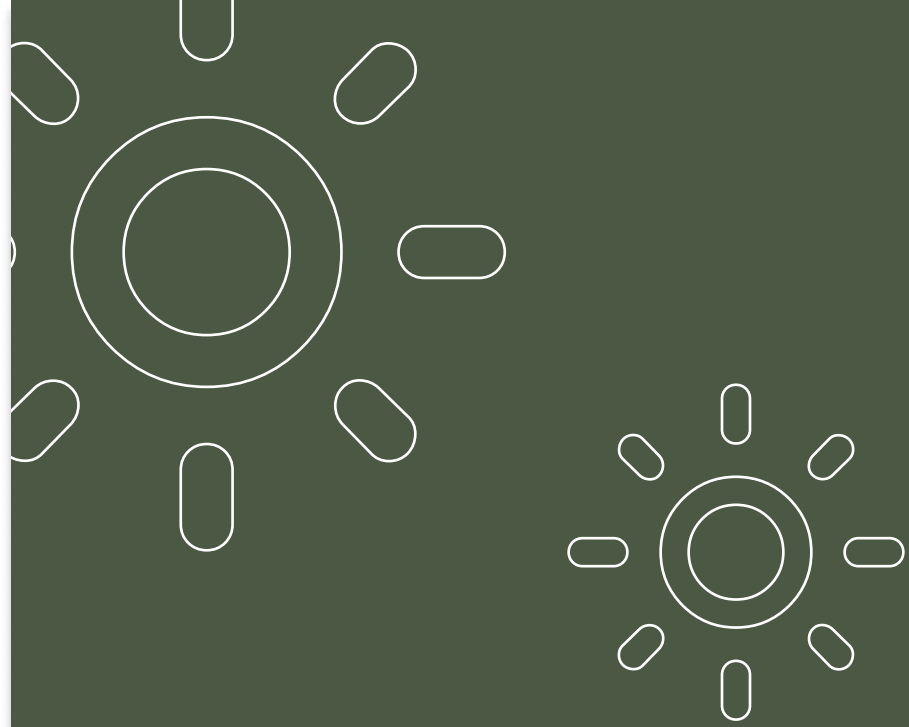# Cognitive Ergonomics
Assignment 2

Interaction & interface Design
of a public laundry washing
machine

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Existing Solutions

Existing interfaces

Start button

Stop button

Temperature

Programme selection

Instructions

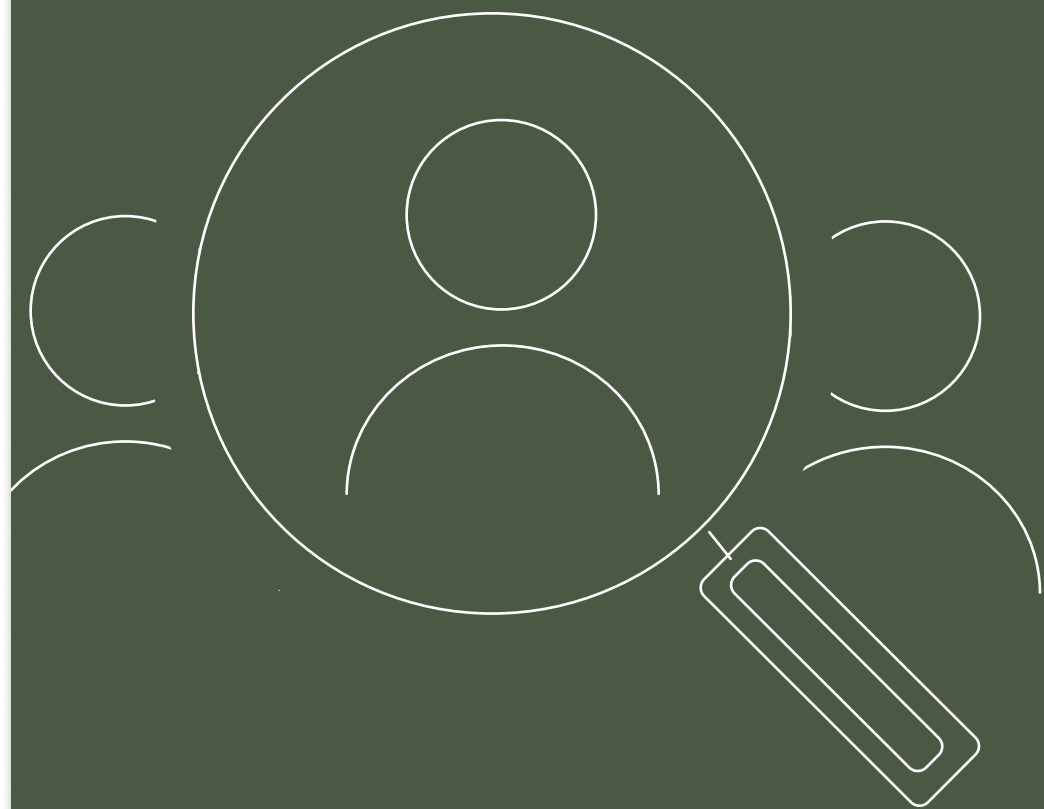Display screen for remaining time and programmes selected

Laundry door

Types of laundry machines:

10kg

18kg

User Needs

Interview Questions-Answers

How sufficient do you think the available instructions were?

