Homework – 4
(10 points)

Name: Patrick Woodrum

Clemson ID: C79975506

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1. What is a system requirement and what are the three challenges it presents to the systems analyst?
   A system requirement is a characteristic or feature that has to be included in a system to satisfy business requirements and be acceptable for users.

2. Is the requirement "The system shall respond within 2 seconds" a functional or non-functional requirement?
   Functional requirement, as it states a service that the system will provide.

3. What is scrum?
   Scrum is an agile approach towards team-development. Scrum involved team members playing specific roles like ScrumMaster, Product owner, or development team where each role has a specific part to play in development and the team will use time blocks and team activities in a series of "scrum sessions" to achieve the development goal.

4. What five questions typically are used in fact-finding?
   Who? What? Where? When? How? These are the 5 typical questions to develop a fact-finding plan.

5. Provide three examples each of closed-ended, open-ended, and range-of-response questions.
   Open-Ended:
   -How is this task performed?
   -Why do you perform the task that way?
   -How are the checks reconciled?
   Closed-Ended:
   -Do you review the reports before they are sent out?
   -How many hours of training does a clerk receive?
   -Is the calculation procedure described in the manual?
   Range-of-Response:
   -On a scale of 1 to 10, with 1 the lowest and 10 the highest, how effective was your training?
   -How would you rate the severity of the problem: low, medium, or high?
   -Is the system shutdown something that occurs never, sometimes, often, usually, or always?

6. Explain how the observation fact-finding technique works, including the Hawthorne Effect.
   Observation fact-finding is when a person/employee/manager chooses to see the system in action themselves, rather than rely on paperwork, numbers, or presentations to describe it to them. Observing an activity can sometimes provide a better perspective on how it operates, what fact could have been misleading, and how the operation could change for the better.

The Hawthorne Effect is based on a study done in the 1920s that proved that employees were more productive and overall better workers when they knew they were being observed. An employee being watched was more likely to improve their work quality or at least stay consistent as opposed to an un-observed worker.

7. What is the relationship between user stories and features in agile projects?
   Features and user stories in agile projects both provide a statement of requirement. Alongside this, a set of user stories is what creates a feature. The feature is the over-arching requirement, while user stories get into each smaller detail that builds into a feature. Both feature descriptive names, size estimates, and priorities.

8. What is an FDD and why would you use one?
   An FDD is a Functional Decomposition Diagram and is a representation of a function/process. FDD's are used to break down a process into smaller functions in a top-down manner to show how functions are organized and can be separated into different development modules.

9. What is the difference between validation and verification of system requirements?
   Validation is asking whether the <u>correct</u> requirements are stated, and verification is asking whether the requirements are stated <u>correctly</u> i.e. Validation is the process of confirming if the correct requirements are written down, and verification is the process of confirming if those written statements are written correctly.

10. Why is traceability important in tool support for requirements engineering?
    Traceability is the ability to follow the breadcrumbs of a model system back to its origins. If a model is traceable retrospectively, it becomes easier to re-walk any steps to find a problem that occurred somewhere in the process. It also makes it easier to revert back to an older version of the model if there was an issue further along the line.