

Acme Immigrant

Acme, Inc. is a holding that encompasses many companies worldwide, including Acme Immigrant, Inc. Their business consists in helping small countries manage their immigration.

The goal of this project is to develop a web information system that Acme Immigrant, 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**, **immigrants**, **investigators**, and **officers**. For every actor, the system must store a name, a surname, an email, an optional phone number, and an optional address.
2. Immigrants can apply for **visas**. For every **application**, the system must store a ticker that identifies it uniquely, the moment when it was opened, the moment when it was closed, an optional **credit card**, several sections, and some statistics. **Applications** are composed of a **personal section**, zero, one, or more **contact sections**, one or more **social sections**, zero, one, or more **education sections**, and zero, one, or more **work sections**. A **personal section** includes the list of full names of an immigrant (typically, immigrants have only one full name, but some countries allow a person to have several full names), his or her birth place, his or her birth date, and a mandatory picture. A **contact section** includes a mandatory email address plus an optional phone number and an optional pager number. A **social identity** section includes a nickname, the name of a social network, and a link to a profile in that network. An **education section** includes the name of a degree, the institution that awards it, the date when it was awarded (if any), and a level, which can be either NONE, ELEMENTARY, PRIMARY, SECONDARY, HIGH, BACHELOR, UNIVERSITY DEGREE, MASTER, or DOCTORATE. A **work section** includes the name of a company, a position, the start date, and the end date (if any). The statistics include the average and the typical variation of the time that elapses since an application regarding a particular visa class is closed until a decision is made.
3. Regarding **visas**, the system must store the following data: a class, a description, and a **price (including the currency)**. In cases in which the price of a visa is zero, immigrants need not provide a credit card in the corresponding applications; in other cases, it is mandatory to provide a credit card whose expiration date must at least three months ahead.
4. Officers self-assign applications in order to process them. Officers may ask questions to the immigrants about their applications. For every **question**, the system must store its **statement** and the moment when it is written, as well as the answer by the corresponding immigrant and the moment when he or she writes it.
5. Officers can make **decisions** on the applications that they have self-assigned. The system must store the moment when the decision is made, whether the officer's accepted or rejected the application, and an optional comment.
6. Investigators must write reports on the immigrants that they're assigned. For every **report** the system must store a piece of text plus some optional pictures.
7. **Phone numbers** should adhere to either **patterns** "+CC (AC) PN" or "+CC PN", where "+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. 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.

8. **Tickers** are generated automatically, must be unique, and cannot be modified by any actors. They must adhere to **pattern "YYMMDD-XXXX99"**, where "YYMMDD" refers to the current year, month, and day, "XXXX" refers to four uppercase random letters, and "99" refers to two random digits.
9. The system must store the following information about **credit cards**: a holder name, a brand name (which must be either VISA, MASTER-CARD, DINNERS, or AMEX), a number, an expiration month, an expiration year, and a CVV code, which is an integer from 100 to 999.

Functional requirements

10. An actor who is not authenticated must be able to:
 1. Register to the system as an immigrant.
 2. Search for visas using a single key word that must be contained either in their classes or descriptions. If no key word is indicated, then all of the visas must be listed.
11. 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 user account data.
12. An actor who is authenticated as an immigrant must be able to:
 1. Manage an arbitrary number of applications, which includes opening them, closing them, editing them, linking them to applications by other users, and displaying them. Once an application is opened, it can be edited until it is closed. Closing an application that is linked to others closes them all immediately.
 2. Answer the questions that an officer has posed on any of his or her applications.
 3. List his or her applications according to whether they are opened, closed and accepted, closed and rejected, or closed and awaiting a decision.
13. An actor who is authenticated as an officer must be able to:
 1. List the applications and self-assign one of them as long as it's not already assigned to another officer. Note that self-assigning an application that has linked applications results in self-assigning the whole collection of linked applications.
 2. List the applications that he or she has accepted, the applications that he or she has rejected, and the applications on which he or she still has to make a decision.
 3. Ask questions regarding an application that he or she has self-assigned.
 4. Make a decision on an application that he or she's self-assigned. The decision can be either accepting it or rejecting it. An application that is rejected must include a comment that justifies the rejection.
 5. Assign an investigator to investigate an immigrant who has made an application that he or she has self-assigned.
 6. Read the reports written by the investigators that he or she's requested to investigate an immigrant.
14. An actor who is authenticated as an administrator must be able to:
 1. Create user accounts for new officers and investigators.
 2. Manage the catalogue of visas, which includes creating them, editing them, listing them, and abrogating them.
 3. Display a dashboard with the following information:
 - The average, the minimum, the maximum, and the standard deviation of the number of applications per user.
 - The average, the minimum, the maximum, and the standard deviation of the number of applications per officer.
 - The average, the minimum, the maximum, and the standard deviation of the price of the visas.

- The average, the minimum, the maximum, and the standard deviation of the number immigrants that are investigated per investigator.
- A chart with the average, the minimum, the maximum, and the standard deviation of the time that elapses since an application is closed till an officer makes a decision on it.

