D

Floor 2

Vicinity Number	Soft Seating Area Student Name	Total Assigned in this Area
D2-033	Alex Cochrane, W0185697	3
D2-034	Mel Thibault, W0212297	
D2-040	Ryan Brownell, W0274281	

Floor 3

Vicinity Number	Soft Seating Area Student Name	Total Assigned in this Area
D3-002	Trent MacKeil, W0295640	2
D3-011	Emily Beauchamp, W0292081	

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No Filter

Figure 7.2.2: Locker Availability by Location Report

This report can be viewed by clicking on the Preview Availability button in the Print Reports menu. It can be printed by clicking on the Print Availability button in the Print Reports Menu.

This report displays all available lockers grouped by wing floor and area name and is then sorted by locker number.

Locker Availability by Location				
Wing B		B2-113	B2-153	B2-193
Floor 2		B2-114	B2-154	B2-194
		B2-115	B2-155	B2-195
Vicinity	Corridor	B2-116	B2-156	B2-196
Locker Number		B2-117	B2-157	B2-197
		B2-118	B2-158	B2-198
		B2-119	B2-159	B2-199
		B2-120	B2-160	B2-200
		B2-121	B2-161	B2-201
		B2-122	B2-162	B2-202
		B2-123	B2-163	B2-203
		B2-124	B2-164	B2-204
		B2-125	B2-165	B2-205
		B2-126	B2-166	B2-206
		B2-127	B2-167	B2-207
		B2-128	B2-168	B2-208
		B2-129	B2-169	B2-209
		B2-130	B2-170	B2-210
		B2-131	B2-171	B2-211
		B2-132	B2-172	B2-212
		B2-133	B2-173	B2-213
		B2-134	B2-174	B2-214
		B2-135	B2-175	B2-215
		B2-136	B2-176	B2-216
		B2-137	B2-177	B2-217
		B2-138	B2-178	B2-218
		B2-139	B2-179	B2-219
		B2-140	B2-180	B2-220
		B2-141	B2-181	B2-221
		B2-142	B2-182	B2-222
		B2-143	B2-183	B2-223
		B2-144	B2-184	B2-224
		B2-145	B2-185	B2-225
		B2-146	B2-186	B2-226
		B2-147	B2-187	B2-227
		B2-148	B2-188	B2-228
		B2-149	B2-189	B2-229
		B2-150	B2-190	B2-230
		B2-151	B2-191	B2-231
		B2-152	B2-192	B2-232
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## Recommendation

I recommend the provided live demonstrations and the documentation in the analysis section above as fulfillment of the statement of requirement.