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| Universität Bern |
| SRS – Group 2 – ESE 2014 |
| Software requirements specification document |

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# I. Revision History

Revision History

| **Version** | **Date** | **Revision Description** |
| --- | --- | --- |
| .01 |  |  |
| .02 |  |  |
| .. |  |  |
| 1.0 |  |  |
|  |  |  |
|  |  |  |

# 1. Introduction

## 1.2 Stakeholders

The stakeholders of this project are as follows:

* For team two especially: Andrea Caracciolo
* Ese- 2014 Staff

## 1.1. Purpose

The purpose of this project is to create a website, where users can search for rooms/ roommates, which is an improvement of existing room/roommate websites.

## 1.3 Definitions

To come

## 1.4 System overview

This software system will be a webpage which helps users find their desired apartment and/or set up an ad to find a suitable member to join their housing commune.   
The system will be designed to assist the ad placer’s to find their optimal housing mate match, by offering them various options to filter Users.   
On the other hand the system will offer various filter options for Users who are looking for an apartment, so that they are offered a good overview over places which might be suitable for them.

The system will be built around flexibility, to fit every user’s needs. Therefore it will be possible to put up/ edit/ watch ads, without having to have an account on the website. However it will be possible to register accounts, which adds a lot of functionality to make the managing of different ads/ applicants even easier.

## 1.5 References

The project should mainly improve existing Software systems with the same purpose. Therefore it is necessary to get an overview of other existing systems, to be able to fully understand the purpose of this project.

Other housing commune sites:

* [www.wgzimmer.ch](http://www.wgzimmer.ch/)
* [www.students.ch/wohnen/](http://www.students.ch/wohnen/)
* [www.tutti.ch/ganze-schweiz/immobilien/wg-zimmer](http://www.tutti.ch/ganze-schweiz/immobilien/wg-zimmer)

Similar real estate websites:

* [www.immoscout24.ch](http://www.wgzimmer.ch/)
* [www.homegate.ch](http://www.students.ch/wohnen/)

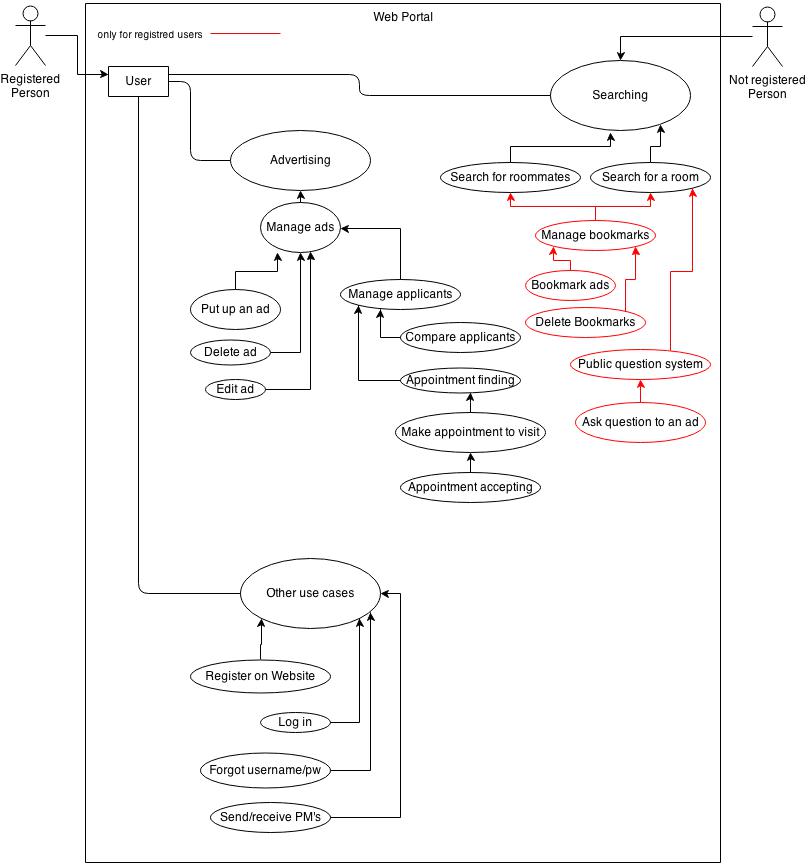
Furthermore the project description of the ese-2014 staff:

* [https://github.com/ese-unibe-ch/ese2014-wiki/wiki/Task-FirstApp](http://www.students.ch/wohnen/)

# 2. Overall description

## 2.1 Use Cases

### 2.1.1 Overview Diagram



### 2.1.2 Advertiser use cases

#### 0. Put up an ad

##### **0.1 Actors**

Registered user

##### **0.2 Description**

As a user I want to be able to log into my account, and put up an ad.

