ISL Data Entry Application

Overview:

The purpose of this document is to describe how the CSCI 470 class went about developing the database and front end of the application ISL will use to track contacts, projects, equipment and labs.

The project was split into three sections which were given to three groups of approximately six students. The groups were responsible for designing and implementing the IRIS database as well as the ISL specific functionality and the web interface for these databases. In the end, IRIS and ISL will be combined into one database which will allow for other labs – the vision lab for example – utilizing the functionality that is already provided for the ISL data.

The following three sections will discuss in more detail each of these three sections and the process it took for design to be accomplished.

The ISL Implementation:

Based on the input from the client, we designed the database should be user-centric. So we started with the contact table and sub-classed it to fit the needs of the various types of users. From there we added the supporting tables needed to keep track of the data related to the users such as what they are working on and who provided the funding for their projects. When the project was split the structure of the database remained overall unchanged although some of the major tables were passed to the other team.

The database is more or less finished. The only major feature that was not finished is the storage of various media files. This is at the request of the project leader. The media file were originally modeled as multi-valued attributes of the various tables they were associated with, but we wanted to unify all of the media tables into one table. Otherwise the database is fully functional.

One of the future plans is to port the database to a DBMS that supports enforcement of foreign key constraints. Currently the database is being used on MySQL which syntactically supports foreign keys but it doesn't actually enforce them. The SQL we wrote have all the key constraints so the port should be fairly easy.

The IRIS Implementation:

The IRIS database design was based off of information received from our initial ISL entity relationship diagram, the ISL and IRIS websites, minutes from IRIS meetings, and feedback from group discussions. The database contains tables for Documents, Funding, Board Members, Expenses, and Contacts. Each of these tables contributes to the administration of ISL and all such projects. Our design of these tables were based on the idea of simplicity and effectiveness which allowed for the end user to input data with ease and quickness. We did this by adding enumerated fields that could be implemented with drop down boxes. In the Document's table we created an enumerated field with the
document Type which would allow the end user to choose from several subcategories of
documents including: Contracts, Proposals, Projections, Funding Documents, Logs,
Forms, Equipment, and Invoices. Each document would receive a Type as well as a
Description from the end user. The document would also contain a path and a primary
key of DocumentID. The Contact’s table also made use of enumeration which included:
Supplier, Student, Faculty, Media, and Sponsor. Each Contact would also contain: Name,
Address, Phone Number, and Email along with the primary key of ContactID. The
Expenses and Funding tables were created to give Board Members an interface to look up
key financial information. The Expenses table explains to the end user a Description of
the expense, the Type of the expense and the Price. This table also contains a foreign key
of DocumentID so that a Document can be linked with the expense information. The
Funding table gives details about Funding sources including: Total Amount of funding,
the Amount Left, and the funding Source with foreign keys of ContactID, DocumentID,
ProjectID and a primary key of FundingID. This table will give Board Members a quick
reference to Funding information. The Board Members table will be made up of
administrators within IRIS. This table will contain a ContactID as well as their Position
and will contain the Primary key of BoardMemberID. The IRIS database will be a good
start at allowing its user an easy interface to keep track of key information for its
organization. Future implementations should include Outreach and Inreach projects to
further integrate ISL and IRIS data into a cohesive database design.

The Interface Implementation:

The biggest decisions we as the interface group had to come to a consensus on
were how to divide up the work, and what programming technologies we were going to
use to develop the interface. About half the people in our group had done some sort of
web programming at some point or another, and most of us were slightly more familiar
with PHP then other technologies such as ASP.NET and PERL. Based on this we
decided to do most of the programming for the interface using JavaScript and PHP.

Dividing up the work was a little bit more difficult. We decided early on that we
wanted to focus mainly on three areas being Projects, Equipment, and Contacts. Once
we’d developed basic functionality for these sections we could move on and improve
upon this functionality while also working on some of the other required areas such as
Inreach, Outreach, and Documents. Having around 6-7 people in our group we tried to
pair people up and assign them to one of those three sections. We also decided to have
two people concentrating on writing a search function that would be flexible enough to be
inserted into any of the three major areas just described.

Status of Project:

Currently the interface group was able to implement basic searching and sorting
functionality into the Equipment, Contacts, Projects, and Documents sections. Upon
entering any of these sections a basic list of for example all equipment or contacts is
listed to the user. They can then click on the different columns to then sort the data
specifically by that corresponding column. From this point, the user can access search
and add features that will allow them to add another item of that type to the database or to
search through the existing data using selectable options and keyword
values. Currently there is no functionality for the inreach and outreach sections of the web interface due to the missing database tables.

