

Acme Packages

Acme, Inc. is a holding that encompasses many companies worldwide, including Acme Packages, Inc. Their business consists in helping customers publish their transport request, carriers publish an offer to deliver packages and both applies to offers or request, respectively.

The goal of this project is to develop a web information system that Acme Packages, Inc. can use to run their business. This document provides a formal requirement specification.

Information requirements

1. The actors of the system are administrators, customers, carriers, auditors and sponsors. For every actor, the system must store a name, an optional middle name, a surname, an optional photo, an email, an optional phone number, an optional address and a valid credit card. The system also stores the VAT of every carrier and the NIF of every sponsor.
2. Actors can exchange messages. For every message, the system must keep track of the sender, the recipients, the moment when it was sent, the subject, the body, its priority, and some optional tags. Priorities are HIGH, NEUTRAL, or LOW, but other values are expected to be defined by the administrator no other values are expected. Every actor has the following message boxes: in box, out box, trash box, spam box and notification box. When an actor receives a message, it gets to the in box unless the system flags it as spam, in which case it gets to the spam box. When he or she sends a message to another user, it's saved to the out box. When an actor removes a message from a box other than trash box, it is moved to the trash box; when he or she removes it from the trash box, then it is removed from the system. The previous boxes are pre-defined, and the actors must not be allowed to delete them, to change their names, or to move them. Actors can create new boxes that they can manage arbitrarily; managing boxes includes nesting a folder within another folder. Note that a message may be stored in several boxes and, but the system must keep a unique copy; removing a message from the "trash box" removes it from every other box.
3. Customers publish requests. For every request, the system must store a ticker, the moment when it's published, a description, an address to be delivered, a maximum price, a deadline, a package list, with at least one package, the total weight, the total volume and a status. Status are "SUBMITTED", "ACCEPTED", "REJECTED", "DELIVERED". The total weight and the volume its calculated with the package list.

4. For every request the customers must enter an address to deliver the request. Each request must have a street address, an optional comment and the town to which it belongs.
5. The system must have all the towns of the countries that the system works in. For every town the system must store the name, the county and the zip code.
6. For every package the system must store a description, at least one category, the weight and its dimensions. The dimensions consist in the length, height and width.
7. A category specifies the type of a package. The system must store the catalogue of categories. The system must store its name and its description in English and Spanish.
8. Carriers publish offers to transport some packages. For every offer the system must store a ticker, a sorted list of towns, its fares, a max date to request, the vehicle which will be used for the transport and the list of packages that will be transported.
9. Carriers can create fares. The system must store maximum weight, the maximum volume and the price of the package that matches those measures.
10. Every offer has a track for every town added to it that are updated by the carrier. For every offer the system must store all updates in the route, this includes its current town and the estimated date to reach that town. Note that the first town will be the starting town of the offer.
11. For every update the system must store the location in which the transport is and the date of the update.
12. Carriers own vehicles. For every vehicle the system must store the type, the license plate, the maximum volume and weight, some optional photos and an optional comment. The available types of vehicles are car, truck, van and motorcycle.

13. In order to carry certain types of packages, carriers must create a solicitation to the correspondent category. An approved solicitation authorises a vehicle to transport packages depending on the category that packages belongs.
14. Solicitations are handled by auditors. For every solicitation the system must store the vehicle, the auditor that managed the solicitation, the category that the carrier wants, the creation date, some comments and a status. The status can be either "ACCEPTED", "REJECTED" or "PENDING". If the status changes to accepted, the vehicle could transport packages with that category.
15. A customer may create an issue about an offer. An issue is handled by any auditor of the system and they can self-assign it. The system must store a ticker, the moment when it's written, a status that can be "OPEN" or "CLOSED", a comment written by the customer about the problem and the following comments between the auditor who has self-assigned that issue, the author of the issue and the carrier of that offer.
16. An issue may have zero, one or more comments, which can be written by the auditor, the carrier of the offer or the customer who created the corresponding issue. The system must store the moment when it's written, the actor who writes it and the comment itself.
17. Customers can evaluate an offer in which they have been involved. For every evaluation, the system must store the moment when it's written, a mark between 0 and 10 and a mandatory comment.
18. Sponsors support our web. The system must store the following data regarding sponsorships: An URL to a banner and a link to a target page.
19. The actors of the system can register their social profiles. The system must store the following data regarding them: a nick, the name of the social network, a link to a profile in that social network.
20. Carrier can register their curricula. Every curriculum has a personal record, some professional records and some miscellaneous records.
21. A personal record consists of the full name of a carrier, a photo of him or her, his or her email and his or her phone number.

