Acme Alpine

Acme, Inc. is a holding that encompasses many companies worldwide, including Acme Alpine, Inc. Their business consists in providing services for mountain stations and resorts, of recreational and sports activities.

The goal of this project is to develop a web information system to help Acme Alpine, Inc. manage their business. The following document provides an informal description of their requirements.

A level requirements

Information requirements

1. The actors of the system are administrators, users, managers, instructors, auditors and sponsors. For every actor, the system must store a name, a surname, an email, an optional phone number, an optional address, and a number of social identities. The system must store the following data regarding such identities: a nick, the name of the social network, a link to the profile in that social network, and an optional photo.

2. Actors can exchange messages. For every message, the system must keep track of the sender, the recipient, the moment when it was sent, the subject, the body, and its priority. Priorities are HIGH, NEUTRAL, LOW. No other values are expected.

3. Actors can create custom folders, which may be arbitrarily nested, and use them to organise their messages. Every actor has the following system folders: "in box", "out box", "notification box", "trash box", and "spam 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 actor, a copy is saved to the "out box". When an actor removes a message from a folder other than "trash box", it is moved to that folder; when he or she removes it from "trash box", then it is actually removed from the system. System folders are predefined and actors must not be allowed to delete them, change their names, or move them.

4. Managers manage resorts. For every resort, the system must store its name, location, a description, a list of features, a legal text to control its terms and conditions, a period of activity (indicated by start and end dates), an optional picture, number of available spots, the price of an adult spot per day, the price of a child spot per day, and the manager in charge. Once inside the active period, the resort accepts reservations until the number of available spots reaches zero. The location is comprised of a name and GPS coordinates. Resorts may be tagged using arbitrary tags that are picked from an open taxonomy. Legal texts have a title, a body, a number of applicable laws, and the moment when it was registered.

5. Users can book reservations for a resort. A reservation must store the user requesting it, the resort in question, number of adults, number of children, stay period (indicated by start and end dates within the resort's activity period), total price, status and some optional comments. The price is automatically computed from the resort's prices plus the corresponding VAT tax. Once a reservation is made, it has "PENDING" status; the corresponding manager can change it to "REJECTED", in which case the system must record the reason why, or "DUE", which means it will be accepted as soon as the reservation has a valid credit card. An application with "DUE" status changes automatically to "ACCEPTED" when the user provides a valid credit card. An application with status "ACCEPTED" can change to status "CANCELLED" by the corresponding user. Failing to provide a credit card before the starting date also changes its status to "CANCELLED".

6. A resort belongs to a category: for each category, the system must store a name, which must be unique within the context of the same parent category; that is, several categories may have the same name as long as they don't have the same parent. Categories are organised into a tree whose root is a fictitious category called "DEFAULT".

7. Resorts offer activities: for each activity, the system records a title, a description, a category and its price. Categories for activities are unlike resort categories: they can only be "ENTERTAINMENT", "SPORT" or "TOURISM". Activities in the "SPORT" category may optionally have an instructor assigned after creation. If the activity isn't free, users can request it on reservations with "ACCEPTED" status for the resort holding the activity.

8. Phone numbers should adhere to the following patterns: "+CC (AC) PN", "+CC PN", or "PN": "+CC" denotes a country code in range "+1" to "+999"; "(AC)" denotes an area code in range "(1)" to "(999)"; "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. While phone numbers should adhere to the previous patterns, it is not required for the system to force the phone numbers to do so. If the user introduces a phone number that does not adhere to any of these patterns, the system must ask for confirmation; if the user confirms the number, then it must be stored.

9. The system must store the following information about credit cards: a holder name, a brand name, a number, an expiration month, an expiration year, and a CVV code, which is an integer between 100 and 999.

10. Instructors work for a number of resorts, and for all of them they may offer lessons in sports or mountain activities. For each lesson, the system must store its name, a description, a schedule, and its price. The schedule is a piece of text describing how often the classes are given; it can only be "DAILY", "WEEKLY" or "MONTHLY". If the activity isn't free, users can request it on reservations with "ACCEPTED" status for the resort holding the lesson.

11. Instructors can register their curricula. Every curriculum has a ticker, a personal record, some education records, some professional records, some endorser records, and some miscellaneous records.

12. A personal record consists of a name, a surname, a photo, his or her email, his or her phone number, and an optional URL to his or her LinkedIn profile.

13. An education record consists of the title of a diploma, the period during which the instructor was studying, the institution that awarded the diploma, an optional link to an attachment, and some optional comments. Note that an education record may refer to a period that hasn't finished yet if the instructor's still studying.

14. A professional record consists of the name of the company for which an instructor was working, the corresponding period of time, the role played, an optional link to an attachment, and some optional comments. Note that a professional record may refer to a period that hasn't finished yet.