**Recommendations:**

As for the future of the interface there are a few things we think would be good to pick up with; one being to add in more advanced linking between the different areas such as Project and Equipment. For example currently there is no way to check out a piece of equipment to a specific project, or to assign a particular student to a research team without knowing their unique id numbers before hand. Implementing a drop down list that would automatically populate with all projects equipment can be checked out to, or all students eligible to work on a research team when doing these modifications would be much more user friendly. Once this linkage is achieved further work on the inreach and outreach sections along with a system for monitoring checked out keys would be our suggested course of action.
Here's what I started with on the ISL Inventory using the OpenOffice.org database feature ...
Purchasing Order

Bill To:
REFERENCE PO: 05540
THE RESEARCH FOUNDATION
MELITA MEMORIAL UNION, ROOM 213
Chico, CA 95929-0246
Phone: 530-898-6115
Fax: 530-898-6099

Shipping To:
REFERENCE PO: 05540
THE RESEARCH FOUNDATION
RECEIVING DEPARTMENT
131nd Orange Streets
Chico, CA 95929-0920

P.O. #: 05540
CONFIRMING ORDER
(Do Not Duplicate)

Amount: $8,028.94
Project: 60280
Object: 8645

Date: 05/21/05

Crossbow Technology, Inc.
4145 N. First Street
San Jose, CA 95134

Vendor #: 800-XBOWTEC

Date Wanted:
Total: $8,028.94

Deliver To:
Benjoe Juliano
OCNL 215

Ship Via:

Terms:
net 30

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<th>Unit</th>
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<td>ISL tag = ISL CBMN #101</td>
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Please indicate purchase order number on shipping label to ensure correct delivery.

Special Instructions:

Subtotal: $7,475.00

Freight: 12.00

State Sales Tax: $541.94

Total: $8,028.94

Requested By: Dr. Benjoe Juliano
Approved By Purchasing Officer: Susan Lameras

[Signature]

[Handwritten note]: Form provided by client.
**PURCHASE ORDER**

**THE RESEARCH FOUNDATION**

**BILL TO:**
REFERENCE PO # 05146
THE RESEARCH FOUNDATION
BELL MEMORIAL UNION, ROOM 219
Chico, CA 95929-0248
Phone: (530) 898-6815
FAX: (530) 898-6999

**SHIP TO:**
REFERENCE PO # 05146
THE RESEARCH FOUNDATION
RECEIVING DEPARTMENT
1st and Orange Streets
Chico, CA 95929-0920

PO#: 05146

JAMECO Electronics
1355 Shoreway Rd.
Belmont, CA 94002
800-536-4316 or 650-592-2503

**Confirming Order (Do Not Duplicate)**

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<th>Description</th>
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<td>#78633 Glue Sticks, 11.5mm Diameter, 6 pack</td>
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<td>#72768 Knife Set, 13 Blades</td>
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<td>#78991 Stripper Wire, 10-30A</td>
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<td>#211289 Electric Grinder, 6-speed w/40pc Accessories</td>
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<td>#76865 Heat Gun, 600F / 1100F</td>
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<td>#262001 Vise, Hobby, 2.4&quot; Jaw</td>
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<td>#19166 Desolder Pump, Non-Electric</td>
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<td>#102461 Soldering Iron, 30W, 110-120Vac</td>
<td>4.99</td>
<td>19.96</td>
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<tr>
<td>#22091 Tip (2) for #19166</td>
<td></td>
<td>4.49</td>
</tr>
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<td>#36329 Soldering Stand</td>
<td></td>
<td>4.95</td>
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<tr>
<td>#116020 Tip, Replacement for #10261</td>
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<td>2.25</td>
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<td>#112344 Solder Roll, .020&quot;</td>
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<td>17.95</td>
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**Special Instructions:**

Please indicate purchase order number on shipping label to ensure correct delivery.

