

**Contract CO1:** loadConnectionData

**Operation:** loadConnectionData (filePath)

**Cross References:** Use Case: Load Records from CSV

**Preconditions:**

- The system is operational.
- CSV Data Source is present and available to use in the correct structure.
- Admin has access to the data source and permissions to load data.

**Postconditions:**

- A new Connection is created for every valid CSV record. (instance creation)
  - New City objects are created given that the City object has not already been created.
  - Train objects are created if a train type was not previously seen. (instance creation)
  - Attributes for Connection are set: routeId, departureTime, arrivalTime, daysOfOperation, ticket prices, and train Type. (attribute modification)
  - Each Connection is associated with its departure City and arrival City. (assoc. formed)
  - Each Connection is associated to a Train according to its trainType. (assoc. formed)
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**Contract CO2:** searchConnections

**Operation:** searchConnections (departureCity, arrivalCity, departTime, arriveTime, trainType, daysOfOperation)

**Cross References:** Use Case: Search for Connection

**Preconditions:**

- The system is operational.
- CSV Data has been loaded into the system memory.

**Postconditions:**

- For each result that matches with the input parameters, a Trip instance **t** was created. (instance creation)
- For each **t** that requires transfers, 1-3 Segment, **s**, instances were created. (instance creation)
- Each **s** was associated with one matching Connection **c** (train used by the segment). (assoc. formed)
- **t** was composed of its Segment instance(s). (assoc. formed)
- **s.connectionDuration** was computed from instance **c**'s arrival and departure times. (attribute modification).
- **t.totalTime**, **t.totalTransferTime**, and **t.price** were computed from the included Segment(s) and selected class prices. (attribute modification).
- Note: If there are no matches, the operator returns an empty list. No instances are created

**Contract CO3:** sortResults

**Operation:** sortResults (trip or price)

**Cross References:** Use Case: Sort Results

**Preconditions:**

- A list of Trips (non-empty) from the most recent search is available.

**Postconditions:**

- The list of trip instances was re-ordered according to duration or price.
- No instances were created or deleted.
- No associations were formed or broken.

**Contract CO4:** selectTrip

**Operation:** selectedTrip (selectedTrip)

**Cross References:** Use Case: Book Trip

**Preconditions:**

- System is operational
- Non-empty list of connections is displayed
- selectedTrip is a valid Trip instance from the list of search results

**Postconditions:**

- The selected Trip instance is stored/marked as an active booking. (attribute modification)
- The system is ready to accept passenger information

**Contract CO4:** enterPassengerInfo

**Operation:** enterPassengerInfo(firstName, lastName, age, id)

**Cross References:** Use Case: Book Trip

**Preconditions:**

- The system is operational.
- A Trip has been selected.
- The passenger has provided valid credentials (firstName, lastName, age, id).
- No existing Reservation exists for a Client with the given id on the selected Connection.

**Postconditions:**

- A new Client instance c was created with the provided attributes. (instance creation)
- A new BookedTrip instance Bt was created. (instance creation)
- Bt was assigned a unique tripId. (attribute modification)
- Bt.travelDate was set to the provided travelDate. (attribute modification)
- Bt.isFirstClass was set based on class selection. (attribute modification)
- Bt was associated with the selected Trip. (association formed)
- A new Reservation instance r was created. (instance creation)
- r was assigned a unique reservationId. (attribute modification)
- r.isFirstClass was set based on class selection. (attribute modification)
- r was associated with the Connection from the selected Trip's first Segment. (association formed)
- r was associated with Client c. (association formed)
- Bt was composed of Reservation r (added to Bt.reservations list). (association formed)
- r was associated back to BookedTrip Bt through setTrip(). (association formed)
- A new Ticket instance t was created for Reservation r. (instance creation)
- t was assigned a unique ticketId. (attribute modification)
- t.firstClassPrice and t.secondClassPrice were computed from the Trip. (attribute modification)

- Bt was added to the TripCollection repository via saveTrip(). (association formed)

**Contract CO6:** viewTrips

**Operation:** viewTrips(lastName, id)

**Cross References:** Use Case: View Trips

**Preconditions:**

- The system is operational.
- Client credentials (lastName and id) are inputted.
- TripCollection contains at least one BookedTrip instance.

**Postconditions:**

- A list of BookedTrip instances matching the client credentials was retrieved from TripCollection.
- The retrieved trips were split into current/future trips and past trips based on trip dates.
- The trips are displayed to the GUI.