CS-5220 User Interface Construction

Time Banking

Responsive User interface Design Document

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Introduction

This report is a comprehensive document for the responsive user interface design of Time Banking project. The responsive user interface for Time Banking is implemented as a web user interface. The implemented web user interface follows certain guidelines and patterns that have been used for a while now in web design. The goal of this document is to represent the developed responsive user interface and show the reasoning of its being developed in that manner via representing its correspondence to existing design guidelines and former documentation of Command Line Interface Design of this project.

The structure for the rest of the documents builds up to that objective. Related Works explains the decided technologies for the development of the responsive user interface. It also points out the basis of design decisions, being the chosen guidelines. Methodology section describes the responsive user interface design at a high-level and provides the evaluation criteria that will be followed through the analysis of the design. Results and Analysis section provides the actual verification of the design through the mentioned evaluation criteria. Finally, Discussion and Conclusions section explains whether the objective is reached and give a brief explanation on the realization of the developed responsive user interface.

Related Works

As the responsive user interface makes use of particular technologies and patterns, these should be mentioned with their reasoning in this document. This section involves this information.

As our target audience is not expected to be the most technology or web literate community, we tried to create the design of the user interface as clean, simple and easy to follow as possible. To reach this objective, we examined several web user interfaces and tried to analyze which ones can be suited for our target audience. This examination involved world-wide used web platform(e.g. Facebook, Twitter etc.) as these target themselves for basically anyone who has access to Internet. This suits our goal of serving a community with limited access as well. We also took a look at existing design patterns to make our possible outcome more clear. We checked related patterns in the pattern library on Welie's website[1], especially regarding the provision of core functionalities, such as searching, navigation etc. Eventually, we decided to make use of Bootstrap which provides easy to figure out components to perform these functions.

As the scope of this assignment frames, we also tried to stay out from platform specific designs at this point. We simply tried to create an interactive web user interface that would be available and understandable for our target audience with any kind of setup they have. This viewpoint let us make use of JavaScript language to handle the interactions of the user interface, as JavaScript is a platform-independent programming language.

As we have decided the programming languages and frameworks we will make use of during the development of responsive user interface, the next step was to re-examine our individual designs and find the optimal

design via design guidelines. For that part of making sure that our design follows the principles, we relied on Nielsen's Ten Usability Heuristics for User Interface Design[2] as a base.

Furthermore, we also took our Command Line Interface design as a foundation for the interactions of the responsive user interface. That was the document relying on our user requirements and those requirements should be covered in all of our designs. Therefore, we tried t make sure that those functionalities corresponding to the user requirements are covered.That document itself is also founded on Designing the User Interface by Shneiderman and Plaisant[3] , especially in the creation of Command Line Language.

Methodology

As this document aims to represent the developed web user interface and verifies it via design guidelines, it is appropriate to have a high-level look at the design in this section.

The developed responsive user interface design consists of pages corresponding to several grouped functionality as the example web pages and design patterns demonstrate and propose.The functionalities are based on the ones described in the Command Line Interface Design document of this project.

During the analysis of the responsive user interface design, the criteria are the ones set by Nielsen.[2] Furthermore, regarding the realization of the design we gathered feedback from real novice users.

Results and Analysis

The section involves the representation and description of the developed responsive user interface and its verification towards the existing guidelines and Command Line Interface Design.

Responsive User Interface Design

First, the user interface with its screenshots and detailed descriptions will be provided.
The user interface consist of pages of grouped elements and functionalities. Each of these pages and the available interactions on them are described below.

Welcome Page

Welcome To Time Banking!

Create A Profile For Free!

Username:

Phone number:

Password:

Password again:

[Create]

Already a member? *Log in* here!

What Is Time Banking?

It is a banking system making use of time instead of money. All you need to do is to send an offer to existig requests, provide the service and earn time balance as a result. With your current time balance, you can also request for a service and receive offers.

Why Should You Join?

Because making use of your abilities and time has never been easier and more active.