##### **0.3 Trigger**

Create new ad

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user owns an account on the website.   
 2. The user still owns his login credentials.   
3. The user is logged in.

##### **0.5 Post-conditions**

1. A new add is added to the users account  
2. The user is able to edit/ delete the ad at any time.

##### **0.6 Main Scenario**

0. The user navigates to the “create new ad” page.  
 1. The user fills out the form with valid information about the room/flat.   
2. The user submits the ad  
3. The ad will be added to his “ads” tab, in his personal account, by the system.   
4. The user receives a confirmation e-mail.

##### **0.7 Alternative Scenarios**

A) The user is not providing valid information  
 1. Print out error: “information not valid”.   
 2. Fill out form again with valid information.

B) The user can’t log in to his account anymore

1. User clicks on forgot username/ password (See use Case: forgot password/username)

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

How should the form look exactly?

#### 1. Edit ad

##### **1.1 Actors**

Registered user

##### **1.2 Description**

As a user I want to be able to log into my account, and edit my ads.

##### **1.3 Trigger**

Click on edit ad

##### **1.4 Pre-conditions**

0. The user has access to the internet.  
1. The user owns an account on the website.   
 2. The user still owns his login credentials.   
3. The user has already put up an ad.   
4. The user is logged in.

##### **1.5 Post-conditions**

1. The System saves the edited ad.

##### **1.6 Main Scenario**

1. The user goes to his “my account” tab on the website.  
2. The user sees the overview over all his ads, and can click on a shortcut to edit it.  
3. The system redirects the user to the edit field for the ad.  
4. The user adjusts the ad the way he wants and saves it.  
5. The system saves the adjusted ad.   
6. A confirmation e-mail will be sent to the user.

##### **1.7 Alternative Scenarios**

None

##### **1.8 Special Requirements**

None

##### **1.9 Notes**

-

#### 2. Delete ad

##### **2.1 Actors**

Registered user

##### **2.2 Description**

As a user I want to be able to delete my ad whenever I want.

##### **2.3 Trigger**

Chose to delete ad under “my ads” tab.

##### **2.4 Pre-conditions**

0. The user has access to the internet.  
1. The user owns an account on the website.   
 2. The user still owns his login credentials.   
3. The user has already put up an ad.

##### **2.5 Post-conditions**

1. The ad gets deleted.

##### **2.6 Main Scenario**

1. The user goes to his “my ads” tab and gets an overview over all his ads. He clicks the delete shortcut besides the ad he wants to delete.  
2. System asks the user if he really wants to delete the ad.  
 3. The user confirms that he really wants to delete the ad.   
4. The system will delete the ad.  
5. User receives a confirmation e-mail.

##### **2.7 Alternative Scenarios**

None

##### **2.8 Special Requirements**

None

##### **2.9 Notes**

-

#### 3. Appointment finding

##### **3.1 Actors**

Registered user

##### **3.2 Description**

As a user I want to be able to find a suitable appointment with all the applicants.

##### **3.3 Trigger**

Click on the “find suitable date” button.

##### **3.4 Pre-conditions**

0. The user has access to the internet.  
1. The user found people who are interested in his room.   
2. The user is logged in to the webpage

##### **3.5 Post-conditions**

1. A message will be sent out to all the applicants, to choose the time, when they can visit the flat and take a look at the room.

##### **3.6 Main Scenario**

1. The user logs in to the website  
2. The user goes to his “ads” tab.  
3. System prompts the user to his “ads” website  
4. The user can clicks on the ad.  
5. System prompts the user to the site for the ad.  
6. The user can click on “interessents”  
7. System prompts user to the “interessents” page of the ad  
8. User manages all the applicants ( see Manage applicants use-case)  
9. User clicks on the “find date” button.  
10. System prompts user to the “find date” page of the ad.  
11. User specifies the time frames and whether he wants single/ or group visists. And the number of person per group. And/Or the length of one appointment. And he can say how long he wants to wait for the applicants to answer.  
12. User clicks on “send out notifications” button.  
13. System sends out notifications to all the applicants.  
14. After the system finished questioning all the applicants, he receives all the times when the applicants have time, and then he chooses the definitive appointments, and sends out messages to the users.

