

## Conversion Strategy of a System of Collaborating Design Patterns into UML Diagram for Design Pattern

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### ABSTRACT

In a past publication, a proposal of a new set of UML diagram designed to picture a software system at architectural level by showing which patterns are being used has been presented. Progressing from the proposal, this publication presents an extensive example to precisely show the way to make the conversion. In this paper we present the proof of the ability of the proposed diagram set to professionally and neatly picture the overall high level architecture of a software system. There is also an additional rule added to the one presented in the past publication. This new rule is to cater for the cases where collaborating patterns are not overlapping; rather they are related just because some class in one pattern is using some other class in the other pattern.

### KEYWORDS

Design Patterns, Unified Modeling Language (UML), Architecture Description Language (ADL), Object Modeling Language (OML), Object Oriented Programming (OOP)

### 1 INTRODUCTION

#### 1.1 UML and Design Pattern Background

One can agree that at the highest level of system design, design pattern [1] has been adopted as a way to model and communicate software ideas and architecture [2] [3] [4] and, more importantly, to start the design idea not-from-scratch [5] [6].

One of the most common ways to represent design pattern is through the use of unified modeling language (UML). However, unknown to many, the de facto inventor of design pattern, Gamma et al. did not represent the design patterns in their book [1] in UML format, but in object modeling technique (OMT) instead.

UML has been around since 1997, and as of now it comprises of 14 diagram sets [7] [8] [9]. Despite the fact that it has been used widely in program development, and despite the fact that it



























