

## Rubric (Spring 2011)

### 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 criteria checked, up to a maximum of 5, should be recorded as your rating of attainment of that outcome evidenced in the project.*

Project Title: PantherCare 2

Semester & Year: Spring 2011

Faculty / Industry Sponsor: Peter Clarke, Steve Luis, Tom Gomez

Evaluators: Steven Luis, Jai Navlakha

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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**

- ☐ Project incorporates elements of mathematical reasoning or proof  
(e.g. Lemma, Theorem, Propositional Logic, First Order Logic, Mathematical Induction)
- ☐ Project utilizes elements of discrete mathematics  
(e.g. Set Theory, Boolean Algebras, Combinatorics, Graph Theory)
- ☒ Project utilizes some statistical procedure(s) to represent or summarize test data  
(e.g. Mean, Standard Deviation, Stem Plot/Histogram, Box Plot/Percentile-Graph)
- ☒ Project utilizes some statistical measure(s) of system behavior or performance  
(e.g. Probability Distributions, Confidence Intervals, Hypothesis Testing)
- ☒ Project design utilizes finite state diagrams to model system behavior
- ☐ Project utilizes some aspect(s) of formal computer science  
(e.g. Automata, Turing Machines, Recursive Function Theory, Recursive Unsolvability)
- ☐ Project utilizes some technique(s) of numerical analysis  
(e.g. Error Estimation, Interpolation, Numerical Calculus, Linear Systems, Matrix Algebra)
- ☐ OTHER: \_\_\_\_\_
- ☐ OTHER: \_\_\_\_\_

**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**

- ☒ Project utilizes an advanced data structure, (**e.g.** search tree, hash table, priority queue)
- ☐ 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 knowledge of programming language syntax  
(**e.g.** Context-Free Grammars, Parse Trees, Ambiguity, Recursive Descent)
- ☐ Project utilizes knowledge of programming language semantics  
(**e.g.** Natural Semantics, Interpreters, Expressions, L- and R- Value, Environments)
- ☒ Project demonstrates familiarity with programming language design issues  
(**e.g.** Scoping Rules, Dynamic Type Checking, Static Type Checking)

**Computer Systems (Database)**

- ☐ Project utilizes or designs an appropriate database management system
- ☐ Project utilizes conceptual and/or relational schema
- ☐ Project utilizes a database query language such as SQL

**Computer Systems (Operating Systems)**

- ☒ Project implementation utilizes knowledge of memory management
- ☒ Project implementation utilizes knowledge of process synchronization
- ☐ Project documents analysis of tradeoffs in selection of system characteristics

☐ OTHER: \_\_\_\_\_

☐ OTHER: \_\_\_\_\_

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

☒ Project demonstrates knowledge of the Software Development Life Cycle

☐ Project deliverables include Project Specification

☒ Project deliverables include Feasibility Study and/or Project Plan

☒ Project deliverables include Requirements Documentation

☒ Project deliverables include Design Documentation

☒ Project documents testing and/or evaluation of the implementation

☐ Project incorporates system walkthroughs

☐ OTHER: \_\_\_\_\_

☐ OTHER: \_\_\_\_\_

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

- ☒ Project is implemented using an appropriate high level language
  - ☐ Project implementation is reasonably efficient rather than “brute force”
  - ☒ Project implementation is modular and/or re-usable
  - ☒ Project implementation uses a modern API or Tool-Kit
  - ☐ Project implementation utilizes recursion
  - ☒ Project implementation utilizes some advanced features, e.g. polymorphism
  - ☒ A project sub-system or module utilizes an appropriate programming language other than the primary implementation language, e.g. SQL, ML, assembly language
- ☐ OTHER: \_\_\_\_\_
- ☐ OTHER: \_\_\_\_\_

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

☒ Project documents sources and references

☒ Project identifies and addresses any relevant social issues

☐ Project identifies and addresses any relevant ethical issues

☒ Project identifies and addresses relevant legal issues

☐ Project identifies and addresses any relevant privacy issues

☒ Project documents anticipated impact on users/clients

☒ Project documents and addresses any anticipated technology impact issues

☐ OTHER: \_\_\_\_\_

☐ OTHER: \_\_\_\_\_

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

☒ Project completion evidences equitable participation by team members

☒ Project presentation(s) included all team members

☐ Project team activity is documented

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

☐ Project team negotiated consensus when needed

☒ Team members roles were clearly defined and executed

☒ Team members shared responsibility for success and failure

☐ OTHER: \_\_\_\_\_

☐ OTHER: \_\_\_\_\_

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

- ☒ Presentations described the essential features of the project
- ☒ Presentations utilized good quality slides and presentation aids
- ☒ Presenters utilized their time effectively
- ☒ Presenters spoke directly to the audience
- ☒ Technical features were communicated clearly
- ☐ Project artifacts clearly document all project features
- ☐ 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**

☒ Project utilized contemporary design tools

☒ Project implementation utilized a modern IDE(s)

☒ Project utilized appropriate validation/testing tools

☒ Project was demonstrated using appropriate presentation tools

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

☐ Project utilizes appropriate version control/document sharing tools

☐ 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”:

The project required evaluating a myriad of protocols and APIs to design and develop an effective implementation. Selection of the protocols and APIs determined overall functionality such as the ability to store a local of medical device output on the phone or to process and not keep such information persistent.