

**EXAM #1, CSC-4330: Software Syst. Dev. Name:**  
S. Kundu, Fall 2011 (Total marks = 100)

**Answers should be to the point and concrete (not generalities, unless asked for).**

1. Is the following a vision-statement or a requirement? Why (which property of requirements is violated)? [3+3]

"Design a tool that would give software designers something they have not seen before."

2. What can go wrong if the designer alone develops the requirements; what if the customer alone develops the requirements? [5+5].
3. State an important requirement from your service-learning class-project in which both you and the customer were involved in developing it. Briefly explain your role and the customer's role. [7+7]
4. People distinguish verification and validation in the following way:

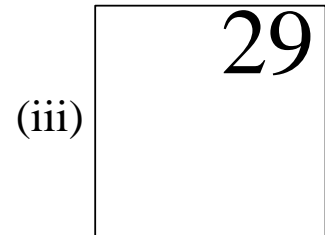
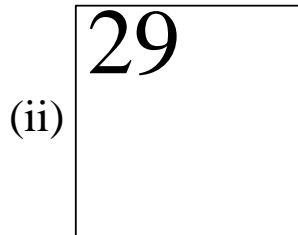
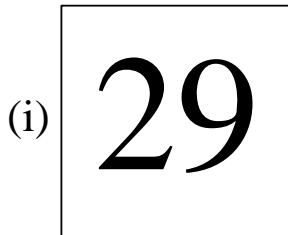
Verification: Are you building the right system (i.e., do you have your target/goal set correctly)?  
Validation: Have you built the right system, i.e., what you wanted?

When and how would you carry out each of these steps? What is the role of requirements in each of these? [4+4+4]

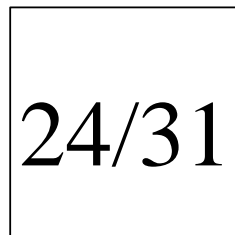
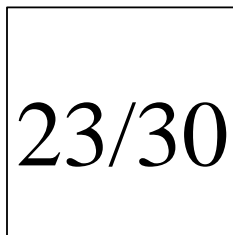
5. Complete the following sentences:
  - (a) Since ..... and ..... are two basic components of any software, the requirements can (must) be ultimately tied to them. [4]
  - (b) Since requirements are looked at after the software is developed to check if the software does what it is supposed to do, the requirements must be ..... [4].
  - (c) The waterfall-model is named that way because

.....  
.....  
..... [4]

6. Consider the following three alternate layouts of the dates in the individual squares/boxes in a printed-calender month.

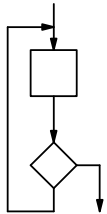


- (a) State a requirement that would make (i) acceptable but (ii)-(iii) unacceptable. Also, give a user for whom the requirement is relevant. [2+2]
- (b) State a requirement that would make (i) unacceptable but (ii)-(iii) both acceptable; give one or more reasons that make (iii) preferred to (ii). Also, give a user for whom the requirement is relevant. [2+2+2]
- (c) State a requirement that makes the "combined dates" form shown below (including their variations in terms of size of the numerals and placement as in (ii)-(iii) above) not acceptable? The LSU printed-calender uses the combined dates form for Oct 23/30 and Oct 24/31. [2]

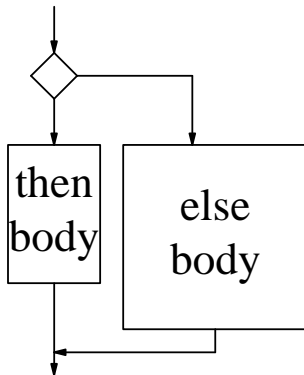


7. What problems do you see with the requirement-statement "Write a program to count the number of words in a text file and the number of characters in those words." What approach is to be taken to avoid this kind of problem? [3+3]
8. Give a better design than the one shown below for the display of do-while loops in a flowchart. Note that the loops may be nested and a

loop-body may be arbitrarily complex. Explain why your design is better with an example of nested do-while loops (keep your diagram clean). [5+5]



What is/are some important requirements that one might be trying to indicate by the statement "the then-block and else-block of an if-statement should be laid as shown in the example below". [4]



10.

Consider the following table for storing some student-related data in a university database. Also shown is a sample data.

S-C-G	Stud#	Course#	Instr#	Grade	CredHrs	SemYr
	87...5	CSC-4330	47...8	A	3	Fa-10
	...	...	...	...	...	...
	...	...	...	...	...	...

(a) What is a key for such a table of data? Does this table correspond to an entity or a relationship of some ER-model - explain? [2+2]

- (b) Why is it not a good idea to store Instructor# in this table? Where should it be stored? [2+2]
- (c) What would go wrong if we do not store SemesterYear here? [2]
- (d) What advantage we might get if we keep a separate table like the one shown above (without Student# column) for each student? What should be its name? What would be a disadvantage? [2+1+1]

S-C-G	Stud#	Course#	Instr#	Grade	CredHrs	SemYr
	87...5	CSC-4330	47...8	A	3	Fa-10
	...	...	...	...	...	...
	...	...	...	...	...	...