Acme Madrugá

Acme, Inc. is a holding that encompasses many companies worldwide, including Acme Madrugá, Inc. Their business consists in helping brotherhoods across the world organise their processions.

The goal of this project is to develop a web information system that Acme Madrugá, 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 of the system are administrators, brotherhoods, and members. For every actor, the system must store a name, an optional middle name, a surname, an optional photo, an email, an optional phone number, and an optional address. The system must store the following additional data regarding brotherhoods: a title, an establishment date, and some pictures.
2. 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.
3. 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.
4. Brotherhoods can organise processions. For every procession, the system must store its title, a description, the moment when it’s going to be organised. The system identifies the processions by means of tickers that must have the following pattern: “YYMMDD-XXXXX”, where “YYMMDD” refers to the year, month, and day that it’s going to be organised, and “XXXXX” are five uppercase letters.
5. Brotherhoods own floats, for which the system must store their title, description, and some optional pictures. Any of the floats that a brotherhood owns can be involved in any of the processions that they organise.
6. A member may enrol an arbitrary number of brotherhoods. For every enrolment, the system must store the moment when it’s registered and the position in the brotherhood, which must be selected from a list that is maintained by the administrators of the system. There are no restrictions on the number of members who can have the same position in a brotherhood.
7. A member may request to march on a procession. The status of a request can be either “PENDING”, “APPROVED”, or “REJECTED”. Approved requests must record the row and column at which the corresponding member must march (both are positive, non-null numbers); rejected requests must record the reason why.

Functional requirements

8. An actor who is not authenticated must be able to:
    1. Register to the system as a member or a brotherhood.
    2. List the brotherhoods in the system and navigate to their members, the processions that they organise, and the floats that they own.
9. 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.
10. An actor who is authenticated as a brotherhood must be able to:
    1. Manage their floats, which includes listing, showing, creating, updating, and deleting them.
    2. Manage their processions, which includes listing, showing, creating, updating, and deleting them. Processions may be saved in draft mode, which implies that they must not be shown in listings to actors other than their corresponding brotherhoods.
    3. Manage the members of the brotherhood, which includes listing, showing, enrolling, and removing them. When a member is enrolled, a position must be selected by the brotherhood.
    4. Manage their floats, which includes listing, showing, creating, updating, and deleting them.
    5. Manage their processions, which includes listing, showing, creating, updating, and deleting them.
    6. Manage the request to march on a procession, which includes listing them by status, showing them, and deciding on them. When the decision on a pending request is to accept it, the brotherhood must provide a position in the procession, which is identified by means of a row and a column; the system must check that no two members can march at the same row/column; the system must suggest a good position automatically, but the brotherhood may change it. When the decision is to reject it, the brotherhood must provide an explanation.
11. An actor who is authenticated as a member must be able to:
    1. Manage his or her requests to march on a procession, which includes listing them by status, showing, creating them, and deleting them. Note that the requests cannot be updated, but they can be deleted as long as they are in the pending status. Requests to march must be shown according to the following colour scheme: pending requests must be shown in grey; applications that are accepted must be shown in green; applications that are rejected must be shown in orange.
    2. Drop out from a brotherhood to which he or she belongs. The system must record the moment then the drop out takes place. A member may be re-enrolled after he or she drops out.
    3. List the brotherhoods to which he or she belongs or has belonged.
12. An actor who is authenticated as an administrator must be able to:
    1. Create user accounts for new administrators.
    2. Manage the catalogue of positions, which includes listing, showing, creating, updating, and deleting them. Positions can be deleted as long as they are not used.
    3. Display a dashboard with the following information:
        - The average, the minimum, the maximum, and the standard deviation of the number of members per brotherhood.
        - The largest brotherhoods.
        - The smallest brotherhoods.
        - The ratio of requests to march in a procession, grouped by their status.
        - The processions that are going to be organised in 30 days or less.

- The ratio of requests to march grouped by status.
- The listing of members who have got at least 10% the maximum number of request to march accepted.
- A histogram of positions.

