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Exam I – CS360 – Fall, 2011

 1. Describe:

 A) Application Architecture

 The specification of the components of the project as

 well as the points at which they intersect

 B) Information Architecture

 I’m still pretty iffy on this one...

 C) Systems Architecture

 The specification of how the components of the project

 behave or work together.

 D) UML Architecture

 As opposed to the above architectures, which are high

 level, the UML architecture should be at a lower level,

 specifying not only what the components of the project

 do, but how they do it (with members, methods, etc.)

 2. Describe the requirements engineering and elicitation

 process in more detail from initial gathering of VOC to CN

 to FR in axiomatic design, including risk concepts.

 A) Design matrix results in which UML diagram type?

 Component diagram

 B) DSM results in which UML diagram type?

 Class diagram

 C) What is the V-Model?

 A visual representation of the axiomatic design process

 (the steps of which are modeled as moving down towards

 module definition and up towards the finished software

 product)

 D) QFD?

 “The voice of the customer translated into the voice of

 the engineer.” “The ultimate goal of QFD is to

 translate quality criteria into objective ones which can

 be used to design and manufacture the product.”

 E) FMEA?

 A procedure of defining potential failure states of the

 project and their likelihood and causes.

 3. When using Axiomatic Design process to develop classes, how

 do the following map to OO Design object elements?

 A) FR

 Classes

 B) DP

 Data structures

 C) FR/DP design matrix intersection

 Methods

 4. Describe the Purpose of these tools/software used in your

 project:

 A) Acclaro DFSS

 This software is used to allow the creation of design

 documents along the lines of the axiomatic design

 process, as well as the QFD, FMEA, etc. not related to

 axiomatic.

B) Microsoft Visio

 Visio allows the creation of diagrams, such as our UML

 diagrams and other design documents (that’s all I used

 it for)

C) Basecamp

 This is an online collaboration system allowing for

 calendar based scheduling, document uploading, and group

 management. Our group used this extensively.

D) Microsoft Project

 This tool was used for our Gantt Chart; I’m assuming it

 has additional uses, but that was what we used it for.

E) Microsoft PowerPoint

 This is a slide based presentation design and presenting

 tool.

 5. Describe the standards applied in this project:

 A) IEEE-830 (SRS)

 SRS is a description of how the system to be engineered

 with act and also includes non-functional requirements

 of the system.

 B) IEEE-1058 (PMP)

 Includes an overview of the project, the organizational

 structure of the project, process plans, etc.

 C) IEEE-1016 (SDD)

 SDD is used to record the application

 architecture/design in a standardized way.

 6. In OO design, describe the concept (with symbol):

 A) Aggregation

 A composition relationship without implication of

 ownership; unfilled diamond

 B) Composition

 A “has a” relationship between objects or entities;

 filled diamond

 C) Polymorphism

 The ability of objects of a subclass to fulfill

 requirements of its superclass; no UML symbol

 D) Inheritance

 A subclass derives some of its functionality from a

 superclass that more generally defines its type; open

 arrowhead toward superclass

 E) Blackbox

 A black box is a component about which only its external

 interfaces are known (i.e. nothing about its inner

 workings); uses the component symbol with a listing of

 provided and required interfaces

 7. In OO design, describe the concept (with symbol):

 A) Public operations

 Public methods and members can be referenced from

 outside the class; denoted with a plus sign

 B) Private operations

 Private methods and members can be referenced only from

 inside the class; denoted with a minus sign.

 C) Inclusions

 ?

 D) Extensions

 ?

 8. Describe how the following concepts are used in your

 project:

 A) Architecture Decomposition View (ADV)

 ?

 B) Work Breakdown Structure (WBS)

 ?

 9. In OO design, describe the concept (with symbol):

 A) Association

 An object relationship characterized by one object being

 able to cause another to perform an action; single line

 with optional arrowhead

 B) Generalization

 A class relationship characterized by one class being a

 more specific form of another class; line with unfilled

 triangle

 C) Dependency

 A relationship in which one class at some point will

 require the use of another (in some fashion); dotted

 line with arrowhead

 D) Realization

 A relationship in which one component recognizes the

 actions of another component; dashed line with unfilled

 arrowhead

 E) Annotation

 ?

