Evaluation through expert analisys

Cognitive Walkthrough

Heuristic Evaluation

Evaluation Techniques

Evaluation **through expert analisys**

- Cognitive Walkthtough
- Heuristic Evaluation
- Review-based evaluation

Evaluation **through user participation**

- Think aloud
- Query techniques
- Controlled experiment
- …

Cognitive Walkthrough

Cognitive Walkthrough

For each task walkthrough considers

- what impact will interaction have on user?
- what cognitive processes are required?
- what learning problems may occur?

Analysis focuses on **goals** and **knowledge**: does the design lead the user to generate the correct goals?

Cognitive Walkthrough

What you need:

- A specification or prototype of the system
- A description of the task
- A complete list of the actions needed to perform the task
- Indication on who the users are

Cognitive Walkthrough

For each action in your list the expert will answer the following questions:

1. Is the effect of the action the same as the user's goal at that point?
2. Will users see that the action is available?
3. Once users have found the correct action, will they know it is the one they need?
4. After the action is taken, will users understand the feedback they get?

Cognitive Walkthrough

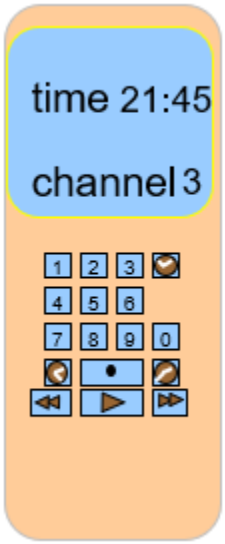
Moreover:

- Produce a standard evaluation form for the evaluation
- Identify
  - Data
  - Time
  - Name of the evaluator
- For any action produce a separate sheet with the four questions
- Any negative answer to the four questions should be documented

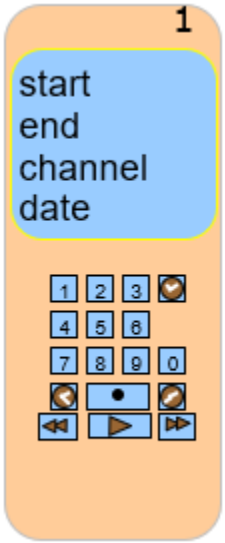
Video remote control

- Example of interface problems: how to record a TV program using a remote control?
- We have an initial design (A) and after the record button has been pressed (B)

A



B



Video remote control

- Identify the task

Program the video to record a program starting at 18:00, finishing at 19:15 on channel 4 on May 24th 2020

- Identify (ad write down the list of) the action sequence in terms of user actions and system response

Action – Response I

- Act. 1: press the “timed record” button
- Resp. 1: display moves to timer mode. Flashing cursor appears after ”start”
- Act. 2: press digits 1 8 0 0
- Resp. 2: each digit is displayed as typed, flashing cursor moves to next position
- Act. 3: press the “timed record” button
- Resp. 3: flashing cursor moves to “End”
- Act. 4: press digits 1 9 1 5
- Resp. 4: each digit is displayed as typed and flashing cursor moves to next position
- Act. 5: press the “timed record” button
- Resp. 5: flashing cursor moves to “channel”

Action – Response II

- Act. 6: press digit 4
- Resp. 6: digit is displayed as typed and flashing cursor moves to next position
- Act. 7: press the “timed record” button
- Resp. 7: flashing cursor moves to “Date”
- Act. 8: press digits 2 4 0 2 0 5
- Resp. 8: each digit is displayed as typed and flashing cursor moves to next position
- Act. 9: press the “timed record” button
- Resp. 9: stream number in top right corner of display flashes
- Act. 10: press the transmit button
- Resp. 10: details are transmitted to video player and display returns to normal mode

Action – Response III

For each action we must record the answers to the 4 questions about the usability of the system

Studying Action 1

Act. 1 Press the "timed record" button

Q1 Is the effect of the action the same as the user's goal at that point?

(Does the user understand that this subtask is needed to reach the goal?)