Non-functional requirements

13. 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.)
14. The system must be easy to customise at run time. The customisation includes, but is not limited to: the name of the system (it's "Acme Madrugá" by default); the banner shown at the header (it's the one available at https://tinyurl.com/acme-madruga by default); the message that is shown on the welcome page ("Welcome to Acme Madrugá, the site to organise your processions." is the default welcome message in English; "¡Bienvenidos a Acme Madrugá! Tu sitio para organizar procesiones." is the default welcome message in Spanish); and the default country code in telephone numbers (it's "+34"by default).
15. The default list of positions must include the following ones: "President", "Vice President", "Secretary", "Treasurer", "Historian", "Fundraiser", and "Officer" in English; "Presidente", "Vicepresidente", "Secretario", "Tesorero", "Historiador", "Promotor", and "Vocal" in Spanish.
16. Photos 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.
17. Tickers 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.

B-level requirements

Information requirements

18. A brotherhood settles in an area, for which the system must store the following information: its name and a number of pictures.
19. Members have a finder that they can configure using the following search criteria: a single key word, an area, a minimum date, and/or a maximum date. The contents of the finder are the processions that match those search criteria; if a search criterion is not specified, then every procession meets it.

Functional requirements

20. An actor who is authenticated as a brotherhood must be able to:
    1. Select the area in which it was settled. A brotherhood cannot enrol any members or organise any processions until it's selected an area. Once the area is selected, it cannot be changed.
21. An actor who is authenticated as a member must be able to:
    1. An actor who is authenticated as a member must be able to:
    2. Manage his or her finder, which involves updating the search criteria, listing its contents, and clearing it.
22. An actor who is authenticated as an administrator must be able to:

1. Manage the areas in the system, which includes listing them, creating them, updating them, and deleting them. An area can be deleted as long as no brotherhood has settled in that area.
2. Display a dashboard with the following information:
    - The ratio, the count, the minimum, the maximum, the average, and the standard deviation of the number of brotherhoods per area.
    - The minimum, the maximum, the average, and the standard deviation of the number of results in the finders.
    - The ratio of empty versus non-empty finders.

Non-functional requirements

23. 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.
24. 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

25. 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.
26. 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, its priority, and some optional tags. Priorities are HIGH, NEUTRAL, or LOW, but other values are expected to be defined by the administrator. Every actor has the following message boxes: in box, out box, trash box, notification 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 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 actually removed from his folders; when a message is not in any folder, it's actually 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 are allowed to 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, but the system must keep a unique copy.

Functional requirements

27. An actor who is authenticated must be able to:
    1. Manage his or her social profiles, which includes listing, showing, creating, updating, and deleting them.
    2. Manage his or her message boxes, except for the system boxes.
28. An actor who is authenticated as an administrator must be able to:
    1. Broadcast a notification to the actors of the system. The notification must be stored in the notification box by default.

2. Launch a process that flags the actors of the system as spammers or not-spammers. A user is considered to be a spammer if at least 10% of the messages that he or she's sent contain at least one spam word.
3. Launch a process that computes a polarity score for every actor. The score is computed building on the messages that they send. The system must analyse them and and compute the number of positive words (*p*) and the number of negative words (n). The polarity score must be computed as $p - n$ normalised to range -1.00 up to +1.00 using a linear homothetic transformation.
4. Manage the lists of positive and negative words that the system uses to compute the polarity scores, which includes listing, showing, creating, updating, and deleting them.
5. Ban an actor with the spammer flag or whose polarity score is too negative.
6. Unban an actor who was banned previously.

Non-functional requirements

29. Wherever the profile of an actor is shown to an administrator, the system must show whether he or she is considered a spammer and his or her polarity score. Note that "N/A" must be shown in cases in which an actor has not been computed his or her spammer flag or his or her polarity score.
30. The default list of positive words includes "good", "fantastic", "excellent", "great", "amazing", "terrific", "beautiful", and their corresponding Spanish translations. The default list of negative words includes "not", "bad", "horrible", "average", "disaster", and their corresponding Spanish translations.
31. The default list of spam words includes "sex", "viagra", "cialis", "one million", "you've been selected", "Nigeria", and their corresponding Spanish translations.
32. The system must generate automatic notifications on the following events: a request to march changes its status; a brotherhood enrols a member; a member drops out of a brotherhood; a procession is published.