Non-functional requirements

15. 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.)
16. 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 (unless you opt to earn an A⁺, in which case you're requested to use the HTTPS protocol where appropriate); b) the requirement in LSSI regarding informing the Chamber of Commerce about your internet domain.
17. The system must be as efficient as possible.
18. The system must be easy to customise at deployment time and run time. The customisation includes the name of the system, its banner, and the welcome message that is shown on the main page.
19. An application must not be displayed to actors other than the one who made it, the officer who self-assign it, and the investigators that are assigned to it (if any). An application may be linked to an application by another user by entering its corresponding ticker in an input box, which must be provided by the other user. People who travel together to a country should link their applications so that they are processed by the same officer, but it's not a strong requirement.
20. Photos are not required to be stored in the database, but links to external systems like Flickr.com, Tumblr.com, or Pinterest.com.

B-level requirements

Information requirements

21. **Visas are categorised.** Categories have a name and are organised into a hierarchy in which every category, but the root one, has a parent category and may have zero, one or more child categories.
22. Visas are offered by countries. For every **country**, the system must store its name, its ISO code, its flag, and a link to the corresponding wiki page. **Two applications may be linked as long as the corresponding visas are offered by the same country.**
23. Countries enact laws that regulate visas. For every **law**, the system must store its title, its text, its enactment date, its abrogation time (if applicable), and the **related laws**.
24. Laws set requirements on every kind of visa. For every **requirement**, the system must store its title, its description, the law that generates it, and whether it is abrogated or not.

Functional requirements

25. An actor who is not authenticated must be able to:
 1. Navigate the hierarchy of visas and display them.
 2. Navigate the list of countries and display the visas that they offer.
 3. Display the requirements (including the laws that generate them) of every visa that he or she can display.
26. An actor who is authenticated as an administrator must be able to:

1. Manage the catalogue of countries, which includes creating them, editing them, deleting them, listing them, and registering the visas that they offer.
2. Manage the hierarchy of visas, which includes creating, editing, deleting, and listing them, as well as assigning visas to categories.
3. Manage the catalogue of laws, which includes creating, editing, deleting, and listing them, as well as assigning them to countries and requirements.
4. Manage the catalogue of requirements, which includes creating, editing, deleting, and listing them, as well as assigning them to visas and laws.
5. Display a dashboard with the following information:
 - The minimum, the maximum, the average, and the standard deviation of the number of visas per category.
 - The minimum, the maximum, the average, and the standard deviation of the number of laws per country.
 - The minimum, the maximum, the average, and the standard deviation of the number of requirements per visa.

Non-functional requirements

27. When a country is displayed, the corresponding wiki page must not be referenced by means of a link, but it must be embedded.

A-level requirements

Information requirements

28. There's a new kind of actors in the system: **supervisors**, who evaluate officers. For every **evaluation**, the system must store a piece of text that describes it and a mark, which can be either F, C, B, A, or A+.
29. Actors can create folders to post messages. For each **folder**, the system must store its title and its type, which can be either private, public, or in-box. Private folders and in-box folders are not listed to actors other than their owners; public folders can be displayed by any authenticated user. For each **message**, the system must store its subject, the moment when it's written, its body, and an optional array of attachments; a message can be written to reply to another message.
30. Every actor has a **finder** that searches for messages in public folders. The search criteria includes a single key word that must be contained in the subject or the body of the messages and the time frame when they were written.

Functional requirements

31. An actor who is authenticated as a supervisor must be able to:
 1. List the officers in the system and self-assign an officer to be supervised as long as he or she doesn't have any supervisors.
 2. List the officers who have not been evaluated in the last three, six, or nine months.
 3. Evaluate the officers that he or she supervises.
32. An actor who is authenticated as an officer must be able to:
 1. List his or her evaluations.
33. An actor who is authenticated as an administrator must be able to:
 1. Manage a list of spam words.
 2. List the messages in public folders that include spam words.
 3. Delete the messages in public folders that he or she thinks are inappropriate.
 4. Display a dashboard with the following information:

- The average, the minimum, the maximum, and the standard deviation of the number of messages per folder.
- The average, the minimum, the maximum, and the standard deviation of the number of messages per actor.
- The ratio of messages that contain spam words.

Non-functional requirements

34. Whenever one of the following events occur, the system must send a message to the in-box folder of the actors involved: a) an application is opened/closed; b) an application is self-assigned; c) a question on an application is posed; d) a decision on an application is made; e) an investigator is assigned to an immigrant; f) a supervisor self-assigns an officer; g) a supervisor evaluates an officer.
35. 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.
36. 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.
37. 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.

A+-level requirements

Information requirements

Intentionally blank.

Functional requirements

Intentionally blank.

Non-functional requirements

38. The system must use the HTTPS protocol where appropriate.
39. The user interface must be as responsive and friendly as possible. It's strongly recommended that Bootstrap be used, but other similar toolkits are allowed.