

Acme LookSee

Acme, Inc. is a holding that encompasses many companies worldwide. One of them is Acme LookSee, Inc., which is a system where companies can publish their job offers and candidates can register their curricula and apply to them.

The goal of this project is to develop a web information system that Acme LookSee, Inc. can use to run their business. This document provides an informal description of their requirements; ask your lecturers for clarifications and details.

C-level requirements

Information requirements

1. The actors of the system are candidates, companies, and administrators. The system must store their names, surnames, and email addresses; optionally, it might also store a phone number and a postal address. Regarding companies, it must also store their names and VAT numbers.
2. Companies can publish offers, for which the system must store a title, a description, a salary range, the currency in which the salary is specified, and a deadline to apply. The deadline must be at least one week ahead the moment when an offer is published.
3. Candidates can register their curricula. Every curriculum has a unique ticker that is generated automatically. Tickers must match the following format: “yyyy-mm-dd-xxxxx”, where “yyyy-mm-dd” refers to the year, month, and day that they are generated and “xxxxx” is a random five-letter label. A curriculum has a personal record, some education records, some professional records, some miscellaneous records, and some endorser records.
4. A personal record consists of the full name of a candidate, a picture of him or her, his or her email, his or her phone number, and a URL to his or her LinkedIn profile.
5. An education record consists of the title of a diploma, the period during which a candidate 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.
6. A professional record consists of the name of the company for which a candidate 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.
7. A miscellaneous record consists of a title, an optional link to an attachment, and some optional comments.
8. 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.
9. Candidates can apply for offers. For every application, the system must store the moment when it’s created, the curriculum that the candidate attaches, and a status, which can be either PENDING, ACCEPTED, or REJECTED. The curriculum that is attached to an application is a copy of the original one.

Functional requirements

10. An actor who is not authenticated must be able to:
 1. Register to the system as a candidate.

2. Register to the system as a company.
 3. Browse the list of companies and navigate to their offers.
 4. Browse the list of offers and navigate to the corresponding companies.
 5. Search for offers that contain a single key word in their title or description, provide a given salary (in a given currency), and are still open.
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 personal data.
 12. An actor who is authenticated as a candidate must be able to:
 1. List his or her curricula.
 2. Search for specific curricula using a single key word that can appear in any record.
 3. Edit an existing curriculum.
 4. Apply for an offer as long as its deadline has not elapsed.
 5. List his or her applications and sort them by status, application moment, or deadline.
 13. An actor who is authenticated as a company must be able to:
 1. Publish an offer. Writing an offer may require some time, so the system must allow to write as many drafts as necessary before an offer is finally published. For an offer to be published, its deadline must be at least one week ahead.
 2. Accept or reject any application for their offers; note that accepting or rejecting an application does not require the corresponding deadline to have elapsed since they can be assessed at any time.
 14. An actor who is authenticated as an administrator must be able to:
 1. Ban or unban a company if he or she thinks that their offers are inappropriate. Banning a company means that their offers are not displayed by the system, but the actor that represents it can login and perform any operation with the system.
 2. Display a dashboard with the following information:
 - The listing of candidates, sorted in descending order by number of curricula.
 - The listing of companies, sorted in descending order by number of offers.
 - The average number of curricula per candidate.
 - The average number of offers per company.
 - The candidates who have registered more curricula.
 - The companies that have registered more offers.
 - The average, the minimum, and the maximum number of applications per candidate.
 - The average, the minimum, and the maximum number of applications per offer.
 - The average, the minimum, and the maximum number of pending applications per company.
 - The average, the minimum, and the maximum number of accepted applications per company.
 - The average, the minimum, and the maximum number of rejected applications per company.

Non-functional requirements

1. 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.)
2. 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.

3. The system must be as efficient and difficult to hack as possible.
4. Phone numbers should adhere to the following pattern: "+CC (AC) PN", where CC is a two digit country code, "(AC)" is an optional area code that consists of up to three digits, and "PN" is a telephone number that consists of at least 4 digits. 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.
5. Whenever an application is shown, it must be rendered differently depending on its status, namely: pending applications whose deadline has not elapsed or whose deadline has elapsed less than one week ago must be displayed in orange; applications that have been accepted must be displayed in green; applications that have been rejected must be displayed in red; other applications must be displayed in black.
6. Every application that remains pending one week after the corresponding deadline has elapsed is rejected automatically by the system.

B-level requirements

Information requirements

7. There's a new kind of actor in the system: verifiers.
8. Verifiers can write notes on curricula. The system must store the following information regarding the notes: the moment when they are created by a verifier, the remark that he or she writes, the eventual reply by the corresponding candidate, the moment when he or she replies, and a status, which can be either pending, cancelled, corrected, or rejected.
9. Actors may have activity reports. For every such report, the system must store the moment when it was written, a title, a description, and a number of attachments.
10. The system generates automatic payments for companies. It stores the following information: the moment when it is created, a description, the price of the service, and the VAT taxes.
11. Companies must provide a valid credit card to settle their payments. The system stores the following information regarding them: 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.

