

## Check-List

### 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.

To assist the evaluators, the project team is asked to identify aspects of the project related to the various Student Outcomes. For each Student Outcome, a checklist of 4 typical project features related to the outcome is provided. There is no requirement or expectation that any particular feature must be present in your particular project. Nor is the checklist exhaustive. Please add to the lists any additional features of your project that relate to any of the Student Outcomes.

For each checklist item represented in your project, please document where that item is evidenced in your project by noting the **deliverable** (*Feasibility Study, Requirements Specification, Design Document or Final Document*) and **section** or **page number**.

**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).**

Project Title An Administrative Framework for WReSTT

Semester & Year Spring 2011

Moderator (Faculty / Industry Sponsor): Dr. Peter J. Clarke

Team Members: Yesenia Sosa \_\_\_\_\_  
Dionny Santiago \_\_\_\_\_  
Jairo Pava \_\_\_\_\_

**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)

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Project utilizes elements of discrete mathematics  
(e.g. Set Theory, Boolean Algebras, Combinatorics, Graph Theory)

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Project utilizes some statistical procedure(s) to represent or summarize test data  
(e.g. Mean, Standard Deviation, Stem Plot/Histogram, Box Plot/Percentile-Graph)

Design Document Pages 30 - 33

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Project utilizes some statistical measure(s) of system behavior or performance  
(e.g. Probability Distributions, Confidence Intervals, Hypothesis Testing)

Design Document Pages 30 - 33

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Project design utilizes finite state diagrams to model system behavior

Design Document Pages 24 - 32

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Project utilizes some aspect(s) of formal computer science  
(e.g. Automata, Turing Machines, Recursive Function Theory, Recursive Unsolvability)

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Project utilizes some technique(s) of numerical analysis  
(e.g. Error Estimation, Interpolation, Numerical Calculus, Linear Systems, Matrix Algebra)

Design Document Pages 30 - 33

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OTHER

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**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. search tree, hash table, priority queue)  
Final Deliverable - Appendix G

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

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X Project documents runtime analysis of selected algorithms  
Design Document Pages 30 - 33

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**Concepts of Programming Languages**

     Project utilizes knowledge of programming language syntax  
(e.g. Context-Free Grammars, Parse Trees, Ambiguity, Recursive Descent)

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     Project utilizes knowledge of programming language semantics  
(e.g. Natural Semantics, Interpreters, Expressions, L- and R- Value, Environments)

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     Project demonstrates familiarity with programming language design issues  
(e.g. Scoping Rules, Dynamic Type Checking, Static Type Checking)

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**Computer Systems (Database)**

X Project utilizes or designs an appropriate database management system  
Design Document Pages 12 - 13

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X Project utilizes conceptual and/or relational schema  
Design Document Pages 12 - 13

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X Project utilizes a database query language such as SQL

*Computer Systems (Operating Systems)*

     Project implementation utilizes knowledge of memory management

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     Project implementation utilizes knowledge of process synchronization

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  X Project documents analysis of tradeoffs in selection of system characteristics

OTHER: \_\_\_\_\_

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OTHER: \_\_\_\_\_

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

- X Project demonstrates knowledge of the Software Development Life Cycle  
Design Document Pages 4 - 5

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- X Project deliverables include Project Specification  
Requirements Document Pages 13 - 18

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- X Project deliverables include Feasibility Study and/or Project Plan  
Feasibility Study and Project Plan Pages 8 - 20

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- X Project deliverables include Requirements Documentation  
Requirements Document Pages 13 - 18

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- X Project deliverables include Design Documentation  
Design Document Pages 8 - 40

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- X Project documents testing and/or evaluation of the implementation  
Final Deliverable Chapter 7

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- X Project incorporates system walkthroughs  
User guide

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**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  
Design Document Appendix C

X Project implementation is reasonably efficient rather than “brute force”  
Design Document Appendix C

X Project implementation is modular and/or re-usable  
Design Document Appendix C

X Project implementation uses a modern API or Tool-Kit  
Design Document Appendix C

     Project implementation utilizes recursion  
\_\_\_\_\_

     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  
Design Document Pages 12 - 13

OTHER: \_\_\_\_\_  
\_\_\_\_\_

OTHER: \_\_\_\_\_  
\_\_\_\_\_

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

X Project documents sources and references

All documents - Works Cited section

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\_\_\_ Project identifies and addresses any relevant social issues

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\_\_\_ Project identifies and addresses any relevant ethical issues

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X Project identifies and addresses relevant legal issues

All Documents - Copyright page

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\_\_\_ Project identifies and addresses any relevant privacy issues

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\_\_\_ Project documents anticipated impact on users/clients

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\_\_\_ Project documents and addresses any anticipated technology impact issues

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OTHER: \_\_\_\_\_

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OTHER: \_\_\_\_\_

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

- X Project completion evidences equitable participation by team members  
Feasibility Study and Project Plan Page 18
  
- X Project presentation(s) included all team members  
Cover slide of all PowerPoint presentations
  
- X Project team activity is documented  
All Meeting Diaries in all document deliverables
  
- X Project team set out and followed a schedule for timely completion  
Feasibility Study and Project Plan Appendix A and Pages 20 - 23
  
- X Project team negotiated consensus when needed  
Feasibility Study and Project Plan Pages 11 - 16
  
- X Team members roles were clearly defined and executed  
Feasibility Study and Project Plan Pages 18 - 19
  
- X Team members shared responsibility for success and failure  
Feasibility Study and Project Plan Page 18 - 19

OTHER: \_\_\_\_\_  
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OTHER: \_\_\_\_\_

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

X Project utilized contemporary design tools  
Feasibility Study and Project Plan Page 19

X Project implementation utilized a modern IDE(s)  
Feasibility Study and Project Plan Page 19

X Project utilized appropriate validation/testing tools  
Final Deliverable Chapter 7

X Project was demonstrated using appropriate presentation tools  
All PowerPoint Presentations

X Project utilized appropriate project management tools (e.g., MS Project)  
Feasibility Study and Project Plan Page 19

X Project utilizes appropriate version control/document sharing tools  
Feasibility Study and Project Plan Page 19

X Project documents consideration of trade-offs in selection of tools  
Feasibility Study and Project Plan Pages 11 - 16

OTHER: \_\_\_\_\_  
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OTHER: \_\_\_\_\_

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**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”:

Chapter 2 in the Design Document contains a comprehensive discussion on a variety of system architectures and their trade-offs and based on this discussion, we justify the selection of the three-tier and Model-View-Controller architectures. Furthermore, Chapter 3 in the Design Document describes design patterns and their trade-offs. Similarly, this Chapter justifies the use of the template, facade, singleton, and strategy design patterns in a variety of contexts.