Figure 1: Welcome Page

Welcome Page greets the user and provide them in-a-nutshell explanation of what Time Banking is. It also gives them the option to either create an account or login to make use of Time Banking Service. The necessary information for creating an account is to create a username, a password and providing a phone number. By providing this basic personal info and clicking the create button, a first-time user will become a member of the Time Banking platform and is directed to the home page of the website. This basic personal info is also asked when log in option is selected by clicking on the formatted text. Clicking the Log in text takes the user to the Login page.

Login Page

Welcome To Time Banking!

Log In With Your Username Or Phone Number And Password!

Username or Phone Number:

Password:

Log in

Figure 2: Login Page

The Login welcomes the user back to Time Banking and asks for the basic personal data to grant the right to access to the user to the platform. Once the data is provided and Log in button is clicked, the user is directed to the Home Page as in the case of creating a new user account.
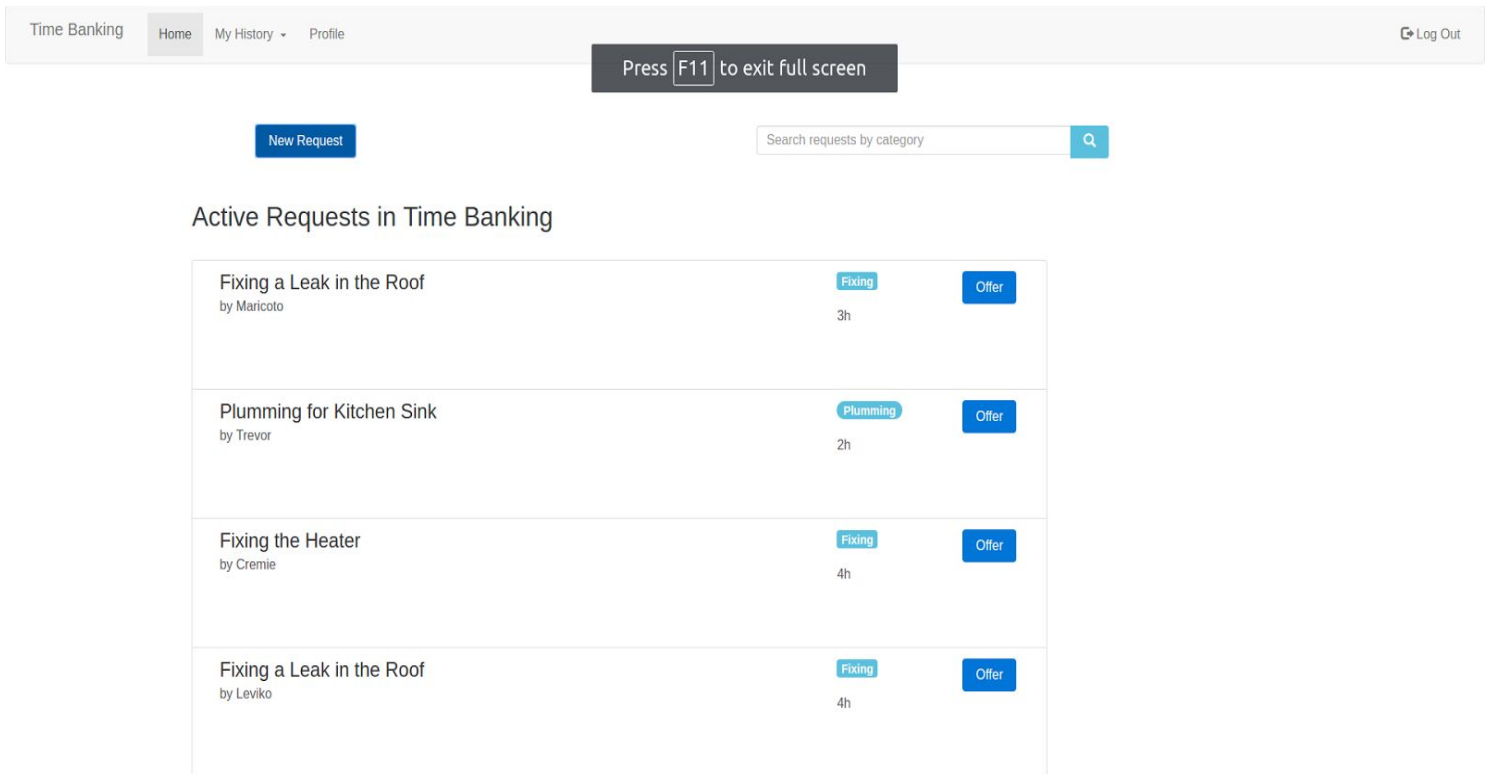
Home Page

