

MONASH UNIVERSITY

CSE3308 Software Engineering: Analysis and Design  
Practice Class 6

Structured Design: Coupling and Cohesion

## 1 Coupling and Cohesion in the Real World

In lectures, we discussed a modular stereo system as an example of real-world system which exhibited good coupling and cohesion. In this exercise you will consider other such real-world systems, and analyse their coupling and cohesion.

### 1.1 Stereo System - Again

Consider a modular stereo system consisting of the following components:

- amplifier
- speakers
- CD player
- AM/FM Radio tuner

1. What kind of coupling is there between these components? What kinds of cohesion do they have?
2. Imagine that the amplifier and tuner are replaced by a module containing both an amplifier and a tuner—as is the case in many real systems. How would this affect the coupling and cohesion in the system?
3. Imagine that an MP3 player is to be added to the original system as an extra component. What constraints must exist on the nature of the coupling between playback components and the amplifier in the system for this to be a simple process? Consider connectors, input characteristics, etc.

## 1.2 Other Real-World Systems

Various systems and items in the world are made up of modules connected in various ways. Some of these exhibit good coupling and cohesion, others do not. Comment on the coupling and cohesion in the following real-world systems. Indicate what problems their designs may pose.

1. speakers for desk-top computers, with the power supply and amplifier built into the right-hand speaker.
2. rechargeable electric screw-driver, where the lead from a transformer is plugged into a socket in the screw-driver handle.
3. lap-top computers. Consider their organization compared to a desk-top PC.
4. university degrees and the subjects in them. You might like to consider the whole degree as a module, as well as the individual subjects.
5. your choice. Think of a real-world system which you have used which has coupling and cohesion problems. Describe that system, and its problems.

## 2 Estimating Cohesion

Each of the modules below is accompanied by a short sentence describing its activities. Determine as well as you can (without seeing each module on a structure chart) each module's level of cohesion:

**AFTIN1** after input, add timestamp and verify totals

**AFTIN2** after input, write backup, add timestamp, verify totals

**GENREPT** produce report: either a sales report, a project status report, or a customer transaction report

**SYNCH** check syntactic correctness of space-vehicle guidance parameters

**OUTTRAN** print transaction and copy it to disk

**UPCREDOUT** update current credit record and write it to disk

**STARTIT** open files, obtain first transaction, and print page headings

**NEWTRAN** update record and get next transaction

**CIRCDISP** from an electrical connection matrix, produce a circuit diagram

From Page-Jones, *The Practical Guide to Structured Systems Design*, Ch. 6, with minor changes