Data Flow Diagrams – Acceptance Test
Client: Dr. Darren Lim, Assistant Professor

Project: Java Online Learning Tool (*J.O.L.T*)

Delivered by: 518 Interactive

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Contents

1 Data Flow Diagrams

The Data Flow Diagrams (DFDs) are used for structure analysis and design. DFDs show the flow of data from external entities into the system. DFDs also show how the data moves and is transformed from one process to another, as well as its logical storage. The following symbols are used within DFDs. For clarity, a key has been provided at the bottom of this page.

At the request of our client, Dr. Lim, some of our diagrams have been done in the UML Activity Diagram format. These documents are contained in the "Activity Diagram" Document, which is found on the 518 Interactive website. The processes that break down to activity diagrams are indicated with a "AN" Label at the bottom of the process bubble, where N is an integer.

Source/Sink: Represented by rectangles in the diagram. Sources and Sinks are external entities which are sources or destinations of data, respectively.

Process: Represented by circles in the diagram. Processes are responsible for manipulating the data. They take data as input and output an altered version of the data.

Data Store: Represented by a segmented rectangle with an open end on the right. Data Stores are both electronic and physical locations of data. Examples include databases, directories, files, and even filing cabinets and stacks of paper.

Data Flow: Represented by a unidirectional arrow. Data Flows show how data is moved through the System. Data Flows are labeled with a description of the data that is being passed through it.

2   Data Flow Diagram: Context

A context diagram is a top level data flow diagram. It only contains one process node (Process 0) that generalizes the function of the entire system in relationship to external entities.
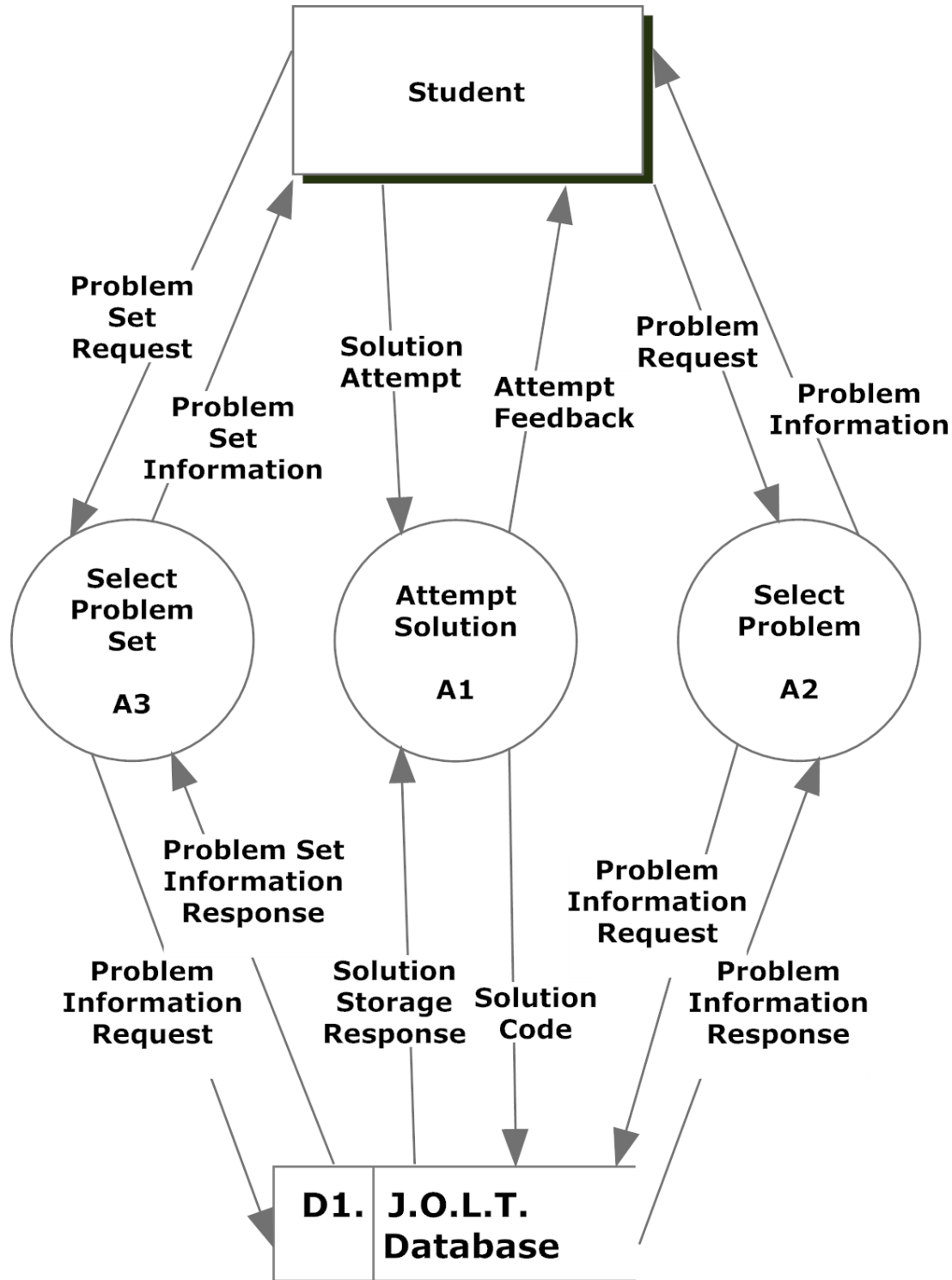

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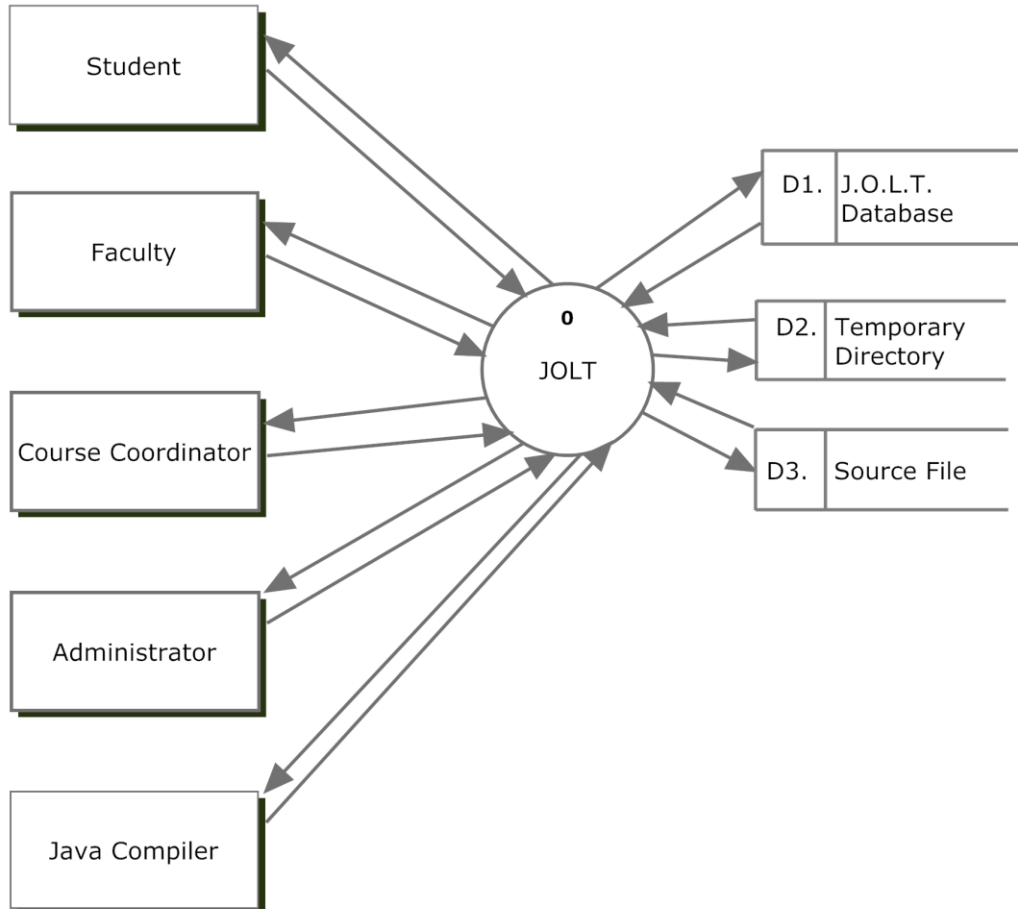
3 Data Flow Diagram: Level 0

The Level 0 Data Flow Diagram shows all of the main, high-level functions of JOLT. Note that each process uses one or more data stores. For clarity, the data stores have been omitted from this diagram. Further detail is provided in subsequent diagrams.
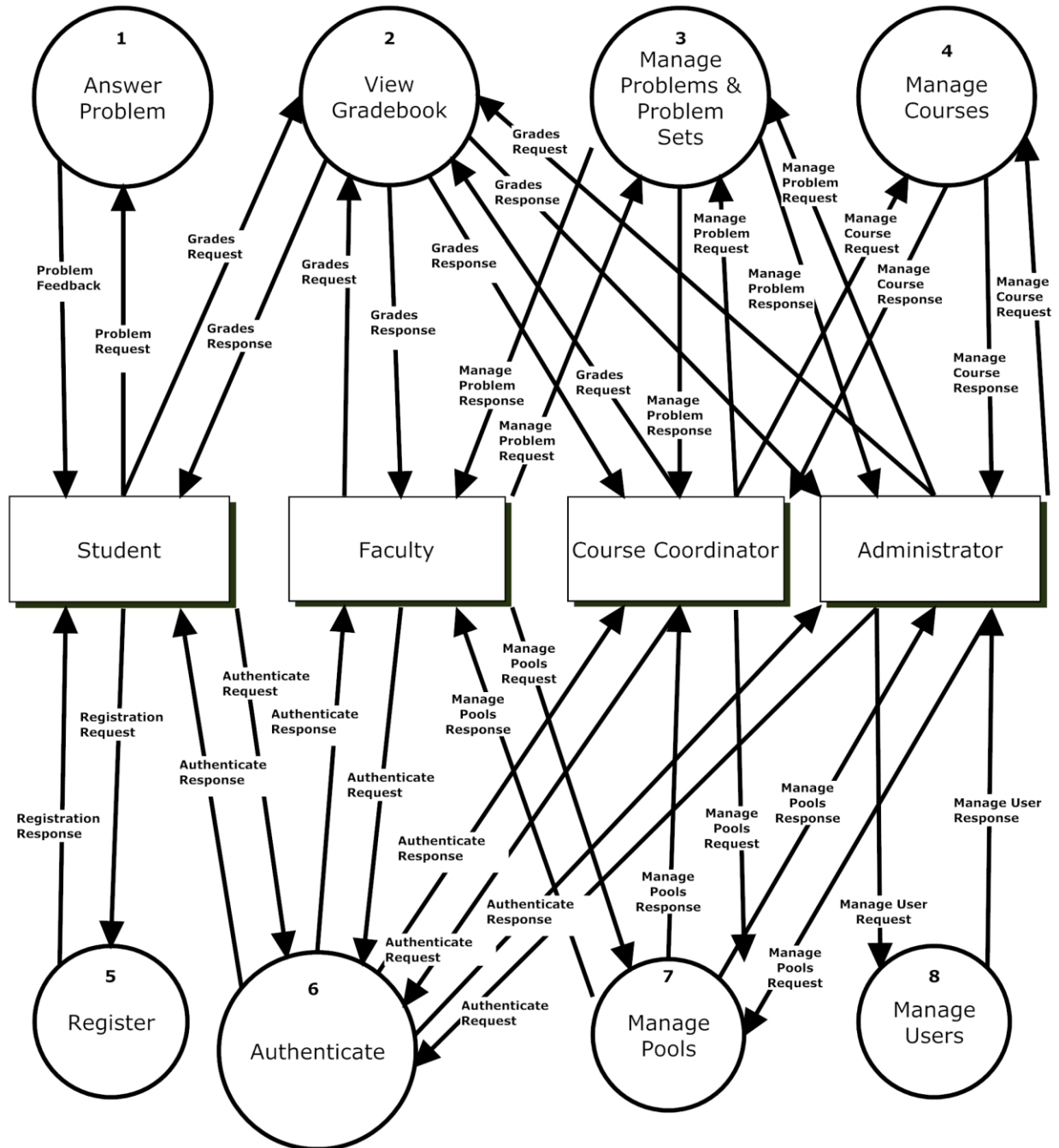
3.1   Process 1, Level 1: Answer Problem

This diagram represents the high-level functions involved in answering a problem from a student's perspective.   **Note the absence of process numbers: These processes represent UML Activity diagrams, which are contained in the Activity Diagrams Document.**

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                          ┌─────────────────────┐
                          │      Student         │
                          └─────────────────────┘

  Problem
   Set                    Solution              Problem
  Request                 Attempt    Attempt    Request      Problem
         Problem                     Feedback               Information
          Set
      Information

     ╭─────────╮         ╭─────────╮         ╭─────────╮
     │ Select  │         │ Attempt │         │ Select  │
     │ Problem │         │Solution │         │ Problem │
     │  Set    │         │         │         │         │
     │         │         │   A1    │         │   A2    │
     │   A3    │         ╰─────────╯         ╰─────────╯
     ╰─────────╯

         Problem Set              Problem
         Information           Information
          Response               Request

    Problem          Solution                Problem
  Information        Storage    Solution    Information
    Request          Response    Code        Response

              ┌──────────────────────┐
              │ D1. │ J.O.L.T.        │
              │     │ Database        │
              └──────────────────────┘
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3.2   Process 2, Level 1 View Gradebook

This process is represented as an Activity Diagram, per request of the client. Please reference Diagram "A4" for the Faculty, Course Coordinator, and Administrator users, and Diagram "A5" for the Student user.