Press **F11** to exit full screen

New Request   Search requests by category   🔍

Active Requests in Time Banking

Fixing a Leak in the Roof   Fixing   Offer
by Maricoto
                                             3h

Plumming for Kitchen Sink   Plumming   Offer
by Trevor
                                             2h

Fixing the Heater   Fixing   Offer
by Cremie
                                             4h

Fixing a Leak in the Roof   Fixing   Offer
by Leviko
                                             4h

Figure 3: Home Page

The Home Page of web application can be also referred as the Feed actually since the main attraction and the aim of this page is to present the active requests going on in Time Banking. The reasoning behind having this feed in the home page of the user interface is to encourage the user to offer service to these requests and keep Time Banking alive and effective so that every user in need is met with their remedy.

So, the core functionality on this page is making an offer to the existing listed requests. When an Offer button is clicked for a request, a new dialog box appears involving the related info to the soon-to-be-sent offer.
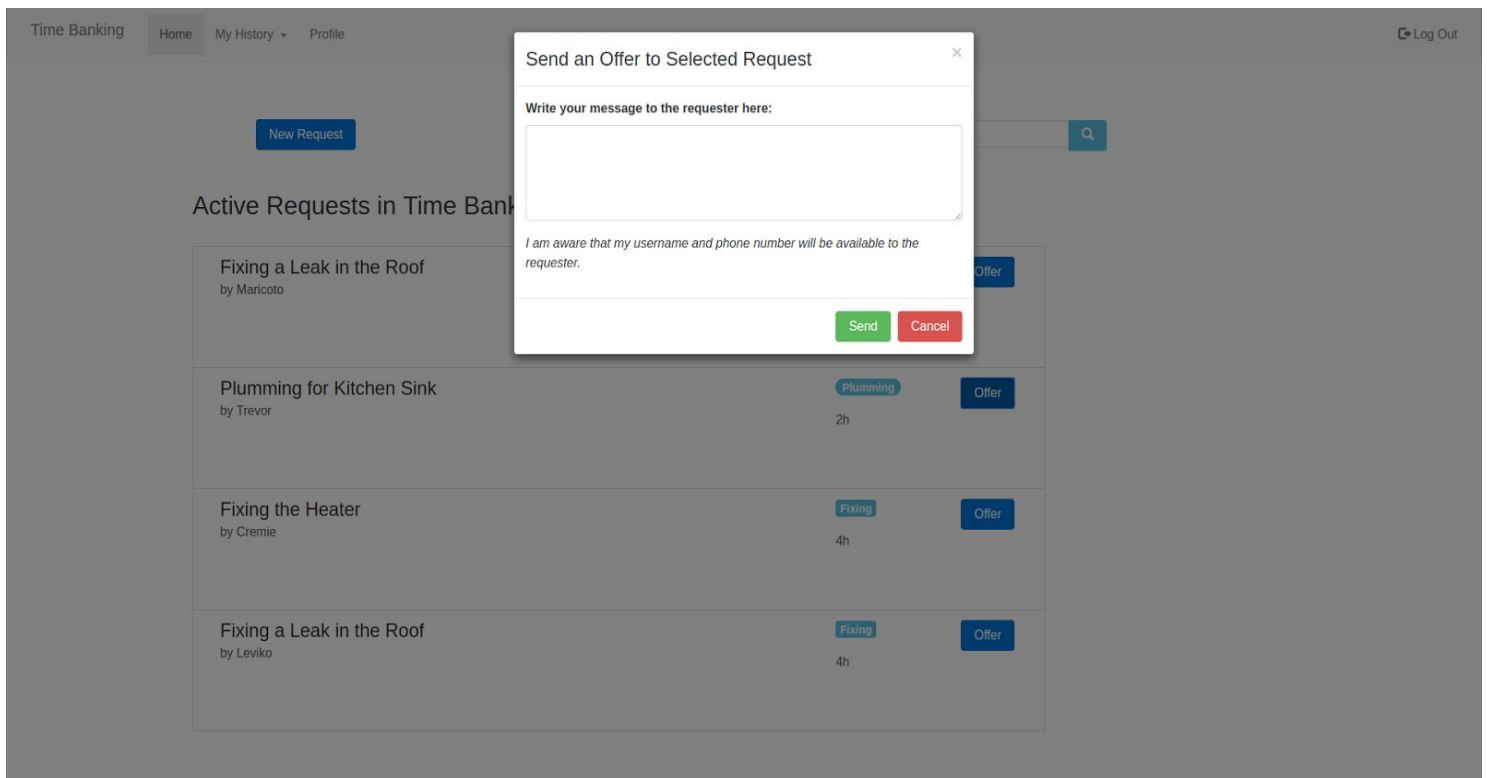
Figure 4: Sending an Offer