**Total:** $362.85

**Requested By:**
Benjoe Juliano
530-898-4619

**Approved By Purchasing Officer:**
Susan Jennings
530-898-4619
**PURCHASE ORDER**

**BILL TO:**
THE RESEARCH FOUNDATION, California State University, Chico
BELL MEMORIAL UNION, ROOM 219
Chico, CA 95929-0248
Phone: (530) 898-6815
FAX: (530) 898-6999

**SHIP TO:**
REFERENCE PO # 4115
THE RESEARCH FOUNDATION
RECEIVING DEPARTMENT
1st and Orange Streets
Chico, CA 95929-0920

**PO #:**
4115

**CONFIRMING ORDER**
(Do Not Duplicate)

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<td>$7,368.08</td>
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<td>8080</td>
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**Lego Shop at Home**
PO Box 1310
Enfield, CT 06083-1310
800-835-4396

**Vendor #:**

**Date Wanted:**

**Total:**
$7,368.08

**Deliver to:**
Dr. Benjoe Juliano
OCNL 215

**Ship Via:**

**Terms:**
net 30

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<td>Lego Mincstorms Robotics Invention System Kit</td>
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(No Product ID # K9195)

A 9/30/03-6 boxes

Complete (no $951.00)

Please indicate purchase order number on shipping label to ensure correct delivery.

**Special Instructions:**

**Requested By:**
Benjoe Juliano
zip:410 (530) 898-4619

**Approved By Purchasing Officer:**

**Subtotal:** $6,870.00
**Freight:**
**State Sales Tax:** $498.08
**Total:** $7,368.08
**PURCHASE ORDER**

**THE RESEARCH FOUNDATION**

**BILL TO:**
REFERENCE PO # 05145
THE RESEARCH FOUNDATION
BELL MEMORIAL UNION, ROOM 219
Chico, CA 95929-0248
Phone: (530) 898-6815
FAX: (530) 898-6999

**DATE:**
09/23/04

**Amount:**
$2,753.44

**CONFIRMING ORDER**
(Do Not Duplicate)

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**Shipment Information:**

**SHIP TO:**
REFERENCE PO # 05145
THE RESEARCH FOUNDATION
RECEIVING DEPARTMENT
1st and Orange Streets
Chico, CA 95929-0920

**PO #:**
05145

**Vendor #:**

**Date Wanted:**
Total: $2,753.44

**Delivered to:**
Dr. Benjoe Juliano
OCNL 215/222

**Ship Via:**

**Terms:**
et 30

**Quantity** | **Unit of Measure** | **Description** | **Unit** | **Amount** |
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<td>33</td>
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<td>#W979649: LEGO Technology Resource Set</td>
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<td>#W979891: LEGO 9V Angle Sensor</td>
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**COMPUTER SCIENCE**

**OCT 07 2004**

**RECEIVED BY**

**DR. JULIANO**

Please indicate purchase order number on shipping label to ensure correct delivery.

**Special Instructions:**

**Subtotal:**
$2,475.00

**Freight:**
$99.00

**State Sales Tax:**
$179.44

**Total:**
$2,753.44

**Requested By:**
Benjoe Juliano
530-898-4619

**Approved By Purchasing Officer:**

Susan Jennings
**PURCHASE ORDER**

**THE RESEARCH FOUNDATION, California State University, Chico**

**BILL TO:**
**REFERENCE PO #** 4130
**THE RESEARCH FOUNDATION, BELL MEMORIAL UNION, ROOM 219**
Chico, CA 95929-0248
Phone: (530) 898-6815
FAX: (530) 898-6999

**SHIP TO:**
**REFERENCE PO #** 4130
**THE RESEARCH FOUNDATION, RECEIVING DEPARTMENT**
1st and Orange Streets
Chico, CA 95929-0920

PO #: 4130
***CONFIRMING ORDER***
(Do Not Duplicate)

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**Lynxmotion, Inc.**
PO Box 818
Pekin, IL 61555-0818
309-382-1816

**Vendor #:**

**Date Wanted:**

**Deliver to:**
B. Juliano
Ocn 222

**Ship Via:**

**Terms:**
net 30

<table>
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<th>Description</th>
<th>Unit</th>
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<td>8</td>
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<td>Carpet Rover 2/Lynx 5 Combo Kit (#CRL5-KT)</td>
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<td>Hexapod 1 (00PIC-R) Robot Combo Kit (#H1CC-KT)</td>
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<td>Ultrasonic Range Sensor (#URS-01)</td>
<td>35.95</td>
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<td>8</td>
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<td>Single Ultrasonic Sensor Housing (#URSH-03)</td>
<td>4.95</td>
<td>39.60</td>
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**Special Instructions:**

