

A.I.S. Class 12: Outline

- REAL Modeling Revisited
- Problem 9 Solution
- Group Work: Problem 10
- CLASSROOM PRESENTATION 1

Business Processes and Events

- We distinguish business events forming parts of business processes from information processes
- Information processes
 - * record data about business events
 - * maintain data
 - * report useful information to decision makers

Business Processes and Events

■ Business events

- * selecting a supplier
- * transporting and distributing goods
- * providing services
- * receiving payment

■ Information processes

- * recording customer orders
- * issuing invoices
- * adding new suppliers to master files
- * printing customer statements

Business Processes and Events

- Business processes may be linked in two ways
 - * by sharing common resources
 - * by an event in one process triggering an event in another process
- Decision processes may trigger
 - * Business events
 - * Information processes

Event-Oriented Modeling

- Applies EER modeling specifically to accounting information systems
- Provides a way of identifying the relevant entities
- The entities (or objects) of interest are the business (economic and non-economic, core and support) events, and the resources and agents involved

REAL Modeling Steps

- 1 Identify the significant business events
- 2 Identify the related resources (and locations)
- 3 Identify the related internal and external agents
- 4 Identify relationships between entities
- 5 Specify the optionalities and cardinalities of the relationships
- 6 Identify the attributes of the REA entities
- 7 Identify the information processes
-
- 8 Design the data repository structure
-
- 9 Implement the design

REAL Modeling

- We may sometimes omit the names of the relationships when our understanding would not thereby be impaired
- We may show optionalities and cardinalities in the alternative form (*optionality, cardinality*) e.g. (0,1) (0,*) (1,1) (1,*)
- We will use lists (data dictionaries) instead of balloons for attributes of entities
- Show primary keys underlined and foreign keys in []

REAL Modeling

■ N.B:

- * Official format:

- ◆ optionalities, cardinalities and attributes

- * Textbook format:

- ◆ omit attributes

- * Simplified format:

- ◆ omit attributes, omit names of relations, use (0,*) etc. for optionalities and cardinalities

REAL Modeling

■ Unified Modeling Language (UML)

- * Class diagrams are similar in some ways to our simplified format

- ◆ No naming diamonds for relationships (associations)

- ◆ Cardinalities (multiplicities)

→ 0 ... 1 0 ... * 1 ... 1 1 ... *

- ◆ Attributes are internal to objects or omitted

- ◆ *Methods are also included in objects*

REAL Modeling

■ Unified Modeling Language (UML)

* *Associations*

- ◆ N-ary associations
- ◆ Aggregation
- ◆ Composition
- ◆ Generalization
- ◆ Reflexive associations

Step 7: Information Processes

- A recording process for each event
- A maintenance process for each other entity
- A reporting process for each required report

Problem 9 Solution

- See Handouts

Group Work for Chapter 8 (2)

■ Problem 10

- * Work through the 9 REA steps in sequence
- * Use simplified format for the EER

Chapter 8 Problem 10 Solution

■ Step 1: Identify the significant business events

- * Submit Proposals
- * Check Proposals
- * Approve Proposals
- * Return Rejected Proposals