15. An endorser record consists of the full name of an endorser, his or her email and phone number, a link to his or her LinkedIn profile, and some optional comments.

16. A miscellaneous record consists of a title, an optional link to an attachment, and some optional comments.

17. Auditors can write notes on activities and lessons, which can be displayed by the corresponding managers (if the note is on an activity) or instructors (if the note is on a lesson). The system must store the following information regarding the notes: the moment when they are created by an auditor, the remark that he or she writes, a reply by the manager or instructor, and the moment when he or she replies.

18. Auditors can audit resorts. For every audit, the system must store a record with the moment when the audit was carried out, a title, a description, and some optional attachments.

19. Tickers are generated automatically, must be unique, and cannot be modified by any actor. They must adhere to the following pattern: "YYMMDD-WWWW", where "YYMMDD" refers to the current year, month, and day, whereas "WWWW" are four uppercase random letters.

20. Sponsors organize sports competitions at resorts. The system must store the following data regarding competitions: a title, a description, a period (indicated by a start and an end date), the name of the sport or sports, maximum number of participants, an optional banner URL, an optional link to an information website, an entry cost, a prize pool and a number of rules.

21. Users and instructors can participate in the competitions organized by sponsors. The system must store the following information about the participations: the moment when it was registered, the actor who made request, a status, and some optional comments. Participations remain with status "PENDING" until the sponsor accepts them. Once accepted, they remain "DUE" until the actor provides a credit card, at which moment the participation automatically becomes "ACCEPTED". If there's no entry cost, once the sponsor accepts the participation it becomes "ACCEPTED". When accepted, the actor may cancel it at any time before the starting date.

22. Every competition has a suggestion box where registered actors can offer suggestions to improve the quality of future events. For every suggestion, the system must store the actor's username, a title, some comments and some optional attachments.

Functional requirements

23. An actor who is not authenticated must be able to:
    1. Register to the system as user or manager.
    2. Browse the list of resorts and display them.
    3. Search for resorts using a single key word that must be contained in its name, description or its location's name.
    4. Browse the list of resorts by navigating the tree of categories.
    5. Browse the list of activities each resort offers, and navigate to the profile of the associated instructor, if any.
    6. List all the instructors in the system and navigate to their curricula and the lessons they offer.
    7. Navigate from every resort to the corresponding audit records, if any, and display them.
    8. List the competitions organized for a resort, and navigate to the list of participants for each competition.

24. 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, including his or her social identities.
    3. Exchange messages with other actors and manage them, which includes deleting and moving them from one folder to another.
    4. Create new folders and rename them, as long as they are not named as one of the default, non modifiable system folders.
    5. Write suggestions for any of the competitions they can display.

25. An actor who is authenticated as manager must be able to:
    1. Manage his or her resorts, which includes creating and listing them, editing and deleting them as long as they're not going through their activity period.
    2. Manage the reservations for the resorts they manage, which includes listing them and changing their status from "PENDING" to "REJECTED" or "DUE".
    3. Manage the activities offered by the resorts they manage, which includes listing and creating them, editing and deleting them as long as no reservation has requested them.
    4. Assign an instructor to an activity in the "SPORT" category.
    5. List the notes that an auditor has written on his or her activities and write a reply.

26. An actor who is authenticated as a user must be able to:
    1. Book a reservation for any resort they can browse, as long as it's not full and the stay period is contained in the resort's activity period.
    2. List all the reservations he or she has made, grouped by status, and navigate to the resorts they were made for.
    3. Provide a credit card to a "DUE" reservation before its starting date has passed.

4. Cancel a reservation with "ACCEPTED" status before its starting date has passed.
5. Request one or more activities for any reservation with "ACCEPTED" status.
6. Display all of the information regarding any one reservation, including information about the requested activities.

27. An actor who is authenticated as an instructor must be able to:
    1. Manage their lessons, which includes listing and creating them, editing them, and deleting them as long as no reservations have requested them.
    2. Manage his or her curriculum, which includes displaying, editing and deleting it.
    3. List the notes that an auditor has written on his or her lessons and write a reply.

28. An actor who is authenticated as an auditor must be able to:
    1. Manage his notes on activities and lessons, which includes listing and writing them. Once a note is written, it can't be modified or deleted.
    2. Manage his or her audit records, which includes listing, writing, modifying, and deleting them. Note that audit records can be modified or deleted as long as they are saved in draft mode. Once they are saved in final mode, they cannot be modified or deleted.

29. An actor who is authenticated as a sponsor must be able to:
    1. Manage his or her competitions, which includes creating and listing them, editing them, and deleting them as long as they haven't started.
    2. See the contents of the suggestion boxes for each of the competitions they manage and navigate to the profiles of the actors who wrote the suggestions.

