# FEATURE ORIENTED SOFTWARE DEVELOPMENT METHODOLOGY FOR STOCK EXCHANGE SYSTEMS

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Degree of Master of Science

Department of Computer Science and Engineering

University of Moratuwa

Sri Lanka

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# DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Name: K.M.G.L.H. Konara (168235T)

The above candidate has carried out research for the Masters Dissertation under my supervision.

Name of the supervisor: Dr. Indika Perera

Signature of the supervisor: …….  Date: ……..

# Abstract

Many organizations that develop software use the traditional method of layered methodologies to develop their end software product or solution. In doing so, the code will be a more general one and there will be a lot of unnecessary elements included which make the system heavy and dirty. This would result in a lot of issues .Also there is a requirement to implement a system with a concept of features. The end system will be delivered as a set of features and the feature set could be decoupled at any time, according to the current requirement without harming any existing functionality.

This research has been narrowed down to a particular domain which is the stock exchange or trading domain. By narrowing down the domain, the end software product could be delivered in a tailor made manner so that its effectiveness will be very high. The final software product would be a feature oriented domain specific language (DSL).

The objective of the feature oriented DSL is to make it very effective even for business analysts to introduce new features without getting help from core software developers. The feature layer will be purely decoupled and presented in an independent way so that the end users will have full flexibility to introduce changes very easily. There is a clear separation between core code segments and auto generated code segments. Auto generated files serve the different features and core code segments will enable those features to function on top of them. Auto generated code should not be changed manually under any circumstance as per this design.

A code generator and the core controller is developed throughout this research exhibiting the above mentioned feature oriented software development principles and domain specific language principles.



Keywords : FOSD, DSL,FOP, AOP, ANTLR,Entity, Instance

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## LIST OF ABBREVIATIONS

| Abbreviations | Description |
|---|---|
| FOSD | Feature Oriented Software Development |
| FOP | Feature Oriented programming |
| AOP | Aspect Oriented Programming |
| AHEAD | Algebraic Hierarchical Equations for |
| . | Application Design |
| DSL | Domain Specific Language |
| VPL | Visual Programming Language |