22. A professional record consists of the name of the company for which a carrier was working, the corresponding period, an optional to an attachment, and some optional comments. Note that a professional record may refer to a period that hasn't finished yet.
23. A miscellaneous record consists of a title, an optional to an attachment, and some optional comments.
24. Customers have a finder in which they can specify some filters: a category to which the offer must be able to transport, a town, a maximum price, a minimum and a maximum date, a weight and a volume.
25. Phone numbers should adhere to the following patterns: "+CC (AC) PN", "+CC PN", or "PN": "+CC" denotes a country code in range "+1" up to "+999", "(AC)" denotes an area code in range "(1)" up to "(999)", and "PN" denotes a number that must have at least four digits. Phone numbers with pattern "PN" must be added automatically a default country, which is a parameter that can be changed by administrators. Note that phone numbers should adhere to the previous patterns, but they are not required to. Whenever a phone number that does not match this pattern is entered, the system must ask for confirmation; if the user confirms the number, it then must be stored.
26. Email addresses must adhere to any of the following patterns: "identifier@domain", "alias <identifier@domain>"; administrators may have email addresses of the form "identifier@", or "alias <identifier@>". The identifier is an alpha-numeric string, the domain is a sequence of alpha-numeric strings that are separated by dots, and the alias is a sequence of alpha-numeric strings that are separated by spaces.
27. The system must store the following information about credit cards: a holder name, a brand name, a make, a number, an expiration month, an expiration year, and a CVV code, which is an integer between 100 and 999.

Functional requirements

28. An actor **who is not authenticated** must be able to:
1. Register to the system as a customer, as a transporter or as a sponsor.
 2. Browse the catalogue of offers to transport and navigate to the profile of the corresponding carrier, which includes his or her

personal data plus his or her curricula. Besides the past offers of the carrier can be shown including its score.

3. Search for an offer using a single key word that must be contained in one of the cities the offer has.

29. 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.
3. Exchange messages with other actors and manage them.
4. Manage his or her message boxes, except for the system boxes.
5. Manage his or her social profiles, which includes listing, showing, creating, updating, and deleting them.

30. An actor who is authenticated as a **carrier** must be able to:

1. Manage an arbitrary number of offers to transport, which includes listing, showing, creating, updating, and deleting them. Offers that are not in final mode can only be seen by its correspondent carrier. Once in final mode an offer cannot be edited or deleted but can be canceled.
2. Accept requests to any of his offers.
3. Manage an arbitrary number of vehicles, which includes listing, showing, creating, updating, and deleting them.
4. Manage solicitations of licenses of their vehicles, which includes listing, showing, creating and deleting them.
5. Manage their curricula, which includes listing, showing, creating, updating and deleting them.
6. Manage the records of their curricula, which includes listing, showing, creating, updating and deleting them.
7. Manage the evaluations of his offers, which includes listing and showing them.
8. Update the tracks of its offers.
9. See the issues he is involved in. In addition, he can see and write comments.
10. Manage his fares, which includes listing, showing, creating, updating and deleting them.
11. Browse the catalogue of requests not fulfilled by any of the offers.

31. An actor who is authenticated as a **customer** must be able to:

1. Manage an arbitrary number of requests to transport, which includes listing, showing, creating, updating, and deleting them. When a

request is published, it cannot be deleted or updated. Request may be saved in draft mode, which implies that they must not be shown in listings to actors other than the corresponding customer. Once the request is created, the customer will have the opportunity to add it to any of the offer that matches its requirements. If none of them satisfies him, he can add it later.

2. Manage the packages of his requests, which includes listing, showing, creating, updating, and deleting them.
3. Change the filters of his or her finder.
4. Display the offers in his or her finder.
5. Manage an arbitrary number of issues, which includes listing, showing, creating, updating, and deleting them.
6. Write some comments on an issue created by him with open status.
7. Manage the evaluations he did, which includes listing, showing, creating and deleting them.
8. List and display all the tracks of the offers he or she has accepted requests.

32. An actor who is authenticated as an **auditor** must be able to:

1. List the solicitations that no auditor has self-assigned and self-assign one of them.
2. List the solicitations that he or she has self-assigned.
3. Change status of his solicitations.
4. List the issues that no auditor has self-assigned and self-assign one of them.
5. List the issues that he or she has self-assigned.
6. Change status of an issue which the auditor has self-assigned.
7. Write a comment in an issue he is involved and with open status.

33. An actor who is authenticated as a **sponsor** must be able to:

1. Manage his or her sponsorships, which includes listing, showing, creating, updating, and deleting them.

34. An actor who is authenticated as an **administrator** must be able to:

1. Display a dashboard with the following information:
 - The average, the minimum, the maximum, and the standard deviation of times that a sponsorship has been shown.
 - Top-3 most shown sponsorships.
 - The average, the minimum, the maximum, and the standard deviation of scores from registered carriers.
 - Top-3 carriers with the highest score.