##### **3.7 Alternative Scenarios**

None

##### **3.8 Special Requirements**

None

##### **3.9 Notes**

How should the form look exactly?

#### 4. manage ads

##### **4.1 Actors**

Registered user

##### **4.2 Description**

As a user I want to be able to retrieve my password/ username to my account.

##### **4.3 Trigger**

Click on “my ads” tab.

##### **4.4 Pre-conditions**

0. The user has access to the internet.  
1. The user registered an account on the website.   
 2. User is logged in

##### **4.5 Post-conditions**

1. The user receives an e-mail with the information to his account.

##### **4.6 Main Scenario**

1. The user clicks on the “my ads” tab.  
2. System prompts user to his “my ads” tab.  
3. The user gets an overview over all his ads. He can select different manage options for each ad (See other usecases, ex.: delete, edit).   
4. System prompts the user to the according manage action page.

##### **4.7 Alternative Scenarios**

-

##### **4.8 Special Requirements**

None

##### **4.9 Notes**

None

#### 5. Manage applicants

##### **5.1 Actors**

Registered user

##### **5.2 Description**

As a user I want to be able to manage all the applicants for my ad.

##### **5.3 Trigger**

Go to the applicants tab

##### **5.4 Pre-conditions**

0. The user has access to the internet.  
1. The user registered an account on the website.   
 2. User is logged in   
3. User has chosen to manage his applicants and is now on the “applicants “ site

##### **5.5 Post-conditions**

1. the user successfully managed all the applicants the way he wants to.

##### **5.6 Main Scenario**

1. The User can filter, read the message, delete and favorite users and chose to compare users( Usecase: Compare applicants).  
2. The System will make the changes.

##### **5.7 Alternative Scenarios**

-

##### **5.8 Special Requirements**

None

##### **5.9 Notes**

None

#### 6. Compare applicants.

##### **6.1 Actors**

Registered user

##### **6.2 Description**

As a user I want to be able to compare different applicants.

##### **6.3 Trigger**

Go to compare

##### **6.4 Pre-conditions**

0. The user has access to the internet.  
1. The user registered an account on the website.   
 2. User is logged in   
3. The User has applicants for his ad.  
4. The User is in the “applicants “ tab.

##### **6.5 Post-conditions**

1.The user has successfully compared applicants by specific criterias.

##### **6.6 Main Scenario**

1. User goes to the “compare” site.  
2. User selects the applicants he wants to compare  
3. User choses to “compare now”.  
4. System prompts the user to the compare page  
6. User can compare the people. The user can compare people by specific criteria and/or take individual notes for each user.

##### **6.7 Alternative Scenarios**

-

##### **6.8 Special Requirements**

None

##### **6.9 Notes**

None

### 2.1.3 Searcher use cases

#### 7. Search for a room

##### **7.1 Actors**

User

##### **7.2 Description**

As a user I want to be able to search for a room using predefined filters.

##### **7.3 Trigger**

Go to the search room site.

##### **7.4 Pre-conditions**

0. The user has access to the internet.  
1. The user is on the search for a room site.

##### **7.5 Post-conditions**

1. User gets presented with a list of rooms that match his criterias.

##### **7.6 Main Scenario**

1. The user can check, and fill out various filters, like price range, location, how many people he wants to have, the type of people(e.g. calm, party etc.), the gender of the people, age of the people, room size.  
 2. The user choses to “add filter”.  
3. System prompts the user to the “results” page.  
4. The user gets presented with all the ads that match his filter.

##### **7.7 Alternative Scenarios**

None

##### **7.8 Special Requirements**

None

##### **7.9 Notes**

What filters in detail?

#### 8. Search for roommates

##### **0.1 Actors**

User

##### **0.2 Description**

As a user I want to be able to search for a roommate using desired filters.

##### **0.3 Trigger**

Click on “search for roommates” button.