As it can be seen above, the user willing to make an offer can send the corresponding requester a message related to the service they are willing to provide. User sending the offer is also warned that the offer will be sent with his/her username and phone number, which is essential for the communication between the user making the offer and the requester in the upcoming phases. An offer is then sent if the user clicks the Send button. He/she can also cancel the offer sending by clicking the Cancel button or the X (Close) sign on the top right if he/she accidentally clicked on Offer button in the first place or decided not to send an offer later. Once an offer is sent or cancelled, the home page is shown again to the user.

Another core functionality of Home Page is, as expected, creating a new request. The user can create a new request for a service he/she needs by clicking the new request button. When New Request button is clicked, another box will be shown to the user involving necessary actions for a request to be formed. This is shown in the figure below.
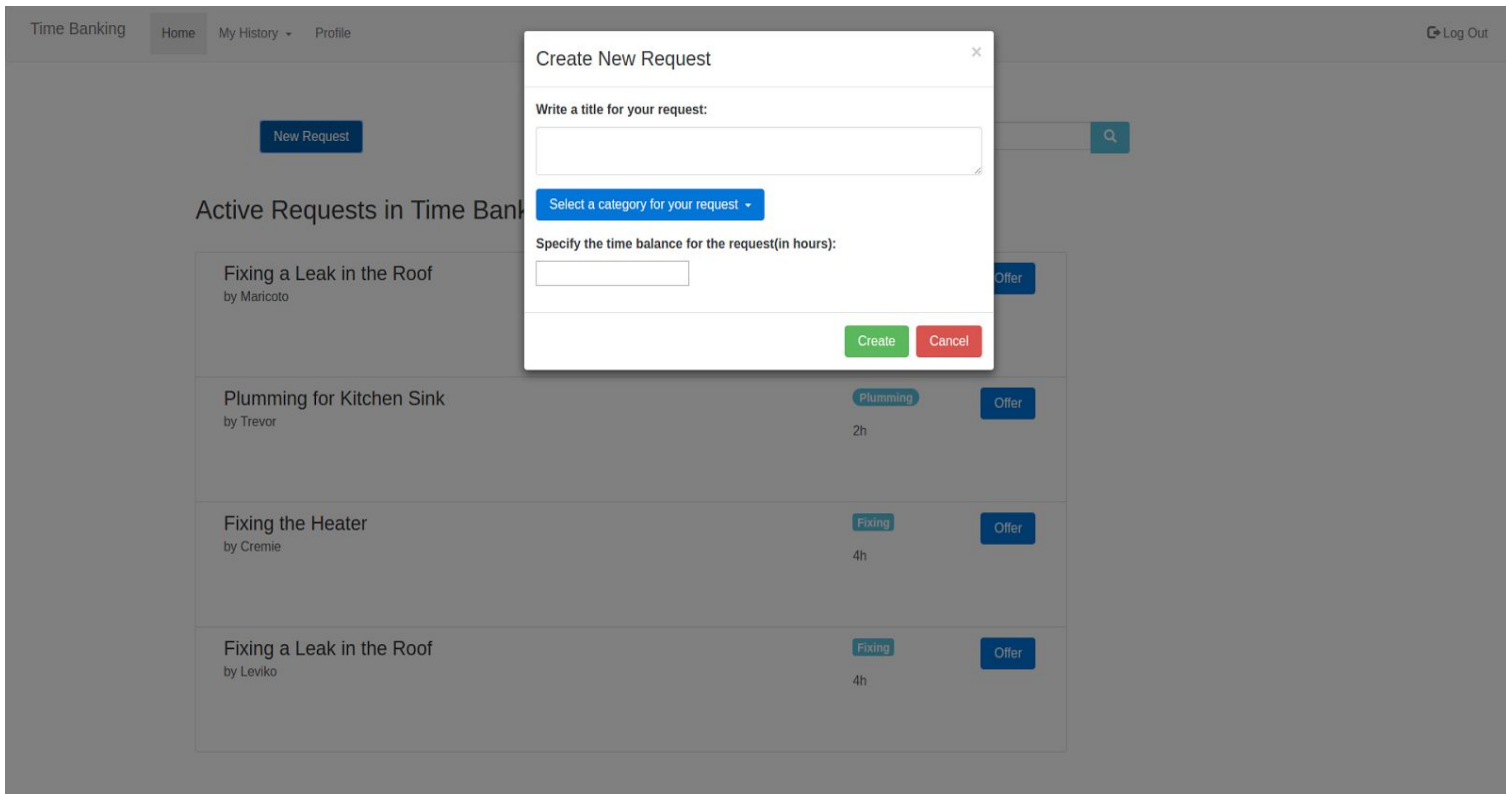
Figure 5: Creating a New Request