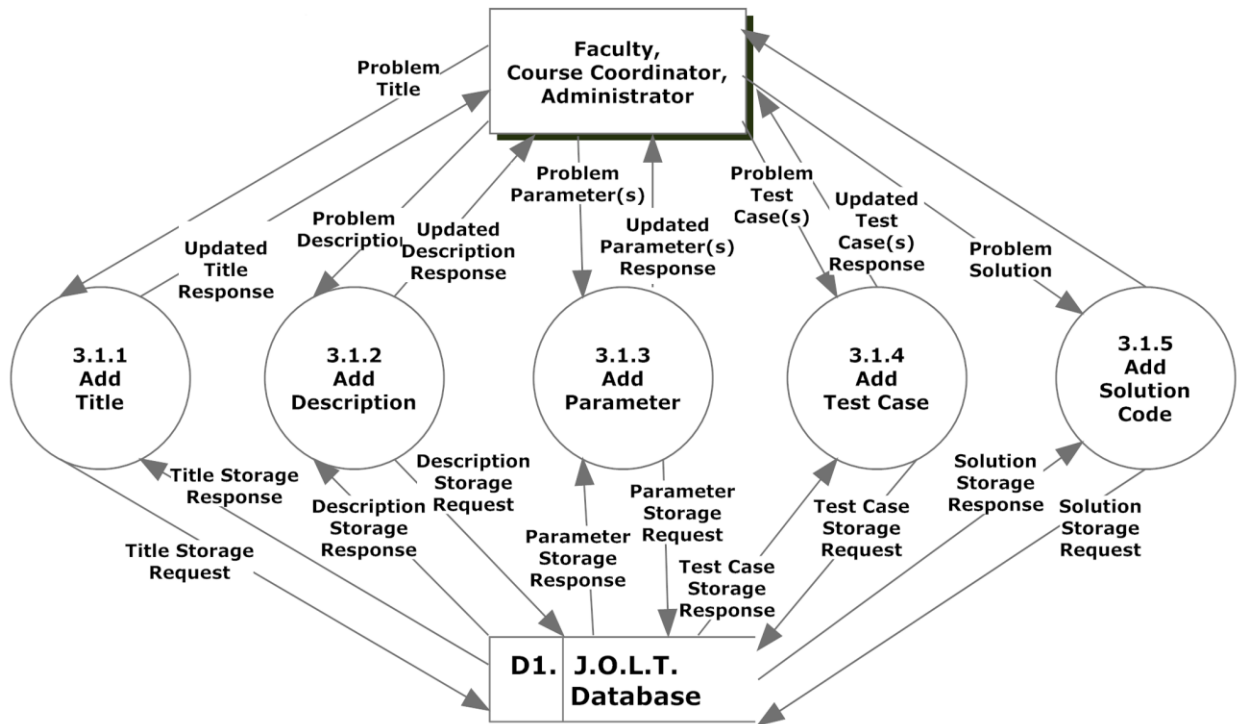## *3.3   Process 3, Level 1Manage Problems and Problem Sets*

This diagram represents the high level functions involved in managing problems and problem sets.
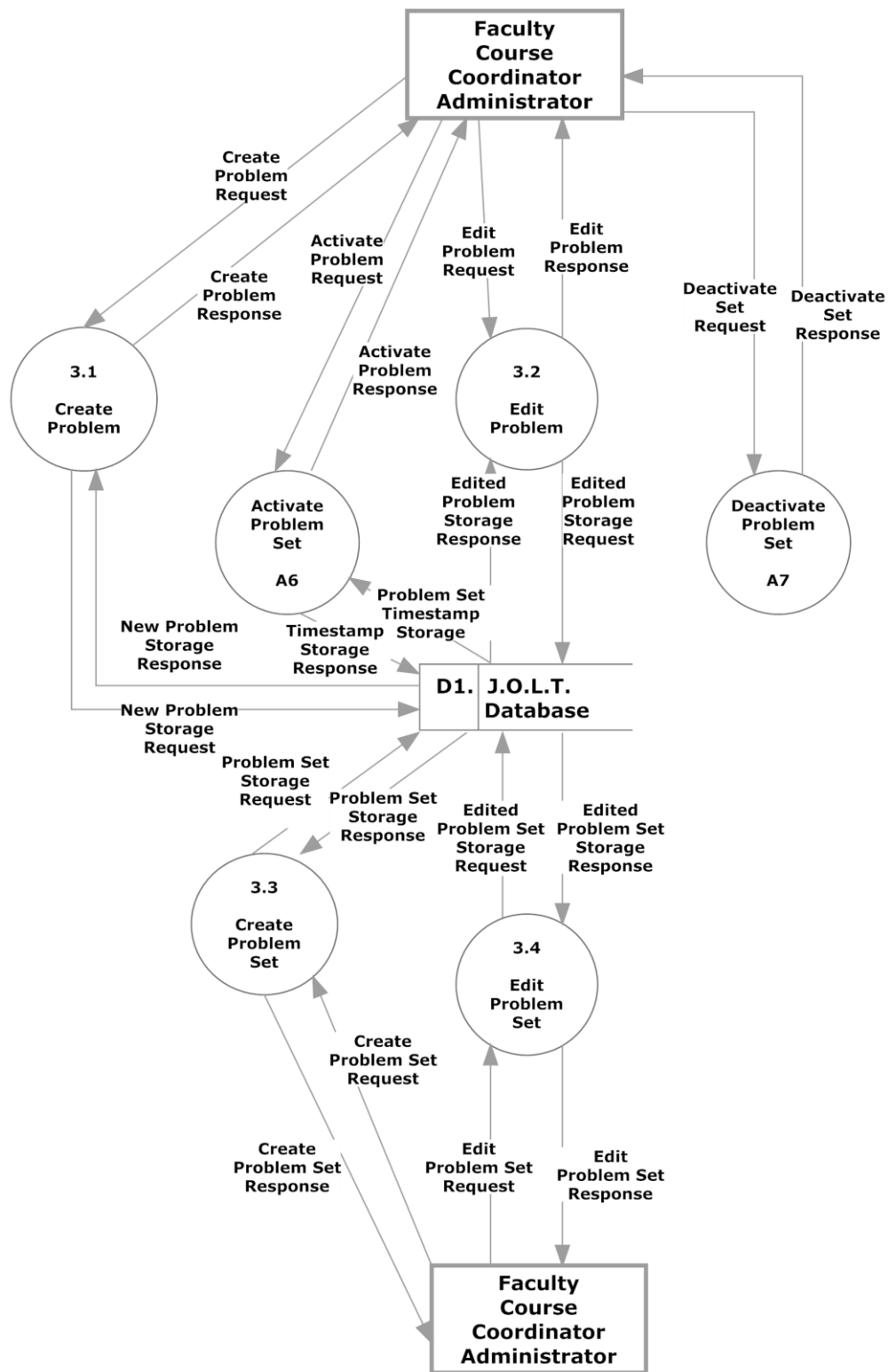
3.3.1 Process 3.1 Level 2 Create Problem

This diagram represents a breakdown of how a problem is created by a Faculty, Course Coordinator, or Administrator user.

3.3.2 Process 3.2 Level 2 Edit Problem

This diagram represents a breakdown of how a problem is edited by a Faculty, Course Coordinator, or Administrator user.
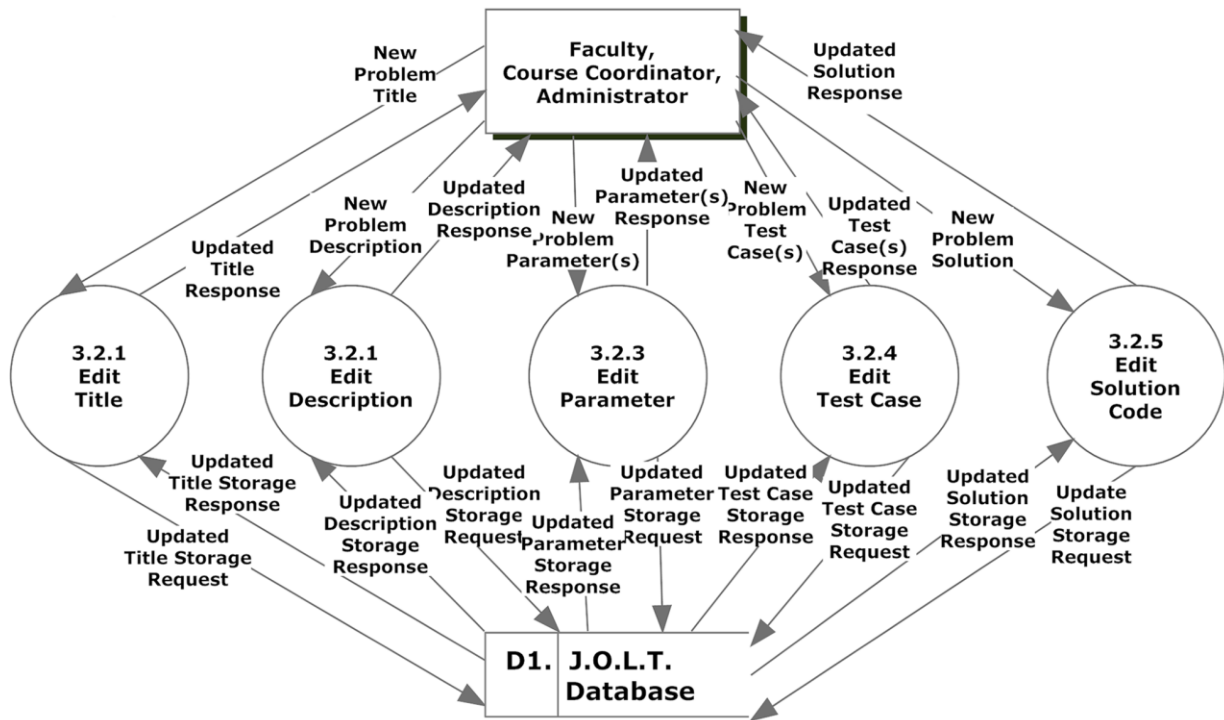
3.3.3 Process 3.3 Level 2 Create Problem Set

