

**Part two of the take home final exam assignment for Computational Modeling and Simulation:**

This is an excerpt from:

<http://www.cs.uni.edu/~jacobson/025/f10/f/ShifletModelingGhostbusters.pdf>

You will need to use the ShifletModelingGhostbusters.pdf along with:

<http://www.cs.uni.edu/~jacobson/025/f10/f/FlockingFall2011.html>

**See especially LI List Item #7 which is:**

7. [Ghostbusters](#) and [waggle dancing](#) bees question: (i., ii., iii., iv. and v. are shown below and on web page).

**LI 7 (List Item #7 on the FlockingFall2011.html web page has these 5 questions. Question 5 (roman v.) consists of 3 questions. This is the Ghostbusters/Waggle Dancing Bees/Shiftlet Modeling and Simulation steps journal part of test.**

- i. Dr. Peter Venkman symbolizes what phase of the four step problem solving process? *Short answer discuss.*
- ii. Dr. Raymond Stantz symbolizes what phase of the four step problem solving/programming/model building process? *Short answer discuss.*
- iii. Dr. Egon Spengler symbolizes what phase of the four step computer troubleshooting, programming and model building process? *Short answer discuss.*
- iv. What are the 3 D's that waggle dancing bees convey when they are solving the problem of overpopulation of a successful colony and need to split it or the need to relocate a colony due to destruction of their food source. Think of 3D as in 3D graphics, but D and D and D are just a convenient way to remember the lessons of the waggle dancing bees for computational modeling and simulation and programming NetLogo issues. *Fill in the blanks question.*
- v. **THREE questions: See GB1, GB2, and GB3.** Answer these Modeling and Simulation Steps as compared to Ghostbusters and Waggle Dancing Bees steps in programming and problem solving. [ShifletModelingGhostbusters.pdf](#) is the document with the 3 questions that connect ghost.txt, waggle.txt and the Shiftlet book excerpt on the Steps Of The Modeling Process. There are SIX STEPS, but you can ignore that last 3 steps. The 3 questions focus on steps 1, 2 and 3 only.

**v.GB1.** Key phrases here from the sentences above:

- i. Our goal – “determine the problem’s objective”
- ii. “study the situation”                      Look up the dictionary definition of the word “situation”
- iii. “identify the problem precisely”
- iv. “understand its fundamental questions clearly”
- v. “clear, precise problem identification”
- vi. “translate the problem into” ... and then be ready for STEP 2 Formulate the Model, which here is anticipated as the GOAL, to “develop and solve the model”.

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**GB1 - Take home test question is writing and exploring task. Journal, note take, write and clarify. Make a connection to ghost.txt and/or waggle.txt.**

Turn in a few ideas or notes which can be diagrams, quotes from ghost.txt or waggle.txt, your comments, reactions, analogies, your own favorite movie or book or poetry or sports parallel, to each of the above phrases. Each one will have a few sentences and/or diagrams that relates to it and show me you thought about it. Call this six part question and journal/writing/note-taking exercise GB 1, as in Ghostbuster #1 question on the take-home test.

v.GB2. Develop a PLAN is Dr. Raymond Stantz. Ghostbusters question 2 is GB2 journal entry:

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GB2 – Take home Ghostbusters GB question #2. **Step 2: Formulate a Model** from the Shiflet book and Steps of the Modeling Process module. Explain in notes and in reference to ideas from waggles.txt (waggle dancing bees and Ghostbusters) and ghost.txt (Ghostbusters and problem solving) that you see a possible connection to Dr. Raymond Stantz and the Develop a PLAN, i.e. focus on the HOW, develop; the PLAN, i.e. ALGORITHM, the recipe. This should be only a paragraph or a few paragraphs.

*The waggle dancing bees and their process might be relevant here too. Remember the 3 Ds of the bees.*

Dr. Peter Venkman: *(talking to and teasing Dr. Raymond Stantz)*

Hee hee hee! "Get her!"

That was your whole plan, huh, "get her."

Very scientific.

v.GB3. The 3<sup>rd</sup> step is SOLVE THE MODEL or in programming it is CODE IT, i.e. translate your step #2 PLAN or algorithm or recipe into an actual program or application. Translate the developed PLAN into NetLogo code. Make your model specific. Step 1 was Understand it. Step 2 was Plan it. Step 3 is code it or solve it. Sentence two suggests it is wise not to JUMP to step 3. **Discuss/write a journal entry, react** to the Ghostbusters and waggle dancing bees readings and quotes and feel free to relate it to your experience in the class with NetLogo turtle graphics..

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GB3 – **Step 3: Solve the model.**

### 3. Solve the model

This stage implements the model. It is important not to jump to this step before thoroughly understanding the problem and designing the model. Otherwise, we might waste much time, which can be most frustrating. Some of the techniques and tools that the solution might employ are algebra, calculus, graphs, computer programs, and computer packages. Our solution might produce an exact answer or might simulate the situation. If the model is too complex to solve, we must return to Step 2 to make additional simplifying assumptions or to Step 1 to reformulate the problem.

The 2<sup>nd</sup> sentence here is key. In light of the ghost.txt Ghostbuster's readings and in light of the waggles.txt Waggle Dancing bees readings, please explain WHY – "It is important not to JUMP to this step before THOROUGHLY UNDERSTANDING the PROBLEM (step #1) and DESIGNING THE MODEL (step #2). Dr. Egon Spengler represents this phase, the step #3 of the troubleshooting, problem solving and programming process in the ghost.txt and waggles.txt discussions and resources. Does he or could he represent **Step 3 of the Modeling Process: SOLVE THE MODEL ?**

Feel free to relate this mainly to the programming proverb: **RESIST THE URGE TO CODE!**

As with part one of the take home final: Email your answers and work to: [jacobson@cs.uni.edu](mailto:jacobson@cs.uni.edu) or you can deliver work to 307 ITTC and slide it under my door or turn it in to CS dept office in 305 ITTC (old East Gym).