Chapter 8 Problem 10 Solution

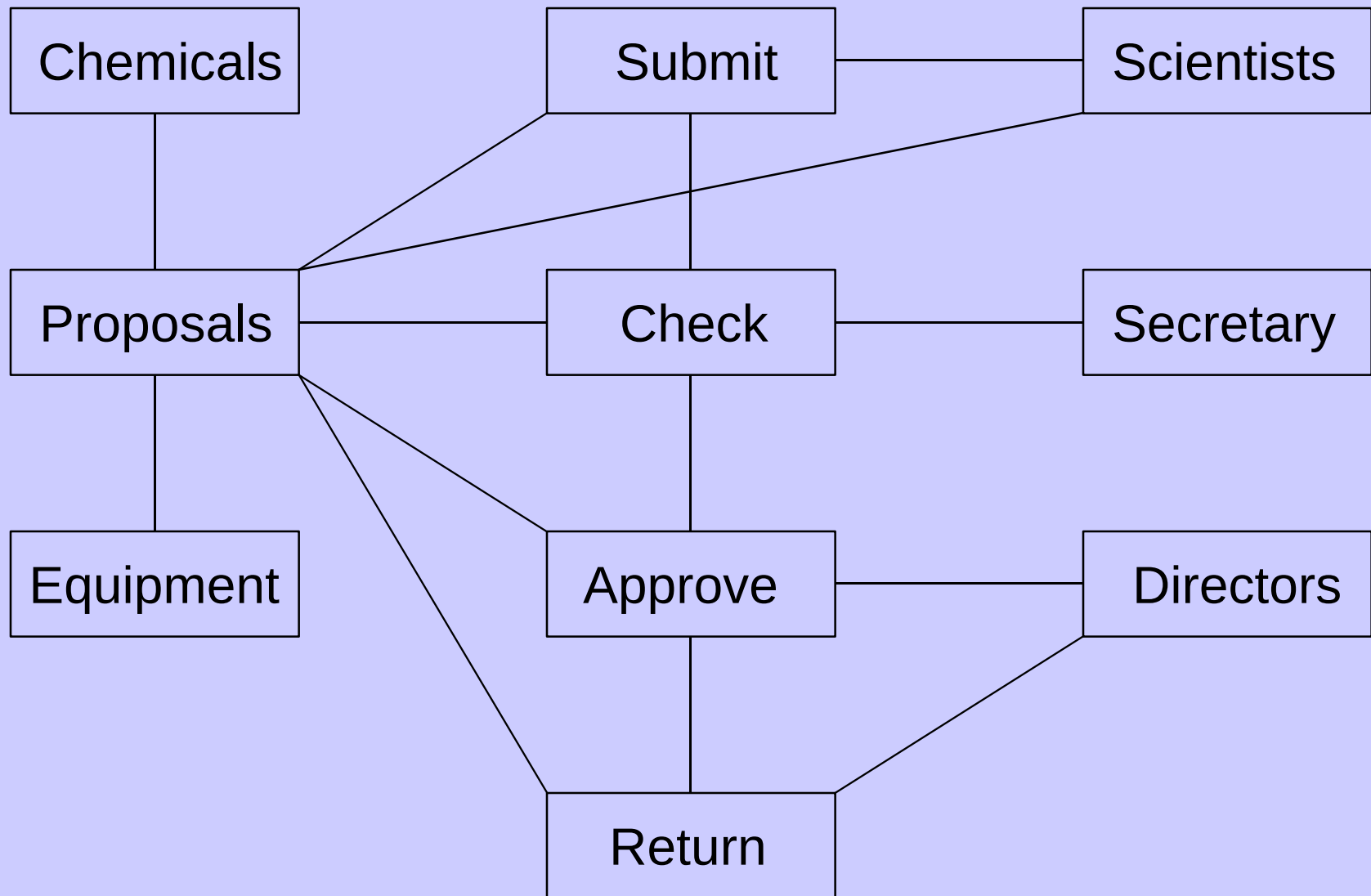
- Step 2: Identify the related resources (and locations)
 - * Equipment
 - * Chemicals
 - * Proposals

Chapter 8 Problem 10 Solution

- Step 3: Identify the related internal and external agents
 - * Directors
 - * Scientists
 - * *Secretary/Clerk (someone must check the proposals!)*

