Activity 15-3: Architectural Styles

Why?

Familiarity with several architectural styles is a valuable asset for designers.

Learning Objectives

- Learn some common architectural styles and their characteristics;
- Use architectural styles in design.

Success Criteria

- Be able to identify several common architectural styles.
- Be able to name the advantages and disadvantages of some architectural styles.
- Be able to create an architecture based on an architectural style.

Resources

ISED section 15.3.

Vocabulary

Filter, pipe, acyclic graph, pipeline, shared-data stores and accessors, blackboard, repository, event, synchronous, asynchronous, model, view, controller.

Plan

1. Review *ISED* section 15.3 individually.
2. Answer the Key Questions individually and then evaluate the answers as a team.
3. Do the Exercises as a team, and check your answers with the instructor.
4. Do the Problems and Assessment as a team.
5. Turn in the Problems and Assessment as a team deliverable.

Key Questions

1. What is a pipeline?
2. What is the difference between a Blackboard style and a Repository style?
3. What is the difference between synchronous and asynchronous event dispatch?
4. What is a heterogeneous architecture?

Exercises

1. Make a table with rows for each style discussed in this section. Add columns for static and dynamic structure, then fill in the table according to whether a style specifies a static structure, a dynamic structure, or both.

2. Which of the architectural styles discussed in this reading make it easiest for components to run in concurrent threads or processes? Which styles make this more difficult?

Problem (Deliverable)

DataSafe is software service providing secure and convenient data storage and recovery that is accessible from the Internet. DataSafe provides the following features:

- Customers may upload, store, and download data of any kind

- Uploaded data is guaranteed to be secure and safe from loss or corruption

- Organizations may control who has access to data on a file-by-file basis

- Data may be searched and viewed in many ways

DataSafe is a client-server system implemented as a web service available to clients through a browser.

Use the architectural styles discussed in the reading to generate two alternative architectural designs for the DataSafe server. Document your design with a decomposition diagram and brief descriptions of the responsibilities of each architectural component. Compare and contrast these alternatives by listing theire advantages and disadvantages.

Assessment (Deliverable)

1. Did this activity help you achieve the learning objectives?

2. How could the instructor improve this activity?