Final Exam Practice

1. Define the following terms: (Practice Note: I will select at most five of these words)
   - Software engineering
   - Software process
   - Extreme programming
   - Functional requirement
   - Nonfunctional requirement
   - Verification
   - Validation
   - Software maintenance

2. What is the relationship between “agile software development” and “eXtreme programming”? 

3. Give an example scenario (describing the project and team) where a plan-driven process model would be preferred over a change-driven model. Include a description of why the plan-driven process model is preferred in your scenario.

4. Give an example scenario (describing the project and team) where a change-driven process model would be preferred over a plan-driven model. Include a description of why the change-driven process model is preferred in your scenario.

5. Consider the {waterfall phase, Scrum task, XP practice} given below. Provide a paragraph describing how it helps meet one of the four “objectives” we gave for software engineering (PQCT – increase productivity and quality, reduce cost and time to market).

6. Consider the software project described below. State which process model (waterfall or XP) you would choose for the project, and give two reasons why you would make this choice. Include several sentences defending each of your two reasons.

7. Give the typical “life cycle” for a user story in a Scrum environment.

8. The user stories below fail to meet at least one of the INVEST criteria. For each story, give one criteria that it does not meet and explain why it does not meet it. Note: I have left off the acceptance criteria for brevity. Do not consider this a violation.

9. Each of the requirements below fail to meet at least one of the IEEE’s criteria for a good single software requirement. Identify one criteria each requirement does not meet and explain why it does not meet it.

10. Write a user story (including acceptance criteria) that might have been created during the development of ServiceHub (UNI’s online help ticket system). Size your story so a single developer could implement it in a week (40 hours). Your user story should satisfy the INVEST criteria.

11. Enter a sequence of Git commands which would create the commit structure shown below. You may assume you are in the correct directory and on the master branch, and may simply leave comments where file creation and modification would take place. You may name your second branch anything you wish.

12. Give one advantage and one disadvantage of using {interviews, surveys, ethnographies} for requirements elicitation.
13. Consider the sample project described below. How would you perform requirements elicitation? Justify your answer.

14. What is the difference between a diagram and a model?

15. Give two benefits of using a model. Include a short discussion of how a model provides this benefit.

16. Answer the following questions regarding the {class, sequence, state, use case} diagram (and underlying model) given below.

17. Identify two “diagram smells” in the {class, sequence, state, use case} diagram below and state why they are considered smells.

18. Create a class diagram for the model summarized below.

19. What is a common use case for {Docker, Vagrant}?