

Constraints

(BR1) The manager of a department must belong to that department.
(BR2) An employee cannot earn more than her manager.
(BR3) A department of the Toronto office can only be managed by an employee who has 10yrs experience.
(BR4) An employee can only participate in projects associated with her department.

Derivations

(BR5) The budget of a project is the sum of all salaries of participating employees, multiplied by 3.

Specifying Business Rules

How do we specify business rules? We'll be looking at several alternative notations.

Natural Language -- use unrestricted natural language...but such descriptions can be highly ambiguous.

Structured English -- use a subset of a natural language (both syntactically and vocabulary-wise) to minimize ambiguities...this has been used with some success

Decision Tables -- use a table representation of alternative outcomes (similar to truth tables)

Decision Trees -- use a tree representation of alternative outcomes

We need representations that are understandable by end user

Structured English

Looks a lot like pseudocode:

For each LOAN ACCOUNT NUMBER in the LOAN ACCOUNT FILE do the following steps:

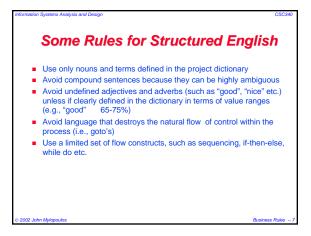
If the AMOUNT PAST DUE is greater than \$0.00 then while there are LOAN ACCOUNT NUMBERS for the CUSTOMER NAME do the following:

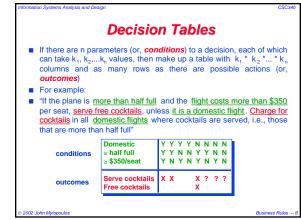
sum the OUTSTANDING LOAN BALANCES sum the MINIMAL PAYMENTS sum the PAST DUE AMOUNTS report the CUSTOMER NAME, LOAN ACCOUNT on OVERDUE CUSTOMER, LOAN ANALYSIS

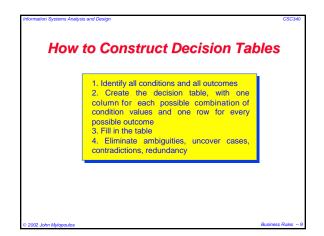
Takes some effort to specify, not very readable, too close to an implementation

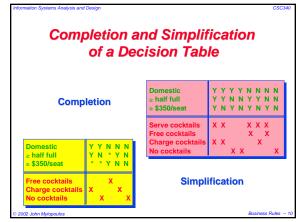
Another Example

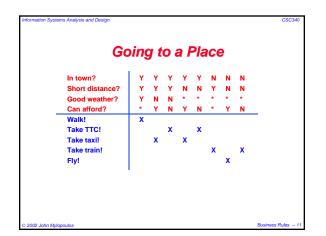
do while there are more staff in the list
 calculate staff bonus
 store bonus amount
 begin case
 case bonus > £250
 add name to StarOfTheMonth list
 case bonus < £25
 print warning letter
 end case
end do

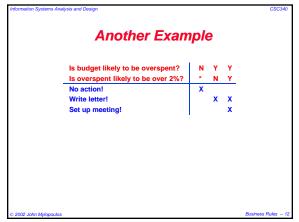


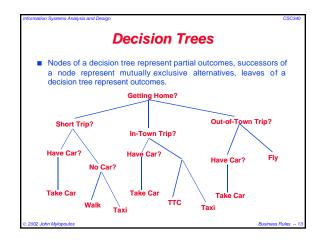


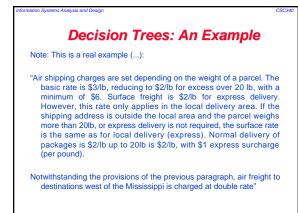




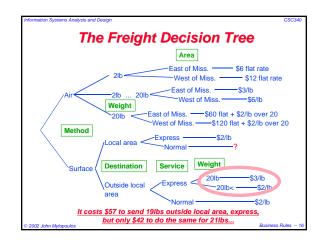








Clarifications Question: Is there a difference between freight shipping and handling Answer: No, all rates include freight and handling. Question: The description mentions "up to 20lbs" and "over 20lbs". Which rate applies for exactly 20lbs? **Answer:** It's generally understood that "up to 20lbs" means "up to and including 20lbs". We can't spell out every little thing, you know? ■ Question: The fourth sentence could be read in two ways: "both outside the local area, and also over 20lbs, or, alternatively, express not required" or "outside the local area and, in addition, either over 20lbs or express not required". Which is correct? Answer: The second one. The first meaning couldn't be right because you would end up charging the local express rate when express delivery was not required. I see your point though, it is a bit confusing...



Summary

Decision trees are best used with applications involving up to 15-20 outcomes
Decision tables are more appropriate for problems involving complex combinations of up to 5-6 conditions (but can handle much larger number of outcomes)
Structured English (and state-oriented models) are most appropriate for problems involving sequential considerations of alternative steps.

Pre- and Post-Conditions

What conditions must be true before an operation can take place?

What are the conditions that will be true after an operation is completed?

• For example, consider
Campaign.assignStaff(creativeStaff.id)

-Pre-condition: creativeStaffObjectid is not null;

-Post-condition: a link is created between campaignObject and creativeStaffObject.