This diagram represents a breakdown of how a problem set is created by a Faculty, Course Coordinator, or Administrator user.
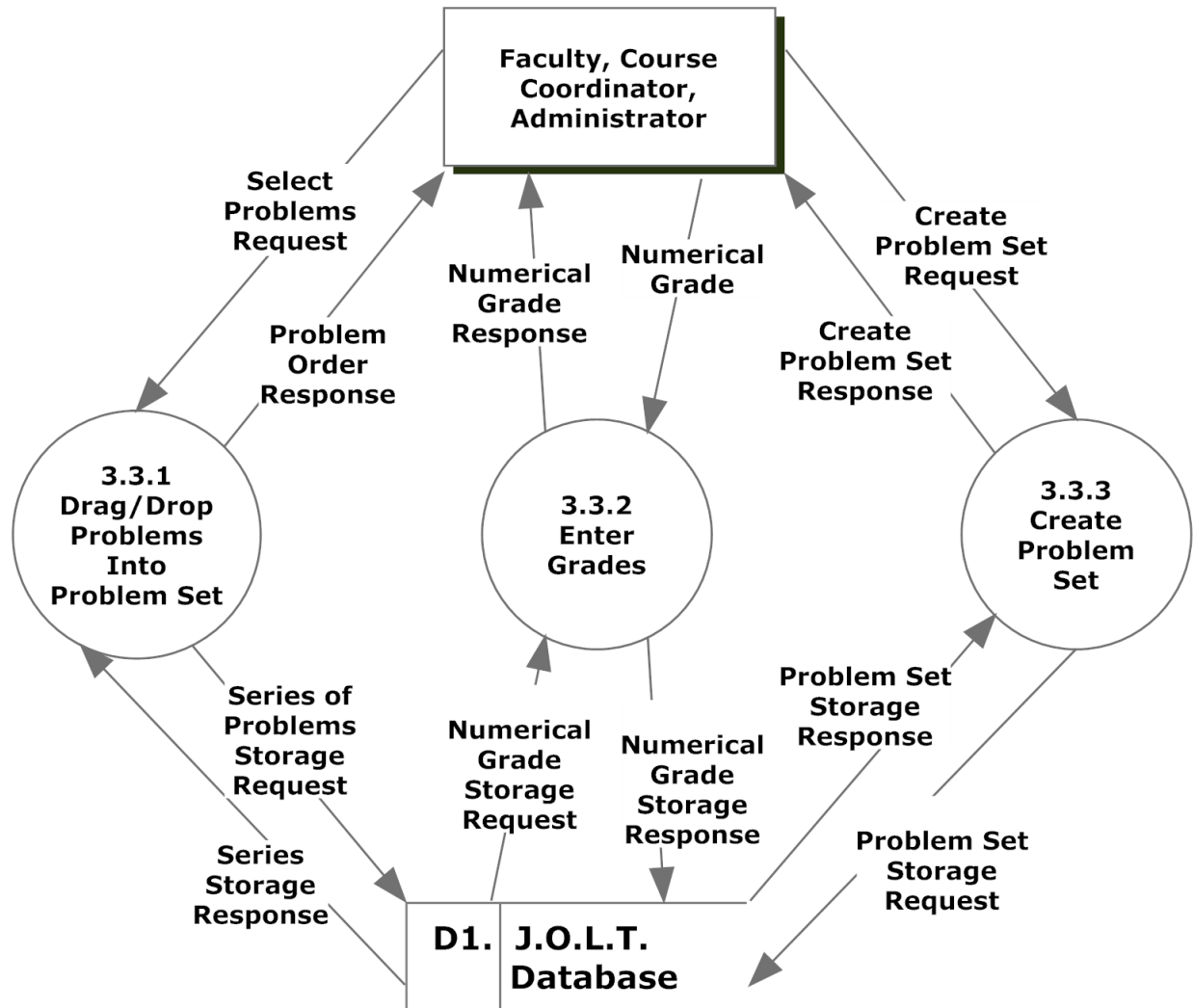
3.3.4 Process 3.4 Level 2 Edit Problem Set

This diagram represents a breakdown of how a problem set is edited by a Faculty, Course Coordinator, or Administrator user.
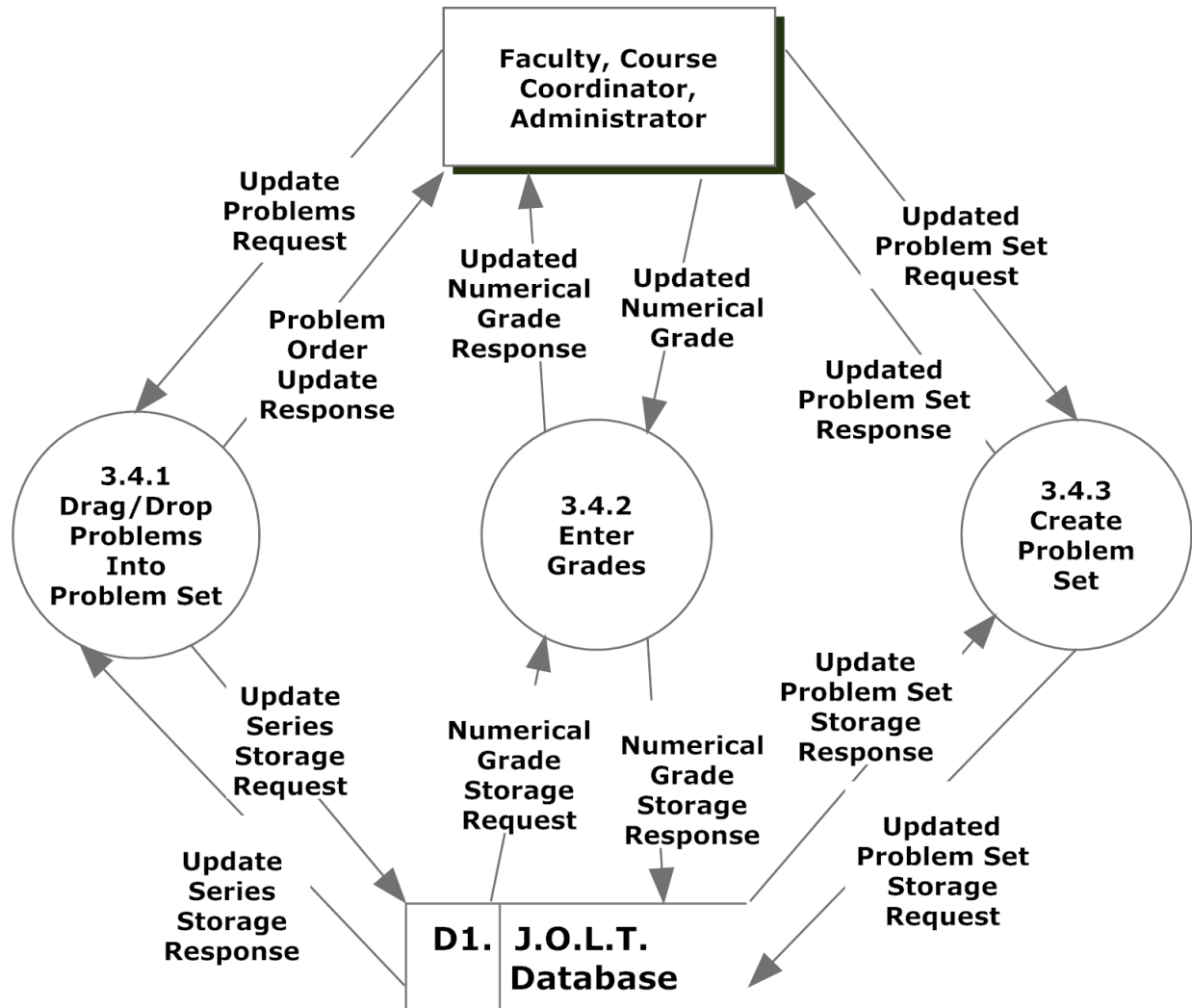
3.4 *Process 4 Level 1 Manage Courses*

This diagram represents a breakdown of how courses are managed by Faculty, Course Coordinator, or Administrator users.

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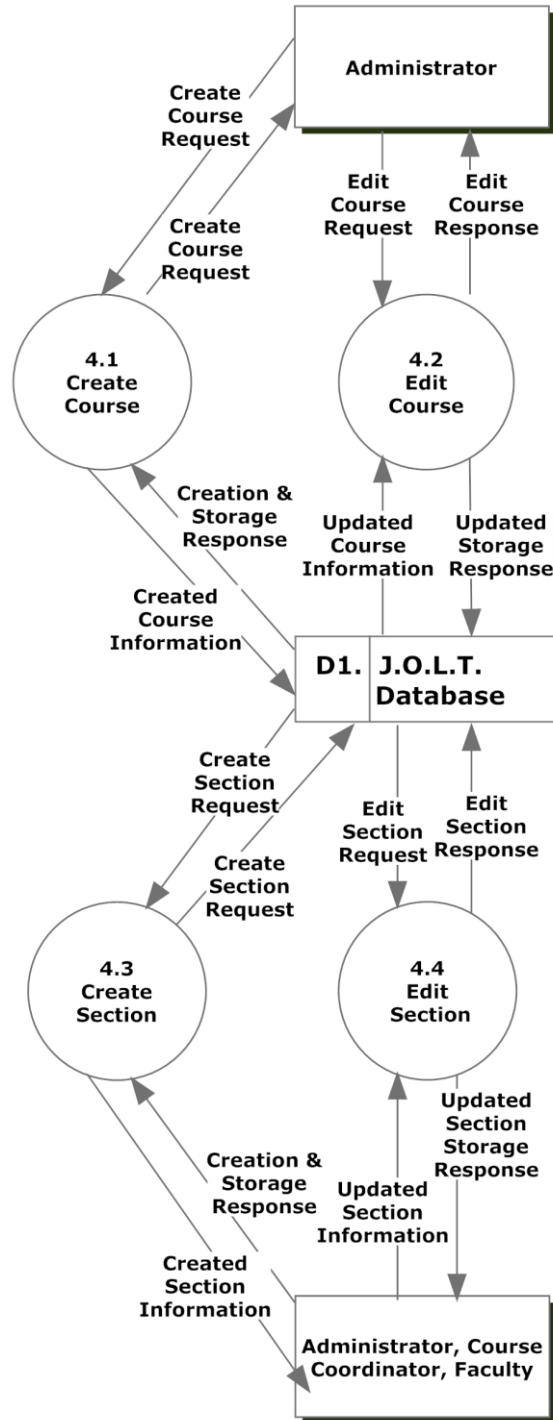
3.4.1 Process 4.1 Level 2 Create Course