 F) Interface

 A situation in which subclasses (or in Java, classes

 that implement the interface) are required to provide

 predetermined requirements and require certain

 predetermined inputs; interfaces are denoted with double

 angle brackets around their name

10. Define each performance attribute:

 A) Efficiency

 The measure of performance (i.e. work vs. time)

 B) Flexibility

 How well the system adapts to different situations

 C) Integrity

 How well the system holds up to increased loads

 D) Security

 How well the system repels intrusion or “hacks”

 F) Portability

 How difficult the task of migrating the system to a new

 platform is

 G) Reliability

 The trust in the system to run relatively unmonitored

 H) Usability

 How difficult the interaction with the system is

11. Describe how you have used your concept map and basecamp

 tool to organize your work as a team using RUP as a guide:

 I really haven’t used my Cmap to much effect—it’s tedious

 to update via the MyIPFW file upload mechanism; a sentiment

 echoed by the rest of my group. So mainly we have been

 using basecamp because of its ease of file uploads and

 integrated messaging system. Once we’re satisfied with a

 version of a file (after each of us working on bits and

 pieces and uploading it to basecamp), then we upload it to

 the Cmap, which is demarcated into RUP phases to keep

 everything organized. In the last week or so, we’ve been

 trying to move to a new group Cmap that I designed and put

 on the public Cmap servers (this allows for live editing

 and \*very\* easy file uploads), so our organization is kind

 of in flux at the moment.

12. Which three SWEBOK areas apply to your role in the project

 and why?

 A) Software requirements: as business analyst, I worked

 with the sponsor’s feature requests translating those

 into eventually into functional requirements.

 B) Software design: my in-group title is “Designer” and I

 have contributed to non-paperwork oriented design

 aspects of the project. Software design seems to fit...

 C) Software Construction: all of the members of my group

 come from a programming oriented background in computer

 science and all are “developers”. Although our group

 hasn’t come to the RUP construction phase yet, this will

 eventually apply.

13. Other than class and component diagrams that all teams are

 required to use, select 3 UML behavior diagram types that

 your project could use and why?

 1) Profile diagram; one of the requirements of our project

 is to profile student preferences.

 2) Deployment diagram; our project will be deployed not

 only to servers at IPFW, but those servers will then

 deploy client applications to users, which could be

 modeled.

 3) Communication diagram; our project utilizes a client

 server architecture and access to several database

 systems over the course of its run.

14. On UML:

 A) What is the relationship between UML and SysML?

 SysML is a recent set of extensions to traditional UML.

 UML is normally used for software based projects, but

 SysML is designed to extend to engineering for the

 purpose of modeling relationships between hardware and

 software components of a project.

 B) What is executable UML?

 Executable UML is when portions of a UML diagram model

 done and redone routines such that the routines are

 themselves routine and the actions of each such routine

 have been databased such that the diagram itself, being

 made up of such routines can actually be executed as

 though it were a program.

15. Describe how this course has helped you manage your team:

 A) Management

 Earlier in the course, different management styles were

 discussed; as I was not the project manager, I didn’t

 actually implement any of these, but it definitely

 highlighted the differences between hands-off and hands

 on management styles.

 B) Architecture

 This class gave our group an opportunity to more

 formally learn about UML. We had all encountered it in

 previous classes, but were not aware of it in fine

 detail. This class also showcased other different forms

 of design architectures at a higher level view which I

 was not personally aware of.

 C) Detail Design

 I’m not familiar with this term...

 D) Documentation

 Our team would not have produced nearly any of the

 documentation that was required during the inception

 phase otherwise; more than likely our documentation

 would have been more informal, so this class definitely

 impacted our group in this aspect in a positive way.

[BONUS] List up to 10 aspects of this course you enjoyed/learned

 from the most?

 I’d have to say that “enjoyed” is a word inapplicable to

 this class. I’d also have to say that in the same way

 “learned” is at best subjective.