Score Sheet. 600.145 Homework #2 – Intersession 2008

Name:_____; Email: _____
Name:_____; Email: _____
Name:_____; Email: _____
Name:_____; Email: _____

1. (40 points)
   - A. (30 points) _____
   - B. (10 points) _____
2. (40 points)
   - A. (10 points) _____
   - B. (20 points) _____
   - C. (10 points) _____
3. (20 points)
   - A. (10 points) _____
   - B. (10 points) _____

TOTAL _____

I/we worked alone on this assignment and followed all other guidelines:

_____ _____
signature date signature date

_____ _____
signature date signature date

600.145 Homework # 2 - Intersession 2008 General Notes and Instructions

1. I would really appreciate typed, double spaced and READABLE output that is firmly attached together. Sketches can of course be hand drawn. I am not looking for beauty, just legibility and room to mark them up. Generous margins are also nice.
2. Put your **name and email address** on each sheet and number the sheets
3. Attach the grade sheet as the first sheet and attach all sheets together.
4. You must include a self-addressed, seal-able 8 ½ x 11 inch envelope if you expect to the homework to be returned (per JHU's interpretation of FERPA).
5. You should work in teams of at most four on this exercise.
6. You are encouraged to make free use of any published materials, the web, etc. in developing your answer but a) you must give full and proper citations to any references consulted and b) you may not consult, discuss, or otherwise communicate about this assignment with any human being except your lab partners, the course instructor, or the TAs.
7. I do not expect truly expert answers at this point, nor am I expecting a great deal of clinical expertise beyond that included in the referenced book chapters. The main purpose of this exercise is to get you thinking analytically about the relationship between systems, application needs, and technology.

Question 1 (40 points) – Fleshing out the preferred embodiment

A. (30 points) Based upon your analysis in HW#1, select one of your proposed system solutions for further design evaluation. For this design, provide an additional 2-3 pages total (discussion + sketches) outlining the technical approach. Your discussion should clearly define

   - Preoperative, intraoperative, and postoperative information needed.
   - How this information will be obtained.
   - Important components and human interfaces.
   - What components need to be developed.
   - What components (if any) need to be "invented"

B. (10 points) Summarize the step-by-step procedural flow for your solution

Question 2 (40 points) – Coordinate System Analysis

A. (10 points) Identify the key coordinate systems and geometric relationships in your proposed solution. (Hint, these will include the pedicle, needle, vertebral body, among others).
B. (20 points) Develop a relationship diagram for these coordinate systems similar to that described in class for Robodoc.
C. (10 points) Develop formulas explaining how the relationship between the needle and vertebral body will be computed.

Project planning (20 points)

A. (10 points) Outline the steps you would need to take to develop this system through initial clinical use
B. (10 points) Present a rough schedule and manpower/cost estimates for your solution. Provide a sentence or two justification for your estimates.

Important NOTE

- There is no single “right” answer to these questions, and I am well aware that people may not have either the experience or the knowledge to make highly credible estimates of things like schedules and costs. The purpose of the exercise is to get you to think.
- In grading the answers, we will be looking more at your reasoning and your approach to the problem than at the specific “correctness” of any technical solutions you come up with.
- At the same time, do try to keep sight of the specific goals of the application, and don’t simply resort to science fiction. An answer proposing well trained termites is not likely to score very well.