For a request to be created, a title explaining the needed service, e.g. Fixing a Leak on the Roof, a category that the service belongs to, e.g. Fixing and a time balance that the service worths need to be specified. It should be noted here that, as described in the Command Line User Interface Design document, categories are actually skills used in performing a service, such as Fixing, Cleaning, Carpentry etc. They are useful in searching for particular requests. By clicking Create button, the request with the provided information will be created. Otherwise, the user can decide not to perform the action by clicking the Cancel button or clicking on the X(Close) sign.

The home page includes a navigation bar on the top of the page, which all other pages except Welcome and Login pages have. This bar basically lets the user change the displayed page out of the provided pages of the application. The starting point saying Time Banking acts as a logo basically and takes the user to Home Page. Home section takes the user to Home Page as well. The section called My History acts as a dropdown menu. When this section is clicked, the options underneath are visible to the user. The current page that is displayed to the user is marked darker on the navigation bar. For example, Home section is darker on the navigation bar in Figure 3.
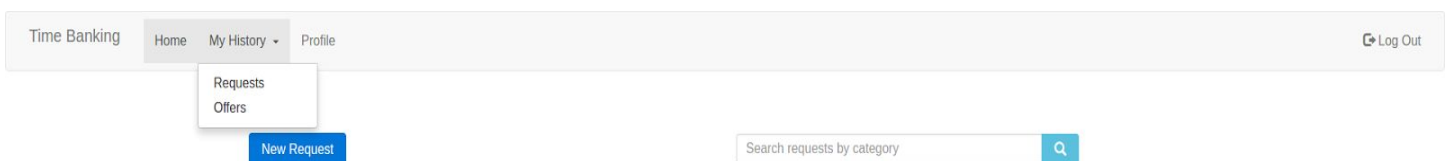

Figure 5: Navigation Bar

As the close-up image of the top of the Home Page above shows, My History section has the pages underneath called Requests and Offers. Clicking on one of these takes the user to the corresponding page. Profile section takes the user to his/her own profile. At the right part of the navigation bar, there is the log out option, which when clicked would terminate the current session of the user and take him/her back to the Welcome Page.

Another important element on Home Page is the search bar, which is also visible in the screenshot above. This element lets users type in a category of requests and search only the requests in that category, so that they are only shown the requests they are interested in offering. When a request is being formed, it is tagged with a skill and put into that skill category. Therefore, when a certain category is searched, requests belonging to that category will be displayed.