- Top-5 most visited towns.
 - The ratio of empty versus non-empty finders.
 - The average, the minimum, the maximum, and the standard deviation of evaluations made by customers.
 - The average, the minimum, the maximum, and the standard deviation of comments per issues.
 - The listing of auditors who have got at least 10% of issues closed above the average.
 - The ratio of closed versus non-closed issues.
2. Display a listing of suspicious actors. An actor is considered suspicious if he or she publishes some data that includes spam words.
 3. Ban an actor who is considered suspicious, which means that his or her user account is de-activated.
 4. Unban an actor who is considered suspicious, which means that his or her user account is activated.
 5. Manage the catalogue of categories, which includes listing, creating, updating and deleting them.
 6. Broadcast a notification to the actors of the system. The notification must be stored in the notification box by default.
 7. Create user accounts for new administrators and auditors.
 8. Launch a process that computes the score of every carrier based on his or her offers.
 9. Launch a process that flags the actors of the system as spammers or not-spammers. A user is considered a spammer if at least 10% of the messages that he or she's sent contain at least one spam word.
 10. Validate the sponsorships of the system. Note that the banner of the sponsorships will not be shown in the page until the administrator gives his approval.
 11. Launch a process that invalid all the sponsorships that surpasses the expiration date.
 12. Launch a process that sends a notification to every sponsor telling them how many times their sponsorships have been shown and how much money they're going to be charged.

Non-functional requirements

35. Whenever a page of the system is displayed, a random sponsorship must be selected and its banner shown, if any. Banners must be shown at the bottom of the page.
36. Any time an administrator validates a sponsorship, the expiration year of it will be set to one year in the future.

37. Any time an offer receives an evaluation its score is recomputed, but the score of the carriers are only recomputed when the administrator launches the correspondent process.
38. Wherever the profile of a carrier is shown, the system must show his or her score.
39. When a solicitation is accepted, its expiration date will be one year later by default, but it may be changed by the auditor.
40. When a request is created, the system show a selection of offers which fulfil the parameters entered in the request if any.
41. Every time a sponsor sees any of his or her sponsorships, he or she can see how many times it has been shown in the page in total and since the last charged was applied.
42. The system must be available in English and Spanish. (Unless otherwise stated, the data are not required to be available in several languages, only the messages that the system displays.).
43. Photos or pictures are not required to be stored in the database, but links to external systems like Pinterest.com or Flickr.com, just to mention a couple of examples. Attachments also must be links to external sites.
44. The system must be easy to customize at run time. The customization includes, but is not limited to: the name of the system (it's "Acme Handy Worker" by default); the banner shown at the header (it's the one available at <https://tinyurl.com/acme-handy-worker-logo> by default); the message that is shown on the welcome page ("Welcome to Acme Packages! Price, quality, and trust in a single place" is the default welcome message in English; "¡Bienvenidos a Acme Packages! " is the default welcome message in Spanish); a list of spam words (it's "sex", "viagra", "cialis", "one million", "you've been selected", "Nigeria", "sexo", "un millón", and "ha sido seleccionado" by default); the applicable VAT percentage (it's "21%" by default); the default country code in telephone numbers (it's "+34" by default); the default list of credit card makes (it's "VISA", "MASTER", "DINNERS", and "AMEX" by default).
45. Every time a carrier gets an evaluation in any of his or her offers, he or she will get a notification.

46. The system will send notifications to customers if any new published transport matches any of his or her requests that have no offer selected.
47. The default list of spam words includes "sex", "viagra", "cialis", "one million", "you've been selected", "Nigeria", and their corresponding Spanish translations.
48. When an actor gets a message that contains a spam word, it must be stored in the spam box instead of the input box.
49. 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 adjust the performance of the system. The minimum time's one hour and the maximum time's 24 hours. When a user requests to clear his or her finder, the system must re-compute its results immediately.
50. 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.
51. When a request changes its status, its correspondent customer will receive a notification.
52. The NIF and the VAT number of the carriers must match a valid pattern.
53. When an evaluation is shown to a carrier, it must display which customer made that evaluation.
54. The ticker of offers and requests must adhere to the following pattern: "yymmdd-xxxxxx", where "yymmdd" refers to the year, month, and day when the corresponding entity is registered, and "xxxxxx" to a random uppercase alpha-numeric string. No two entities may have the same ticker since it's assumed to be a unique external identifier.
55. The ticker of an issue must adhere to the following pattern: "yymmdd-xxxxxx-ZZ", where "yymmdd-xxxxxx" refers to the ticker from the offer and "ZZ" to a random uppercase alpha-numeric string. No two entities may have the same ticker since it's assumed to be a unique external identifier.
56. The measurements of the packages will be taken in centimeters for length, height and width, cubic centimeters for the volume and in kilograms the weight. The minimum length, height and width will be 1 centimeter and the minimum weight will be 100 grams.

57. If a fare is modified and a request has chosen it, any modification to that fare won't affect to requests which has previously selected it.

58. When an offer is shown to be applied for a request, this offer must:

- The total price of the request, based on price of fares of that offer applied to each package, is less than max price that customer would pay.
- The vehicle is used by that offer must have every category that the packages registered in that request and have volume and weight available for that packages.
- The delivered date to destination town in the request must be after the estimated date specified by the carrier on which it will pass through that city, and the date for making the request has not expired