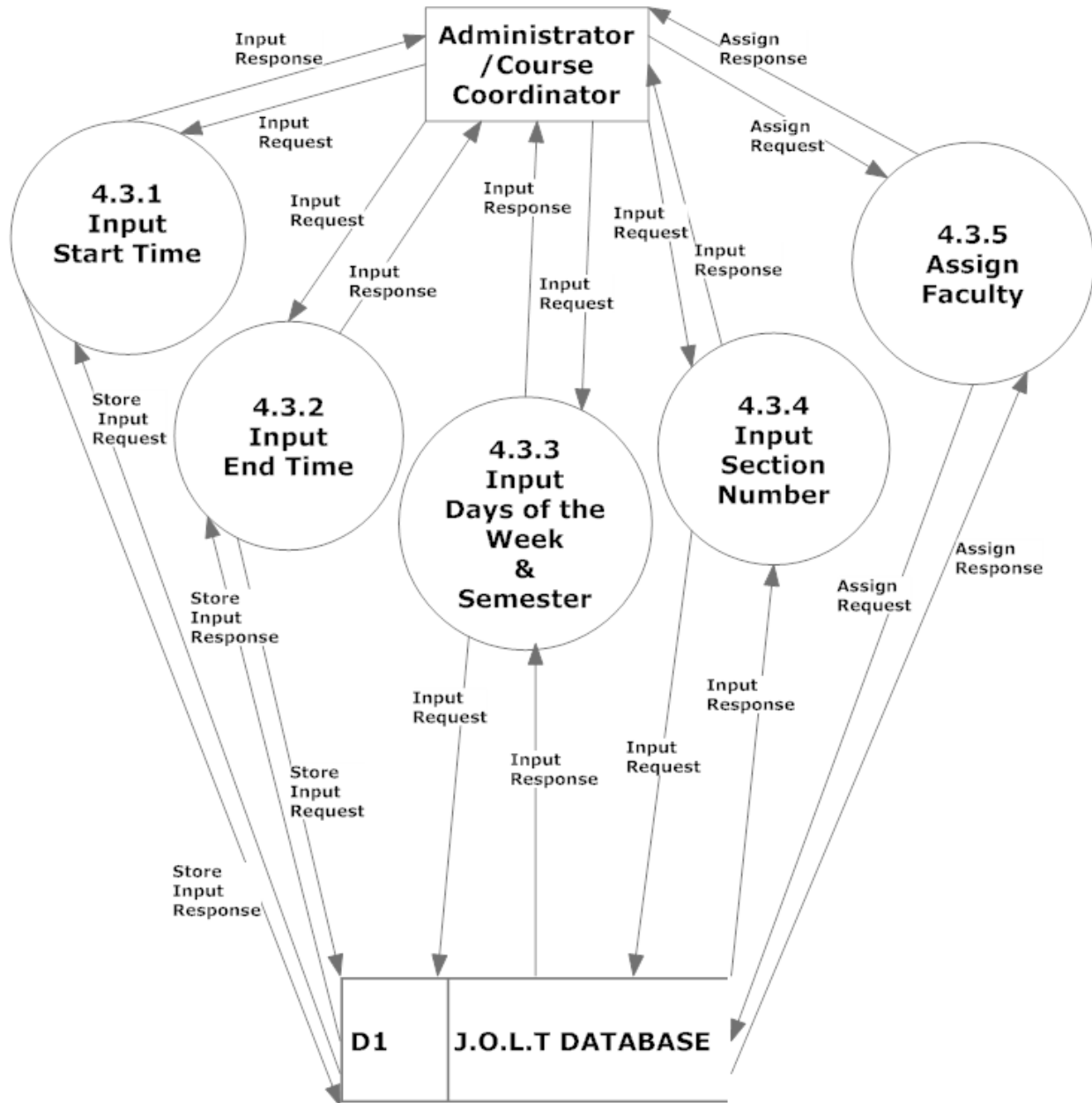This diagram represents a breakdown of how course is by an Administrator user.
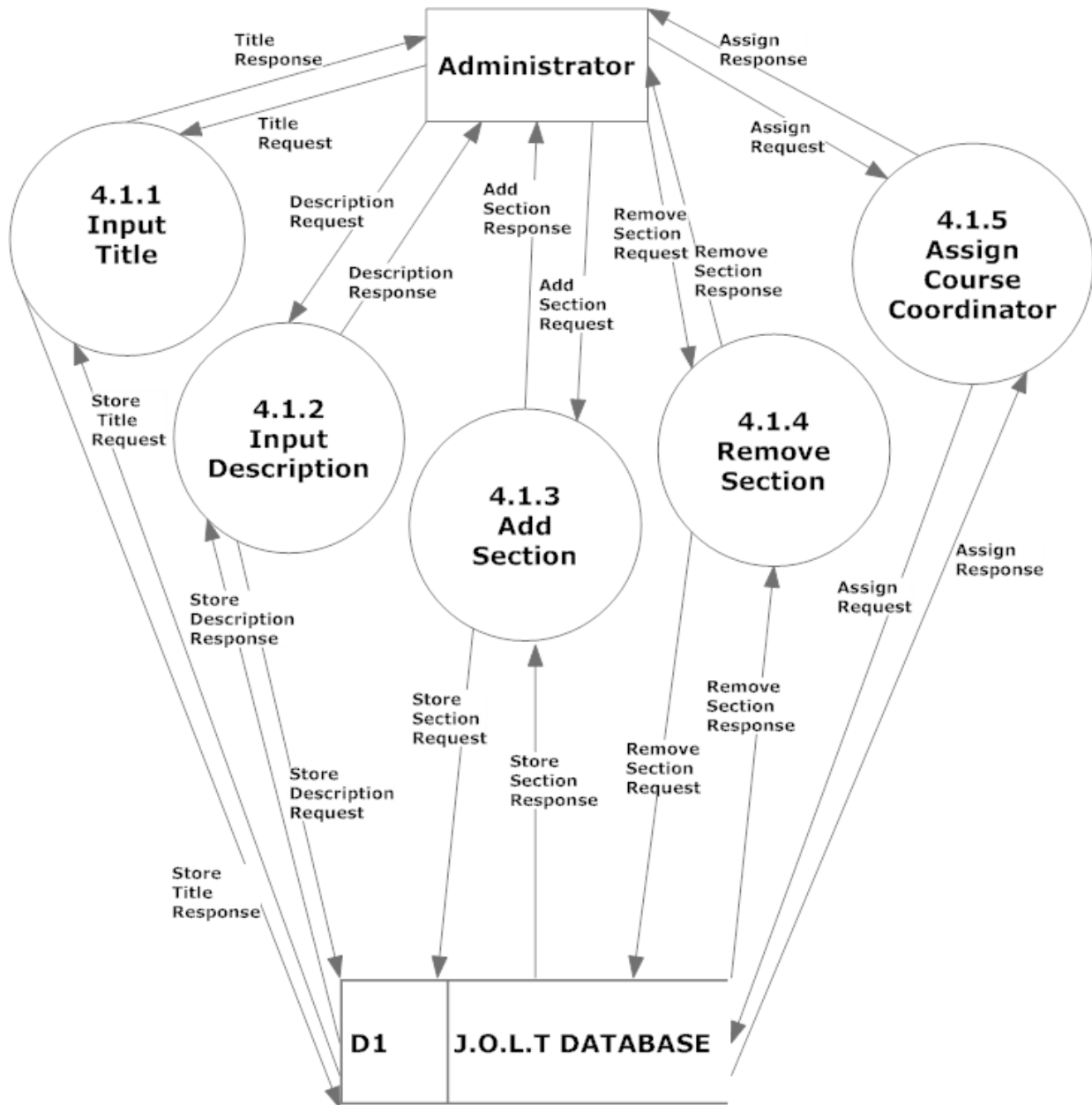
3.4.2 Process 4.2 Level 2 Edit Course

This diagram represents a breakdown of how a course is edited by an Administrator user.
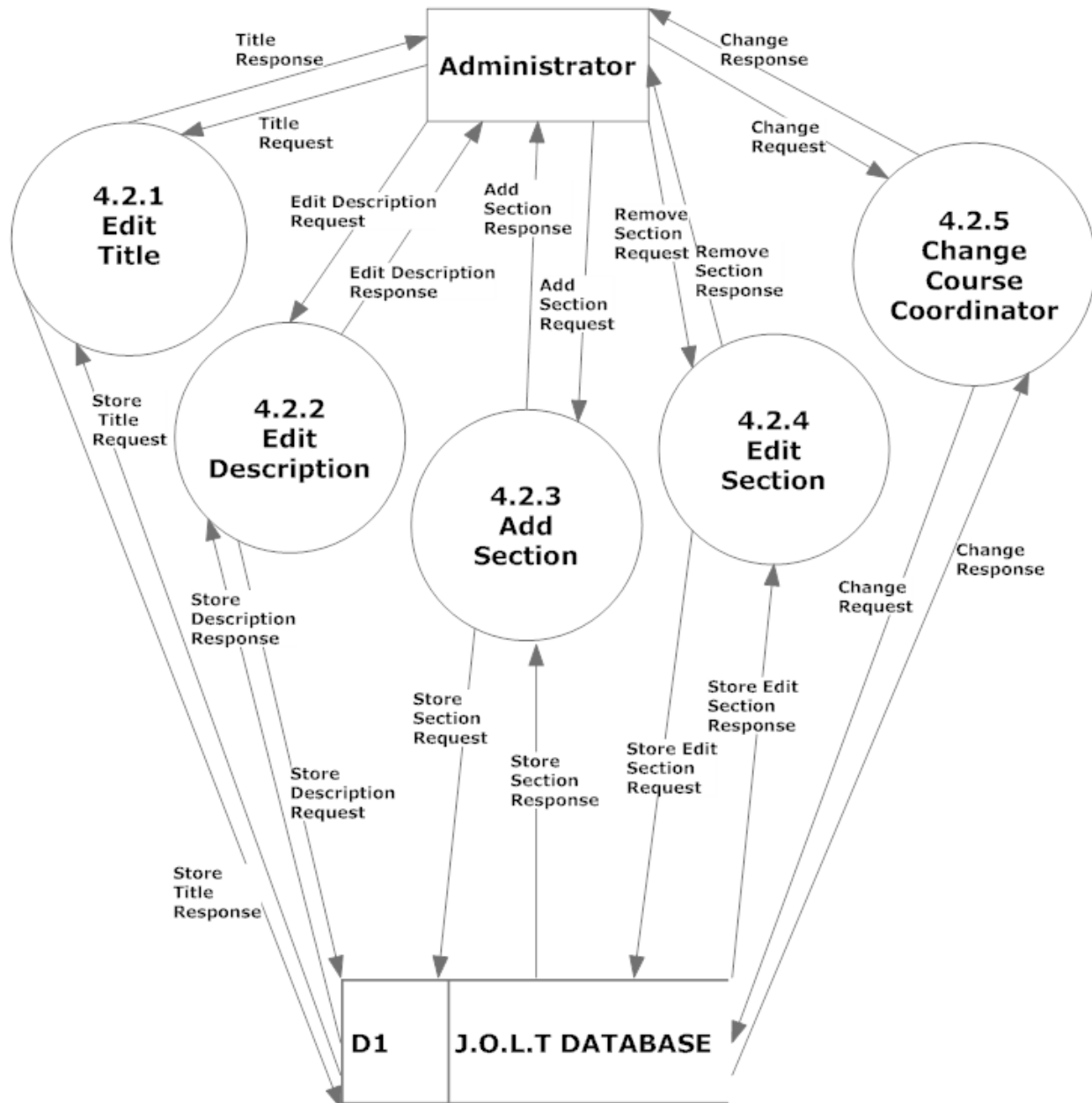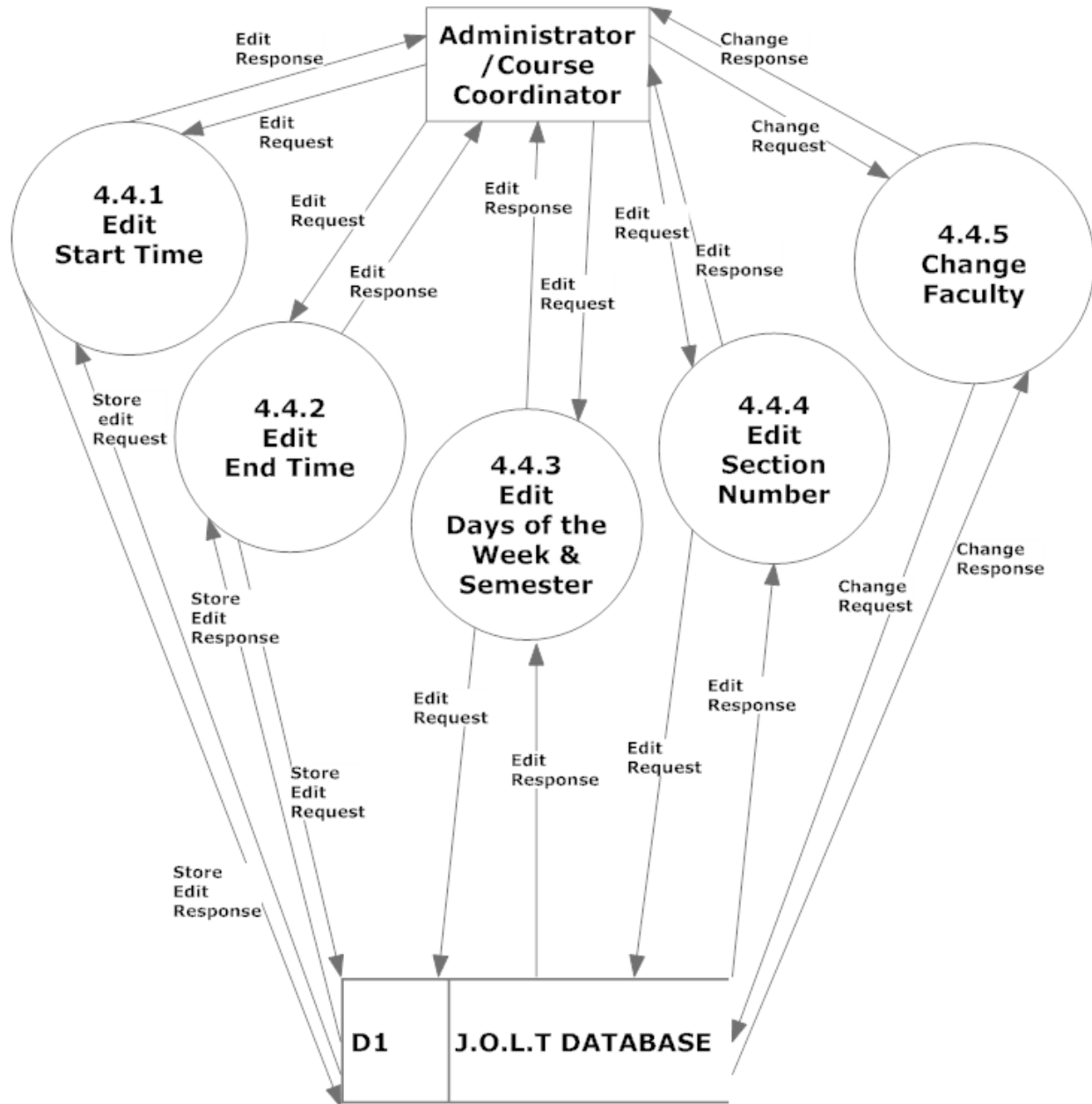
3.4.3 Process 4.3 Level 2 Create Section

