

FACULTAD DE INGENIERÍA

GRUPO 5

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Exercise 5 ADT

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**ADT: Rental**

**Description**: service from a movie shop where a client rents one.

Constructor

**Rental**: movieName X rentalId X rentalDate X returnDate → Rental

**Comment**: creates a rental with the specified information.

**Precondition**: a movie name, rental date, return date and an integer > 0 for the rental id.

**Postcondition**: the rental with the specified information.

**ADT: Administrator**

**Description**: the one who takes care of every aspect of the rental place.

Constructor

**Administrator**: name X lastName X id X movies→ Administrator

**Comment**: creates an administrator with the specified information and a list of movies and no registered clients, rentals, an empty rented movies list and a new surplus.

**Precondition**: a name, last name, an integer > 0 for the id and a list of movies.

**Postcondition**: the administrator with the specified information.

Modifier

**registerClient**: Administrator X clientId → Administrator

**Comment**: registers a client and adds it to the administrator’s registered clients list.

**Precondition**: a client id which is an integer > 0.

**Postcondition**: the administrator with the client added to the registered clients.

**rentMovie**: Administrator X clientId X movieName → Rental

**Comment**: given a client’s id, checks if it is registered or not. If it isn’t, registers it. Creates a rental for the client and removes the movie name from his movies list and adds it to the rented movies. Also, adds the price of a rental to the surplus’ earned money.

**Precondition**: an integer > 0 for the client id and a movie name.

**Postcondition**: a rental and the modified administrator’s movies and rented movies lists.

**getMovieBack**: Administrator X Rental → Administrator

**Comment**: given a client’s rental, gets the movie back to the movies list and out of the rented movies list.

**Precondition**: a rental.

**Postcondition**: the administrator with the movie added to the movies list.

Analyzer

**checkMovieAvailability**: Administrator X movieName → boolean

**Comment**: given a movie name, checks if the movie is available (in the movie list) or not (in the rented movie list).

**Precondition**: a movie name.

**Postcondition**: true if the movie is available, false if not.

**checkPremiered**: Administrator X movieName → boolean

**Comment**: checks if the administrator has the movie in his movie list or his rented movie list.

**Precondition**: a movie name.

**Postcondition**: true if the movie has premiered, false if not.

**ADT: Client**

**Description**: a person who rents movies.

Constructor

**Client**: name X lastName X id → Client

**Comment**: creates a client with the specified information and no rental.

**Precondition**: a name, last name and an integer > 0 for the id.

**Postcondition**: a client with the specified information and no rental.

Modifier

**rentMovie**: Client X Administrator X movieName → Client

**Comment**: rents a movie by giving the administrator the movie name and his own id. The client also pays for the rental. If the movie isn’t available, doesn’t rent it.

**Precondition**: an administrator and a movie name.

**Postcondition**: the client with the rental.

**returnMovie**: Client X Administrator → Client

**Comment**: given his rental, the client returns the movie to the administrator.

**Precondition**: an administrator.

**Postcondition**: the client without the rental.

Analyzer

**checkMovieAvailabilty**: Client X Administrator X movieName → boolean

**Comment**: asks the administrator if the movie is available.

**Precondition**: an administrator and a movie name.

**Postcondition**: true if the movie is available, false if not.

**checkPremiere**: Client X Administrator X movieName → boolean

**Comment**: asks the administrator if he already has a movie or not.

**Precondition**: an administrator and a movie.

**Postcondition**: true if the movie premiered, false if not.

**ADT: Surplus**

**Description**: rental place extra information kept by the administrator.

Constructor

**Surplus**: rentalPrice → Surplus

**Comment**: creates a surplus with the specified rental price and no earned money.

**Precondition**: a real number > 0 for the rental price.

**Postcondition**: the surplus with the specified information.

Modifier

**earnMoney**: Surplus X moneyEarned → Surplus

**Comment**: adds the specified money earned to the surplus money earned.

**Precondition**: a real number > 0 for the money earned.

**Postcondition**: the surplus with the money added to the earned money.