##### **0.4 Pre-conditions**

0. The user has access to the internet.

##### **0.5 Post-conditions**

1. User gets presented with the filtered flatmates.

##### **0.6 Main Scenario**

1. The user clicks on “search for a roommate” button on the website.  
2. System prompts the user to the “looking for roommate” site.  
3. The user can check, and fill out various filters, like budget the contestants are willing to pay, the type of people(e.g. calm, party etc.), the gender of the people, age of the people, the minimum time someone wants to live in the room.   
 4. The user clicks on “filter”  
5. System prompts the user to the “results” page.  
6. The user gets presented with all ads, that match his filter criteria.

##### **0.7 Alternative Scenarios**

None

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

What are the exact filter criterias?

#### 9. Ask question to an ad (as a registered user)

##### **0.1 Actors**

User

##### **0.2 Description**

As a user I want to ask a specific question to an ad.

##### **0.3 Trigger**

Click on an ad.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user clicked on an ad.

##### **0.5 Post-conditions**

1. The user asked a question to the ad placer.

##### **0.6 Main Scenario**

1. The user clicks on “search for a room” and/or “search for a person” on the website.  
2. System prompts the user to the “room ads”/ “person ads” site.  
3. The user clicks the “ask question” button.  
4. System prompts the user to the question form.  
5. The user writes his question. And clicks on “submit question” button.  
6. System prompts the user to the “submitted question” page.  
7. The question will be displayed under the “already asked questions” tab.

##### **0.7 Alternative Scenarios**

None

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

How should the form look exactly?

#### 10. Public question system

##### **0.1 Actors**

User

##### **0.2 Description**

As a user I might have questions about a room/ person. I want that questions that have already been asked, are displayed publicly.

##### **0.3 Trigger**

Click on an ad.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user clicked on an ad.

##### **0.5 Post-conditions**

The user can read the questions that have already been asked. If the owner of the ad wants it ( See Use case 11.)

##### **0.6 Main Scenario**

1. The user clicks on “search for a room” and/or “search for a person” on the website.  
2. System prompts the user to the “room ads”/ “person ads” site.  
3. The user scrolls down, and can read the question who have already been asked.

##### **0.7 Alternative Scenarios**

None

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

How should the form look exactly?

#### 11. Bookmark ads (registered users only)

##### **0.1 Actors**

Registered user

##### **0.2 Description**

As a registered user I want to be able to bookmark my favorite ads and review them later.

##### **0.3 Trigger**

Click on the “bookmark ad” button.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user clicked on an ad.  
2. The user is logged in to the webpage

##### **0.5 Post-conditions**

1. The user finds the ad under his “bookmarks” tab.

##### **0.6 Main Scenario**

1. The user logged in to his account  
2. The user found an ad that he likes  
3. The user clicks on the “bookmark ad” button in the ad  
4. The system will prompt him to the “successfully added” page  
5. The user clicks on his “bookmarks” tab.  
6. The user now sees every ad, that he added to his bookmarks.

##### **0.7 Alternative Scenarios**

None

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

-

#### 12. Delete bookmark ads (registered users only)

##### **0.1 Actors**

Registered user

##### **0.2 Description**

As a registered user I want to be able to delete my bookmarks.

##### **0.3 Trigger**

Click on the “bookmarks” button.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user clicked on an ad.  
2. The user is logged in to the webpage  
3. The user has bookmarked an ad.

##### **0.5 Post-conditions**

1. The ad will be removed from his bookmarks

##### **0.6 Main Scenario**

1. The user logged in to his account  
2. The user clicks on his “bookmarks” tab  
3. System prompts user to favoites website.  
4. User clicks on delete bookmark beside the corresponding bookmark  
5. System asks user if he really wants to delete  
6. User clicks Yes, really.   
7. System prompts user to Bookmarks tab, the bookmark is now deleted.

##### **0.7 Alternative Scenarios**

A. User deletes bookmark from inside the ad  
 1. The user is on the ad he bookmarked earlier.   
 2. The user can click the bookmark button again  
 3. Bookmark removed.

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

-

#### 13. Appointment accepting ( for registered users)

##### **0.1 Actors**

Registered user, who is interested in a room

##### **0.2 Description**

As a user I want to be informed, when the owner of a flat/room wants to make an appointment with everybody who is interested. And I want to be able to choose a date.