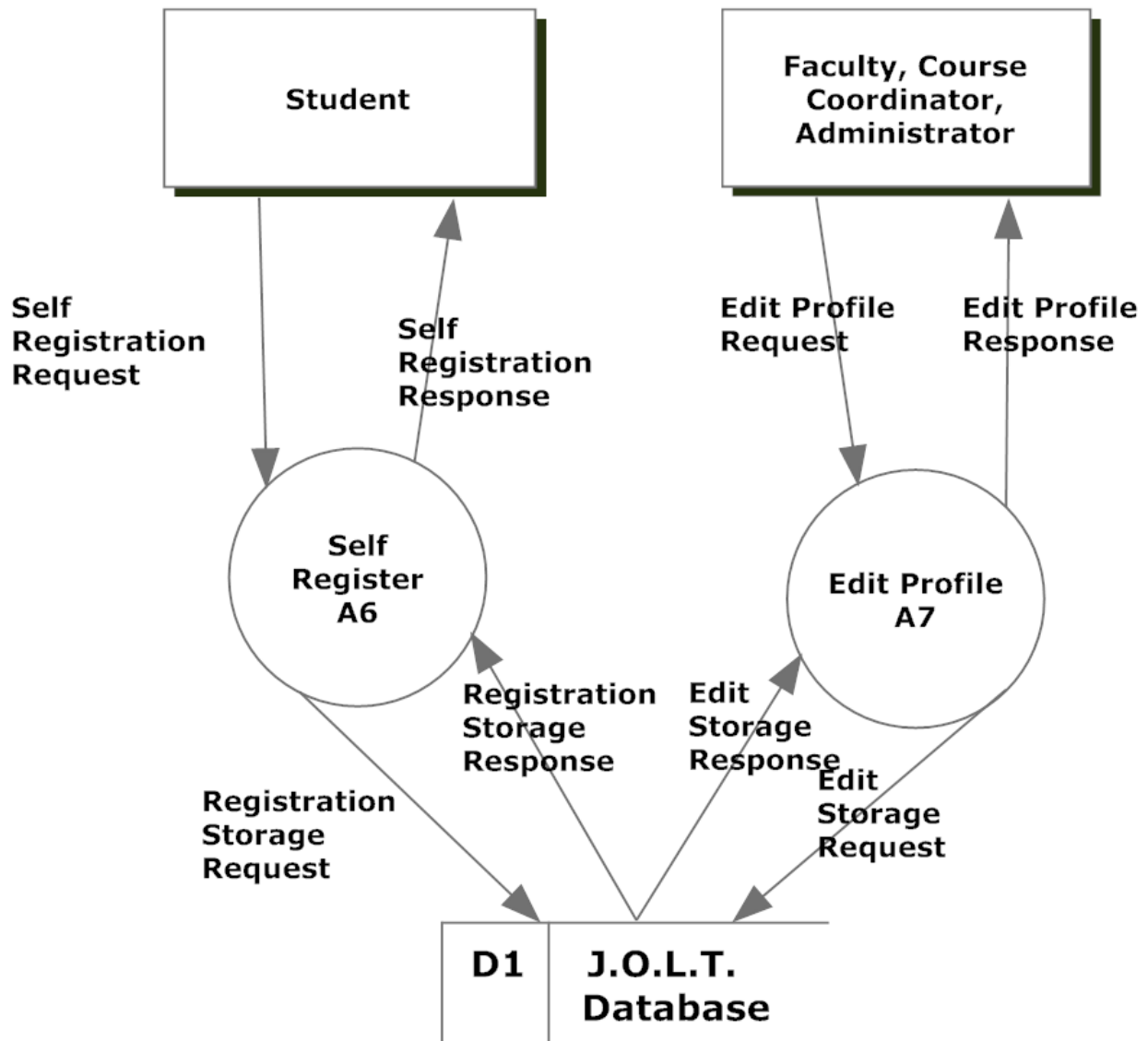This diagram represents a breakdown of how a section is created by an Administrator and Course Coordinator user.

3.4.4 Process 4.4 Level 2 Edit Section

This diagram represents a breakdown of how a section is edited by an Administrator and Course Coordinator user.

3.5 Process 5 Level 1 Registration

This diagram represents a breakdown of how students register with the system.

The containing processes are represented as Activity Diagrams, per request of the client. Please reference Diagrams "A6" and "A7" in the Activity Diagram Document.

3.6 Process 6 Level 1 Authentication

This diagram represents a breakdown of how authentication is handled within JOLT.

This process is represented as an Activity Diagram, per request of the client. Please reference Diagram "A8" in the Activity Diagram Document.
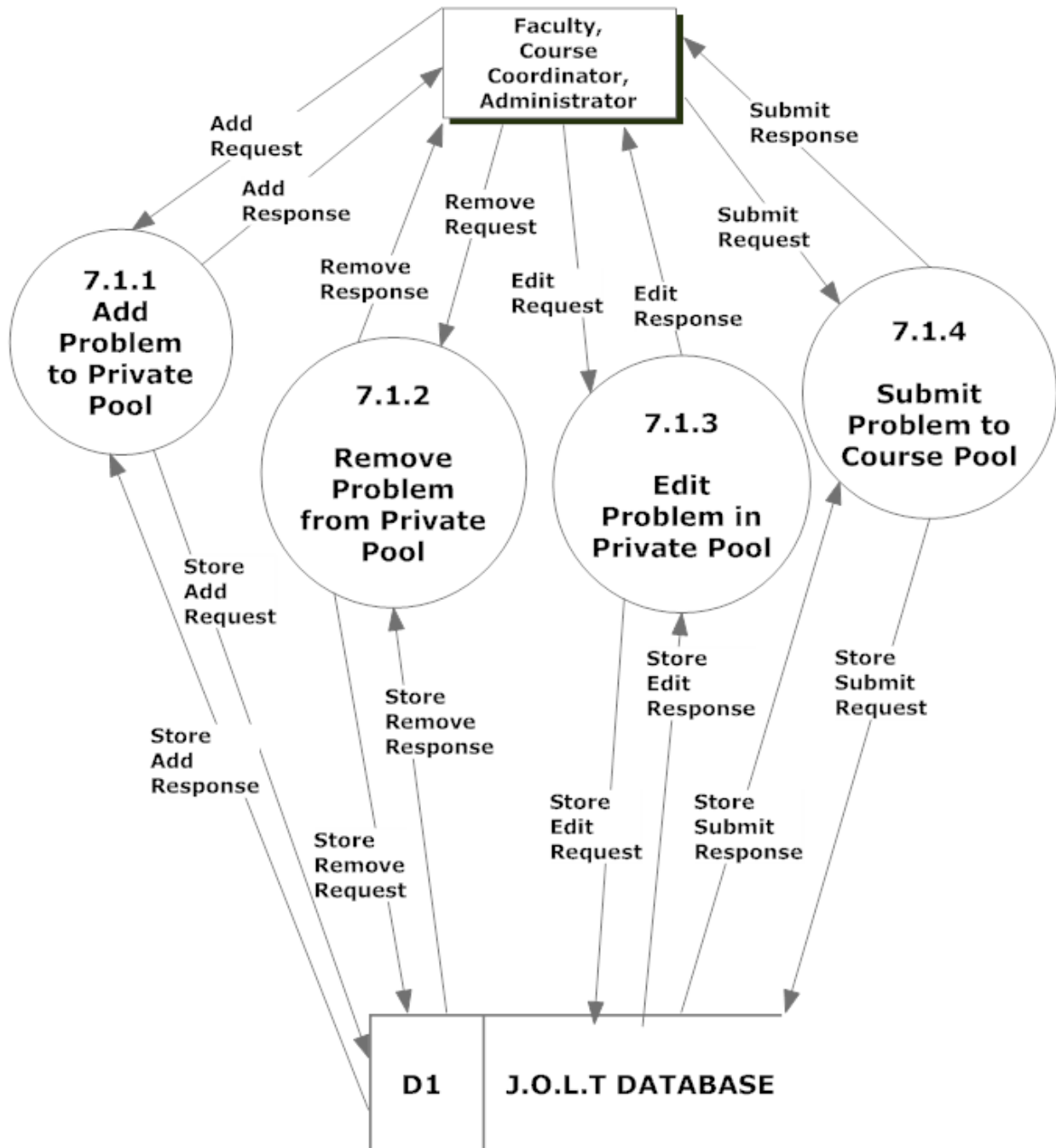
3.7 Process 7 Level 1 Manage Pools

