

1 Introduction

For this assignment, we had to use a testing tool in order to check if our context-feature mapping was reliable, and was doing as expected. The results from the test allowed us to modify and correct different aspects of our models.

2 Design Testing

2.1 Table containing the analysed test suite

Original context activate : DontHaveConnection, NotBlocked, BlockedStatus, ContactFamiliarity, Friend-Family, UserDevice, UserConnectivity, Context.

Original feature activate : Quit, SendMessages, Chat, Create, ListAdmin, Offline, Groups, UserAccount, Text, Voice, Remove, Add, Type, Contacts, Emoji, Feature, Reaction, Media, Status

	Added Context	Deleted Context	Added Feature	Deleted Feature
1	ActivelyOnApp, Have-Connection	DontHaveConnection	ReceiveMessages, On-line	Offline
2	HasMicro, HasFront-Camera	NotBlocked	Stories	SendMessages, Re-ceiveMessages, Voice, Emoji, Reaction, Media
3	Stranger	FriendFamily		
4	NotBlocked, Acquain-tance	Stranger	SendMessages, Re-ceiveMessages, Vi-deoCall, Reaction, VoiceCall	
5	AwayForTenMinute	ActivelyOnApp, Has-FrontCamera	Away	VideoCall, Stories, On-line
6	Stranger	NotBlocked, Acquain-tance		SendMessages, Recei-veMessages, Reaction, VoiceCall
7	InMeeting	HasMicro, AwayFor-TenMinute	DoNotDisturb	Away
8	Acquaintance, Has-FrontCamera	Stranger		
9	NotBlocked, HasMi-cro, FriendFamily	Acquaintance	SendMessages, Re-ceiveMessages, Voice, Emoji, VideoCall, Reaction, VoiceCall, Media, Stories	
10	AwayForTenMinute	InMeeting	Away	DoNotDisturb
11	Stranger	HasMicro, FriendFa-mily		SendMessages, Re-ceiveMessages, Voice, Emoji, VideoCall, Reaction, VoiceCall, Media, Stories
12	DontHaveConnection, HasMicro	AwayForTenMinute, HaveConnection	Offline	Away
13	Acquaintance	Stranger, NotBlocked, HasFrontCamera		

2.2 Table containing a realistic scenario

0	I'm not at home, thus I don't have connection at the moment, I can send messages (that will be sent later when I get connection back), but I can't receive them. I can't launch call either.
1	I go home and I have wifi (HaveConnection) and I have the application open on my phone (ActivelyOnApp). My status changes from Offline to Online and I can now receive messages.
2	I activate the microphone and the camera of my device, so I can add a story to my profile. However, a contact has blocked me (delete NotBlocked) so I can't send or receive messages to him.
3	My familiarity with this contact changes to Stranger, it doesn't change anything because as he blocked me I couldn't send him any more messages.
4	The contact unlocks me and to a familiarity Acquaintance with me. We can now send each other messages and make calls (audio and video).
5	I haven't logged in for less than 10 minutes on the app and my phone fell into a puddle, making the camera unusable. So my status is set to Away and since I don't have a camera I can't make stories or video calls.
6	A contact changes our familiarity to Stranger and blocks me. So I can't send or receive messages or make voice calls to him anymore.
7	I'm in a meeting, my phone fell on the floor and the microphone on my phone doesn't work anymore. So my status changes to DoNotDisturb.
8	The relationship with my contact goes from Stranger to Acquaintance, as I remain blocked it does not reactive feature. On the other hand, I dipped my phone in rice and the camera that had taken water worked again.
9	The contact unlocks me and our familiarity status changes to FriendFamily. The microphone that was not working anymore has been fixed. I can now send/receive all types of messages with my contact, make stories and have audio and video conversations.
10	I log out of the application within 10 minutes, so my status changes to Away.
11	My microphone breaks down, so I can't make any audio/video calls. The familiarity status with my contact changes from Friend to Stranger, so we can't send any messages.
12	My microphone is repaired but the connection at home fails. My status is now Offline.
13	The familiarity with my contact changes from Stranger to Acquaintance but as I still don't have my internet connection back I still can't send him messages.

2.3 List of errors found

By analyzing the test suite, we found errors in our models and were able to improve/correct them.

First of all all our contexts were optional, which was not correct and caused big inconsistencies in the tests.

We also found errors in our mapping regarding familiarity. Let's take the example for the SendMessages feature, which was activated by the Acquaintance, Friends/Family and NotBlocked contexts : as the 3 contexts were in a "block" (AND relationship) that activated the feature, we realized that we had to separate the activation of the feature in 2 blocks : 1) Acquaintance AND NotBlocked 2) Friends/Family AND NotBlocked.

Finally we also noticed that when we deactivate the `NotBlocked` context, the contact could no longer send or receive messages from the blocked contact but we had forgotten to manage the case for calls (VoiceCall and VideoCall feature) so a blocked contact could no longer send messages but could still call.

3 Updated Models

3.1 Lexicon

- **Add** : When the user want to add a contact in its **ListContact**.
- **Away** : When the user status is away.
- **BlockStatus** : The status block of all the contact of a user (if it is blocked or **notBlocked**).
- **Chat** : Simply, the place where users can send or receive messages, react, send pictures (media), etc.
- **Contact's Familiarity** : The contacts of each user are divided into familiarity groups : **Stranger**, **Acquaintance** and **Friend's/Family**.
- **Create** : When a user want to create a group.
- **DoNotDisturb** : When the user does not want to be disturbed.
- **Emoji** : The users can send and receive smiley into a text (:emoji :).
- **Groups** : Each user have a list of its group.
- **Has FrontCamera** : Context if the user has a frontcamera on his device.
- **Has Micro** : Context if the user has a microphone on his device.
- **Have Connection** : If the user has a connection (reverse of **Don't Have Connection**)
- **ListAdmin** : Each group can have a list of admins who can manage the group.
- **ListContact** : Each user have a list of contact.
- **Media** : The user can send or receive media like picture, video, gif, etc.
- **Offline** : When the user status is offline.
- **Online** : When the user status is online.
- **Quit** : When a user want to quit a group.
- **Reaction** : Every user can react to a message (with text, emoji etc.).
- **ReceiveMessage** : Every user can receive message in a **Chat**.
- **Remove** : When the user want to remove a contact from its **ListContact**.
- **SendMessage** : Every user can send message in a **Chat**.
- **Status** : The status of a user (Away, DoNotDisturb, Online ou offline).
- **Stories** : The user can add a story that will remain 24 hours on his profile. To do a story, the user must **hasFrontCamera** and **hasMicro**.
- **Stranger** : A stranger can't send or receive messages until he is in the user's contact list.
- **Text** : Basically, a text message.
- **Type** : The type of message (if it is a text, a voice or a media message).
- **UserAccount** : Information about the user like name, pseudo, picture profile, etc.

- **User's Connectivity** : Context for the connectivity of the user (WiFi or 4G for example).
- **User's Device** : Context of the device that the user has in his possession.
- **Voice** : Basically, a audio message.
- **VoiceCall** : The user can make a call with its voice with another user.
- **VideoCall** : The user can make a Videocall with its camera with another user.

3.2 Updated context-feature mapping model