##### **0.3 Trigger**

Click on the link in pm.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user got invited to make an appointment by the owner of the ad.   
2. The user is logged in to the webpage  
3. The user is in his PM inbox

##### **0.5 Post-conditions**

1. Post conditions should be about changes in the system after the case.

##### **0.6 Main Scenario**

##### Be as distant as possible in use cases, don’t go much into detail.

1. User clicks on the “appointments” tab in his inbox.  
2. System prompts the user to his “appointments” messages.  
3. User sees all the appointment invitations and clicks on one.  
4. System prompts the user to the specific invitation message  
5. The User can chose the time when he will be available.  
6. User clicks “submit”  
7. The User will be notified, that he will receive an invitation, if he will be invited definitely.  
8. When the user receives the definitive invitation, he can accept or decline it.

##### **0.7 Alternative Scenarios**

None What happens if the person declines.

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

-

#### 14. User wants to make an appointment to visit ( for registered users)

##### **0.1 Actors**

Registered user, who is interested in a room

##### **0.2 Description**

As a user I want to be informed, when the owner of a flat/room wants to make an appointment with everybody who is interested. And I want to be able to choose a date.

##### **0.3 Trigger**

Click on the link in pm.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user got invited to make an appointment by the owner of the ad.   
2. The user is logged in to the webpage  
3. The user is on the website of a desired ad.

##### **0.5 Post-conditions**

1. The User sends out a notification to the ad owner, that he wants to visit.

##### **0.6 Main Scenario**

1. User clicks on the “Request appointment” button.  
2. System prompts user to the “fill out short information about themselves” form.  
3. User fills out the form.  
4. User clicks “send”  
5. System gives the user a message sent confirmation.

##### **0.7 Alternative Scenarios**

None

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

-

### 2.1.4 other use cases

#### 15. Register on the website

##### **0.1 Actors**

User

##### **0.2 Description**

As a user I want to be able to register on the website and get my personal account, with my own login.

##### **0.3 Trigger**

Click on the “register” button on the website, and filling out the required form.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user owns a valid e-mail account.   
 2. The user is willing to give his correct name and first name.   
 3. The user provides a username and a password.

##### **0.5 Post-conditions**

1. The user receives the confirmation of the registration in an e-mail.  
 2. The user is able to login into the website, using the given username and password.

##### **0.6 Main Scenario**

1. The user clicks on the “register” button on the website  
 2. The user fills out the form with valid credentials  
 3. The user clicks “submit” to submit the information and register his account

##### **0.7 Alternative Scenarios**

A) the user is not providing valid information  
 1. Print out error: “ information not valid”.   
 2. Fill out form again with valid information.

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

Link facebook account?   
 The user is responsible for keeping his username, and password.

#### 16. login on the website as a registered user

##### **0.1 Actors**

Registered user

##### **0.2 Description**

As a user I want to be able to log in to my personal account.

##### **0.3 Trigger**

Click on the “login” button on the website.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
 1. The user still owns his login credentials.

##### **0.5 Post-conditions**

1. The user is logged in to the website and has access to his personal profile

##### **0.6 Main Scenario**

1. The user enters his password and username on the website.   
2. System prompts the user to the login successful page.

##### **0.7 Alternative Scenarios**

A) the user is not entering a valid username and/ or password  
 1. Print out error: “ password/ username not valid”.   
 2. Ask if he wants to reset password.

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

None

#### 17. Send PM to an user( as a registered user)

##### **0.1 Actors**

Registered user

##### **0.2 Description**

As a user I might have questions about a room/ person. The question is not answered by the public question system ( See use-case 11.)

##### **0.3 Trigger**

Click on the “ask question” button.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user clicked on an ad.  
2. The user is logged in to the webpage

##### **0.5 Post-conditions**

1. The user was able to send a message to the owner of the ad.

##### **0.6 Main Scenario**

1. The user clicked on an ad/ or a user.  
2. The user clicks on “send PM” button  
3. System prompts the user to “send message” page.  
3. The user can freely write his question to the owner of the ad. The user can choose if he wants a copy of the message to his email or not.  
4. The user clicks on “send” button.  
5. System prompts the user to “message successfully sent” page.

##### **0.7 Alternative Scenarios**

None

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

How should the form look exactly?

#### 18. forgot username/password as a-registered user

##### **0.1 Actors**

Registered user

##### **0.2 Description**

As a user I want to be able to retrieve my password/ username to my account.

##### **0.3 Trigger**

Click on the “forgot username/password” button on the website.