**Please indicate purchase order number or shipping label to ensure correct delivery.**

**Subtotal:** $5,961.92
**Freight:** $40.00
**State Sales Tax:**

**Total:** $6,001.92

**Requested By:**
Benjoe Juliano
zip: 410 (530) 898-4619

**Approved By Purchasing Officer:**

**COMPUTER SCIENCE**

**OCT 14 2003**

**RECEIVED BY**
DR. JULIANO

**Completed**

**_Signature_**

---

**Note:**

1. Reference invoice in triplicate and bill of lading in duplicate.
2. Reference our purchase order number on your invoice.
3. Reference all cash discounts.
4. This purchase order is not complete until approved by Foundation's Purchasing Officer.
### PURCHASE ORDER

**THE RESEARCH FOUNDATION, California State University, Chico**

**BILL TO:**

**REFERENCE PO #**: 4129

**THE RESEARCH FOUNDATION**

**BELL MEMORIAL UNION, ROOM 219**

**Chico, CA 95929-9240**

**Phone**: (530) 898-5878

**FAX**: (530) 898-6999

---

**SHIP TO:**

**REFERENCE PO #**: 4129

**THE RESEARCH FOUNDATION**

**RECEIVING DEPARTMENT**

**151 and Orange Streets**

**Chico, CA 95929-2920**

---

**PO #:** 4129

**CONFIRMING ORDER**

(Do Not Duplicate)

**DATE:** 09/18/03

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<td>110.09</td>
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<tr>
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<td>96000</td>
<td>2152</td>
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**Net Media, Inc.**

10940 N. Stallard Pl.

**Tucson, AZ 85737**

**520-544-4567**

**Vendor #:**

---

**Date and Time:**

---

**Delivery to:**

B. Juliano

**OCNL 222**

---

**Ship Via:**

---

**Terms:**

net 30

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**Quantity**

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<tr>
<th>Net Media Basic X-24 Stamp (BX-24)</th>
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**Description**

- Net Media Basic X-24 Stamp (BX-24)
- Net Media Basic X Software CD

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**Subtotal**: $1,518.45

**State Sales Tax**: 12.00

**Total**: $1,530.45

---

**Please indicate purchase order number on shipping label to ensure correct delivery.**

---

**Special Instructions:**

---

**Requested by:**

B. Juliano

**Approved by Purchasing Officer:**

---

**Zip: 85737**

**(530) 898-4619**
**PURCHASE ORDER**

**THE RESEARCH FOUNDATION, California State University, Chico**

**BILL TO:**
REFERENCE PO #: 4131
THE RESEARCH FOUNDATION
BELL MEMORIAL UNION, ROOM 219
Chico, CA 95929-0248
Phone: (530) 898-6851
FAX: (530) 893-8599

**CONCERNING ORDER**
(Do Not Duplicate)

**DATE:**
09/12/03

**Amount:**
$2,386.65

**Project:**
60280

**Object:**
8081

**Total:**
$2,386.65

**Vendor:**
Parallax
599 Menlo Drive, Ste. 100
Rocklin, CA 95765
808-512-1024

**Date Wanted:**

**Deliver to:**
B. Juliano
0cr 215

**Ship Via:**

**Terms:**
net 30

**Quantity** | **Unit of Measure** | **Description** | **Unit** | **Amount** |
--- | --- | --- | --- | --- |
15 | | #28016 - Parallax IR Buddy Par | 59.00 | 885.00 |
10 | | #29113 - Parallax Compass App. Mod. | 79.00 | 790.00 |
10 | | #29143 - Parallax Audio Amplifier App.Mod | 29.00 | 290.00 |
10 | | #28019 - Parallax SSIR Detector | 14.95 | 149.50 |
10 | | 800-00303 - Service Cable for BS2 Programming. | 10.00 | 100.00 |

**COMPUTER SCIENCE**

**SEP 29 2003**

**RECEIVED BY**
B. Juliano

**Please indicate purchase order number on shipping label to ensure correct delivery.**

**Special Instructions:**

**Subtotal:**
$2,214.50

**Freight:**
11.60

**State Sales Tax:**
160.55

**Total:**
$2,386.65

**Requested By:**
B. Juliano

**Approved by Purchasing Officer:**

**zip:**
410

(530) 698-4619
Susan Jennings
Deliver TO Computer Science after 1:30 pm 1-6-04
<table>
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<th>Jim</th>
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<td>Middle Initial:</td>
<td>F</td>
</tr>
<tr>
<td>Title:</td>
<td>Ski Instructor</td>
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<tr>
<td>Type:</td>
<td>Faculty</td>
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<td>MrCheezit@gmail</td>
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<td>Address:</td>
<td>123 The Stre</td>
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<td>The Ci</td>
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<td>Alan is God</td>
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<td>Benbob</td>
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