

Project report

Project overview:

The CENT researcher centre has a lot of physical equipment in the lab. This project focuses on which of the equipment are used as part of faculty-led research projects, student-led research projects or as part of classroom activities. In every case equipment must be loaned out and kept track of so that it does not go missing i.e. Inventory management of the products.

Project Requirements:

1. CENT must maintain an inventory of equipment in its lab. Some of the equipment is eligible for loan others are not.
2. All equipment, whether loanable or not should have an inventory bar-code readable tag in it which uniquely identifies the equipment.
3. Inventory should be classified by item type such as equipment manufacturer, make and model.
4. While each physical item should be inventoried, but there should be a report which can provide a count of how many items of a specific item type: manufacturer, make and model are available.
5. Researchers (students, faculty, etc.) should be able to loan out any loanable equipment by item type.
6. The loan process should work like a shopping cart where you can create a new loan and add multiple inventoried items of a specific type to the loan. This is called an Ad-hoc loan.
7. Ad-hoc loans can be renewed. Also, the return date can be set manually.
8. There needs to be a loan template facility so than common loan setups can be created. These are called activity loans. For example, for one class activity, a specific model of router and Wi-fi access point are required to be loaned for the activity. In this case a student can ask to loan the equipment required to complete Lab XYZ for course IST123 and then the loan shopping cart would automatically be loaded with specific items from inventory to be loaned.
9. All items on loan must have a return date. And a report should be able to be generated for items on loan and overdue items.
10. Return dates are customizable as part of the activity loan template.
11. The system should easily setup users using SUID, net ID or some other facility to guarantee the identity of the loaner.
12. Any activity loan template should have a point of contact so that a user is identified as responsible for the setup of the activity loans.
13. Activity loans should have fields to describe the nature and purpose of the loan or a least a link to a URL. So that users know what to do with the equipment.
14. All equipment on loan of the same type should have notes so that important information can be communicated regarding how to use and or setup the equipment.
15. For every loan, there should be a record of the user who processed the loan. This will typically be a user affiliated with CENT as a faculty member or technician.

16. There needs to be a list of people affiliated with CENT who are permitted to process loans.
17. Anyone affiliated with cent should get notifications when equipment is overdue.
18. The user loaning the equipment should get notifications when equipment is overdue.

Entities & Attributes:

User: username (unique, required), user id(required), first name(required),last name(required),borrow date(required), due date(required), reason(required), designation(required), barcode of the equipment borrowed(required, multivariable).

Equipment: name(required), manufacturer(required), model(required), make(required), barcode (required, unique).

Activity Loans: identity number(required),equipment barcode(required,multi variable), URL(required), point of contact(required),lab number(required), course name(required),course name(required),borrow date(required), due date(required), reason(required).

Ad-hoc Loans: identity number(required), equipment barcode(required), URL(required), point of contact(required),email(required), borrow date(required), due date(required), reason(required).

CENT affiliations: identity number(required), email(required),password(required),first name(required), last name(required), barcode of items loaned out(required).

Conceptual Diagram:**Logical Diagram:****Diagram of Screens used in the application****Implementation of the application in Power Apps****Team contribution log report:**

When we initially wanted to start working on the project, we did individual analysis of the requirements and came up with few different approaches. Due to clashing schedules, we divided up the work and started working on it individually. Shripad started off the project by doing analysis for conceptual and logical modelling and jotting down the attributes, entities and relationships on paper. Anupama was responsible for converting the diagrams on paper into the actual data flow diagram i.e. conceptual and logical model for the database. Prachi converted the conceptual & logical models into tables on the SQL server. With the initial phase of the project complete, we decided it would be best to start working on the rest of the project together because it needed a lot of team-work contribution. Over the Thanksgiving break, we met up a few times and spent at least 9 hours building the project ground-up. Overall, we were able to implement most of the major functionalities.

