2012
INF 272
Final Project v1.0

Outcomes:
- Create a professional, usable program using all knowledge gained in the past two years.
- Learn to apply the knowledge learned to a practical application.
- Interpreting user requirements for an application

Note:
- ➢ Start early, **do not leave this till the last minute**
- ➢ Assistance will be given for understanding the project problem and
- ➢ Programming problems which have been thoroughly researched and you have attempted to solve on your own, please do not bring problems which you have not attempted to solve on your own, you will be sent away.
- ➢ **Do not make assumptions** as to what you think the program should do, ask the lecturers if you have any questions! Adding unnecessary functionality is nice but may cost you marks if you do not meet the requirements.

Project problem

The Department of Informatics, in collaboration with E-skills and BlackBerry Academic has recently opened a new lab at the university. The aim of the lab is to assist upcoming and existing developers in developing quality apps for the BlackBerry platform. The BlackBerry Apps lab requires your help to develop a system to manage: people who have access to the lab, events run by the lab and sign out of testing devices.

- The system should keep a list of all the people who have access to the lab. This is just a control list so that the people who have access can be controlled
- The system should allow the user to easily view upcoming events and add, edit or remove these events as and when required.
- The system must be able to accommodate two types of user's administrator and normal user with limited access. The roles of each of these users are described in more detail below.
- The system must be able to generate different reports (Specified bellow)
- The system must keep track of any changes which are made so that changes can be traced back to whoever made them.

Requirements Specification

1 SYSTEM CONTEXT & SCOPE

1.1 SCOPE OF THE SYSTEM

The system required needs to be able to store and manage information about the people which have been given access to the lab as well as any events which are scheduled in the lab. The system needs to control the devices which are available in the lab, this means that any of the testing devices which are in the lab need to be either registered as being either in the safe or checked out. Devices which are checked out cannot leave the lab, they are placed into one of the lab lockers and a key to that locker is given to the person who signed out the device.

