GRAPHICAL USER INTERFACE FOR DESIGNING 3WORLDS ECOLOGICAL EXPERIMENTS

COMP6470 – Special Topics in Computing

Presented By – Perumal Viravan (U5084292)

Supervisors: Dr. Shayne Flint & Dr. Ramesh Sankaranarayana
Outline

• Introduction
• Background – Graph Database
• Graphical User Interface
• Evaluation
• Conclusions and Future Work
• Questions & Answers
Introduction

• 3Worlds – Simulation and modeling software for Ecological and Environmental science.

• Graphs are stored as nodeList using DSL files.

• This interface allows basic editing operations on graphs – Adding node, Deleting nodes, editing node properties and creating node edges.
Background – Graph Database

• **NodeList**
  – List of connected nodes.
  – Node Properties.
  – Node Edges.

• **Archetype**
  – Graphs that describe structure of another graph.
  – Properties – data type and multiplicity.
  – Edges – connection nodes and multiplicity.
Graphical User Interface

- **Node Property Editor Interface**
  - Spreadsheet view
  - Property Editor view

- **Node Edge Connection Interface**

- **Search Feature**
  - Searches for list of nodes using node reference.
  - Node Reference: Node names, label and properties.
  - Groovy – Evaluate text strings or scripts.
Node Property Editor – Spreadsheet View

• Provides a spreadsheet view.
• Allows to edit Single property value.
• Analysis of Large Graphs – Search and sorting.
Node Property Editor – Property Editor

- Allows Editing properties of multiple nodes.
- Updates selected nodes with new property value.
GUI - Node Edge Connection Interface
GUI - Node Edge Connection Interface

• Creating Edges between nodes
  – Finds all common valid connection nodes.
  – Allows creating edges for multiple nodes at once.

• Deleting Multiple Nodes
  – Select multiple nodes and click delete.
  – Removes nodes and associated edges from nodeList.
GUI - Node Edge Connection Interface

- Adding a New Node
  - A dialog box request for node label and node name.
  - Next dialog box requests for node properties.
  - Checks if inputs are valid against archetype.
Evaluation

- Evaluation was performed across various graph size.

- Verification of correctness of the interface against the archetype.

- Evaluation of effectiveness and user friendliness of the interface.
Conclusions and Future Work

• Conclusions
  – The project satisfied the initial requirements.
  – It provides a easy to use interface for editing large graphs.

• Future Work
  – Option to delete edges.
  – Find and Replace option for node property editor.
Thank You

Any Questions?