Rubric

Senior Project

Assessment of Student Outcomes of the BS in Computer Science of the School of Computing and Information Sciences Florida International University

The School of Computing and Information Sciences evaluates the Senior Projects of its graduating seniors for the purpose of assessing the level of attainment of the Student Outcomes of the BS in Computer Science program.

Your responses to this survey will be used solely for the purpose of assessing the Student Outcomes of the BS in Computer Science program of the School of Computing and Information Sciences at FIU. This survey is expressly NOT for assessment of student performance in the SCIS Senior Project course for assignment of letter grade, nor for assessment of the instructor(s).

Rating Instructions

For each program outcome, you are provided with a check-list of 7 or more criteria that evidence attainment of that outcome. Please check all criteria that are presented in this project. You may include additional criteria that are not explicitly listed; if so, please record the additional criteria in the spaces provided. Unless noted otherwise, the number of checked criteria, up to a maximum of 5, should be recorded as your rating of attainment of that outcome evidenced in the project.

Project Title Math Instant Messenger for Visually Impaired People

Semester & Year Fall 2010

Moderator (Faculty / Industry Sponsor): Patricia McDermott-Wells, President, Mega-Data Services, Inc.

Evaluators: Patricia McDermott-Wells, President, Mega-Data Services, Inc.

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Student Outcome *(a)*: *Demonstrate proficiency in the foundation areas of Computer Science including mathematics, discrete structures, logic and the theory of algorithms*

_X_ Project incorporates elements of mathematical reasoning or proof

____ Project utilizes elements of set theory, Boolean algebras

___ Project utilizes statistical procedures to summarize test data

____ Project utilizes statistical measures of system behavior or performance

__X_ Project design utilizes finite state machines or automata to model system behavior

____ Project utilizes some graph theoretic knowledge

____ Project utilizes some techniques of numerical analysis

_X__ OTHER: Demonstrates good understanding of integration of disparate program modules and a wide variety of data types and representations

_X__ OTHER: Project uses statistical analysis to evaluate costs of alternative solutions

Student Outcome (b): *Demonstrate proficiency in various areas of Computer Science including data structures and algorithms, concepts of programming languages and computer systems.*

Data Structures & Algorithms

_X_ Project utilizes an advanced data structure, e.g. balanced search tree, hash table

____ Project utilizes some graph algorithm, e.g. shortest path, minimum spanning tree

____ Project documents runtime analysis of selected algorithms

Concepts of Programming Languages

____ Project utilizes some functional programming language (e.g., ML, Lisp)

____ Project utilizes aspects of context-free grammars

_X_ Project demonstrates familiarity with design issues such as scoping rules or dynamic type checking

Computer Systems (Database)

__X_ Project utilizes an appropriately selected database system

__X_ Project design utilizes conceptual and/or relational schema

____ Project demonstrates understanding of physical database design

Computer Systems (OS)

____ Project implementation utilizes knowledge of memory management

_X_ Project implementation utilizes knowledge of process synchronization

_X_ Project documents analysis of tradeoffs in selection of system characteristics

__X_ OTHER: This project required working with complex context-dependent language representations and aspects of translation between language representations

____ OTHER: _____

Student Outcome *(c)*: *Demonstrate proficiency in problem solving and application of software engineering techniques.*

_X_ Project demonstrates knowledge of the Software Development Life Cycle

_X__ Project deliverables include Project Specification

_X__ Project deliverables include Feasibility Study and/or Project Plan

_X__ Project deliverables include Requirements Documentation

_X__ Project deliverables include Design Documentation

_X__ Project documents testing and/or evaluation of the implementation

_X__ Project incorporates system walkthroughs

_X_ OTHER: Excellent ability to work within the bounds of and work around unexpected limitations of the tools being integrated, yet still deliver a final product on time

____ OTHER: _____

Student Outcome (d): *Demonstrate mastery of at least one modern programming language and proficiency in at least one other.*

_X__ Project is implemented using an appropriate high level language

_X__ Project implementation is reasonably efficient rather than “brute force”

_X_ Project implementation is modular and/or re-usable

_X__ Project implementation uses a modern API or Tool-Kit

_X__ Project implementation utilizes recursion

_X__ Project implementation utilizes some advanced features, e.g. polymorphism

_X__ A project sub-system or module utilizes an appropriate programming language other than the primary implementation language, e.g. SQL, ML, assembly language

_X__ OTHER: Project required integrating Liblouis, ASCII representation of Nemeth Braille, MathType

____ OTHER: _____

Student Outcome *(e)*: *Demonstrate understanding of the social and ethical concerns of the practicing computer scientist*

__X_ Project documents sources and references

__X_ Project identifies and addresses any relevant social issues

__X_ Project identifies and addresses any relevant ethical issues

__X_ Project identifies and addresses relevant legal issues

____ Project identifies and addresses any relevant privacy issues

__X_ Project documents anticipated impact on users/clients

__X_ Project documents and addresses any anticipated technology impact issues

____ OTHER: _____

____ OTHER: _____

Student Outcome (f): *Demonstrate the ability to work cooperatively in teams*

__X_ Project completion evidences equitable participation by team members

__X_ Project presentation(s) included all team members

__X_ Project team activity is documented

__X_ Project team set out and followed a schedule for timely completion

____ Project team negotiated consensus when needed

__X_ Team members roles were clearly defined and executed

__X_ Team members shared responsibility for success and failure

____ OTHER: _____

____ OTHER: _____

Program Outcome *(g)*: *Demonstrate effective communication skills*

__X_ Presentations described the essential features of the project

__X_ Presentations utilized good quality slides and presentation aids

__X_ Presenters utilized their time effectively

__X_ Presenters spoke directly to the audience

__X_ Technical features were communicated clearly

__X_ Project artifacts clearly document all project features

__X_ Project reports are well organized and written

____ OTHER: _____

____ OTHER: _____

Program Outcome (j): *Have experience with contemporary environments and tools necessary for the practice of computing*

__X_ Project utilized contemporary design tools

__X_ Project implementation utilized a modern IDE(s)

__X_ Project utilized appropriate validation/testing tools

__X_ Project was demonstrated using appropriate presentation tools

__X_ Project utilized appropriate project management tools (e.g., MS Project)

____ Project utilizes appropriate version control/document sharing tools

__X_ Project documents consideration of trade-offs in selection of tools

____ OTHER: _____

____ OTHER: _____

ABET Student Outcome

The program must enable students to attain, by the time of graduation:
(j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices. [CS]

Please comment on how this project "*demonstrates comprehension of the tradeoffs involved in design choices"*:

Students were required to understand the market penetration of the operating system platform and the accessibility tools used by VI students. They had to evaluate several Instant Messaging products for possible integration, again staying within the acceptable platform targets. They explored the flexibility and capabilities of each IM product to evaluate tradeoffs between the products' ability to support enhancements, add-ins, and integration with other tools. They also had to factor in time-to-learn and time-to-implementation tradeoffs in their decisions.

In addition to the technical tradeoff aspects, they also had to evaluate the social impact tradeoffs of their design choices, opting to produce a product that would be readily available and within financial reach of a VI individual, as opposed to a corporate or institutional-level solution.