Architectural Patterns and Styles - Notes

Priscilla Madigoe

08 March 2016

1 Architectural Styles

1.1 Introduction

A system typically has various functions to fulfil. These functions can then be divided into subsystems which can be made up of components and connectors, data and control ssections. Architectural styles help decompose a huge system into subsystems effectively. A list of architectural syles will follow below and each one will be discussed in detail.

1.2 Types of Architectural Styles

- Interacting Processes
- Dataflow
- Data-centered
- Hierarchical
- Call and Return

2 Architectural Patterns

2.1 Introduction

Often times source code needs to be organised so that clear roles, responsibilities and relationships of different modules of the code can be well defined. Architectural patterns help in making this possible and numerous types will be discussed in this section. Using these patterns, code becomes easier to maintain, manage and visualise. They also make understanding of how each

component works in a system easier. They are reusable solutions to a commonly occuring problem in Software Architecture within a given context. Patterns generally belong to one of the aforementioned Architectural Styles.

2.2 Types of Architectural Patterns

- Layers Pattern
- Client-server
- Representational State Transfer (REST)
- Master-slave
- Pipe-filter
- Broker Pattern
- Peer-to-peer
- Event-bus Pattern
- Model View Controller
- Blackboard Pattern
- Interpreter

2.3 Architectural Patterns for the PAPERS System

2.3.1 Model View Controller

- Background

  I n the Model-View-Controller Pattern, an interactive application is divided into three parts: the Model is an object representing the data and activities, the View displays information to the user and the Controller offers a way to change the state of the Model.