Molly

by

Richard Drake

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Supervisor: Dr. Ken Q. Pu

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Abstract

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

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Chapter 1

Introduction

1.1 Outline

1.2 Data Represaentation

The data from the database is represented in various data structures. There are separate representations for each type of data: values, entities, and entity groups.

1.2.1 Value

Definition 1. A **Value** represents a single piece of information. To avoid repetition, each value is unique. That is, $\exists!\, v \in V$, where v is a value in the set V of all values.

1.2.2 Entity

Definition 2. An **Entity** is a collection of attributes, a_n, each mapped to a single value, v_n. An entity also includes additional information such as a unique identifier.

$$\begin{array}{ll} \text{id} & T_n|v_{id} \\ a_1 & v_1 \\ a_2 & v_2 \\ \vdots & \vdots \\ a_n & v_n \end{array}$$

Figure 1.1: The structure of an entity

Entities are analogous to rows in a database table. Thus, the unique identifier is generated based on the table name, T_n, as well as unique key in the table, v_{id}. The unique key identifies the row, and the table name identifies the table. Together they uniquely identify the entity within the entire database.

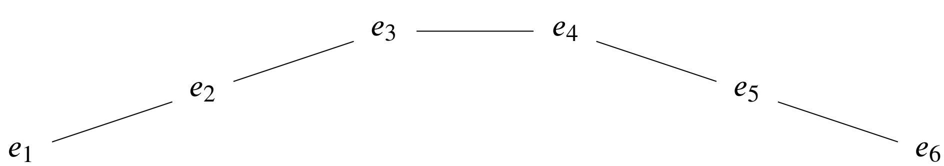
$\exists!\, e_{id} \in E$, where E is the set of all entities.

1.2.3 Entity Group

Definition 3. An **Entity Group** joins together two or more entities. These entity groups can also have attributes, a_n, and values, v_n, associated with them much like entities.

$$\begin{array}{ll} e_L & [e_1, e_2, \ldots, e_n] \\ a_1 & v_1 \\ a_2 & v_2 \\ \vdots & \vdots \\ a_n & v_n \end{array}$$

Figure 1.2: The structure of an entity group



1.3 Ford-Fulkerson

Ensure: $1 = 1$

Chapter 2

Blah blah blah

2.1 Choosing a Breadth-First Search Algorithm

We took several criteria into consideration when choosing a Breadth-First Search algorithm to perform the graph search. In the context of this problem, there is no obvious heuristic to help predict the distance between two nodes. We decided to use a constant cost function. That is, $d_{(v_1,v_2)} = n$. The selected algorithm must also be highly parallelizable.

BFS - Wrong result if non-uniform distance Bellman-Ford - Always correct result Dijkstra - Faster than Bellman-Ford, uses priority queue Push-Relabel & Johnson - Uses complicated (and difficult to parallelize) data structures A-Star Search - No obvious heuristic