EECE 310 – Software Engineering

Midterm review

Midterm score (after scaling)

Students	84
Min	25
Max	100
Average	**60**
Median	**59**
St. Dev.	15

Scaled:

- x/24 -> x/22
- means 8% added to everyone’s score

Distribution (after scaling)

90 - 100	5
80 - 89	4
70 - 79	11
60 - 69	17
50 - 59	29
40 - 49	10
30 - 39	6
20 - 29	2
< 20	0

1. Multiple choice

Choose the **best** answer for each of the following questions:

(a) Software project failures are due to:

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B. Lack of properly defined organizational hierarchy.
C. Inaccurate estimates of needed resources.
D. All of above.

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(b) What is the difference between a user story and a user scenario?

A. user story defines the overall requirements of a system, whereas a scenario presents a partial requirement for the program at runtime.

B. A user story captures a user requirement whereas a scenario captures an acceptance test.

C. A user story is written in the language of the user, but a scenario is written in the language of the developer.

D. A user story is a Scrum task, but a scenario is not used in Scrum.

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(c) Often, customers do not have a complete understanding of beginning of a software project. How does Agile approach this issue?

A. Discuss the problem in detail with the customer at the beginning of the project.

B. Study similar systems to get requirements right first before implementation.

C. Use short development cycles to show the user a working system.

D. Focus more on design than requirements.

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(d) Which of the following are part of the XP methodology:

A. TDD, Design patterns, Continuous integration.
B. User Stories, Product Backlogs, Pair programming.
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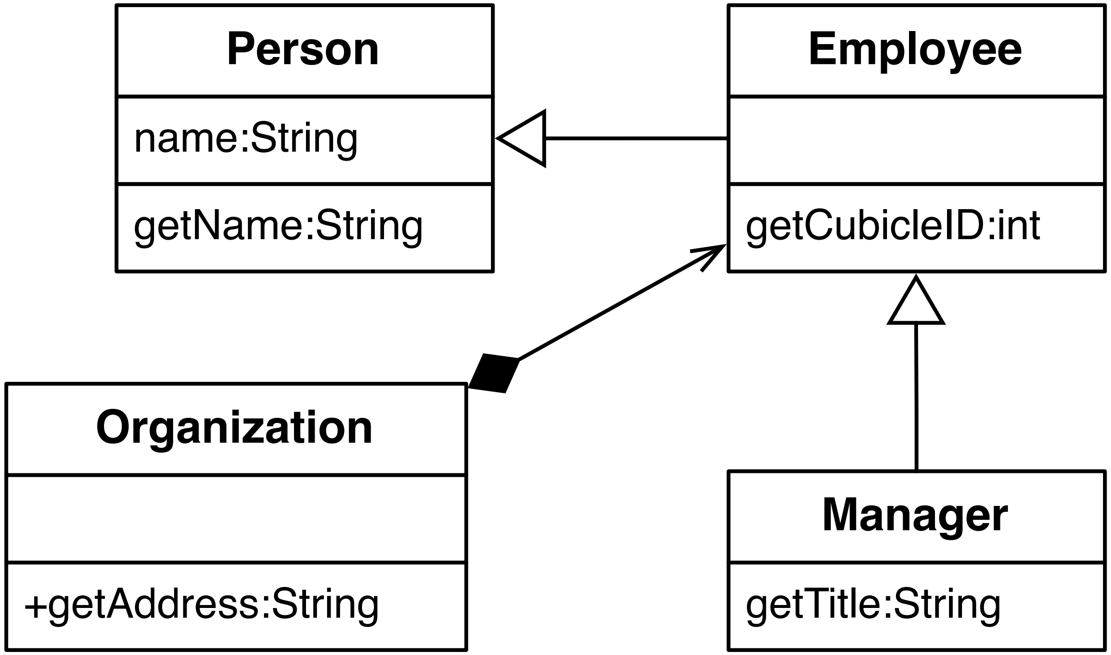
(e) For the class diagram below, which statement about the relations is true?



