APPLYING OBJECT ROLE MODELING TO SOFTWARE DESIGN PATTERNS

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The most important issue in object-oriented design is identifying classes and their relations in the problem domain. Relations such as association and inheritance should be specified clearly. But problems arise when class migration comes into account in the problem domain. In such cases, the user has to consider several classes at the same time.

Researchers have identified that incorporating roles into object-oriented design can solve this problem. This approach is known as *Object Role Modeling (ORM)*. The Object Role Modeling methodology developed by Trygve Reenskaug presents a general approach to modeling objects and object collaborations using roles and role models.

The aim of this research is to apply ORM to reduce complexity when doing 'large scale' design. This is done by supporting separation of concern, a flexible design approach and reusable designs. At present, developers use *'Design Patterns'* to develop reusable software. The main problem is that the patterns have been described using the conventional object model, hence not applicable when *'object reclassification anomaly'* is presented in the problem domain. There is a need in describing patterns with alternative ways to address these issues. In this research, we have applied ORM to overcome the problems and limitations of class-based modeling when designing with patterns. With ORM, designing and using of patterns can be described succinctly and with much better separation of concern than with classes.

Design patterns will make the problem more simple and reusable while roles make the design more accurate. Since the ORM concept is becoming more and more popular, describing patterns using 'roles' can be more advantageous. Roles will handle the problem of class migration as well as supporting the separation of concern. Seven commonly used patterns are chosen in this study to redesign using roles. Furthermore, a new role constraint is introduced to easier the combination of these two concepts.