An1 The timed record button is initiates timer programming. It is reasonable that a user familiar with VRCs would be trying to do this as his first goal

Studying Action 1

Act. 1 Press the “timed record” button

Q2 Will users see the action is avalilable?

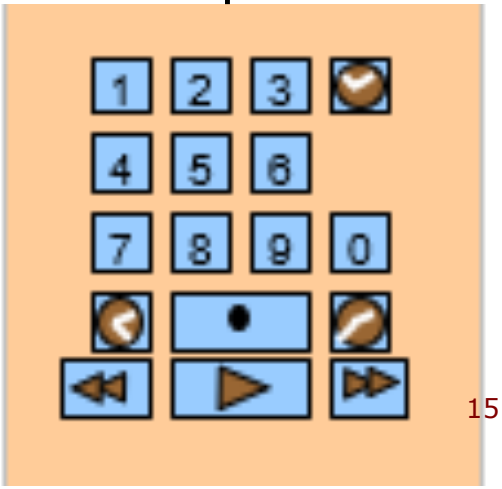
An2 The “timed record” button is visible on the remote control

Still studying action A

Act. 1 Press the "timed record" button

Q3 Once users find the correct action, will they know it is the one they need?

An3 It is not clear which button is the "timed record" button, the icon of a clock is a possible candidate but this could be interpreted as a button to change the time. Other possible candidates, 4th button down on the left or the filled circle. It is quite possible that the user would fail at this point. This is a potential usability problem



Final study of action A

Act. 1 Press the "timed record" button

Q4 After the action is taken, will users understand the feedback they get?

An4 Once the action is taken the display changes to the timed record mode and shows familiar headings (start, end, channel, date); it is reasonable to assume that the user would recognize these as indicating successful completion of the first action

Usability problem

A potential usability problem stems from the first action: namely how to find the correct icon to start the TV program recording

The walkthrough proceeds to the analysis of the other actions, always trying to answer the four basic questions.

Cognitive Walkthrough

Exercise

Patients check in for a visit

Imagine a tablet interface used by health-clinic patients to check in for a visit and update their patient information.

The reviewers would focus on evaluating the steps that patients go through within the interface to complete these activities in preparation for their visit.

Patients check in for a visit

Lecture Notes (HCI Practices) ○ Manually sort using ≡ ◉ Sort on: File name 0-9,aA-zZ

Lecture Notes (HCI Practices)	Date	Actions
00_-_Temporary_-_Cognitive_Walkthrough_Ex1.docx	May 16, 2024	Edit | Post a note | Update file | Delete
00_-_Temporary_-_Heuristic_Evaluation_Ex2.docx	May 16, 2024	Edit | Post a note | Update file | Delete
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02_UserReq_Questionnaires__2024.pdf	Mar 21, 2024	Edit | Post a note | Update file | Delete
02_UserReq_Slide_2024_P1.pdf	Mar 21, 2024	Edit | Post a note | Update file | Delete