A. Organization has Person.

B. Manger belongs to Organization.

C. Employee has Organization.

D. Person is a type of Manager.

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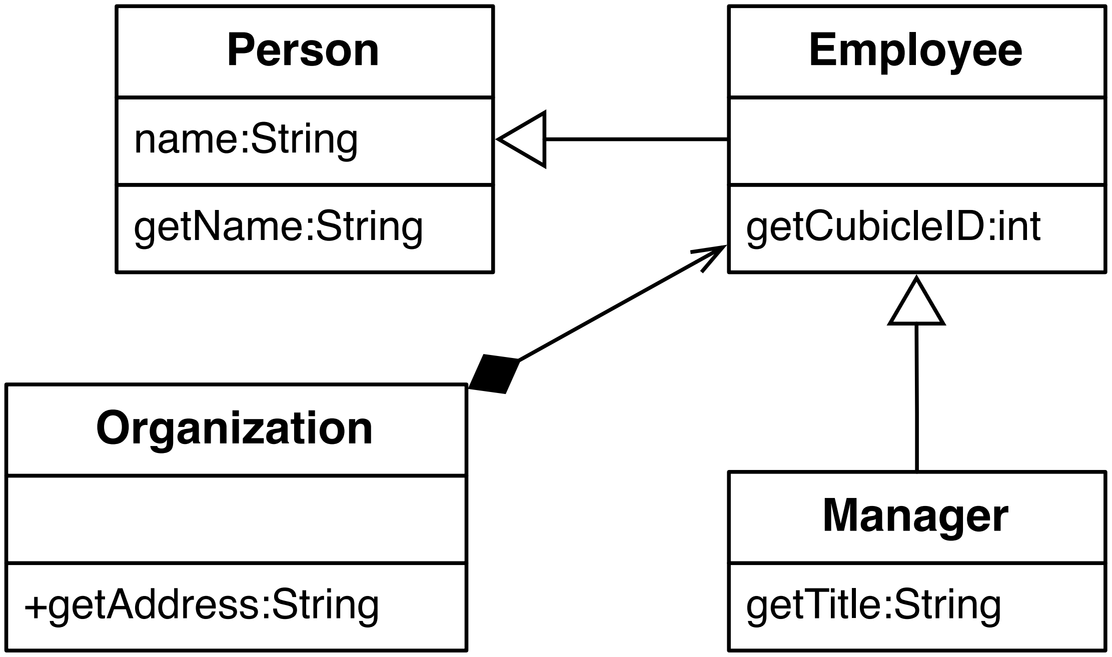

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(f) When might we NOT want to refactor a piece of code?

A. When the code is not written by us.

B. Just after a major release.

C. When we need to add a new feature.

D. When the code has no unit tests.

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(g) Which of the following should NOT be stored in a version control system?

A. Unit tests

B. IDE settings

C. Design documents

D. Generated files

E. C and D

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(i) Using ‘pull requests’ on GitHub:

A. reduces conflicts by separating who is working on what portion of the code.

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C. slows down the development speed considerably.

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2. True/False questions (/8)

For the true/false questions below specify whether each is TRUE or FALSE (1 mark), and provide a clear one sentence justification of your answer (1 mark).

(a) (2 points) A scrum master is responsible for assigning sprint tasks to developers in a scrum team.

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False. Scrum master is only the facilitator, not the boss/manager. Has no special powers.

(b) (2 points) Agile methods use relative numbers instead of function points to estimate the cost of a user story.

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True: They use relative numerical values (e.g., 1, 3, 5, 8, 10) that the team agrees upon.

(c) (2 points) A sequence diagram models how messages pass between objects at runtime.

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True. It models message-passing events to show dynamic relationships between objects.

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False: preconditions of the subclass may be weaker, but **cannot be stronger** than those of the superclass.

Reason: subclass cannot demand more of its clients than the superclass does.

3. Open-ended questions (/7)

Keep your answers short, neat, and to the point.

(a) (3 points) You are the manager of the software component of the next Mars exploration project at NASA. Briefly (in point form) describe how you make sure the project is going to be a success.

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- Chooses a proper **software process model** (Waterfall, Scrum, etc). As long as the choice is justified it is acceptable.
- Understand the **requirements** properly and thoroughly.
- Cost **estimation** to manage time, people, resources.
- Proper and thorough **testing** of the software. Mission critical so correctness is vital.