This diagram represents a breakdown of how pools are managed with JOLT for Faculty, Course Coordinators, and the Administrator.
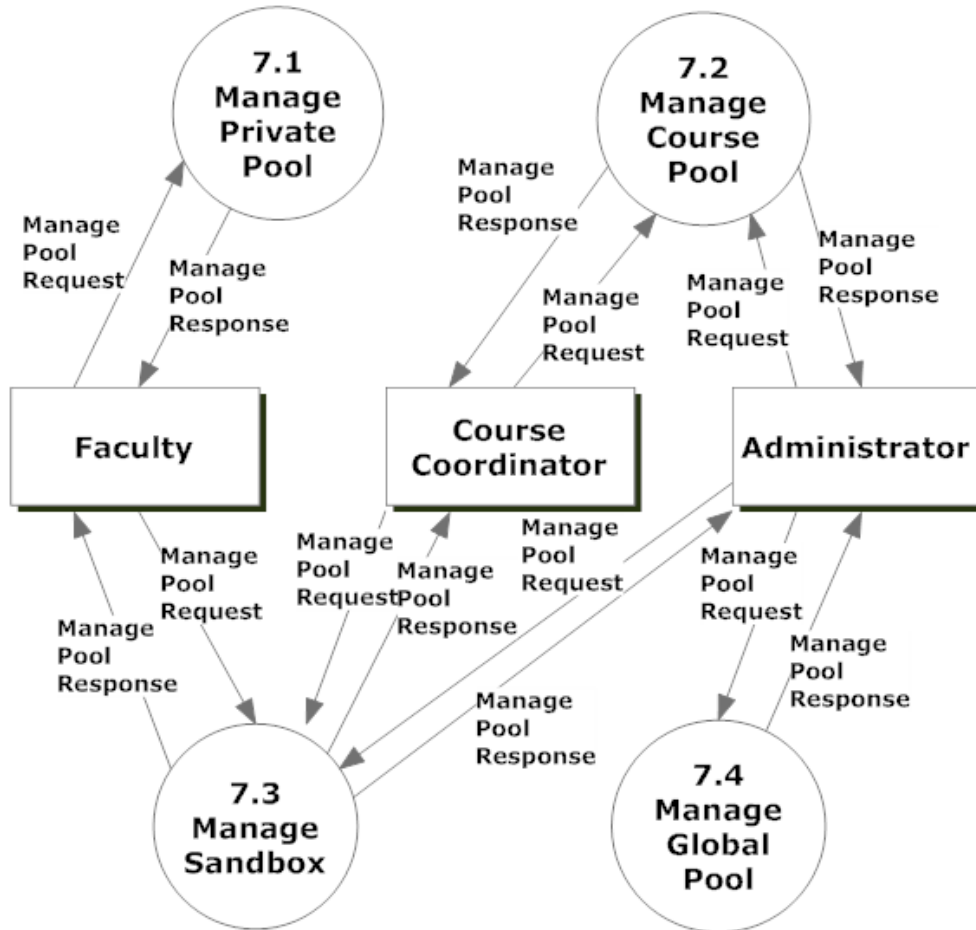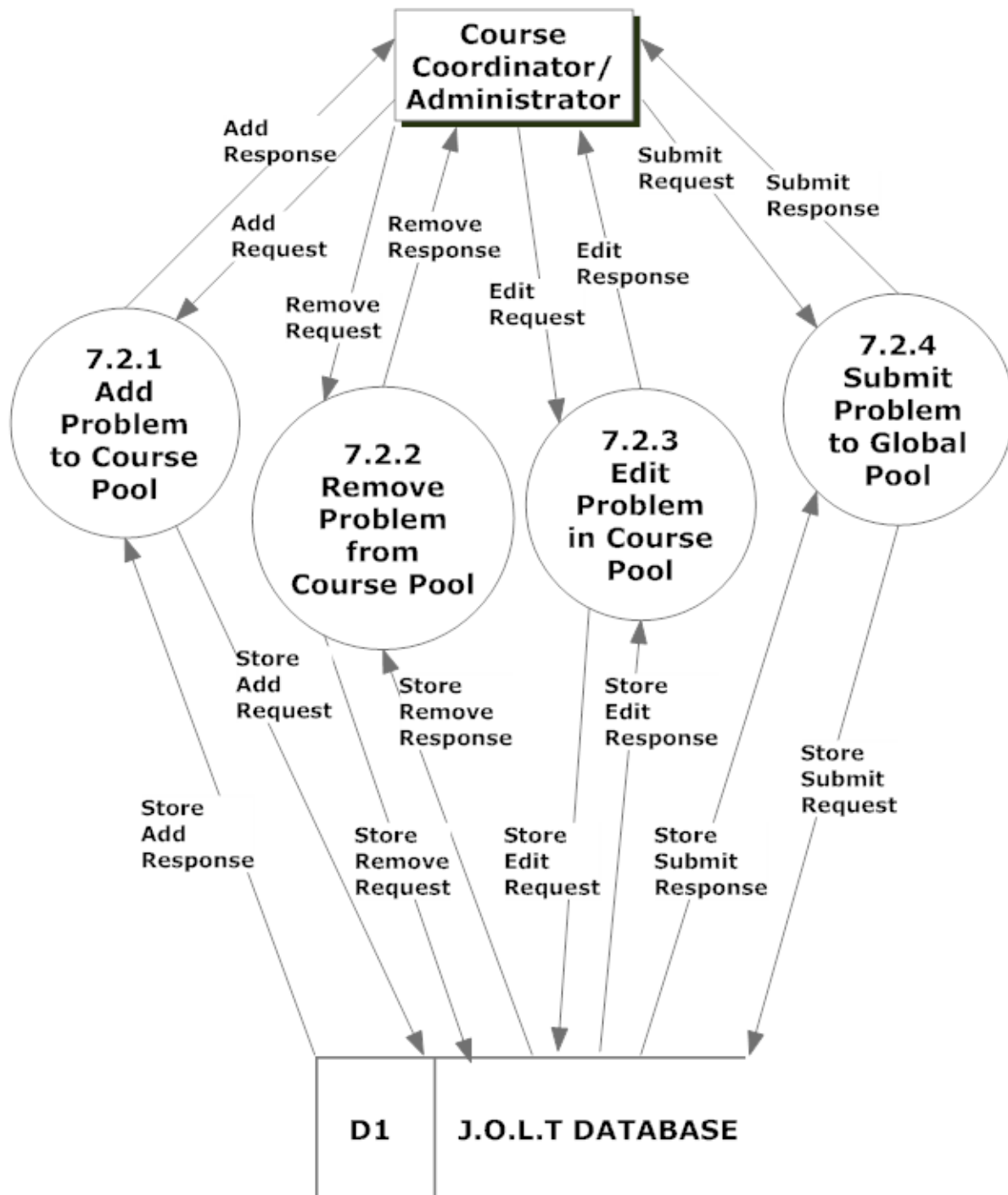
3.7.1 Process 7.1 Level 2 Manage Private Pool

This diagram represents a breakdown of how a private pool is managed by a Faculty, Course Coordinator, or Administrator user.
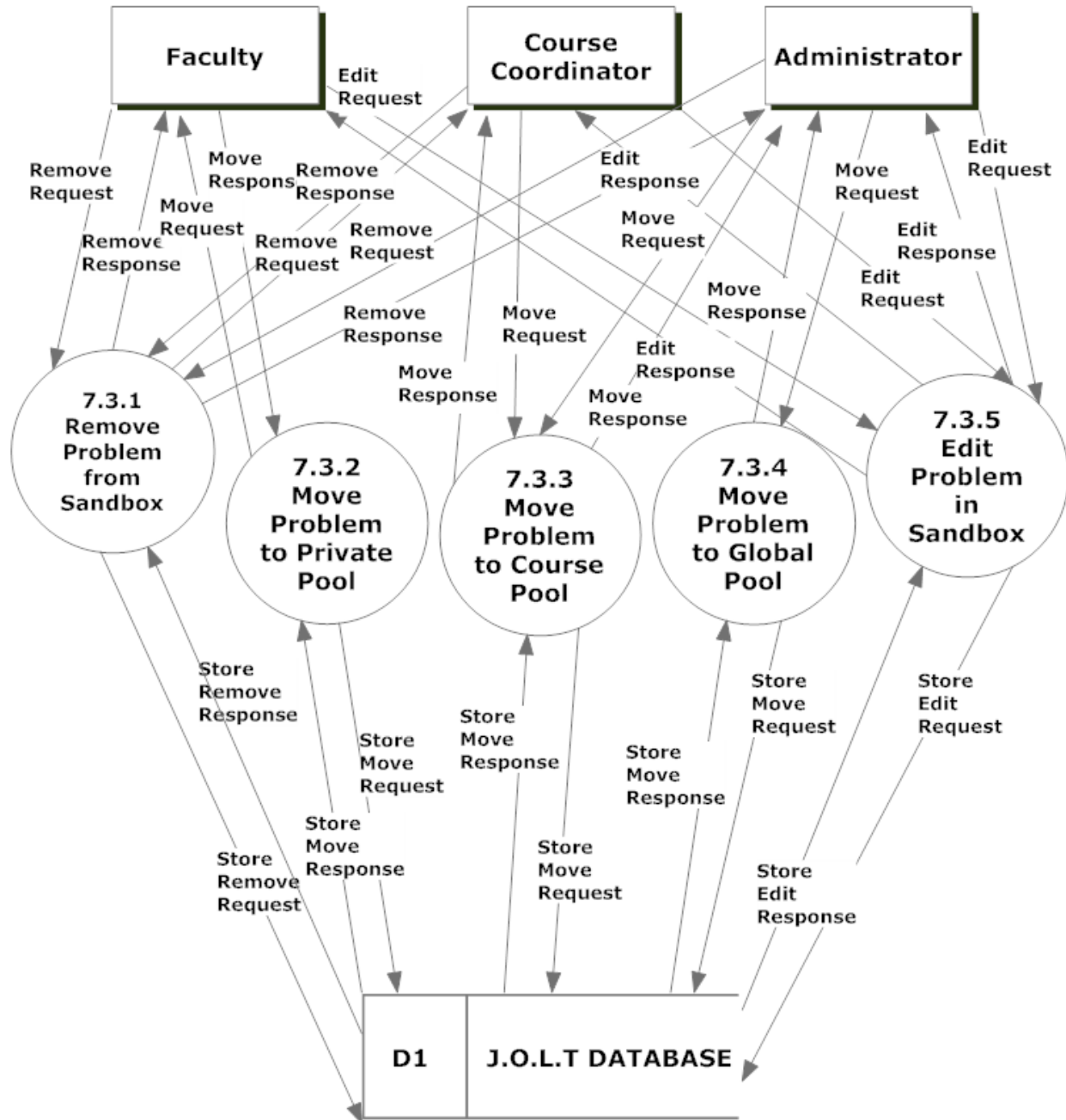
3.7.2 Process 7.2 Level 2 Manage Course Pool

This diagram represents a breakdown of how a course pool is managed by a Course Coordinator, or Administrator user.
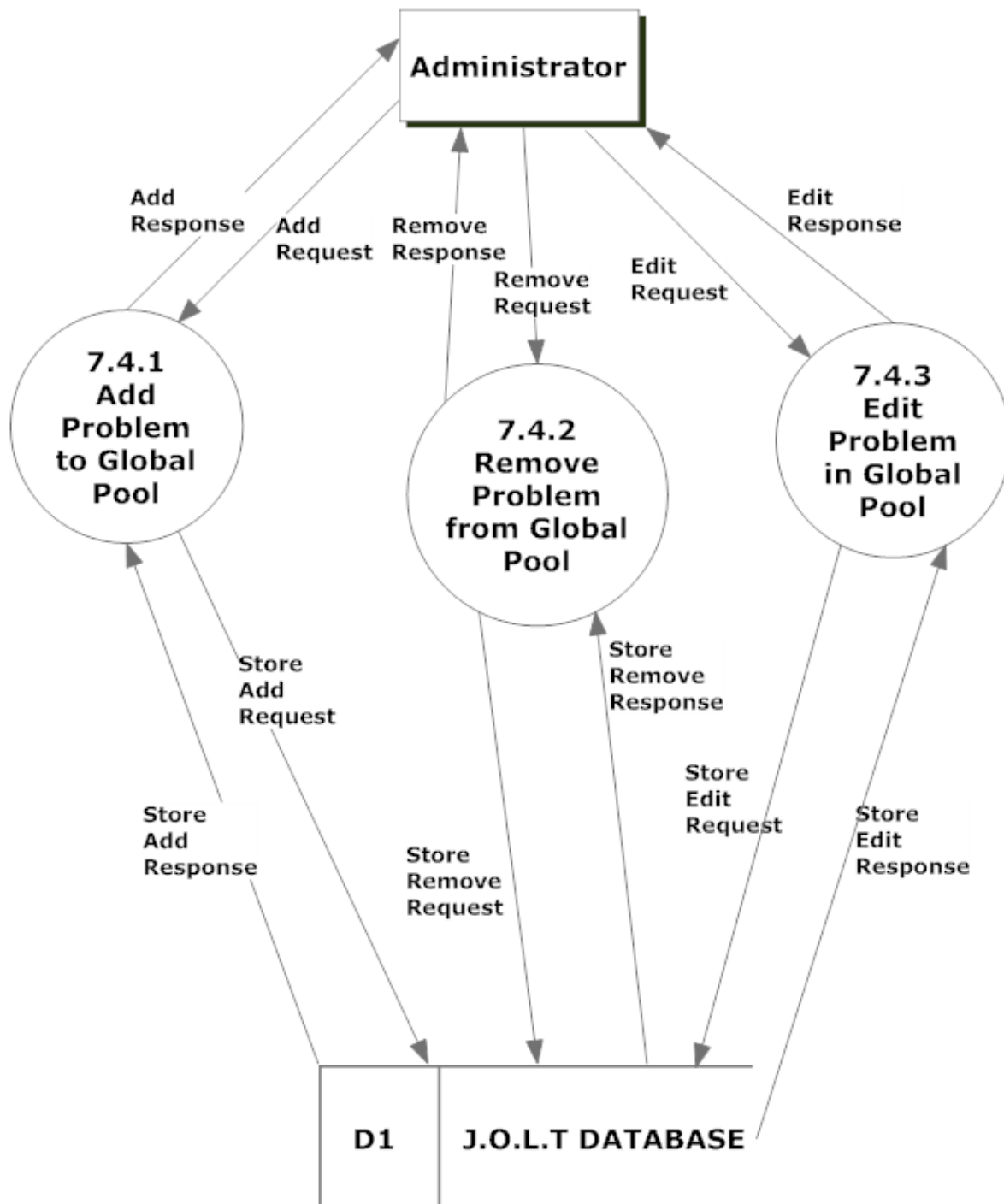
3.7.3 Process 7.3 Level 2 Manage Sandbox

This diagram represents a breakdown of how a sandbox is managed by a Faculty, Course Coordinator, or Administrator user.