https://piazza.com/uniroma1.it/spring2024/1038134/resources

Work in groups

Patients check in for a visit

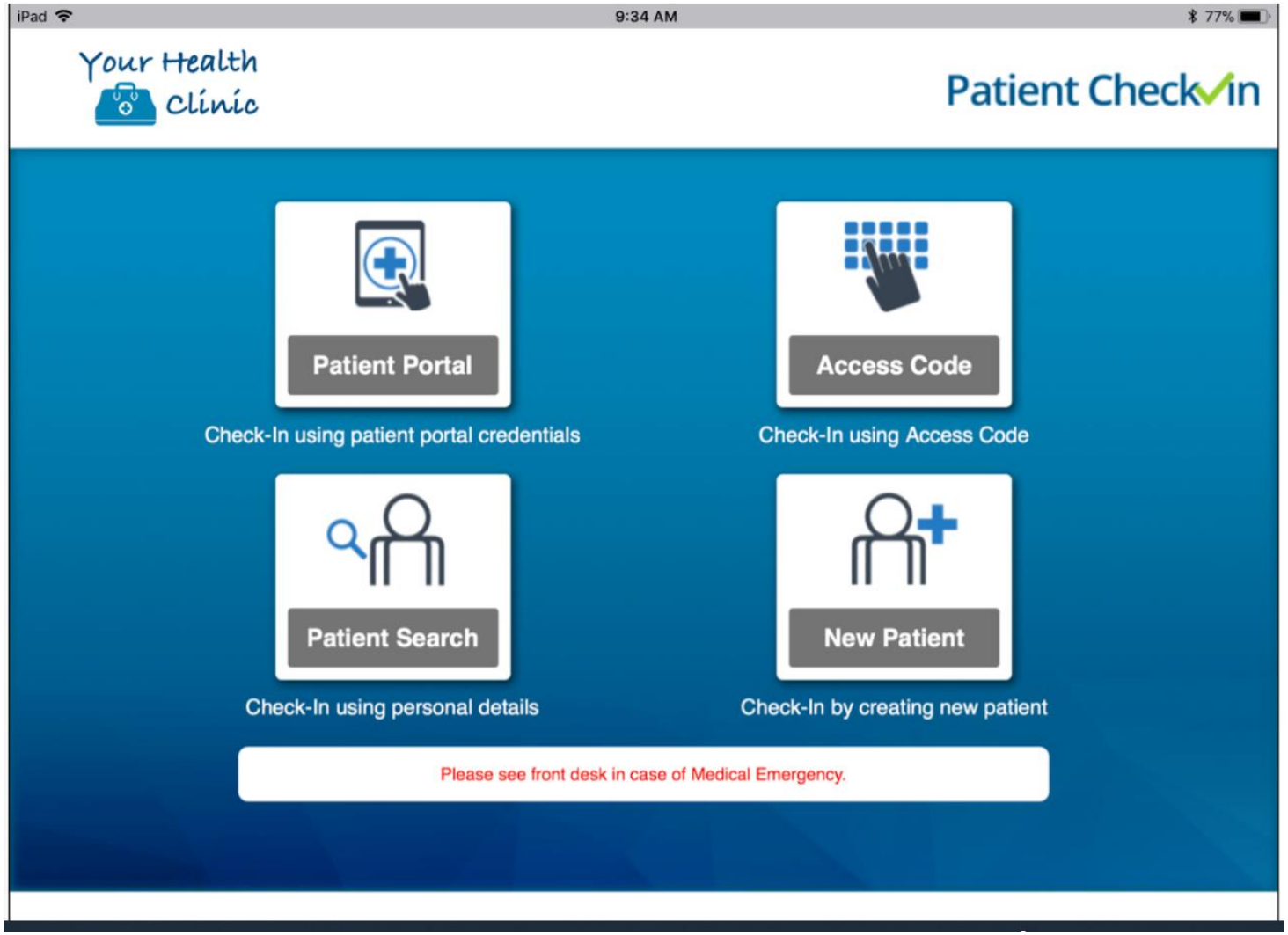
Checkin: a patient new to the clinic arrives for an appointment and is asked by the receptionist to check in using the provided tablet application.

The task: check in using the provided tablet application

- Act. 1: press the new patient Check in button
- Resp. 1: a new page “Enter your personal information” is displayed.

https://www.nngroup.com/articles/cognitive-walkthroughs/

Patients check in for a visit



Patients check in for a visit

- Act. 1: press the new patient Check in button
- Resp. 1: a new page "Enter your personal information" is displayed.

Q1: **Is the effect of the action the same as the user's goal at that point?**

Yes: patients will be directed by a receptionist upon entry to check in for their appointment, and the application includes the phrase Patient Check in in the header.

Note: There may be instances where the receptionist is away from the desk.

Patients check in for a visit

- Act. 1: press the new patient Check in button
- Resp. 1: a new page “Enter your personal information” is displayed.

Q2: **Will users see that the action is available?**

Yes: all action buttons are positioned within the body of the page using a highly salient visual styling that effectively communicates tapability.