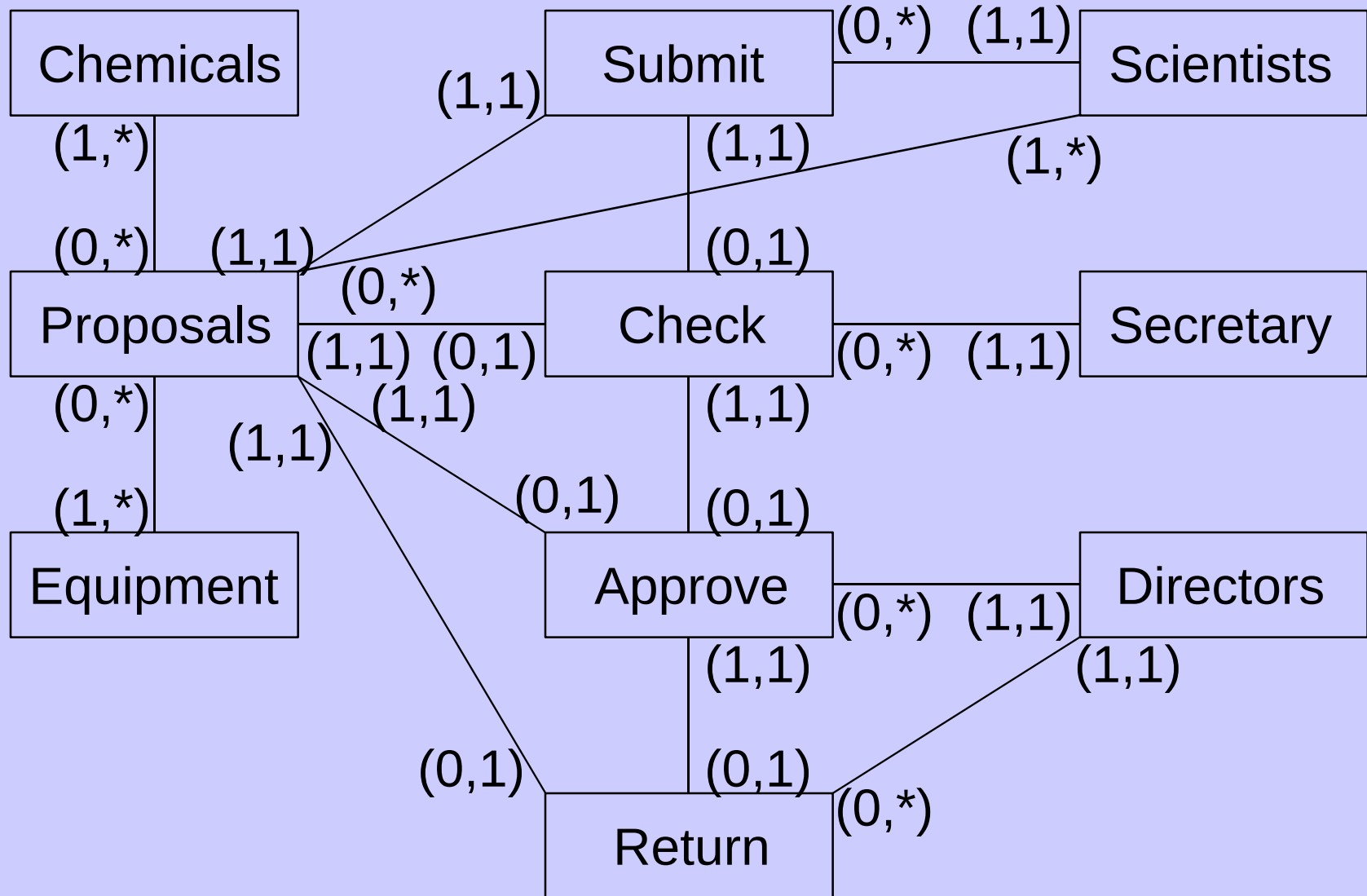
Chapter 8 Problem 10 Solution

- Step 4: Identify relationships between entities



Chapter 8 Problem 10 Solution

- Step 5: Specify the optionalities and cardinalities of the relationships



Chapter 8 Problem 10 Solution

- Step 6: Identify the attributes of the REA entities (*not required for this problem*)

