

Computer Science 732

Assignment #1

Due by 5pm, Thursday 5th April 2007

Introduction

In this assignment you will develop a simple multiple view, visual software development support tool using a meta-tool technology developed at the University of Auckland, called Marama*. You will write a short report that describes the motivation for the choice of your tool, how you built it with Marama, and its strengths and weaknesses. You must work **individually** for this assignment, both in developing your prototype tool and writing your short paper.

Software Tool Construction Task

Building software engineering tools is a time-consuming, complex task. Particularly challenging ones are those that involve the use of diagrammatic notations, multiple representations, or views, on a notation, code generation, reverse engineering and collaborative work support. Meta-tools are software engineering tools developed to make building such tools somewhat easier. We have been developing a software meta-tool called Marama, which you will use in this assignment to develop a simple multiple view software tool.

Obtain the Marama core meta-tool from the COMPSCI 732 assignment web page and read the short paper. Work through the tutorial to familiarise yourself with the key facilities of the meta-tool.

Decide on a small multiple view visual software engineering tool that you will develop a prototype of using Marama. I don't mind much what the tool is. Some example application areas I have indicated below:

- Software process modelling – www.cs.auckland.ac.nz/~john-g/papers/ic98.pdf
- Software architecture design – www.cs.auckland.ac.nz/~john-g/papers/ijseke2003.pdf
- Aspect-oriented design – www.cs.auckland.ac.nz/~john-g/papers/ncws2003.pdf
- Design pattern modelling – www.cs.auckland.ac.nz/~john-g/papers/tools2002.pdf
- Entity-relationship modelling – www.cs.auckland.ac.nz/~john-g/papers/ooer95.pdf
- Data mapping specification – www.cs.auckland.ac.nz/~john-g/papers/hcc2002.pdf
- Statistics design tool – www.cs.auckland.ac.nz/~john-g/papers/vlhcc2005.pdf [this is based on an extended 732 assignment from 2 years ago using a forerunner to Marama...!]

* Marama is the Maori word for “moon” – the moon generates an Eclipse... ☺

A non-Software Engineering tool application is also allowable e.g. a “family tree” editor for genealogy research, but check with me first! Your prototype should have:

- At least three meta-model entity types and appropriate associations
- At least three different iconic shapes, possibly of differing complexity (of the shape image)
- At least two different shape connectors
- At least two DIFFERENT view types i.e. that show different kinds of information within the view types
- A few simple formulae and/or event handlers managing things like diagram layout, editing constraints, model (entity) constraints, mock code generation, data import, ...

Report

Write a short report of **no more** than 3 pages in IEEE CS Press format which describes:

- The motivation for your tool – why did you choose to implement a prototype of this tool and how will it help software engineers?
- A description of your tool’s facilities
- An example of the tool in use, showing appropriate screen dumps etc
- A description of how you built the tool in Marama – meta-model, shapes, view types, event handlers etc
- An assessment of your tool
- An assessment of Marama’s suitability for building your prototype, together with suggestions for five improvements you would like to see with Marama

YOUR REPORTS MUST BE YOUR OWN, INDIVIDUAL WORK – DO NOT COLLABORATE IN WRITING THESE!!!

Submission

Submit your individual reports as a Word or PDF document and your Marama tool project files in a single ZIP file via the assignment drop box on or before 5pm, Thursday 5th April 2007.

This assignment is worth 16.6% of your final mark for COMPSCI 732. You should aim to spend around 25 hours on this assignment.