Modeling Exercises:
These exercises are provided for modeling practice. You should attempt these exercises without looking at the answers. When you are done, compare your efforts to the answer file.

TO DO:
Described below is a system for creating estimates for construction jobs and then starting projects for the jobs (when the estimates are accepted).

Create a StarUML model named CONSTRUCTION. In that model do the following:
- Create a system sequence diagram for each of the scenarios – you should end up with 5 SSDs. Name them after each scenario (e.g. Change Policy)
- Using ALL of the scenarios, create ONE domain class diagram named Jobs showing:
    o Classes, attributes (including all reference attributes)
    o Associations, multiplicity and association names
    o **Generalization** – show **one** potential generalization hierarchy.
    o **Composition** – show **one** potential composition

Note : Sometimes an actor will have the same name as a class. StarUML might not let you have duplicate names so you might want to append Actor to the Actor's name e.g. if you have a customer class and a customer actor, name the actor CustomerActor.

Estimate System for Jobs
A construction firm hires workers--specifically contractors and estimators, to help run its business (note—the HR Manager is not considered a worker). Both contractors and estimators need to have insurance before they can be hired. An estimator creates estimates for construction jobs, and the contractor creates and runs projects for the jobs that move forward. Not all jobs have projects; once an estimate expires there will be no project for the job.

Scenario 1: Change Insurance Policy for a worker

HR Manager	System
Enters worker id	Retrieves and displays the following worker information: name, phone, email, name of insurance company, policy number of insurance
Enters new company name and new policy id	Replaces the old insurance information with the new information and displays the new insurance company name and the new policy number.

Scenario 2: Create estimate for a new job

An estimator is responsible for creating estimates for many jobs.

Estimator Actor	System
Enters job id, name and description and requests to create a new job.	Saves the new job. Displays the job name with a "successfully added" message
Enters date, estimate expiry date and requests to start a new estimate.	Displays all the work tasks that the estimator must choose from to do the estimate. For each work task, displays name and hourly cost.
Chooses a work task, enters estimated number of hours	Adds the work task and hours to the estimate and updates the total cost. Displays the updated total cost. *(Hint: there is a pattern for this!)*
Repeats the above line until complete	Saves the estimate information. Displays job name, estimate date, expiry date, and total cost.

Scenario 3: Report on Estimator

HR Manager	System
Enters estimator name	Displays all job estimates for the estimator. For each, shows job name and description and estimate expiry date and total estimate cost.

Scenario 4: Add Project

HR Manager	System
Requests to start a project	Displays the names and descriptions of all jobs which have not yet been started, and the names of all contractors
Selects a job, a contractor and enters a project start date.	Creates a project for the job and assigns the contractor to the job. Displays job name, contractor name, and project start date
Confirms	Sets the status of the job to "started"

Scenario 5: Update Project Progress

Contractor Actor	System
Enters a project id.	Lists dates and progress descriptions for all logs for the project.
Enters a new date, and a progress description.	Creates a project log for the date and displays the updated list of logs for the project.