##### **0.4 Pre-conditions**

0. The user has access to the internet.  
1. The user registered an account on the website.   
 2. User forgot his password/username   
3. The User HAS TO HAVE his e-mail address.

##### **0.5 Post-conditions**

1. The user receives an e-mail with the information to his account.

##### **0.6 Main Scenario**

1. The user clicks on the “forgot username/password” button.  
2. System prompts user to the password/username retrieval page.  
3. User enters his e-mail address.  
4. User clicks on the “get information” button.  
5. System prompts user to “success” page.  
6. User receives an email with the desired information.

##### **0.7 Alternative Scenarios**

A) The user forgot his e-mail  
 1. Not the problem of this website.

##### **0.8 Special Requirements**

None

##### **0.9 Notes**

None

Manage ads  
manage applicants  
Set notes to visitors.   
  
Filter pms

## 2.2 Actor characteristics

The User is expected to be Internet literate, be able to register on a website and is capable of managing his e- mails.

The website administrators are expected to be Internet literate, be able to manage a user database, be capable of reading emails with attachments and use an internet search-engine, like Google.

# 3. Specific requirements

## 3.1 Functional requirements

Write in general what the product should be able to do. Generally things that will be in our product.

Stay very general. Keep the section about things that really need to be in the application.  
ex.: The user needs to be authenticated for some things to do. Lets say to create an ad.

User needs to be able to search for ads

The Users of the Application should be able to:

* create an Account an log into their account
  + recover their account/pw
  + An account is required for all actions exept searching the adds
  + Cresting an account is easy and fast
* create ads for Rooms and Persons
  + can ask questions concerning the ad
  + apply attributes to the add (some of which can be searched for)
* search the adds using filters
* bookmark ads
  + manage/view their bookmarks
* communicate with other users
  + manage their sent and received messages

## 3.2 Non-functional requirements

### 3.2.1 Performance

The application will run on a Server. The software will require the user of Apache Server to connect the Program to a MySQL database.

### 3.2.2 Safety

Information transmission should be securely transmitted to server without any changes in information.

### 3.2.3 Reliability

DO not lose data.

3.2.5 Availability24/7 98%

### 3.2.6 Security

The main security concern is for users account hence proper login mechanism should be used to avoid hacking. The tablet id registration is way to spam check for increasing the security. Hence, security is provided from unwanted use of recognition software.

### 3.2.7 Usability

* The system will be intuitive und easy to use.
* The language of the system will be English.

### 3.2.8. Logical Structure of the Data

The data descriptions of each of these data entities is as follows:

#### 3.2.8.1 Ad Entity

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Type** | **Description** | **Comment** |
| ID | INT |  |  |
| Name | VARCHAR |  |  |
| FllatAttributes | FlatAttribute |  |  |
| TextObj | TextObj |  |  |
| Owner | User |  |  |
| Description | TextObj |  |  |
| PublicQUestions | TextObj |  |  |
|  |  |  |  |

#### 3.2.8.2 User Entity

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Type** | **Description** | **Comment** |
| ID |  |  |  |
| Lastname |  |  |  |
| Firstname |  |  |  |
| E-mail |  |  |  |
| Pw |  |  |  |
| Username |  |  |  |
|  |  |  |  |
|  |  |  |  |

#### 3.2.8.3 FlatAttribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Type** | **Description** | **Comment** |
| ID |  |  |  |
| Roomnumber |  |  |  |
| Pricerange |  |  |  |
| SocialType |  |  | What do we do together |
| Genders |  |  | Women,Men, Mixed |
| ZIP |  |  |  |
| RoomSize |  |  |  |
| DesiredGenders |  |  | Desired Attribute |
| DesiredSocialType |  |  | Desired Attribute |
|  |  |  | Desired Attribute |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

#### 3.2.8.4 Person Attribute

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Type** | **Description** | **Comment** |
| ID |  |  |  |
| Gender |  |  |  |
| Age |  |  |  |
| Budget |  |  |  |
| SocialType |  |  |  |
| DesiredLocation |  |  |  |
| Smoker |  |  |  |
| DesiredType |  |  | Desired Attribute |
| DesiredAge |  |  | Desired Attribute |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

#### 3.2.8.5 TextObj

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Type** | **Description** | **Comment** |
| ID |  |  |  |
| User\_ID |  |  |  |
| Ad (Abstract)\_Id |  |  |  |
| Text | VARCHAR |  | What can we store in a db |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |