

Acme Explorer

Acme Explorer, Inc. is a company that organises adventurous trips around the world. The goal of this project is to develop a web information system that Acme Explorer, Inc. can use to run their business. This document provides an informal requirement specification. Ask your lecturers for clarifications and details, if necessary.

C-level requirements

Information requirements

1. The actors are administrators, managers, and explorers. For every actor, the system must store a name, a surname, an email, an optional phone number, and an optional address.
2. Managers can organise trips. For every trip, the system must store a ticker, a title, a description, a price, a list of requirements, the dates when the trip starts and ends, and an optional collection of pictures. A trip may be cancelled, in which case the system must store the reason why. Trips are composed of stages. The system must store the following data for each stage: a title, a description, and a price. The price of a trip is automatically computed building on the price of the individual stages.
3. Explorers can apply for trips. For every application, the system must store the moment when it's made, a status, and some optional comments by the applicant. When an application is made, the initial status is "PENDING"; later, the corresponding manager can change it to "REJECTED", which means that the applicant is denied to enrol the trip, in which case the system must record the reason why, or "DUE", which means that it's awaiting payment. An application with status "DUE" changes automatically to status "ACCEPTED" whenever the corresponding applicant pays the trip. An application with status "ACCEPTED" can change to status "CANCELLED" by the corresponding applicant.
4. Tickers are generated automatically, must be unique, and cannot be modified by any actors. They must adhere to the following pattern: "YYMMDD-XXXX", where "YYMMDD" refers to the current year, month, and day, and "XXXX" are four uppercase random letters.

Functional requirements

5. An actor who is not authenticated must be able to:
 1. Register to the system as an explorer.
 2. Browse the list of trips and display them.
 3. Search for trips using a single key word that must be contained in either their tickers, titles, or descriptions.
6. An actor who is authenticated must be able to:
 1. Do the same as an actor who is not authenticated, but register to the system.
 2. Edit his or her personal data.
7. An actor who is authenticated as a manager must be able to:
 1. Manage an arbitrary number of trips, which includes creating, publishing, listing, displaying, modifying, and deleting them. A trip can be modified or deleted as long as it's not published.
 2. Manage the applications for the trips that they manage, which includes listing them, displaying them, and changing their statuses from "PENDING" to "REJECTED" or from "PENDING" to "DUE".

3. Cancel a trip that has been published but has not yet started and does not have any accepted applications.
8. An actor who is authenticated as an explorer must be able to:
 1. Apply for a trip that has been published and is not started or cancelled.
 2. List and display the applications that he or she's made, grouped by status.
 3. Pay a trip with status "DUE"
 4. Cancel an application with status "PENDING" or "ACCEPTED".
9. An actor who is authenticated as an administrator must be able to:
 1. Create accounts for new managers.
 2. Display a dashboard with the following information:
 - The average, the minimum, the maximum, and the standard deviation of the number of trips managed per manager.
 - The average, the minimum, the maximum, and the standard deviation of the number of applications per trip.
 - The average, the minimum, the maximum, and the standard deviation of the price of the trips.
 - The ratio of applications grouped by status.

Non-functional requirements

10. The system must be available in English and Spanish. (The data themselves are not required to be available in several languages, only the messages that the system displays.)
11. Payments must be handled via PayPal.
12. Whenever an application is shown, it must be rendered differently depending on its status, namely: pending applications must be shown on a white background, unless the corresponding trip is going to start in less than a month, in which case, the background must be red; rejected applications must be shown on a grey background; due applications must be shown on a yellow background; accepted applications must be shown on a green background; and cancelled applications must be stroked out.

B-level requirements

Information requirements

13. Explorers have a finder in which they can specify some search criteria regarding trips, namely: a key word, a price range, and a date range. The key word must be contained in the ticker, the title, or the description of the trips returned, which must not exceed the price range and must be organised within the date range specified. Initially, every search criterion must be null; it is assumed that every trip satisfies a null search criterion.

Functional requirements

14. An actor who is authenticated as an explorer must be able to:
 1. Manage his or her finder, which includes modifying it and consulting its results, that is, the trips that meet the search criteria.
15. An actor who is authenticated as an administrator must be able to:
 1. Ban an actor, which means that his or her user account is de-activated.
 2. Unban an actor, which means that his or her user account is re-activated.
 3. Display a dashboard with the following information:
 - The average price range that explorers indicate in their finders.
 - The top 10 key words that the explorers indicate in their finders.

Non-functional requirements

16. The results of a finder are cached for one hour by default. The administrator should be able to configure that period at will in order to tune the performance of the system. The minimum time's one hour and the maximum time's 24 hours.
17. The maximum number of results that a finder returns is 10 by default. The administrator should be able to change this parameter in order to adjust the performance of the system. The absolute maximum is 100 results.

A-level requirements

Information requirements

18. There's a new kind of actors in the system: sponsors, who support some trips by means of sponsorships.
19. The system must store a banner and a link to a landing page for every sponsorship.

Functional requirements

20. An actor who is authenticated as a sponsor must be able to:
 1. Manage his or her sponsorships, which includes listing, displaying, creating, modifying, and deleting them.
 2. Pay for a sponsorship. Note that sponsorships must not been shown until they are payed.
21. An actor who is authenticated as an administrator must be able to:
 1. Configure a flat rate for sponsorships.
 2. Launch a process to compute a cube of the form $M[e, p]$ that returns the amount of money that explorer e has spent on trips during period p , which can be $M01-M36$ to denote any of the last 1-36 months or $Y01-Y03$ to denote any of the last three years.
 3. Consult the cube by means of the following queries:
 - a. Given e and p , return $M[e, p]$.
 - b. Given p , return the explorers e such that $M[e, p] \theta v$, where v denotes an arbitrary amount of money and θ is a comparison operator (that is, "equal", "not equal", "greater than", "greater than or equal", "smaller than", or "smaller than or equal").

Non-functional requirements

22. Whenever a trip that has payed sponsorships is displayed, any of them must be selected random and its banner shown.