Patients check in for a visit

- Act. 1: press the new patient Check in button
- Resp. 1: a new page "Enter your personal information" is displayed.

Q3: **Once users have found the correct action, will they know it is the one they need?**

No: selecting from the four options provided on the screen requires a lot of cognitive effort for new patients, because they must assess and eliminate the incorrect options before determining the correct one, New Patient.

Some patients may assume they have a patient record because they have an appointment. Others may simply see the Patient Search option first and take action before assessing the New Patient option.

Patients check in for a visit

- Act. 1: press the new patient Check in button
- Resp. 1: a new page “Enter your personal information” is displayed.

Q4: **After the action is taken, will users understand the feedback they get?**

Yes: the page changes and a form with the heading Enter your personal information is displayed.

Heuristic evaluation

Heuristic evaluation

Is a method for structuring the critique of a system using a set of relatively simple and general heuristics

Heuristic evaluation

- Several evaluators perform the analysis independently
- Aimed at early design

-> 5 evaluators discover, on average, 75% of usability problems

Nielsen's 10 heuristics

1. Visibility of system status
2. Match between the system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose and recover from errors
10. Help and documentation

Visibility of system status

Keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.

https://www.nngroup.com/articles/ten-usability-heuristics/

Match between the system and the real world

The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.

https://www.nngroup.com/articles/ten-usability-heuristics/

User control and freedom

Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.

https://www.nngroup.com/articles/ten-usability-heuristics/

Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions.

https://www.nngroup.com/articles/ten-usability-heuristics/

Error prevention

Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action.

https://www.nngroup.com/articles/ten-usability-heuristics/

Recognition rather than recall

Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed.

https://www.nngroup.com/articles/ten-usability-heuristics/

Flexibility and efficiency of use

Shortcuts — hidden from novice users — may speed up the interaction for the expert user so that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

https://www.nngroup.com/articles/ten-usability-heuristics/

Aesthetic and minimalist design

Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.

https://www.nngroup.com/articles/ten-usability-heuristics/

Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution

https://www.nngroup.com/articles/ten-usability-heuristics/

Help and documentation

It’s best if the system doesn’t need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

https://www.nngroup.com/articles/ten-usability-heuristics/

Severity

0 = I don’t agree that this is a usability problem at all
1 = Cosmetic problem only
2 = Minor usability problem
3 = Major usability problem
4 = Usability catastrophe

Heuristic evaluation

Exercise

Mobile application about museums

System purpose

Mobile application that allows users to get information about monuments, museums and art works around the whole world.

User profiles

Age: 16-60

Gender: Equally distributed

Location: Everywhere

Job title/Education: Student or worker

Technology: A smartphone and some mobile app experience

Mobile application about museums

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Work in groups

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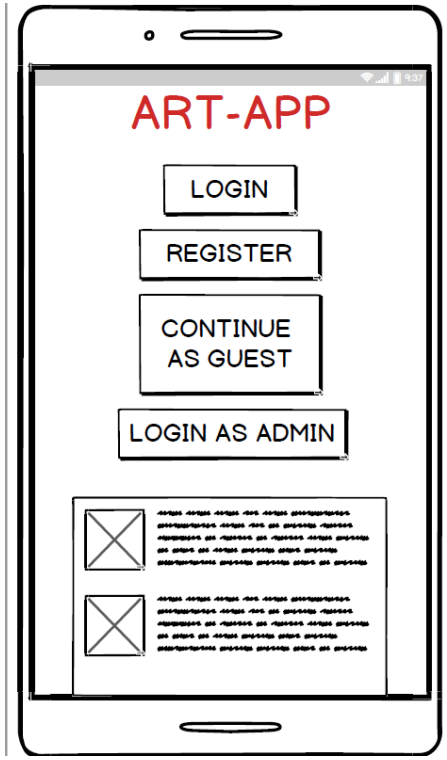
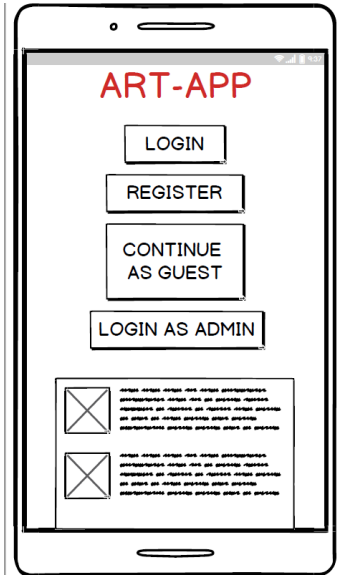
Mock up