Functional requirements

12. An actor who is not authenticated must be able to:
 1. Display the activity record of a company.
13. An actor who is authenticated must be able to:
 1. Manage his or her activity records, which includes listing them, editing them, or deleting them.
14. An actor who is authenticated as a candidate must be able to:
 1. Create an offer finder in which he or she can specify one key word and a salary range.
 2. Consult his or her offer finder, which must show the offers that meet the search criteria. The results of a finder must be cached for at least one hour and no more than 10 results must be returned.
 3. List the notes that a verifier has written regarding any of his or her curricula.
 4. Write a reply to any of the notes that he or she can list.
15. An actor who is authenticated as a company must be able to:

1. Create a finder to search for candidates using one key word that must have been mentioned somewhere in any of his or her curricula.
 2. Consult his or her finder, which must show candidates who meet the search criteria. The results of a finder must be cached for at least one hour and no more than 10 results must be returned.
 3. Provide a credit card to settle a payment.
 4. List their payments, making a difference between the payments that have already been settled and the payments that remain unsettled.
16. An actor who is authenticated as a verifier must be able to:
1. List all of the curricula in the system grouped by candidate.
 2. List all of the curricula in the system grouped by offer.
 3. List all of the curricula in the system grouped by company.
 4. Write a note and associate it with a curriculum.
 5. Display his or her notes grouped by candidate.
 6. List his or her notes grouped by their status.
 7. Change the status of a note.
17. An actor who is authenticated as an administrator must be able to:
1. Start a process that creates a weekly payment for every company that is registered in the system. The payment charges a fixed price plus taxes per offer that has been published during the last month. Obviously, if the process is executed several times in a week, only one payment is generated.
 2. Display a dashboard with the following information:
 - The minimum, the maximum, and the average number of activity records per actor.
 - The actors who have $\pm 10\%$ the average number of activity records per actor.
 - The minimum, the maximum, and the average number of payments per company.
 - The ratio of companies that have unsettled payments.
 - The average number of unsettled payments per company.
 - The average number of notes per verifier.
 - The average number of notes, grouped by their state.

Non-functional requirements

18. The time that the results of a finder are cached is one hour by default. The administrator should be able to configure that time at will in order to adjust the performance of the system. The minimum time's one hour and the maximum time's 24 hours.
19. The maximum number of results that a finder returns is 10. The administrator should be able to change this parameter in order to adjust the performance of the system. The absolute maximum is 100 results.
20. Attachments are not required to be stored by the system, but their URLs in external storage systems like Drive, Dropbox, or Mega, to mention a few examples.
21. The system must generate an automatic activity report every time that a company publishes an offer, a candidate applies for an offer, a verifier writes a note, a company changes the state of an application, or a verifier changes the state of a note.
22. By default, the price that Acme charges companies is one euro per offer, but an administrator should be able to change it at will.
23. By default, the VAT percentage's 21%, but an administrator can change if necessary.
24. To check the validity of a credit card, the system must check its brand (which must be either VISA, MASTERCARD, DISCOVER, DINNERS, or AMEX), its number (which must pass Luhn's check), and its expiration date (which is expected to be at least one day ahead).

A-level requirements

Information requirements

25. The actors of the system can exchange messages. Every actor has the following system folders, whose names cannot be modified at all: inbox, outbox, trashbox, and spambox. When an actor receives a message, it gets to the inbox unless the system flags it as spam, in which case it gets to the spambox. When he or she sends a message to another user, a copy is saved to the outbox. When an actor removes a message from a folder other than trashbox, it is moved to folder trashbox; when an actor removes a message from the trashbox folder, it is then removed from the system. The system flags a message as spam if it contains any of the key words that an administrator has configured; by default, the key words must include, but must not be limited to, "viagra", "cialis", "sex", and "love". Actors can create their custom folders and manage them. 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, or LOW; no other values are expected.

Functional requirements

26. An actor who is authenticated must be able to:
1. Exchange messages with other actors of the system.
 2. Manage his or her message folders, which includes creating, listing, modifying, and deleting them.
 3. Manage his or her messages, which includes writing and sending them, deleting them, moving them from one folder to another one, and the like.

Non-functional requirements

Intentionally blank.

A+-level requirements

Information requirements

Intentionally blank.

Functional requirements

Intentionally blank.

Non-functional requirements

27. The communications must be secured by using HTTPS where appropriate. A short report to explain how this A+ has been implemented is required.
28. At least one of the services must be implemented as a stored procedure. A short report to explain how this A+ has been implemented is required.