Your Name:

College of Charleston
Department of Computer Science
CSCI 360 Software Architecture and Design
Spring 2007
Jim 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.

Your Name:

1. (5) List the benefits and dangers of modeling.

2. (5) What is the essential difference between structured design methods and object-oriented design methods?

3. (5) List two ways that the flow of control through an activity diagram might be improperly specified in addition to deadlock.

4. (10) Draw an example of deadlock in an activity diagram.

Your Name:

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

Your Name:

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

Your Name:

7. (5) Give three examples of things that should be hidden inside a module.

8. (5) Give two examples of how design principles might conflict and explain why.

9. (10) What is the difference between operational and development quality attributes? Give examples.

Your Name:

10. (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:

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

_____

_____

12. (EC 2) What is Simula I?

_____

13. (EC 2) What is Dave Parnas known for in this class?

_____

14. (EC 2) What is an anti-pattern and give an example?

_____

15. (EC 2) Define xUML: _____