As all the elements and functionalities belonging to Home Page, is covered, it is time to move on to the other pages of the user interface. As mentioned above, My History section consists of two separate pages, Requests and Offers pages. When clicked on Requests pages, the following page will be displayed to the user.
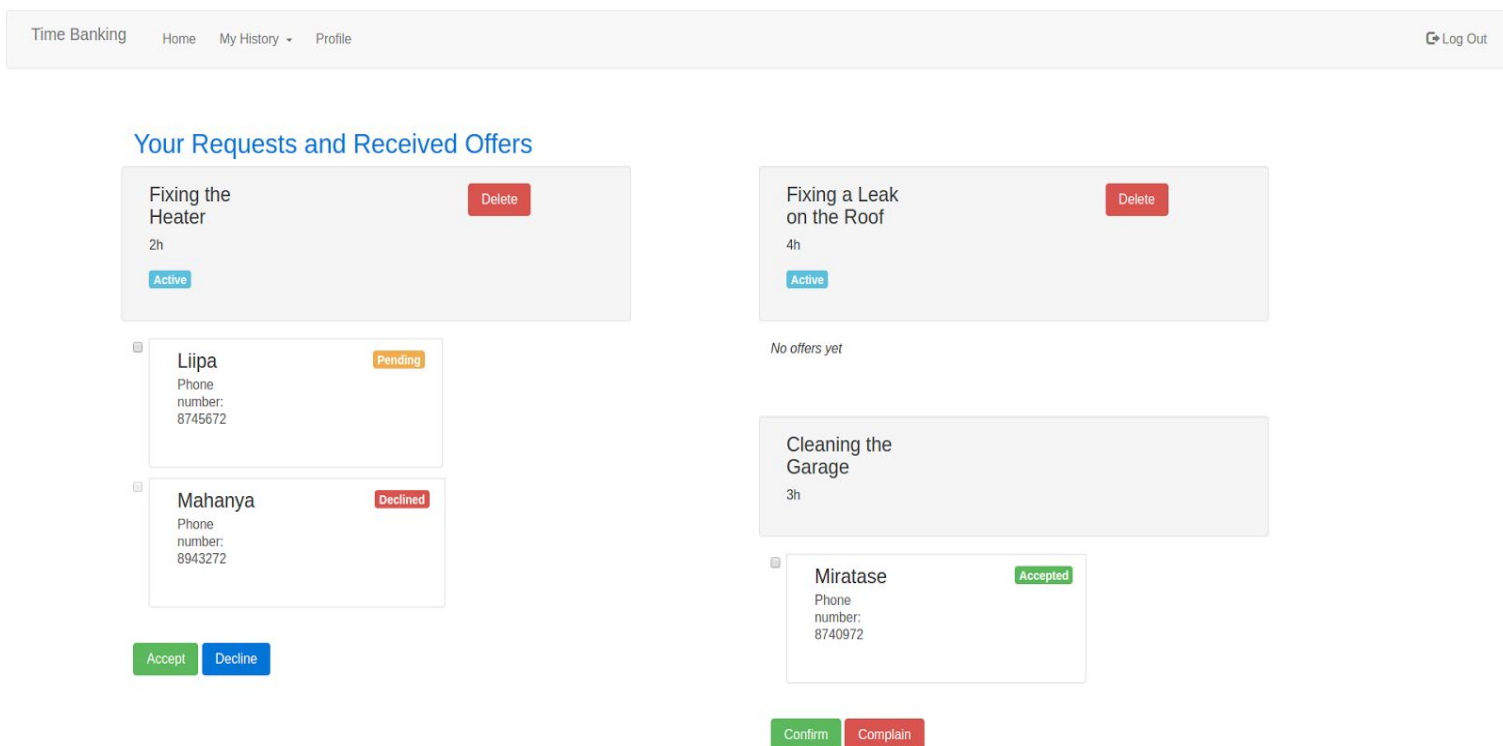
Requests Page

