Faculty/Course Evaluation System
“From Paper to Electrons…”
(IU-EVAL)

Introduction
Traditionally, educational institutions conduct a teacher/course evaluation at the end of each semester. Each unit (school, college or department) has a different criteria for fulfilling their assessment goals therefore, typically each unit uses its own customized evaluation form. A typical form consists of both multiple choice and essay questions. The evaluations are completed by students and returned to the department secretary. To preserve anonymity, the secretary types all the written comments, and scans the multiple choice questions (using a scantron machine), and prepares a 3 to 4 page report for each section taught in the department. In a department the size of computer science, this process typically takes about one to two weeks of secretarial work. University policy, ensures that the instructors will not see the result of the evaluations prior to submission of their grades. At the same time the result of the evaluations is necessary for the faculty to prepare their annual reports for the university administration. With heroic effort from our secretarial staff and patience of our faculty and administrators, this process is usually quite civilized. Every year however, the voice in the back our head tells us that there should be a better way. Nevertheless, every year most departments continue to use the same paper evaluation forms. For the past three semesters, our department has been using an electronic evaluations system developed by researchers at Mount Royal College in Calgary Canada (http://www.mtroyal.ab.ca/). The system is called FAST (Free Assessment Summary Tool) and its goal is provide educational institutions or individual teachers a user friendly tool for developing web based surveys. The FAST system is quite user friendly and for most practical purposes, completely anonymous. Furthermore, the result of the surveys are automatically tabulated and summarized, and can be made available on the web with proper authorization. Last semester, a large number of departments in the College of Liberal Arts and Sciences experimented with using this system. So far the results have been mixed. Most agree that such an electronic system would be beneficial, however, they also cite some problems.

Project Description:
Our goal is to develop a generic, off-the-shelf, electronic evaluation system for Universities, Colleges and Departments. For the purpose of this project, we will study and analyze the current manual and electronic system used at IU South Bend and we will view IU as a potential client for our product.

Our goal is not to redesign the evaluation forms for any specific unit, instead, the goal is to try to understand the needs of each unit and design a system that can accommodate all types of evaluation forms. (Those currently in use, and hopefully those that may be developed in the future.)

Assume that the IUSB administration has made a request for the implementation of a computerized evaluation system (IU-EVAL) to aid the academic units in performing this important assessment task. The purpose of this system is to develop a modern, coherent, user friendly, and full featured information system which allows academic departments as well as other units to easily develop and implement evaluation tools for their units.
At a minimum, our system should keep track of the following data, and ensure its privacy and security:

- Student / Evaluator Information (for authentication but not identification)
- Faculty / Course / Section information
- Department information
- Administrative authorizations and passwords
- Evaluation questions, their answer types and their answers

In addition, the system must provide adequate reporting mechanisms, equal or exceeding the current system.

**Basic Reports:** (At a minimum your system must accommodate the following reports)

**Department/Administration:**
- Overall trend analysis
- Faculty Report (Analysis of data for each course/section)
- Email notification of the completion of evaluation (for those cases when extra credit is provided by the faculty)

**Faculty:**
- Course evaluation (accumulated comments, and aggregated data)

**Student:**
- Ability to email the evaluation or the confirmation # to self or others.

**Miscellaneous:**
- Other

**Sources:**
- Departmental or university documents
- Books and guidelines
- IUSB faculty, staff and administration
- IUSB web pages (http://www.iusb.edu)
- Departmental web pages (http://www.cs.iusb.edu)
- IUSB bulletin
- Departmental Evaluation forms
- Office of Information Technology (Scantron equipment)
- Various IUSB forms and reports

**Data Entry (Input Forms and Screens):**
- Department evaluation forms
- etc.

**Common Components:**
Most information systems include the following components:

- Input:
  - Screen design (text or graphics)
  - Electronic Forms.
  - Input validation.
  - Input Encryption (Information in the text box should appear scrambled when the user exits the text box) (unique to this system)
Output:
- Screen design
- Report design (Hard copy)

File Design:
- Storage and retrieval of data.
- File organization (sequential, random access, index-sequential)
- Encryption of data while stored on disk (as a file or in the database)

Database Design:
- Entity Relation Model
- Normalization

Multi-Media:
- Audio, Graphics (static images and dynamic charts for data analysis), Video, etc.

Networking and Distribution of Data and Resources:
- Distribution of resources, Replication of data, Media, Protocols, Security, etc.