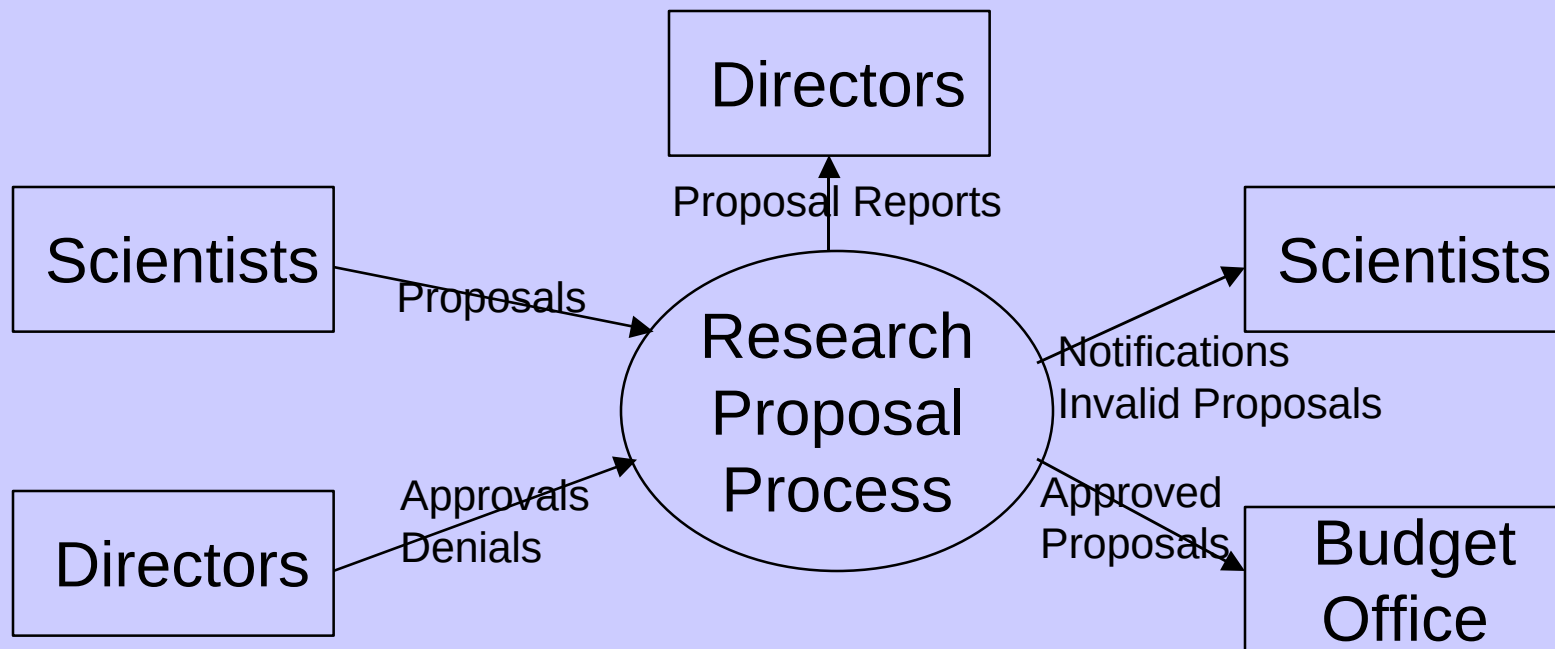
- * e.g., Proposal

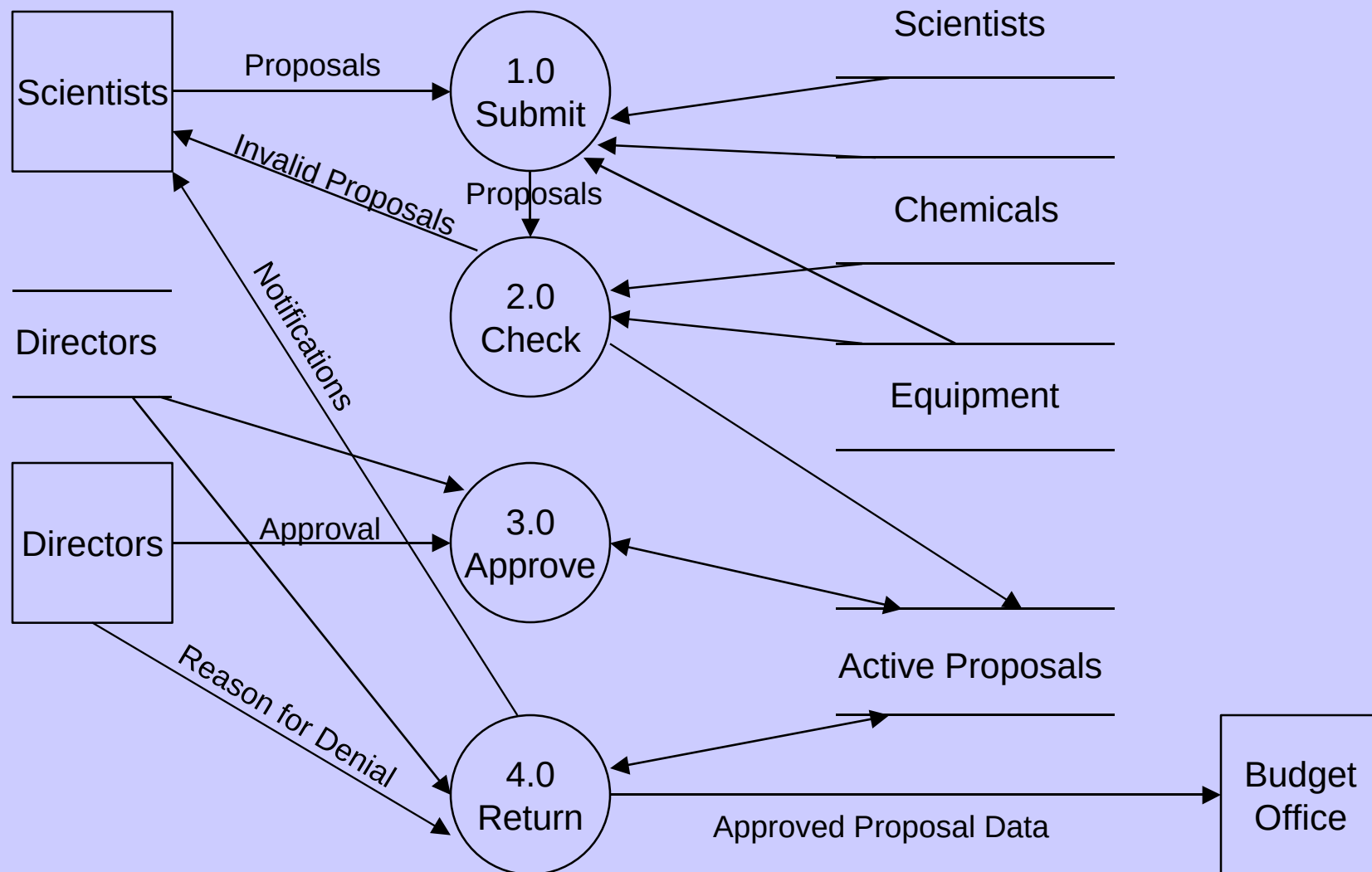
- ◆ Proposal #
 - ◆ Scientist Preparing
 - ◆ {Scientist Working}
 - ◆ {Equipment Requested}
 - ◆ {Equipment Used}
 - ◆ {Procedures, Chemicals Requested}
 - ◆ {Procedures, Chemicals Used}

