

Tickets4Sale

Imagine that the company Tickets4Sale asks for your help to solve a number of problems they have. John is the owner of Tickets4Sale. He started years ago in his basement in Amsterdam selling tickets for performances of shows to tourist in Amsterdam. At first, he only sold tickets for Musical shows, but these days Ticket4Sale also sell tickets for Comedy and Drama shows. Business goes well, but even after all these years it is a lot of hassle to get a clear grasp on the inventory. Especially the questions; how many tickets are left, and how many tickets have been sold are not so easy to answer. Finally, John decided to do something about this, and that is where you come in.

Assumptions

Over the years John learned that shows have some special specifications:

- Shows always run for exactly 100 days in the theater;
- Shows run 7 days a week;
- Shows always start in the big hall, which can hold up to 200 people;
- After 60 days the show moves to the small hall, which can hold up to 100 people;
- After 80 days the show price is discounted with 20%.

So, the 60th performance of the same show will be held in the big hall and cost 100% of the ticket price, where the 61st will be held in the small hall and also costs 100% of the ticket price, and the 81st cost 80% of the ticket price.

Furthermore, ticket availability in Amsterdam is completely regulated:

- Ticket sale starts 25 days before a show starts;
- Tickets are only sold by Tickets4Sale;
- Each day a fixed number of tickets is available for sales:
 - 10 tickets for shows in the big hall;
 - 5 tickets for shows in the small hall;
 - At the end of the day these tickets are per definition sold.

Consequently, 5 days before the show starts it is always sold out.

So, consider today, if a show opened 20 days ago, then there are 100 tickets left for the performance of the same show in 60 days (that is the 80th performance of this show and will be held in the small hall), and ticket sale for that day hasn't started yet. For the same show there are 50 tickets left for the performance in 10 days, and 10 tickets up for sale (that is the 30rd performance of this show and will be held in the big hall).

One of the USPs of Ticket4Sale is that ticket prices for the same genre are always the same:

Genre	Price (euro)
Musicals	70
Comedy	50
Drama	40

Tickets4Sale is a European company, hence they embrace the ISO 8601 standard for all date formats (YYYY-MM-DD).

Considerations

Tickets4Sale expects that you will read the User Stories carefully, and implement them according to the requirements. If you have questions about the requirements, or think that things should be solved in a different way please inform us about this. That allows us for feedback, and makes sure we are not unpleasantly surprised. Besides the functionality that is described in the User Stories there are also some quality considerations you should pay attention to:

- A clear description of the design considerations
- A clear description of how and what is needed to run the CLI and web application
- No unused code, or left-overs from old/bootstrap code
- Descriptive and well written Unit Tests
- Clean file and directory structure (sources, tests, resources)
- No code duplication

Tickets4Sale is very happy that they have found you to help them. They are very confident that you will be able to build a solid solution. You might have questions. In that case, don't hesitate to send them to us via email. We are here to help you make the best of this!

User Stories

US-1: As Tickets4Sale, I want to know the ticket status of a performance for a show, so that I can service my customers well.

Since the ticket availability is regulated in Amsterdam we know in advance how the inventory develops over time. Hence, we can determine the number of tickets left and the number of tickets

available for sale for all performances of all shows at all days at any moment in time. Where number of tickets left is equal to the number of people that fit in the hall minus the number of tickets sold.

There are 4 different ticket sale states for the performance of a show:

- Sale not started
- Open for sale
- Sold out
- In the past

For this User Story you will deliver a CLI tool that takes three arguments:

1. an input file consisting of the show inventory. Where the input file is in the comma separated value (CSV) format, and the columns consist of the title, opening day (the day of the first performance of a show), and genre of the show.
2. query-date, the reference data that determines the inventory state.
3. show-date, the date for which you want to know how many tickets are left.

The CLI tool is needed to integrate with the back-end tools of Tickets4Sale.

For example

Let's consider the following show inventory:

Title	Opening day	Genre
Cats	2018-06-01	musical
Comedy of Errors	2018-07-01	comedy
Everyman	2018-08-01	drama

scenario 1

Running the program with the above inventory, query-date 2018-01-01 and show-date 2018-07-01 should give:

```
{"inventory": [  
  {"genre": "musical", "shows": [  
    {"title": "cats", "tickets_left": "200", "tickets_available": "0",  
    "status": "sale not started"}  
  ]},  
  {"genre": "comedy", "shows": [  
    {"title": "comedy of errors", "tickets_left": "200", "tickets_available":  
    "0", "status": "sale not started"}  
  ]}  
]}
```

scenario 2:

Running the program with the above inventory, query-date 2018-08-01, and show-date 2018-08-15 should give:

```
{"inventory": [
  {"genre": "musical", "shows": [
    {"title": "cats", "tickets_left": "50", "tickets_available": "5",
    "status": "open for sale"}
  ]},
  {"genre": "comedy", "shows": [
    {"title": "comedy of errors", "tickets_left": "100", "tickets_available":
    "10", "status": "open for sale"}
  ]},
  {"genre": "drama", "shows": [
    {"title": "everyman", "tickets_left": "100", "tickets_available": "10",
    "status": "open for sale"}
  ]}
]}
```

US-2: As Tickets4Sale service employee, I want to have a web site, so that I can check the ticket status of a performance for a show.

This story is about opening-up the above functionality via a web site. For now, the web site will only be used by employees of Tickets4Sale. So, you don't have to worry about security.

The web site will be used to check the ticket status of a performance for a show. The inventory that is used by the web site is provided as a separate CSV file, and is part of the web site. In other words, the employee does not have to upload the inventory file. Also, the query-date is used internally as the date that the employee uses the web site. Hence, this will be "today".

Below a simple mock-up of the UI is shown:

The mock-up shows a web window titled "Tickets4Sale". At the top, there is a "Show date:" label followed by a text input field containing "YYYY-MM-DD" and a "Submit" button. Below this, the interface is divided into three sections, each for a different genre: Musical, Comedy, and Drama. Each section contains a table with the following columns: Title, Tickets Left, Tickets Available, Status, and Price.

Musical				
Title	Tickets Left	Tickets Available	Status	Price
Cats	50	5	open for sale	70

Comedy				
Title	Tickets Left	Tickets Available	Status	Price
Comedy of Errors	100	10	open for sale	50

Drama				
Title	Tickets Left	Tickets Available	Status	Price
Everyman	100	10	open for sale	40

The UI consists of two main parts:

1. Selecting the show date
2. Showing a list of show performances with ticket information
 - Title of show
 - Tickets left for the performance of the show on the show date
 - Tickets available for sale
 - Status of the ticket sale
 - NEW: Price of a ticket

The mock-up is purely for clarification. You have all the freedom for presenting this information the way you feel is best. Also, don't forget about validation feedback on incorrect input.

BONUS US-3: As Tickets4Sale service employee, I want to order tickets via the website, so that I don't have to use all the old paper procedures.

John realizes, that to really grow his business, he needs to streamline his operations, and get rid of all the paperwork in his company. Using the brand new Ticket4Sale system should be very helpful with this. The next step, he figures, could be ordering tickets via the web site. This can be realized with a simple ticket ordering form on the web site, but it can also be a different solution. As long as it has the following functionality:

- No more tickets can be ordered than there are available
- If more tickets are ordered than available, then the order fails and no tickets are ordered
- The sold tickets are reflected in the ticket status; in other words, if there are 5 tickets available, and then after 3 are sold, there are 2 left. And this also shows in the overview.
- Some feedback to the user that the order was/was not successful

As stated above this is a bonus User Story. This one is not required for the assessment. Nice but not required.

Good Luck!