Figure 6: Requests Page

Requests Page displays the requests belonging to the user and the offers received from other users for fulfilling these requests, if there are any. The requests of the user can be active ones, meaning that they are not completed and still receiving offers. In figure 6, Fixing the Heater and Fixing a Leak on the Roof requests

are tagged as Active, as visible. Then, Fixing the Heater has some offers received. Offers for an Active Request, can be Accepted, Pending and Declined. In the case of Fixing the Heater request, the offer from the user Mahanya was already Declined, but the offer from the user Liipa is still Pending, as it can be seen from the tags. The Pending offers can be selected with their corresponding checkbox and can either be accepted or declined, by clicking the corresponding buttons underneath. Once an offer is declined, it its checkbox will be disabled, as it is the case for the offer from Mahanya in this case and that action cannot be rollbacked. On the other hand, if any of the pending offers is accepted, other offers are automatically declined since only one offer can be accepted for a request and the request itself is not active anymore. This means that an offer has been accepted and the person with the offer will be notified about it by Time Banking, so the requester and the user with the offer has an agreement based on trust from that moment on.

It is also possible for the user to delete an active request. Though, for inactive requests, in other words, request that has already accepted an offer, it is possible for the requester to confirm or complain about the offered service. As mentioned in Command Line User Interface Design document, the time balance of a request will be granted to the accepted offer in 2 days, since Time Banking is based on the trust to the community, that the request was fulfilled. Still, to prevent harms to both users(requester and offerer), this confirming and issuing a complaint about the accepted offer is added to the system. If a confirmation happens before 2 days passed, the time balance will be granted to the offerer immediately. If the requester complains about the service, requester's right will be preserved and the time balance will not be granted to the offerer.

So, the Requests page involves all the functionality related to the user's own requests and their management. The page also has the navigation and log out options, just as the Home Page does.

Offers Page

If Offers page is selected from the My History section on the navigation bar, the Offers page containing the user's own offers will be displayed. So, the main idea of having these pages under My History section is actually grouping them as they are both related to user's own actions in Time Banking system.

The Offers page displays the users all sent offers so far, which have not been deleted. These can include Accepted, Pending and Declined offers. A user cannot perform any action for a Declined offer, but he/she can actually delete an offer before it gets accepted or declined. The idea behind having the Delete option is not to encourage the untrustworthy behavior but rather, giving offerers a chance to withdraw their offer if they realize they cannot perform it on that particular time and so on. For an accepted offer, offerer is expected to perform the service. If a problem occurs, the corresponding requester can complain about that service, as explained in Requests page.

Besides these limited functionality regarding the user's own offers, Offers Page has the navigation and log out operations as well.

Figure 7: Offers Page

Profile Page

As clicking the last section of the navigation bar takes the user, Profile page is presented. Profile page acts as both the presentation of personal data of the user and a settings section. Rather than having too many sections on the navigation bar, just as Requests and Offers page are grouped under My History section, we decided to have the personal data and settings in one page, as both involves very little information and functionality.

As shown in figure 8, on the Profile Page, the username, time balance and skills of the user is presented in the scope of personal data. Then, in the scope of functionality, we have the so called settings. The user can delete or add new skills to their profile by making use of Delete and Add buttons. They can also change their username, phone number and password. These changes will be updated once the corresponding Save button is clicked.

These are all the available pages and interactions in the responsive user interface design of Time Banking. It is appropriate to examine these with the selected design guideline.

Verification of the Responsive User Interface Design

This subsection includes the correspondence of our design to Nielsen's Ten Usability Heuristics for User Interface Design.[2]

Visibility of system status

We deal with keeping user informed about the status by mostly the tags we se of their requests and offers. For example, in Requests and Offers pages, the user is informed whether they can delete their request at the moment, or confirm an accepted offer and so on. We also try to change the status in a reasonable time for the actions as well. For instance, if as in Figure 6, Liipa's offer for Fixing a Leak on the Roof request is checked and Accept button is clicked, all the other offers will be declined automatically and will not displayed to the user anymore. The accepted offer will appear as Accepted rather than Pending. The request itself will not be active anymore, therefore the Delete option will not be available. Also, the Confirm and Complain options for the accepted offer will become available.Below is the display of the Requests page after Liipa's offer is accepted.