Chapter 8 Problem 10 Solution

■ Step 7: Identify the information processes

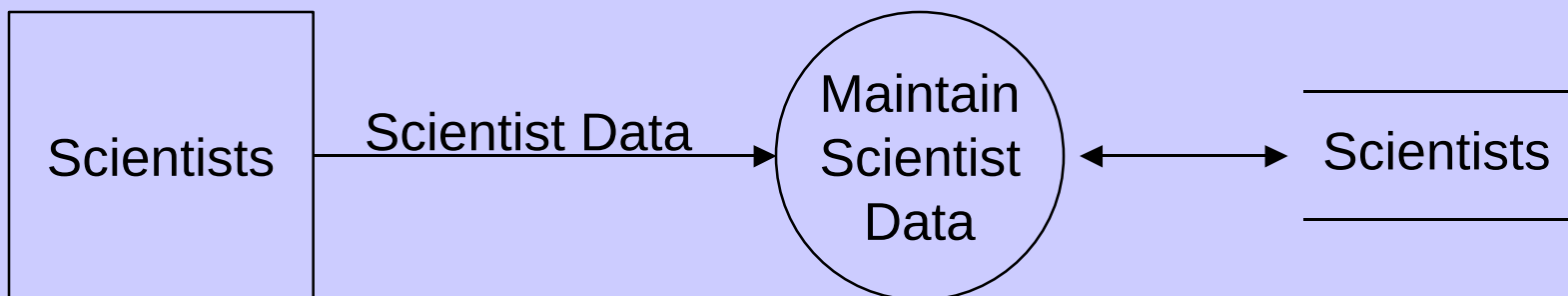
* Context Diagram





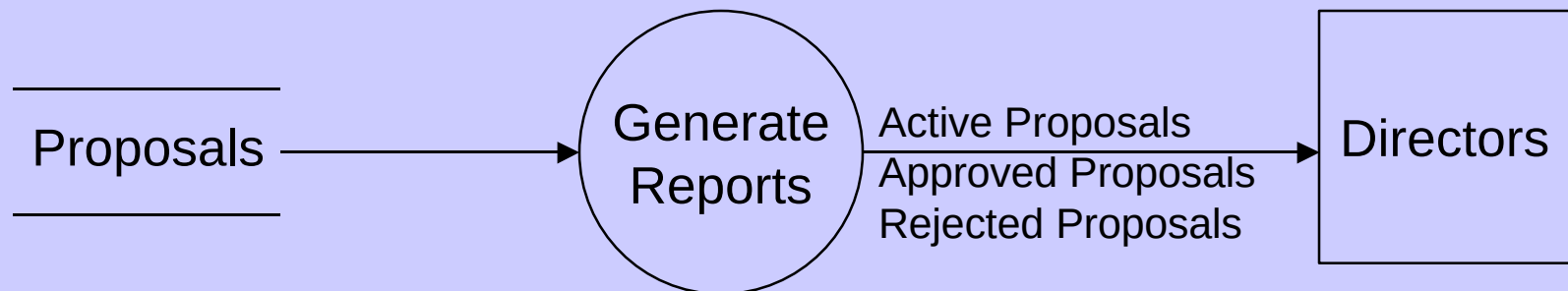
Chapter 8 Problem 10 Solution

- Step 7: Identify the information processes
 - * DFDs are also required for maintenance processes for all non-event entities e.g.



Chapter 8 Problem 10 Solution

- Step 7: Identify the information processes
 - * DFDs are also required for reporting processes for all reports not included in the main DFD e.g.



Benefits of REAL (so far)

- Identifies the entities for EER modeling
- Identifies the required processes so that model integration is automatic
- Leads to tables already in 3NF (to be discussed in Chapter 9)

CLASSROOM PRESENTATION

■ Group Project Stage 1