Adobe Acrobat
Document

Page 1

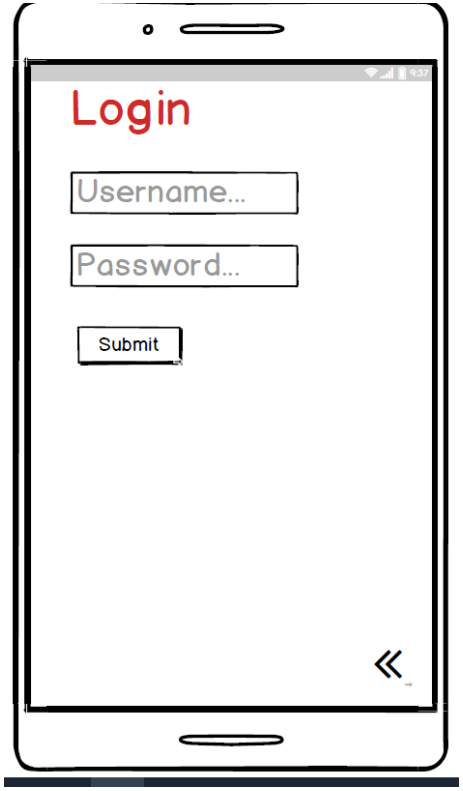


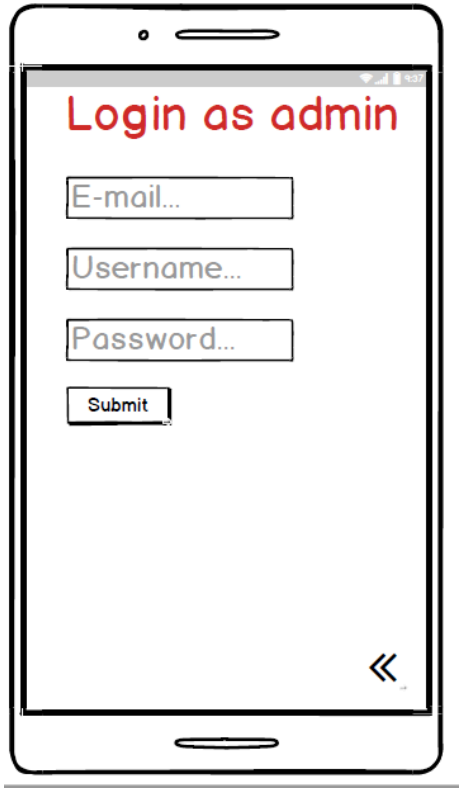
Page 1



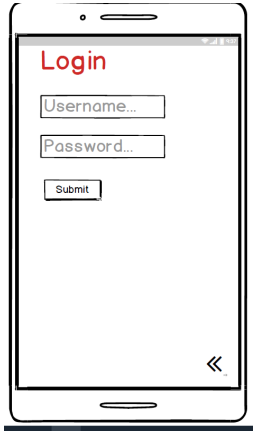
Page	Heuristic violated	Severity	Description / Comment
Home page (page 1)	Aesthetic and minimalist design	2	Login page is full of buttons. Dialogues should not contain information, which is irrelevant or rarely needed.