2 FUNCTIONAL AND DATA REQUIREMENTS

2.1 USER REQUIREMENTS LIST

2.2 FUNCTIONAL REQUIREMENTS

Requirement	Explanation
Requirement Number	
Requirement Title	ADD USER
Requirement Text	Add a new user which is able to access the system. The information to be stored on a user is: User name, Password, Access level, Name, Surname, Contact (Either cell phone, email or both)
Requirement Type	Functional
Requirement Details and Constraints	The default access level must be "User", not administrator. The user name must not already exist in system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	EDIT USER
Requirement Text	Edit a user's accessibility to the system. The information which can be edited is: Password and contact information.
Requirement Type	Functional
Requirement Details and Constraints	A user is only able to change their password. Only administrators are able to change all the information of a user.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	DELETE USER.
Requirement Text	A user must never truly be deleted from the system so that the audit log will always be valid for specific users; therefore in order to delete a user their account must simply be disabled.
Requirement Type	Functional
Requirement Details and Constraints	Only administrators may delete users.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	ADD LAB USER
Requirement Text	A Lab user does not need to be a system user however a lab user can also be a system user. It is a person who makes use of the lab to develop and test apps. Lab user information should include: Name Surname, Student Number or Personnel Number, ID Number, Contact Information (as much as possible)
Requirement Type	Functional
Requirement Details and Constraints	Lab users must have either a Student Number, Personnel Number or ID Number
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	EDIT LAB USER
Requirement Text	Edit Lab User information.
Requirement Type	Functional
Requirement Details and Constraints	Only administrators can edit Lab User information.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	DELETE LAB USER
Requirement Text	Lab Users cannot be completely deleted from the system; they can only be disabled so as to ensure that all the devices checked out by the user always show in the audit logs.
Requirement Type	Functional
Requirement Details and Constraints	Only administrators can delete a Lab User.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	ADD EVENT
Requirement Text	Add an Event to the system. Event information which should be stored is: Event Name, Responsible person (Will be a Lab User), Comments (Sufficient space to provide all details about the event such as the type of even and the expected number of people) Event date.
Requirement Type	Functional
Requirement Details and Constraints	Only an administrator can add an event to the system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	EDIT EVENT
Requirement Text	Change events details. Information which can be changed about an event is: All information
Requirement Type	Functional
Requirement Details and Constraints	Only an administrator can change events information.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	DELETE EVENT
Requirement Text	Remove an event from the system. An event can be completely removed from the system.
Requirement Type	Functional
Requirement Details and Constraints	Only an administrator can delete an event from the system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	USER ACCESS
Requirement Text	Users can either be a User or an Administrator. The user must login with their given username and password and then only be allowed access to the parts of the system which they are permitted to access.
Requirement Type	Functional
Requirement Details and Constraints	Any user of the system must be by default a "User".
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	ADD DEVICE
Requirement Text	The lab has devices for testing purposes; an administrator should be able to add devices to the system. The information to be stored on the devices is: Category (Either phone or tablet), IMIE Number, Serial Number, Device PIN (BlackBerry Pin), Device Email, Device Password, Model Number.
Requirement Type	Functional
Requirement Details and Constraints	Only the administrator is should be able to add devices to the system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	EDIT DEVICE
Requirement Text	The information on devices which can be edited is: Category (Either phone or tablet), IMIE Number, Serial Number, Device PIN (BlackBerry Pin), Device Email, Device Password, Model Number.
Requirement Type	Functional
Requirement Details and Constraints	Only the administrator is should be able to edit devices in the system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	DELETE DEVICE
Requirement Text	The devices cannot be completely removed from the system. They must just be made "inactive" in the system so that they can no longer be used but still show on all records of checked out devices.
Requirement Type	Functional
Requirement Details and Constraints	Only the administrator is should be able to delete devices from the system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	ADD LAB STORAGE
Requirement Text	The lab has a number of storage units (lockers) which are used to store the devices which are given to the lab users. The lab storage is numbered and has keys, one which is kept by the lab user while they have devices checked out and the other one is kept by lab admin.
Requirement Type	Functional
Requirement Details and Constraints	Only the administrator is should be able to add storage to the system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	EDIT LAB STORAGE
Requirement Text	If lab storage is changed for whatever reason, information about it can be edited.
Requirement Type	Functional
Requirement Details and Constraints	Only the administrator is should be able to edit storage in the system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	DELETE LAB STORAGE
Requirement Text	The storage cannot be completely removed from the system. They must just be made "inactive" in the system so that they can no longer be used but still show on all records.
Requirement Type	Functional
Requirement Details and Constraints	Only the administrator is should be able to delete storage from the system.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	CREATE BACKUP
Requirement Text	The system must be able to create a backup of the database. The entire database must be backed up to a text file and saved in a user specified location.
Requirement Type	Functional
Requirement Details and Constraints	Only an administrator should be able to create a backup. TIP: Create a csv file or something similar, not all tables need to be in the same file although it is better to make a single file.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	RESTORE BACKUP
Requirement Text	The system must be able to restore a backup of the database. The entire database must be restored from the previously saved text file.
Requirement Type	Functional
Requirement Details and Constraints	Only an administrator should be able to restore a backup.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	PRINT LAB USER LIST
Requirement Text	The system must be able to print a report of all the lab users and any devices which those users checked out. The user of the system must be able to select which users are displayed in the report. It can either be a single user, a selection or all of them.
Requirement Type	Functional
Requirement Details and Constraints	Only administrators may print Lab User Lists.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	PRINT DEVICE LIST
Requirement Text	The system must be able to print a list of devices. The list must display when the device was added to the system, who checked out the devices, when and for how long. The user of the system must be able to select which devices are displayed in the report. It can either be a single device, a selection or all of them.
Requirement Type	Functional
Requirement Details and Constraints	Only administrators may a print Device List.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	PRINT AN EVENT LIST
Requirement Text	The system must be able to generate an event list for a selected time period or print out a specific event's details.
Requirement Type	Functional
Requirement Details and Constraints	Both users and administrators can create and print event lists.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	AUDIT LOG
Requirement Text	An audit log must be generated for all changes to the system. Information to be stored: User name, System change affected and time.
Requirement Type	Functional
Requirement Details and Constraints	The audit log must monitor: Who, what and when is anything within the system changed.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	AUDIT LOG REPORT
Requirement Text	The system must be able to generate an audit log for a given time period. The audit log should contain information on who did what in the system and when they did it.
Requirement Type	Functional
Requirement Details and Constraints	Only an administrator can generate and print an audit log report.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	SEARCH EVENT
Requirement Text	The user must be able to search for an event in a quick logical way. The events should be displayed with all the relevant event information.
Requirement Type	Functional
Requirement Details and Constraints	The user must be able to quickly find events based on either their dates or names. Several events may be returned in a single search and then the required event selected from the list.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	SEARCH DEVICES
Requirement Text	The user must be able to search for a contact in a quick logical way.
Requirement Type	Functional
Requirement Details and Constraints	The user must be able to quickly find contacts based on either their names or telephone numbers.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	SEARCH LAB USER
Requirement Text	The user must be able to search for a Lab User in a quick logical way.
Requirement Type	Functional
Requirement Details and Constraints	The user must be able to quickly find contacts based on either their names or telephone numbers.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	CHECK OUT DEVICES
Requirement Text	Lab Users are able to check out testing devices. The devices are kept in a safe until a lab user requests a device. It is then signed out and the lab user is given a device along with a locker for them to store the device in for the duration which the device is in their possession. The system should be able to record all devices which are checked out. A lab user may have more than one device checked out, however a device can only be checked out by one person at a time. There must always be a history list of who checked out the devices, when and for how long.
Requirement Type	Functional
Requirement Details and Constraints	Only administrators may check out devices.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	SIGN IN DEVICES
Requirement Text	Once a lab user has finished using a device, the device will be wiped clean and then returned to the safe. If it is still in full working order it will be signed back in as a device which can be signed out again.
Requirement Type	Functional
Requirement Details and Constraints	Only administrators may sign out devices.
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