Phase I - Planning and Statement of Purpose

- Describe the existing system, its problems and limitations (if known at this time)
- Describe the purpose and goal of your project.
- Identify the system owners and system users.
- Indicate how you are planning to collect or have collected information about this system.
- Describe the breadth and depth of your project. (Project Scope)
- Develop and include blank copies of your interview forms, survey forms, questionnaires, etc.
- Develop and include a follow up “thank you” note to be sent to the interviewee.
- Include a list of your references. Books, articles, forms, interview logs, web addresses and other resources which you used to develop your statement of purpose.
- Develop a preliminary schedule (Later this will change to a Gantt and PERT chart. We will discuss these charts in class.)
- Produce a Statement of Purpose Document (Minimum of 4 pages)
- For this phase of the project, feel free to interview your teammates, other students or your instructor. However, do not interview others. I would like to see your interview forms prior to your interview with others. You may also show me your interview forms prior to the due date for phase I.

Phase II - Analysis

- Interview users and get their wish list of features. (Each group must interview at least 5 people and document their answers, suggestions, etc.) Try to interview individuals from the various categories such as students, faculty, secretaries, administrators, registrars office, recorders and advisors.

The following people have agreed to serve as consultants for this project:

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
<th>Email</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miss. Emily Parker (CS Secretary)</td>
<td>6521</td>
<td><a href="mailto:ecparker@iusb.edu">ecparker@iusb.edu</a></td>
<td>Group (TBA)</td>
</tr>
<tr>
<td>Mrs. Linda Knefely (Math. Secretary)</td>
<td>4335</td>
<td><a href="mailto:iknefely@iusb.edu">iknefely@iusb.edu</a></td>
<td>Group (TBA)</td>
</tr>
<tr>
<td>Dr. Hossein Hakimzadeh (Chair, CS)</td>
<td>4517</td>
<td><a href="mailto:hhakimza@iusb.edu">hhakimza@iusb.edu</a></td>
<td>In class, or make appointment</td>
</tr>
<tr>
<td>Dr. Lynn Williams (Associate Dean,</td>
<td>4322</td>
<td><a href="mailto:lwilliam@iusb.edu">lwilliam@iusb.edu</a></td>
<td>In class</td>
</tr>
<tr>
<td>College of Liberal Arts and Sciences)</td>
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<tr>
<td>Dr. Peter G. Bushnell (Chair, Biological</td>
<td>4888</td>
<td><a href="mailto:pbushnel@iusb.edu">pbushnel@iusb.edu</a></td>
<td>Group (TBA)</td>
</tr>
<tr>
<td>Sciences)</td>
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</tbody>
</table>
Please be extremely courteous and mindful of the time and schedule of the above people as well as those who are not on this list. They are not required to provide you with an interview. They are doing this to help you. Don't wait till the last minute and demand that they grant you an interview. Conduct yourself in a professional manner. Do not use computer jargon, do not point out what you feel are obvious flaws with the current system. You have ample time and opportunity to do that in your analysis documentation. Prior to the interview, you should prepare and type your questionnaire as a group. Start your interviewing process with other students, me and then others listed in the table above. (i.e. secretaries, faculty, chairs, other administrators). Modify and refine your questionnaires if necessary.

Follow up your interview with a thank you note, e-mail, etc., also ask the interviewee if they would be willing to clarify some issues later on. Include a copy of your thank you note in your project binder.

Identify the problems with the existing system. (if such a system exists!?) If it does not then we have the luxury of designing the system according to our own specifications.

Further refine the forms developed for interviewing the system owners and users.

Identify additional forms, books, binders, reports, web sites, etc. where the data currently resides.

Produce an entity relationship tables (ERT) (Owners view of data)
  # Preliminary table(s) with the entities and their relationships (as discussed in class)
  # Produce an entity/attribute table (as discussed in class). These tables will be further extended in future phases.

Identify the rules that govern your entities and/or attributes of those entities. (as discussed in class)

Produce one or more entity relationship diagram (ERD) (as discussed in class)

Identify and explain the following six components as they relate to your project.

People: Owners, users, designers, builders

Data: Raw material used to create useful information.

Processes: Business activities, data processing, info generation, calculations, reports, etc.

Interfaces: User and system interfaces.

Networks: Decentralization and distribution of data and resources.

Technology: The hardware and software that supports the other building blocks.

Identify the sources and format of data

Identify the type and number of reports needed

Provide alternative solutions (centralized vs. distributed, partial vs. total automation, cheap vs. expensive, etc.)