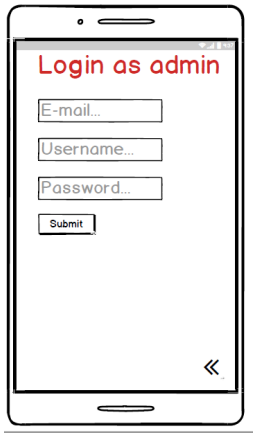
Page 2 and 3


Login
Username...
Password...
Submit


Login as admin
E-mail...
Username...
Password...
Submit

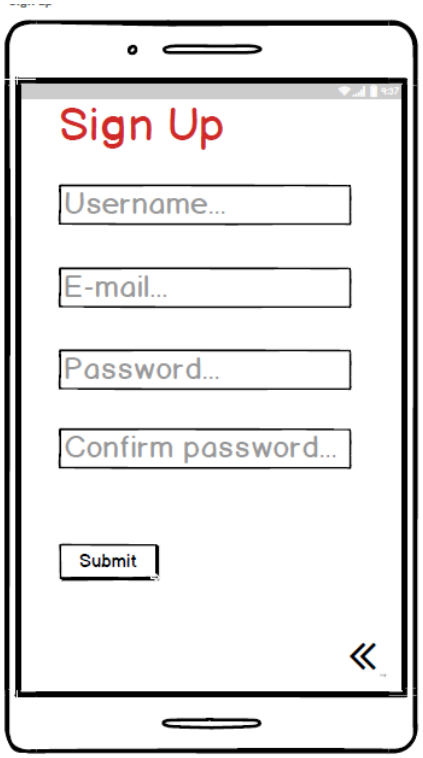
Page 2 and 3



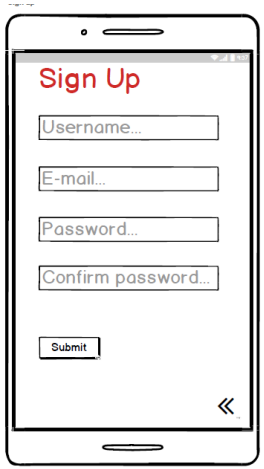


Page	Heuristic violated	Severity	Description / Comment
Login (page 2)	Help users recognize, diagnose, and recover from errors	4	Include a Forgot password? link
Login as admin (page 3)	Help users recognize, diagnose, and recover from errors	4	See previous note

