

I. Problem statement: We are after a system that controls a recycling machine for returnable bottles and cans. The machine will allow a customer to return bottles or cans on the same occasion. When the customer returns an item, the system will check what type has been returned. The system will register how many items each customer returns and, when the customer asks for a receipt, the system will print out what he deposited, the value of the returned items and the total return sum that will be paid to the customer. The system is also be used by an operator. The operator wants to know how many items of each type have been returned during the day. At the end of the day, the operator asks for a printout of the total number of items that have been deposited in the machine on that particular day. The operator should also be able to change information in the system, such as the deposit values of the items. If something is missing, for example if a can gets stuck or if the receipt rolls is finished, the operator will be called by a special alarm signal.

Using the above problem statement, perform:

1. Use case Modeling – Relating Use cases with include, extend and generalization
2. Find conceptual class, domain model refinement

II. Problem Statement: Consider the following requirements for the Video Store system. Identify the candidate classes: The video store keeps in stock an extensive library of current and popular movie titles. A particular movie may be held on video tape or disk. Video tapes are in either "Beta" or "VHS" format. Video disks are in DVD format. Each movie has a particular rental period (expressed in days), with a rental charge to that period. The video store must be able to immediately answer any inquiries about a movie's stock availability and how many tapes and/or disks are available for rental. The current condition of each tape and disk must be known and recorded. The rental charge differs depending on video medium: tape or disk (but it is the same for the two categories of tapes: Beta and VHS). The system should accommodate future video storage formats in addition to VHS tapes, Beta tapes and DVD disks. The employees frequently use a movie code, instead of movie title, to identify the movie. The same movie title may have more than one release by different directors. You may use any (or mix) of the class elicitation methods to find the candidate classes.

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