Assign one or more people in your group to the job of developing a set of standards for preparing your documents. (i.e. word processors, fonts, sizes, drawing packages, CASE tools, presentation software, compilers, RAD tools, etc. This is an important task and it will help your group in putting together a coherent document.)

Develop a Gantt and PERT chart.

Perform a cost benefit analysis. (Give a convincing argument to the system users and owners that the advising system will benefit the students, faculty, and administrators in both tangible and non-tangible ways. Discuss why you think that a flexible assessment tool can benefit students,
Phase III - Design

# Identify the tools and utilities that you need in order to design your system (i.e. CASE tools, databases, 4GL’s, libraries (communication, GUI, image processing, data analysis and visualization, audio processing), class hierarchies, languages, etc.) Start learning these tools!
# Design your screens (input and output). Use a drawing package or a RAD tool such as Visual Basic, Microsoft Access, etc.
# Design your reports (screen and hard copy) Use a drawing package or an RAD tool such as Visual Basic, Microsoft Access, etc.
# Design your file formats (record layouts) and access mechanisms. (only if you are using a 3GL environment)
# Update and possibly add new ER Diagrams, ER tables, etc.
# Design your databases (relations, keys, query mechanism)
# Normalize your relations. (1NF, 2NF, 3NF)
# Develop your top down design (identify the modules in your system). Draw your hierarchy diagrams.
# Define the processes and data flow within your system. Draw your data flow diagrams (DFD).
# Design your data structures and the functions that act upon them. (ADT) Encapsulate your data. (your classes or entities) (only if your are using a 3GL)
# Design your class hierarchy (if using an object oriented design)(only if your are using a 3GL)
# Develop a functional specification of your system. (functions, their parameters, their processing, and what they will return.) (only if your are using a 3GL)
# Design for incremental development. Plan for the future components, include provisions for incremental growth.
# Design for scalability (i.e. can accommodate more data, more machines, more users, more of any thing.)
# Produce a Design Document. (Minimum of 15 pages)

Phase IV - Implementation & Testing  (Develop a Prototype)

# Identify which parts of your system can be implemented as a prototype.
# Learn to use the tools, languages and libraries selected in the Analysis phase.
# Divide the tasks among programmers/analysts.
# Implement your prototype.
# perform testing (component, integration, etc.)
# Provide a demonstration for your system.

Final Phase - Presentation and Project Demonstration

# Produce a PowerPoint presentation
# Revise and refine your project documentation (all phases)
# Demonstrate your system
# Identify 3 things that you would do differently if you had the chance to start over again.
# Be prepared for Q&A
What to hand in for each phase:

Obviously each phase of the project requires different material, however, each group should put together at least two binders (one for grading and one for the group while you are working on the next phase). Your binders should include the following basic components:

1) Cover Page

   Project Name
   System Analysis and Design
   Phase # - Phase Name
   By:
   Team # X
   Name
   e-mail
   telephone #
   Date

2) Project Abstract  (one page) (Summary of the project. Update this page at the beginning of each new phase.)

3) Table of Contents (Use the Table of content facilities of your word processor.) (This is easy to do! take a few minutes to learn it.)

4) Gantt Chart
5) PERT Chart
6) Resume from each group member.
7) Phase I - IV

   Phase Abstract  (note that this is different from the project abstract.)
   Documentation for each phase. (including phase description, Internal and external documentation, data structures (nicely drawn using a drawing package, PERT and GANTT charts, etc..))

   Design Diagrams (Data Structures, Hierarchy Charts, ERD’s, DFD’s, etc..)
   Tools (Describe the Libraries, CASE tools, 4GL’s, Compilers and other facilities used.)

   ER and DFD diagrams. (Using a CASE Tool or a Drawing Package)
   Database schema
   Sample Screen Designs, Reports, Queries, etc..
   Self and Peer evaluation form.
   (Fill them out but do not include them in your binder. These forms are anonymous and should be returned to me directly. Without your Self and Peer evaluations you do not get credit for the phase.)

8) Source Code
   * ".h" files and ".c" or ".cpp" files, project files, make files, other code (Visual Basic, Java Visual Access, etc..) (Separated by Modules)
   * Internal Documentation (Each function, Class, Struct, etc..)
   * Nicely formatted (Use a smaller font when printing your source code so it does not wrap around.)