Requirement	Explanation
Requirement Number	
Requirement Title	
Requirement Text	
Requirement Type	Functional
Requirement Details and Constraints	
Rev Date and Rev #	02/08/2012 #1.0
Criticality	Must

2.3 DATA REQUIREMENTS

The above requirements cover only the minimum data requirements required by the user. You will possibly need to add additional fields for functionality if you have any questions as to the processes of the lab which are not described here then you must ask one of the lecturers so as to ensure that the system meets the requirements of the lab and not your interpretation of it.
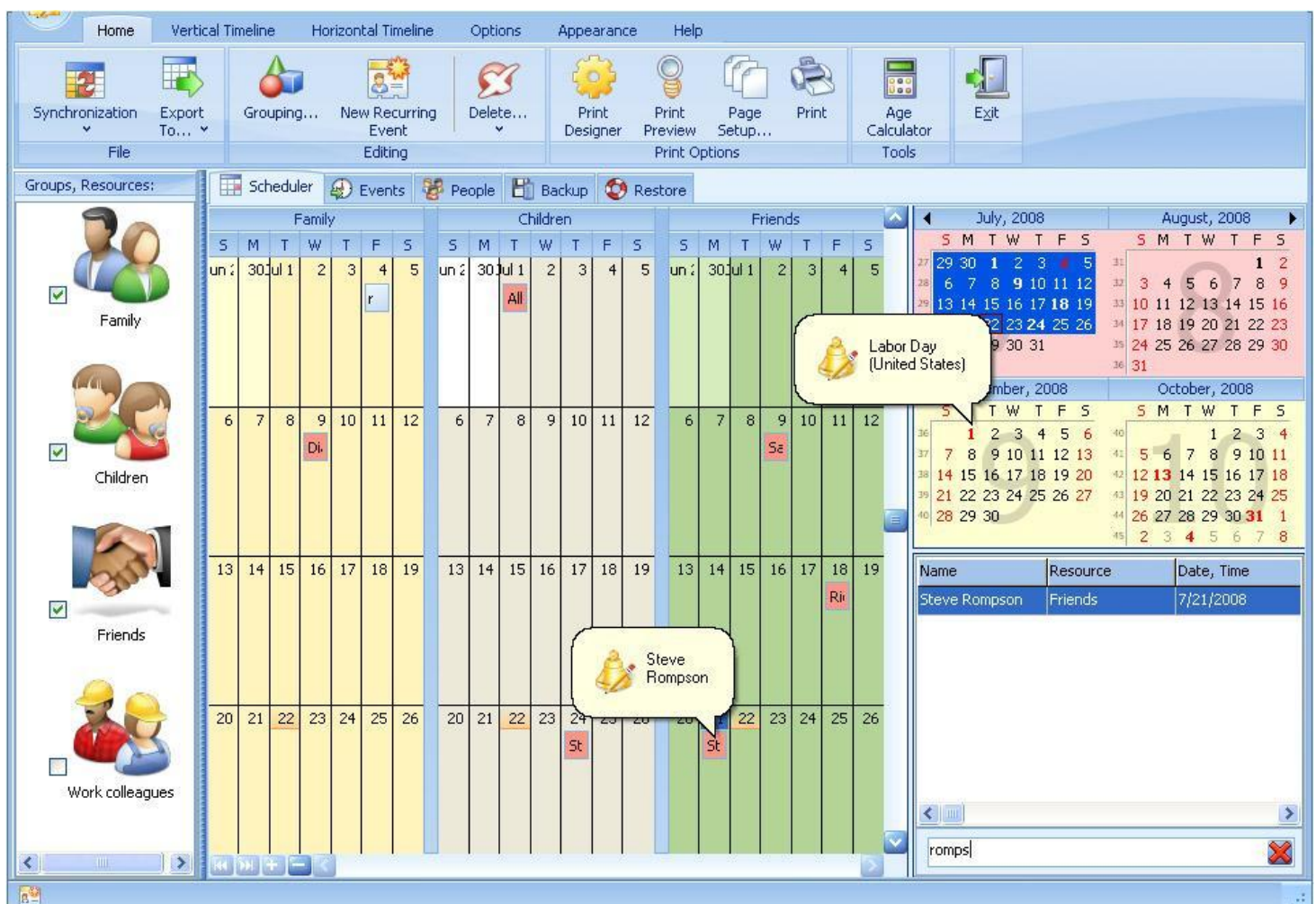
Look, Feel and Use Requirements

