Your Name:

College of Charleston
Department of Computer Science
CSCI 360 Software Architecture and Design
Spring 2008
Dr. Bowring

Midterm Examination

Answer all questions with complete sentences unless noted otherwise in the question. You may use the back of the exam papers to organize your thoughts and for continuations of answers when necessary. Please write your answers legibly.

Some of the exam questions will refer to the Single Page Pager, described below:

Single Page Pager (A device to receive text messages, or pages)

A. A single-page pager has a display screen showing one line of text and two buttons: an activation button, and a selector button.
B. When the pager is off, pressing either of the buttons turns it on.
C. When it is turned on, the pager goes into its ready state.
D. From the ready state, a press of the selector button will display a page (typically a phone number), or the message "no page" if there is no page recorded.
E. Pressing the activation button during page display erases any recorded page and returns the pager to its ready state.
F. Pressing the selector button during page display causes the query "off" to be displayed.
G. If the activation button is pressed when “off” is displayed, the pager turns off; if the selector button is pressed, the pager returns to its ready state.
H. Failure to press any button when the pager is not in its ready state for five seconds returns the pager to its ready state.
I. If a page is received when the pager is on, the pager records the page and immediately beeps until either one of its buttons is pressed, or it has beeped five times, after which it returns to its ready state.
J. The pager only holds one page, so each page replaces any undeleted previous page.
K. Turning the pager off erases any recorded page.

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1. (15) What is an activity diagram? What is it used for? List and define the possible components of an activity diagram. List and define the types of tokens implicit in an activity diagram. How does an activity diagram handle concurrency?

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2. (5) What are the most useful static and dynamic models for engineering design analysis?

3. (5) How does a design class model differ from an implementation class model?

4. (5) Give an example of a syntactically correct attribute specification that omits as much as possible. Give an example of a syntactically correct attribute specification that omits nothing.

5. (5) Compare and contrast required and provided interfaces. Show two ways to represent each.

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6. (15) Make a use-case diagram for the Single Page Pager.

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7. (15) Make a design class model for the Single Page Pager.

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8. (5) What are the characteristics of an ideal virtual device?

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9. (5) What information should be included in a software architecture document (SAD)?

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10. (5) List and define the four kinds of visibility supported in UML.

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11. (5) What is the difference between an abstract class with no concrete operations and a UML interface?

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12. (15) Provide a utility tree for the Single Page Pager. No architecture has been developed, but you can supply at least four sub-trees each with at least 3 leaves. Be sure to state what the sub-trees and leaves represent in general as well as giving them specific names.

Your Name:

EXTRA CREDIT

13. (EC 2) What does ACM stand for?

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14. (EC 2) Name one characteristic of successful virtual software teams as presented by Lauren.

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15. (EC 2) What is Dave Parnas known for as described in Conner's presentation?

    _____

16. (EC 2) What does DeSCRIPTR stand for?

    _____

17. (EC 2) What does PAID stand for?

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