(d) (4 points) What is the architectural style of the web? Mention three of its main constrains and their induced properties. Draw an instance of the architecture.

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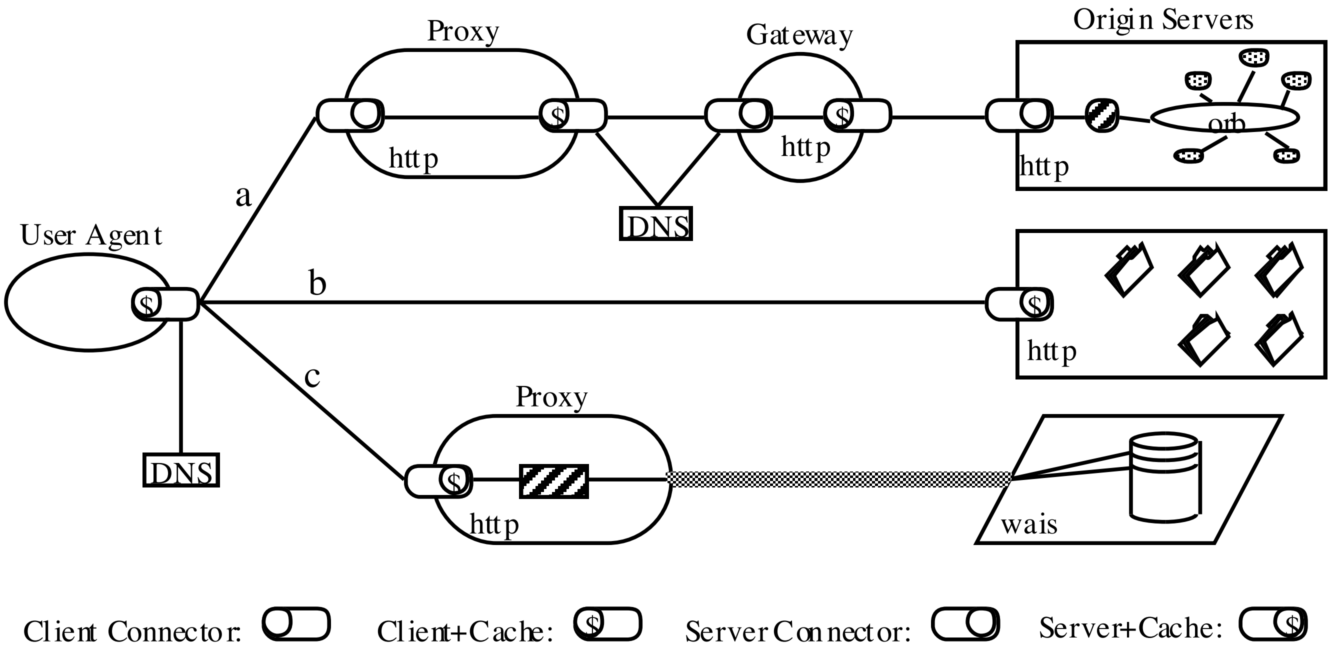
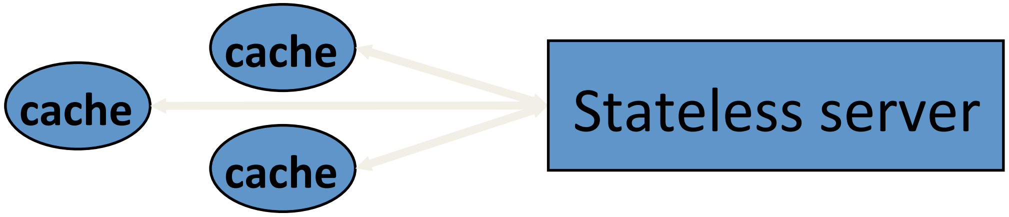
- REST (Representational State Transfer)
  - Client-server to induce separation of concerns
  - Layered System to induce evolvability
  - Resource-based interface to induce universal accessibility
  - *Stateless* communication with the server (server is stateless) to induce *scalability*
  - *Caching* on the client side to induce *low user-perceived latency*

Client-Cache-Stateless-Server (C$SS)




cache

cache

cache

Stateless server