Figure 9: After an offer is accepted

For the same objective, if the user decides to complain about Miratase's accepted offer, the new display of the page will be as below.

Match between system and the real world

We put the emphasis on this aspect in our Command Line Use Interface design. Time Banking system is aimed to be a service for users from any technology literacy level. Therefore, the system uses a language that is understandable for any type of users by making use of natural language conventions rather than system oriented ones. We sticked with our command line language design to ensure this. For example, using button keywords as Add, Delete, Create corresponds to this aspect.

User control and freedom

We took the accidental selections of options by users into consideration during our design. This prevents unwanted actions to be performed, which will be the ska of all users of Time Banking system.Therefore, we offer emergency exits for these type of actions. The Cancel buttons and CLose signs of boxes provided for Creating new Request and Sending an Offer to the existing request actions are the most visible examples for this aspect.Also, letting the user delete a pending offer before it is accepted or declined is a valuable instance in this scope.

Consistency and standards

As it is the case in our Command Line User Interface design, we stick with same keywords for the same and similar cases. We do not want to confuse our users with different keywords. Also the design of separate pages are consistent with each other so the users do not need to spare time to adapt them either. In that sense, we made use of patterns from Welie's website.[1]

Error prevention

We tried to keep our design simple, to prevent error-prone situations. For example, while creating a new request, the user is directed to choose a category from an extensive existing list rather than putting in a new one. This eliminates the situation of same categories appearing in Uppercase/lowercase and with typos. Another example here is when sending an offer to a request, we inform user that his/her user name and phone number will be displayed to the requester once the offer is sent.

Recognition rather than recall

This is the motivation for having the Requests and Offers pages. The user is not solely notifies, but provided with all available information regarding their actions in Time Banking system, rather than having to remember and search for them. Also, with the usage of the tags and categories, the user have a quite easy time to keep track of their actions.

Flexibility and efficiency of use

In this scope, we do not make use of accelerators for expert users, since our target community is formed by novice users. The whole design is accustomed to novice users and their needs.

Aesthetic and minimalist design

Dialog boxes, which appear when creating a new request and sending an offer, contain only the relevant and necessary, basic information. We do not want to overwhelm our users with rarely needed information. Further, the whole design is minimalistic, since our goal is to serve for novice users. We only display the ultimate necessary information and provide relevant interactions to them.

Help users recognize, diagnose, and recover from errors

As we tried to design the user interface as error-prone as possible, we did not include error diagnosis and recovery so far. Though, we know that it should provide that for the users at least in improved versions of the user interface.

Help and documentation

As we do not want to overwhelm our users with non-ultimate information, we do not provide documentation to them We kept our design simplistic to prevent the need for such documentation needs. Still, the buttons, navigation bar etc. provide the user the necessary help.

Discussion and Conclusions

We believe that we included the main heuristics of user interface design into our responsive user interface design, as explained in detail in the previous section. Further, we tried to gather some objective feedback from the novice users we know, e.g. our parents. The key ideas from their feedback included:

"Easy to use"
"I know where to click and go"
"I like the colors, they let me understand what is going on easily"
"Good, I can cancel that"

All these feedback let us recognize our design suitable not only according to the guidelines but according to our target audience as well. Still, it is for sure that more user testing, especially including people who this system is actually built for, needs to be performed to get a better analysis on the capabilities and design of the system.

Related to the complexity and workload of this whole assignment, we thought that very little explanation was provided about the extent. Therefore, we could not be sure about the level of the detail in the user interface design. We took initiatives in that scope and tried to explain those in this report.

References

[1] Welie, M. V. (n.d.). Pattern library. Retrieved December 05, 2016, from http://www.welie.com/patterns

[2] 10 Heuristics for User Interface Design: Article by Jakob Nielsen. (n.d.). Retrieved December 05, 2016, from https://www.nngroup.com/articles/ten-usability-heuristics/

[3] Shneiderman, B. (1998). "Command and Natural Languages". *Designing the user interface: Strategies for effective human-computer-interaction* (4th ed.). Reading, Mass: Addison Wesley Longman.