30. An actor who is authenticated as user or instructor only must be able to:
    1. Apply to participate in any event, regardless of whether or not they were previously associated to the resort in cuestion by way of reservations or lessons.
    2. Provide a valid credit card on participations with "DUE" status.
    3. Cancel a participation as long as the competition hasn't started.

31. An actor who is authenticated as an administrator must be able to:
    1. Create new accounts for managers and instructors.
    2. Manage the catalogue of tags and its values. Tags and their values can only be edited as long as they're not being used by any resort; they can be deleted at any time.
    3. Manage the catalogue of legal texts. A legal text can only be modified or deleted while it's in draft mode; once it is set to final mode, it cannot be modified at all. Only legal texts in final mode can be referenced by resorts.
    4. Manage the taxonomy of resort categories in the system. Categories can be modified and deleted independently of whether or not there are resorts associated to them. If a category with resorts in it is deleted, the corresponding resorts are moved to the "DEFAULT" category.

5. Broadcast a notification to all the actors in the system, or only the actors in a certain role. The notification must be stored in the "notification box" folder of each targeted actor.
6. List suspicious actors. An actor is considered suspicious if he or she publishes some data that includes a spam word.
7. Ban another actor who is considered suspicious, which means that his or her user account is deactivated.
8. Unban another actor, which means that his or her user account is reactivated.
9. Display a dashboard with the following information:
    1. The average, the minimum, the maximum and the standard deviation of the number of reservations per resort.
    2. The average, the minimum, the maximum and the standard deviation of the number of resorts managed per manager.
    3. The average, the minimum, the maximum and the standard deviation of the reservations' total prices.
    4. The average, the minimum, the maximum and the standard deviation of the number of activities per resort.
    5. The ratio of "ENTERTAINMENT" activities.
    6. The ratio of "SPORT" activities with instructor, without instructor and total.
    7. The ratio of "TOURISM" activities.
    8. The ratio of "PENDING", "DUE", "ACCEPTED" and "REJECTED" reservations.
    9. The resorts that have got at least 15% more reservations than the average, ordered by number of reservations.
    10. The ratio of full resorts.
    11. A table with the number of times each legal text has been referenced.
    12. The minimum, the maximum, the average, and the standard deviation of the number of notes per activity and per lesson.
    13. The minimum, the maximum, the average, and the standard deviation of audit records per resort.
    14. The ratio of resorts with an audit record.
    15. The ratio of instructors who have registered their curricula.
    16. The ratio of instructors whose curriculum's been endorsed.
    17. The ratio of suspicious managers, instructors and users.
    18. The minimum, the maximum, the average, and the standard deviation of competitions per sponsor.
    19. The top five competitions by prize pool, and the top five by maximum number of participants allowed.

Non-functional requirements

32. 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.)

33. The system will be run in Spain, so it must comply with the Spanish regulations except for the following ones: a) the requirement in LOPD regarding keeping files and communications secure and confidential; b) the requirement in LSSI regarding informing the Chamber of Commerce about the internet domain.

34. The system must be easy to customise at deployment time and run time. The administrator must be able to change the following parameters: a welcome banner, a welcome message in English and Spanish (default: "Welcome to the place to plan your ideal holidays", "Bienvenido al lugar donde planear tus vacaciones ideales"), the default list of spam words ("viagra", "cialis", "sex", "love"), the default VAT tax (21.00%), the default country code ("+34"), the default catalogue of tags ("country", "capacity", "altitude"), the default tree of categories ("DEFAULT" -> ("Family" -> ("Children", "Adults"), "Outdoors" -> ("Hiking" -> ("Mountain", "Lake"), "Sightseeing"), "Sports-based")), the catalogue of legal texts, and other configuration parameters that might make sense.

35. Photos are not required to be stored in the database, but links to external systems like Flickr.com, Tumblr.com, or Pinterest.com. Similarly, attachments are not required to be stored by the system, but their URLs to external storage systems like Drive.com or Dropbox.com, to mention a few examples.

36. Every time that a reservation changes its status, the system must send a message to both the manager and the user involved to let them know of the change. The message must be stored in folder "notification box".

37. Whenever a reservation is shown, it must be rendered differently depending on its status, namely: pending reservations must be shown on a yellow background; rejected applications must be shown on a grey background; due applications must be shown on a cyan background; accepted applications must be shown on a green background, unless they have any activities or extras requested, in which case they must be shown in purple; and cancelled applications must be shown on a red background.

38. Free activities and lessons must be displayed properly in listings.

39. Every time someone enters the welcome page, the system should choose a random competition banner and display it.

40. When an actor leaves a message in a competition's suggestion box, he or she may opt to send it as anonymous, in which case their username isn't displayed, and the sponsor in charge of the suggestion box cannot navigate to their profile.