Page 4

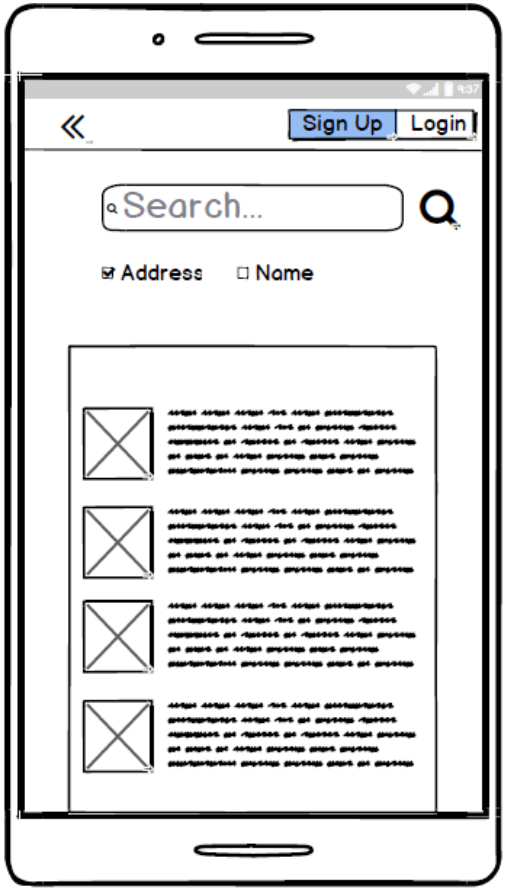


Page 4

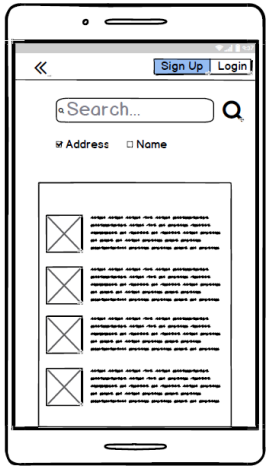


Page	Heuristic violated	Severity	Description / Comment
Sign up (page 4)	Flexibility and efficiency of use	2	Offer alternative methods of registration such social login or Google login
Sign up (page 4)	Error Prevention	2	Provide function to show password in clear text
Sign up (page 4)	Error Prevention	2	If you have set some rules for the format of user password, make them clear before the user click to submit

Page 5



Page 5



Page	Heuristic violated	Severity	Description / Comment
Search (page 5)	User Control and Freedom	2	Let the user move from "Address" to "Name" and vice-versa without losing what he wrote in the search field.
Search (page 5)	User control and freedom	2	Provide an option to cancel the search
Search (page 5)	Recognition rather than recall Error prevention	3	Put "Search" label outside the form field: placeholder text will disappear when the cursor is placed. Placeholder text, located inside a form field can be an example of the information required.

Page 7


Logout
Username
Add new monument
Rate the monument
Name...
Address...
Info monument...
Add your own experience/review...
Submit

Page 7

Page	Heuristic violated	Severity	Description / Comment
Add new monument (page 7)	User control and freedom	3	Cancel button is missing
Add new monument (page 7)	Recognition rather than recall Error prevention	3	See previous note on putting label outside the form field

Evaluation through expert analisys

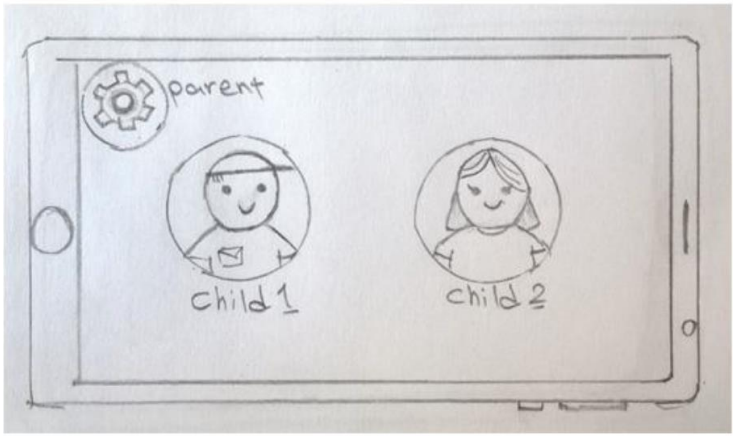
Notes for tesina

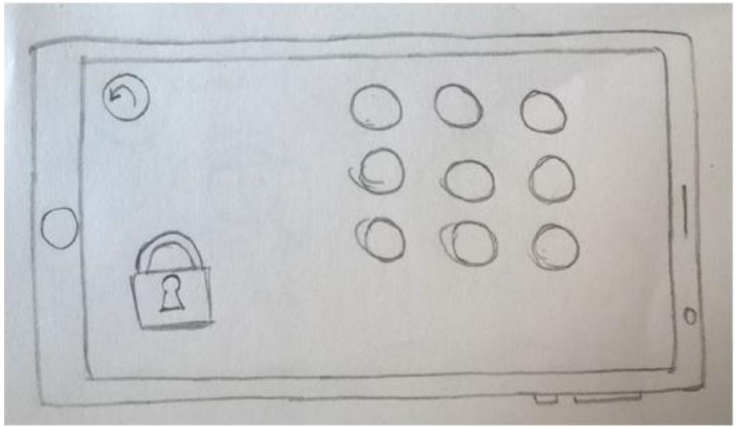
Evaluation through expert analisys

Ask tutors for the evaluations (one or both)

CW	HE
 Adobe Acrobat Document	 Adobe Acrobat Document

Mock-up example





Mock-up example

Mock-up example

balsamiq

eSoftner