3.7.4 Process 7.4 Level 2 Manage Global Pool

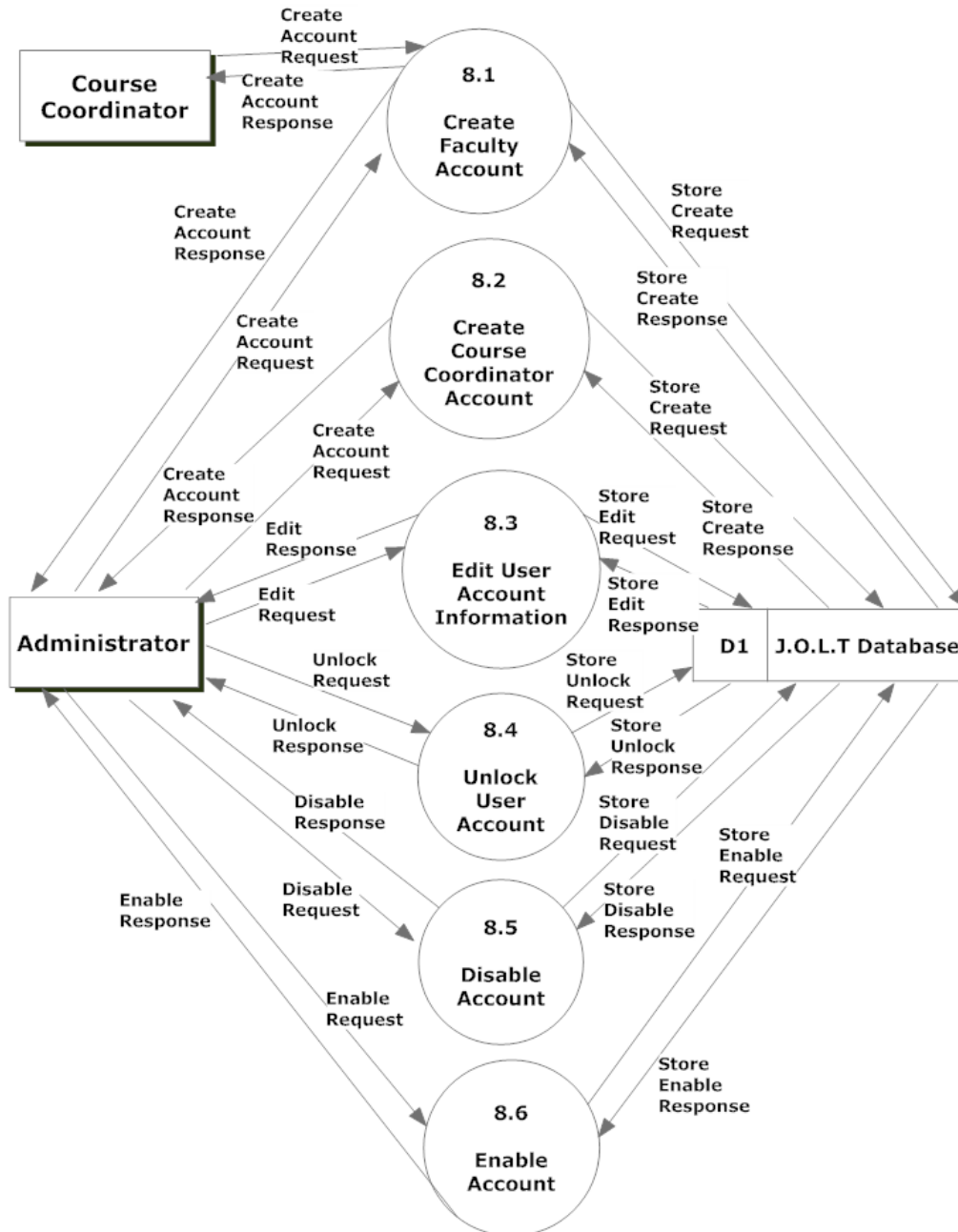This diagram represents a breakdown of how the Global Pool is managed by the Administrator user.

3.8 Process 8 Level 1 Manage Users

This diagram represents a breakdown of how users are managed by Course Coordinator, or Administrator users.

Please note that the details for Unlocking, enabling, and disabling accounts have not been established, so those processes (8.4, 8.5, 8.6, respectively) have not been broken down.
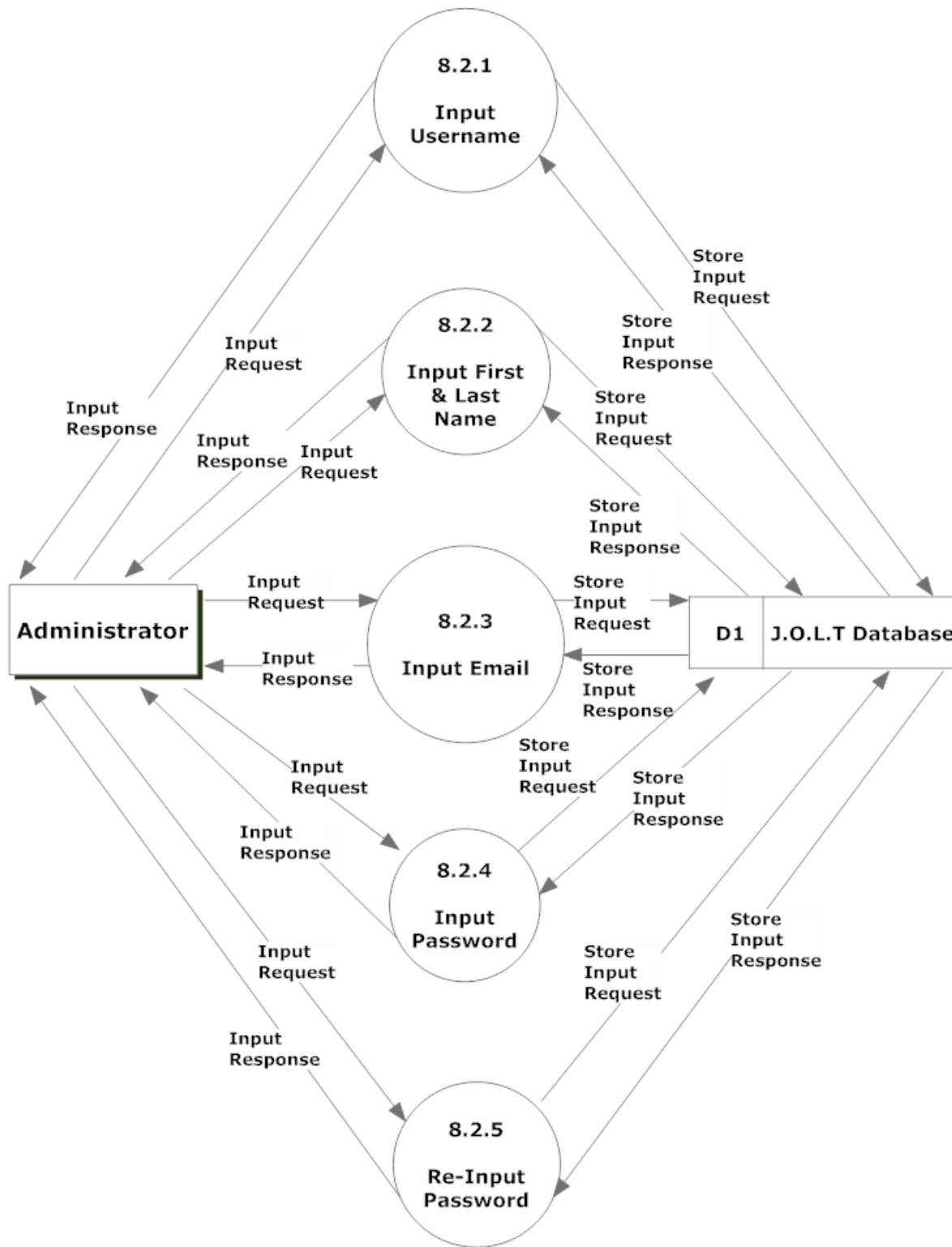
3.8.1 Process 8.1 Level 2 Create Faculty Account