2.4 USER INTERFACE REQUIREMENTS

You are allowed to develop the interface however you wish however, you must keep it logical and functional. Please try to keep the interface professional looking.

Bellow is an example of a commercially available program which performs similar functions.

NOTE:

> This is an example only!

> This is what your program could look like and contains some of the functionality. We would like you to aim for a similar professional looking interface.

3 MARK SHEET

		MAXIMUM MAKSIMUM	ALLOCATION ALLOKASIE
1	**Basic CRUD on database**	**(12)**	12
1.1	User	3	3
1.2	Devices	3	3
1.3	Event	3	3
1.4	Storage	3	3
2	**Solving of Identified problems**	**(78)**	78
2.1	Two types of users (Administrator and User) working access profiles.	5	5
2.2	Disabled users are still displayed within the audit log	5	5
2.3	Create a backup of the database (must be verifiable)	5	5
2.4	Restore a backup of the database (Application must run from the restored data)	5	5
2.5	Using crystal reports		
2.5.1	Create a printable Lab User List (half marks if not customisable)	6	6
2.5.2	Create a printable Event List (half marks if not customisable)	6	6
2.5.3	Create a printable Audit Log (half marks if not customisable)	6	6
2.5.4	Insert picture onto device list for each device from file (Bonus marks) * You will only get the marks if the picture works with the report, it must be logical and a device image must be added for each device in the report.	5	5
2.6	Search		
2.6.1	Search Events by name and date	5	5
2.6.2	Search Devices by name or telephone number	5	5
2.6.3	Search Lab Users	5	5
2.7	Device Control		
2.7.1	Check Out Devices * All appropriate information must be stored and displayed in order to obtain maximum marks	15	15
2.7.2	Sign In devices * Devices status must be changed so that they are no longer checked out and the history log must show that the device was signed out by the person which returned it.	5	5
3	**Appropriate use of programming techniques (5 marks for 5 techniques)**	**(25)**	25
3.1	Each business object defined in the specification (e.g. Device, Event) needs to be defined as class and the class needs to be used through the program.	5	5
3.2	Classes should be organized using some kind of Collection (e.g. Array List)	5	5
3.3	All input should be validated using regular expressions	5	5
3.4	At least one Data Structure should be used in a meaningful way	5	5
3.5	Any errors should be caught and the user should be warned using error providers or Message Boxes as appropriate	5	5
	TOTAL *inc Bonus Marks **Maximum**	**(115)** **(110)**	115 110

* A customizable report is one which allows the user to make a selection of which data is displayed in the report. i.e. Date selection or specific items.