Assignment 01 – Due on 09/04/18, 1.00pm
Alex Lundin
AML140830

Question 1

What are some of the limitations of using an analogy of building architectures towards software systems development?

The toolsets are completely different. Building architects will use more physically tools, while software architectures use conceptual tools.

Question 2

What are architectural styles? Provide any two examples of 'architectural styles' that characterize building architectures. What 'requirements' do they meet?

An architectural style is a set of patterns that a design embodies.

1) Generic layer architecture

Example:

UI

UI management / authentication / authorization

Core business logic / application functionality / utilities

system support / OS / database

Qualities:

lower layer provides service to upper layers

strict layering - each layer can only talk to adjacent

loose layering - layer can bypass intermediate layers and go directly to who it needs to talk to

Pros:

Simple

Organized

Easy to understand

Easy to add layers to top

Cons:

Latency with more layers

Hard to add layers to

2) Pipe and Filter

Example:

Invoice system

Language assembler

Qualities:

Used for data flow

Pros:

Good for serial processing

Each filter defines functionality so there is little or no overlap

Cons:

Filter going down can cause a bottleneck the bottom

Question 3

List any two differences between the traditional waterfall, agile, and spiral
software development models.

Waterfall
> **Does not support changing requirements**
> **Good for small projects**

Agile
> **Does support changing requirements, while incremental development**
> **Encourages face to face communication**

Spiral
> **Does support changing requirements, while incremental development**
> **Can turn into chaos, if the spiral does not terminate or spins out of control**

Question 4

Why is software architecture defined as "broad and shallow" while software
design is defined as "narrow and deep"?

> **Architecture is more concerned with a high-level snapshot of the intended system.**
> **Software design is more concerned with low level implementation details.**

Question 5

Describe how an architecture serves as a basis for analysis. What about
decision-making? What kinds of decision-making does an architecture empower?
(Problem 4, page 23 from the textbook)

> **Architecture promotes interacting with many different stakeholders, from business
> analysts to end users. This process of interaction yields a lot of information from many
> different perspectives and gives the architect an opportunity to analyze system design
> from the human perspective**

Question 6
Search three different job websites for "Software Architect". Include a summary or actual job description (if short enough) for each job. What qualifications are listed for the job? If salary is included, what is the listed salary?

https://www.glassdoor.com/Job/software-architect-jobs-SRCH_KO0,18.htm

Summary:

Design enterprise apps.

Determine operational flexibility

Improve operations

Develop scalable architecture

Qualifications:

Familiar with many languages

Salary:

79,000-140,000 per year

https://www.monster.com/jobs/q-software-architect-jobs.aspx?jobid=199806586

Summary:

- Collaborate on overall software architecture and development of the software products, including hands-on development, mentorship of team members, and definition and adoption of improved development processes.
-Responsibility for collaborating on overall software architecture of software products
-Ensure that all software releases are of appropriate quality and provide a premium user experience to our customers
-Collaborate with other development team members, and cross-functional collaboration on certain initiatives
-Provide mentorship and leadership to all developers, including periodic code reviews and technical design reviews
-Understand and assist, as needed, in the full development stack

Qualifications:

- 8+ years professional experience in software development
- Experience building scalable, cloud-based software
- Strong full stack development experience with C# and JavaScript frameworks
- Working experience with Azure or AWS (Azure preferred!)
- RESTful APIs
- Relational databases

Salary:

Not listed

https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm

Summary:

Software developers are the creative minds behind computer programs. Some develop the applications that allow people to do specific tasks on a computer or another device. Others develop the underlying systems that run the devices or that control networks.

Qualifications:

Software developers usually have a bachelor's degree in computer science and strong computer programming skills.

Salary:

$103,560 per year