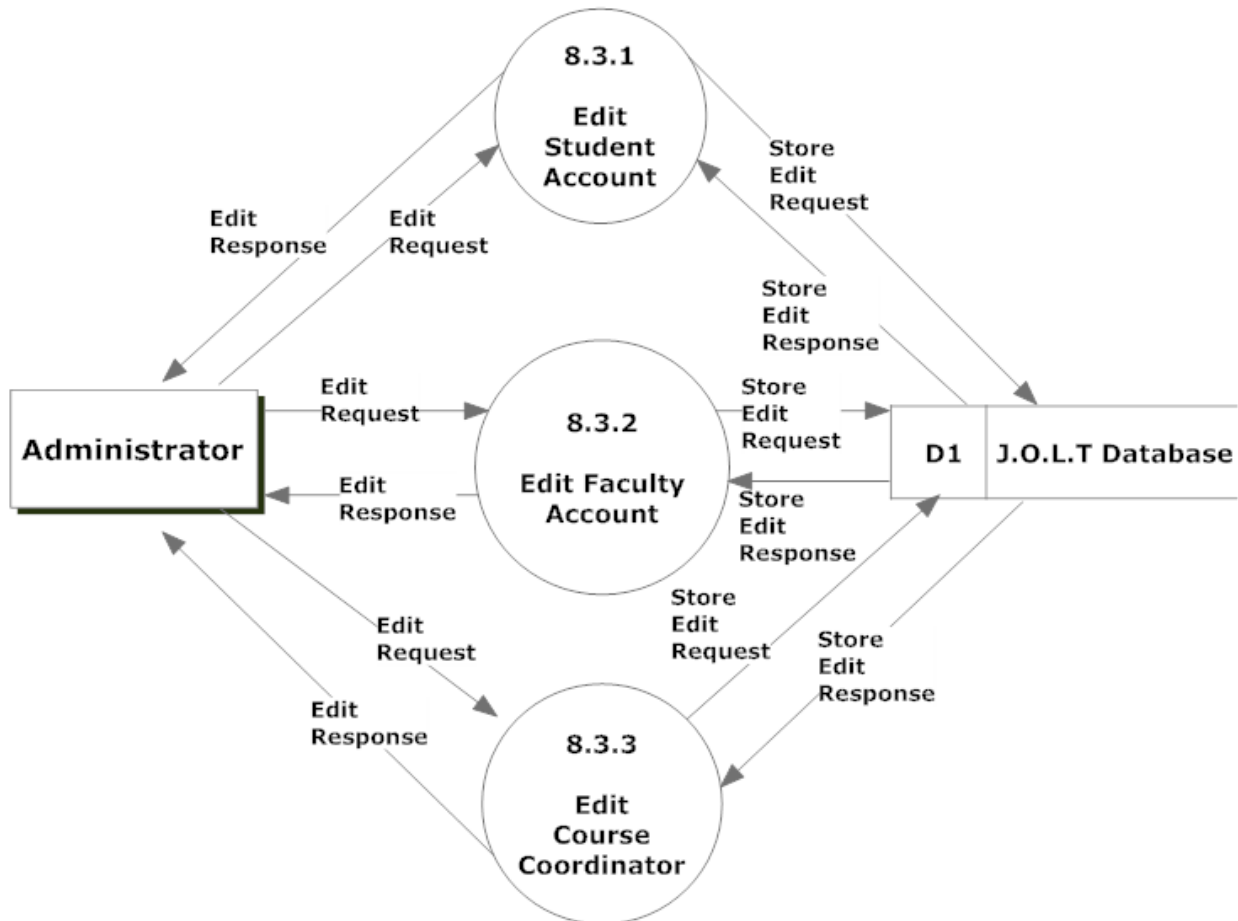This diagram represents a breakdown of how the Faculty Accounts are created.
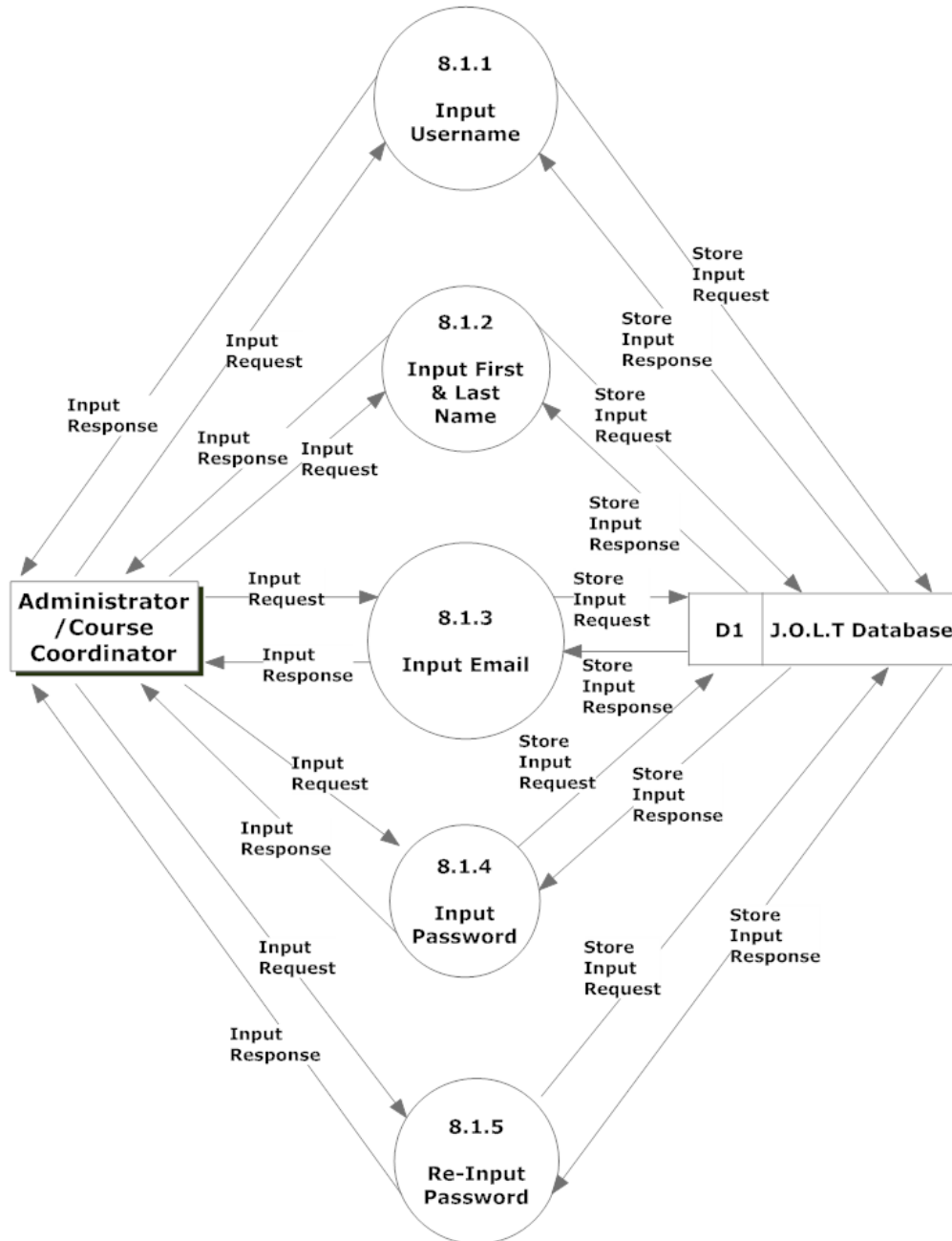
3.8.2 Process 8.2 Level 2 Create Course Coordinator Account

This diagram represents a breakdown of how the Course Coordinator accounts are created.
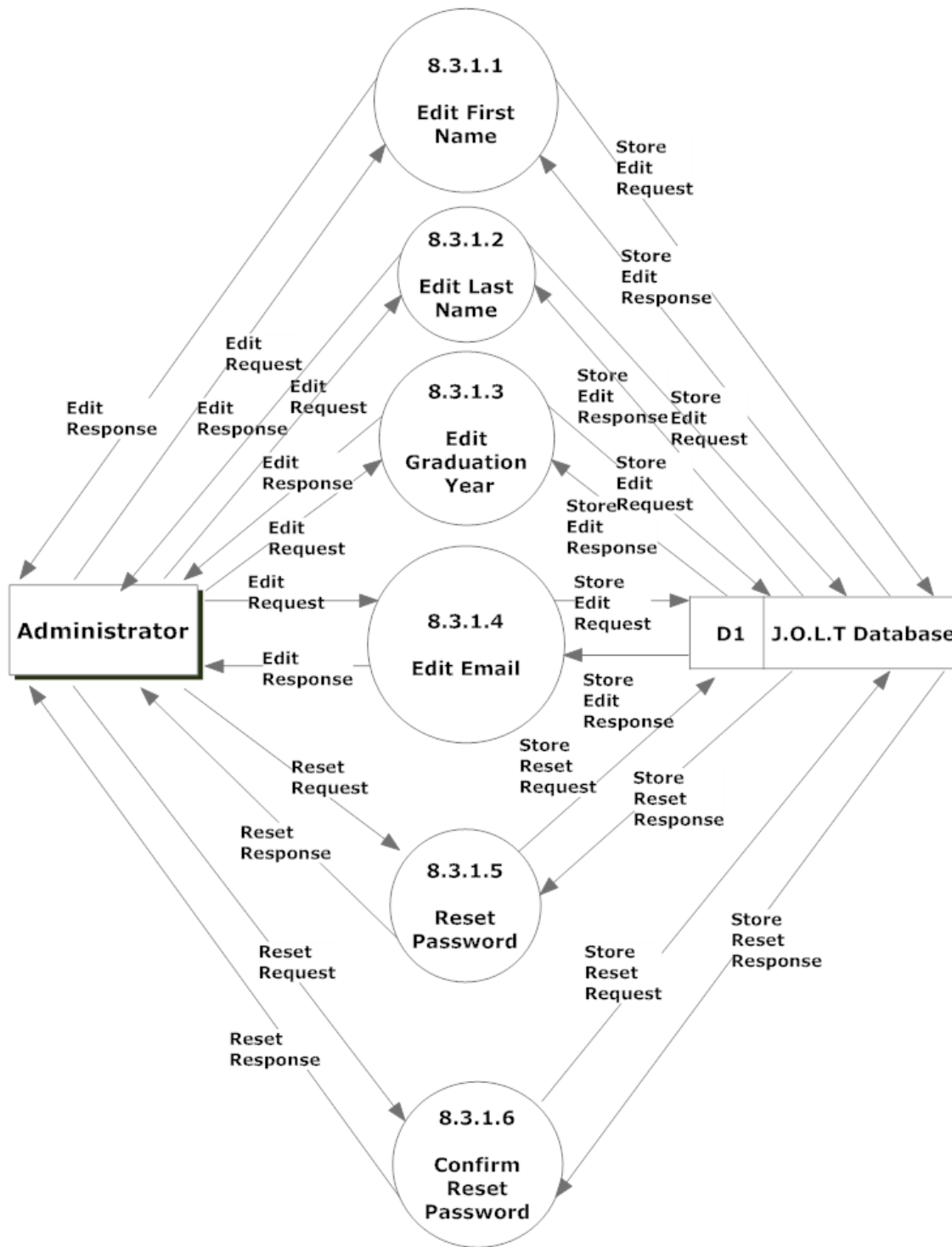
3.8.3 Process 8.3 Level 2 Edit User Account Information

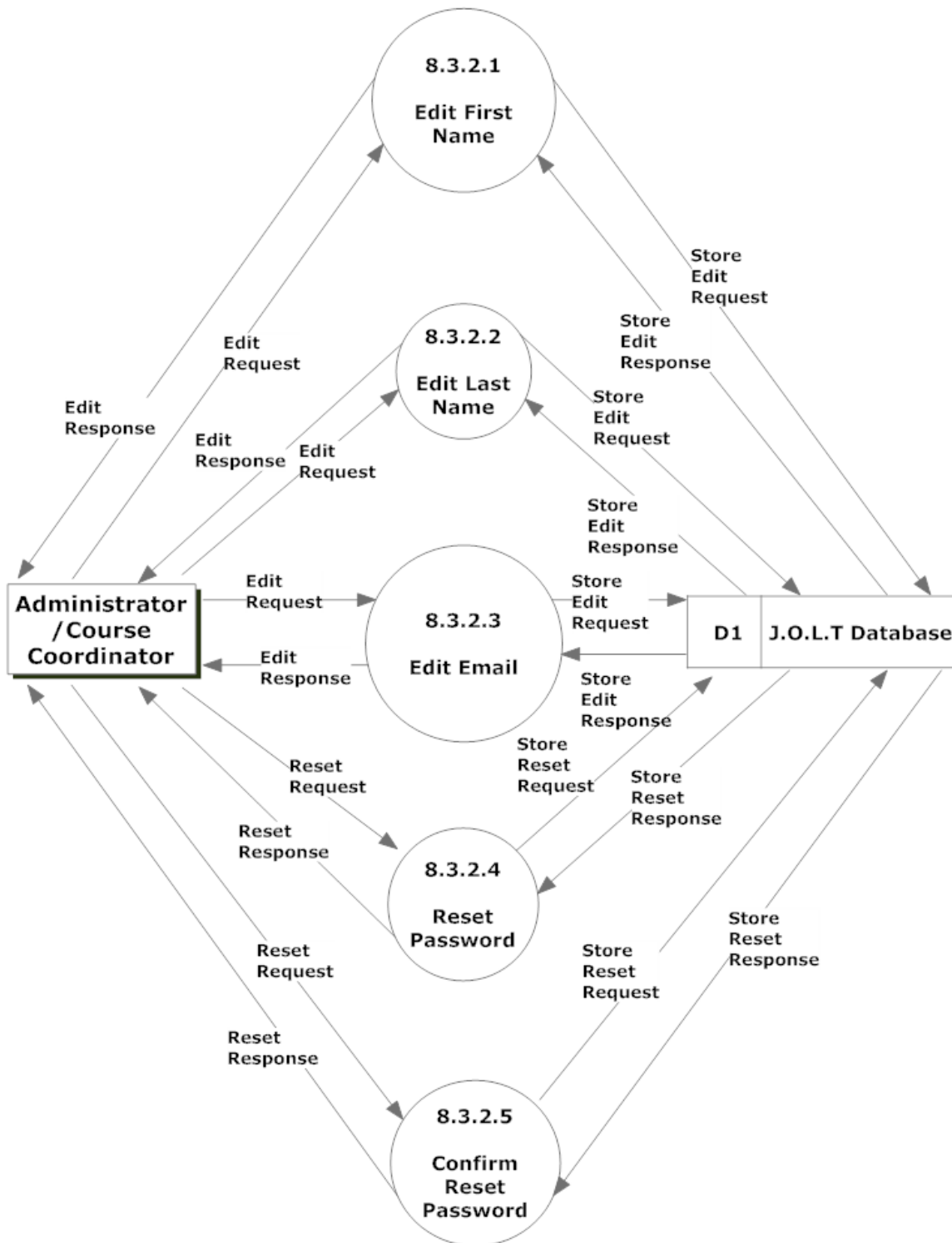This diagram represents a breakdown of how user accounts are edited.

3.8.4 Process 8.3.1 Level 3 Edit Student Account

This diagram represents a breakdown of how student accounts are edited.

3.8.5 Process 8.3.2 Level 3 Edit Faculty Account

This diagram represents a breakdown of how faculty accounts are edited.

3.8.6 Process 8.3.3 Level 3 Edit Course Coordinator Account

This diagram represents a breakdown of how course coordinator accounts are edited.