9) Output (Must be coherent and annotated)
   * Sample output (nicely formatted and annotated by hand if necessary)

10) Sources and References
**DO NOT forget your SELF and PEER EVALUATION......**

**Self / Peer Evaluation Form**

**C308 - Systems Analysis and Design**

Date: ________  Phase Number: ___  Phase Description: ____________

Name: ______________________

1) Given the following categories, evaluate each member of your group. Start with yourself.

   a) Attending group meetings: % ____ Hrs: ____  Other Activity ____________
   b) Participation in the design: % ____ Hrs: ____
   c) Participation in the implementation: % ____ Hrs: ____
   d) Participation in the debugging: % ____ Hrs: ____
   e) Participation in testing: % ____ Hrs: ____
   f) Participation in the documentation: % ____ Hrs: ____
   g) Overall contribution to the group: % ____ Hrs: ____

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Name: ______________________

   a) Attending group meetings: % ____ Hrs: ____  Other Activity ____________
   b) Participation in the design: % ____ Hrs: ____
   c) Participation in the implementation: % ____ Hrs: ____
   d) Participation in the debugging: % ____ Hrs: ____
   e) Participation in testing: % ____ Hrs: ____
   f) Participation in the documentation: % ____ Hrs: ____
   g) Overall contribution to the group: % ____ Hrs: ____

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Name: ______________________

   a) Attending group meetings: % ____ Hrs: ____  Other Activity ____________
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   e) Participation in testing: % ____ Hrs: ____
   f) Participation in the documentation: % ____ Hrs: ____
   g) Overall contribution to the group: % ____ Hrs: ____

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Name: ______________________

   a) Attending group meetings: % ____ Hrs: ____  Other Activity ____________
   b) Participation in the design: % ____ Hrs: ____
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   d) Participation in the debugging: % ____ Hrs: ____
   e) Participation in testing: % ____ Hrs: ____
   f) Participation in the documentation: % ____ Hrs: ____
   g) Overall contribution to the group: % ____ Hrs: ____

-----------------------------------------------
2) What were your exact responsibilities for this phase?

A) Design Activity:  
- Data structure  
- Algorithms  
- Diagrams  

Name the data structures and algorithms you worked on:

Name the design diagrams you worked on:

B) Implementation Activity: What functions did you work on?

C) Documentation Activity:  
- Internal  
- External  

Name of functions you documented:

D) Testing Activity:  
- Modules  
- Overall system  

Name of functions you tested:

E) Other Activity: (Research, Interviews, Learning new tools, etc) _______________________

3) How would you improve this phase of your project?

4) Do you understand the design decisions that were made by your group?  
   If so explain:
   If not explain:
   
   Do you agree with this design decisions?  
   - Yes  
   - No  

   If yes, did you argue for this design?  
   - Yes  
   - No  

   If no, did you argue against this design?  
   - Yes  
   - No

5) What did you learn during this phase of your project?

6) Which of the following helped you to understand and complete this phase of the project? (Check all that apply)

   - Text Book  
   - Class Discussion  
   - Class notes  
   - Group Discussion  
   - Interviews  
   - External Sources ________________________
Sample Grade Sheet For the Project  
**C308 Systems Analysis and Design**

<table>
<thead>
<tr>
<th>Team Members:</th>
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<tbody>
<tr>
<td>Project Name:</td>
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<tr>
<td>Phase # 4</td>
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<td>Resumes:</td>
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<td>Project Abstract:</td>
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<tr>
<td>Phase Description:</td>
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<td>- Table of contents</td>
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<td>- Problem statement</td>
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<td>Documentation:</td>
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<td>- Self and Peer Eval.</td>
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<td>- GANTT or PERT charts</td>
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<td>Design Diagrams:</td>
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<tr>
<td>- Overall System Design</td>
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<td>- Data Flow</td>
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<td>- ER Table</td>
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<td>- ERD</td>
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<td>- Class Hierarchy</td>
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<td>- Functional Specs.</td>
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<td>- Screen Design</td>
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<td>- Top down design</td>
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<td>Source Code:</td>
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<td>- Correctness, Clarity</td>
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<td>Output:</td>
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<td>Sources &amp; References:</td>
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<td>Group Grade:</td>
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<td>Individual Grades:</td>
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Department of Computer and Information Sciences
Indiana University South Bend

C308 - Systems Analysis and Design

Team Members:

Name, phone, email
Name, phone, email
Name, phone, email

IU-EVAL
Electronic Evaluation System