→

There are no instructions for the steps required to wash the clothes

At first when you go and see everything together you get confused

It was clear what I had to do to wash my clothes

Interview Questions-Answers

Is there any missing feature that you would like to have ?

$\longrightarrow$

When travelling, I would want the menu to be available in English as well

Was there any occurance where you faced any difficulties?

$\longrightarrow$

I always want to know how much time is left to finish washing

1st Scenario

A mother of three children, after the winter season, goes to a public laundromat to wash the curtains and blankets of the house. She sets the program to 40 degrees and pays with cash. She stays in the shop until the washing is finished.

2nd Scenario

A student wants to wash his weekly color clothes and goes to a public laundromat to wash them. He want to get notified when the wash is finished because he wants to leave and come back. He also wants to pay with credit card, because he does not carry any cash.
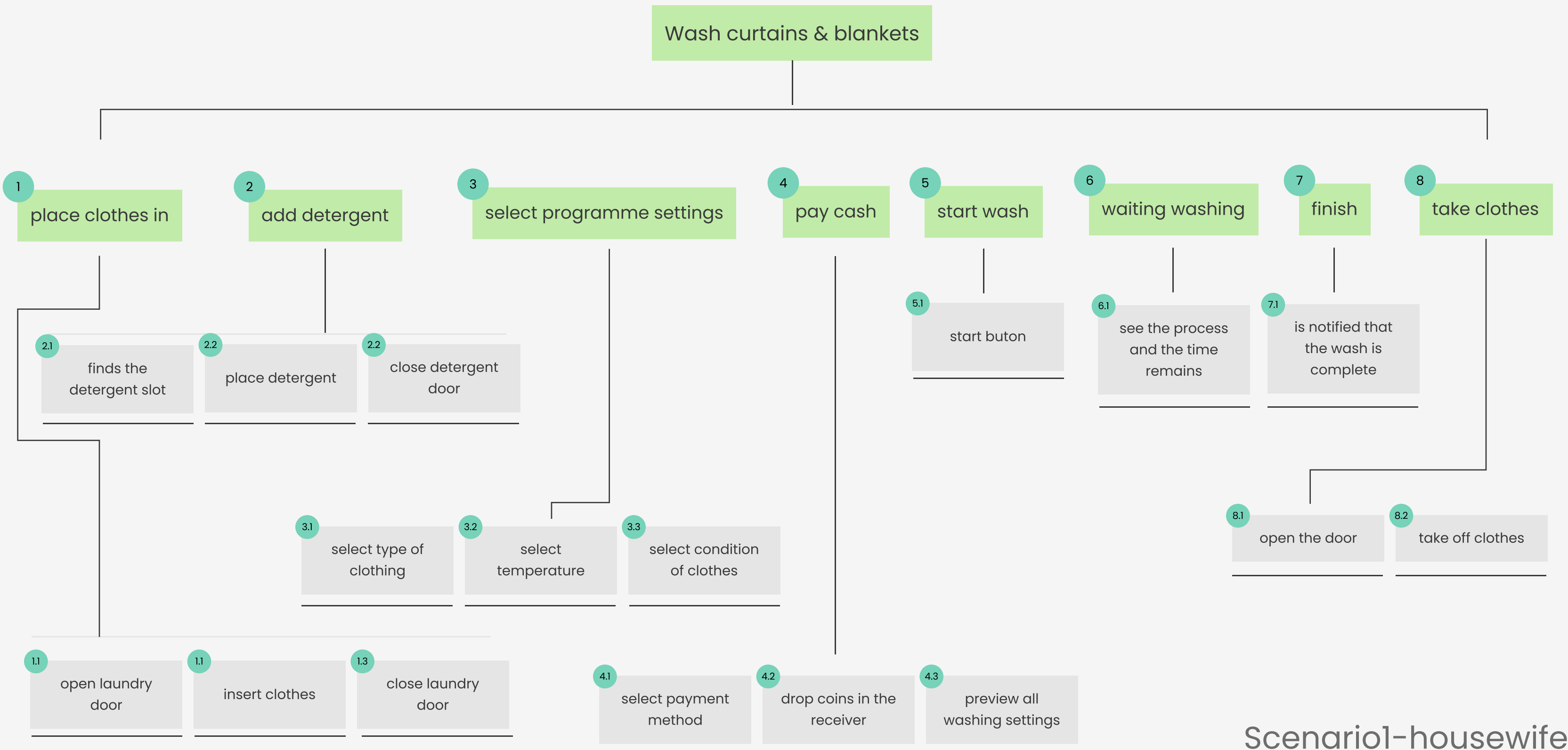
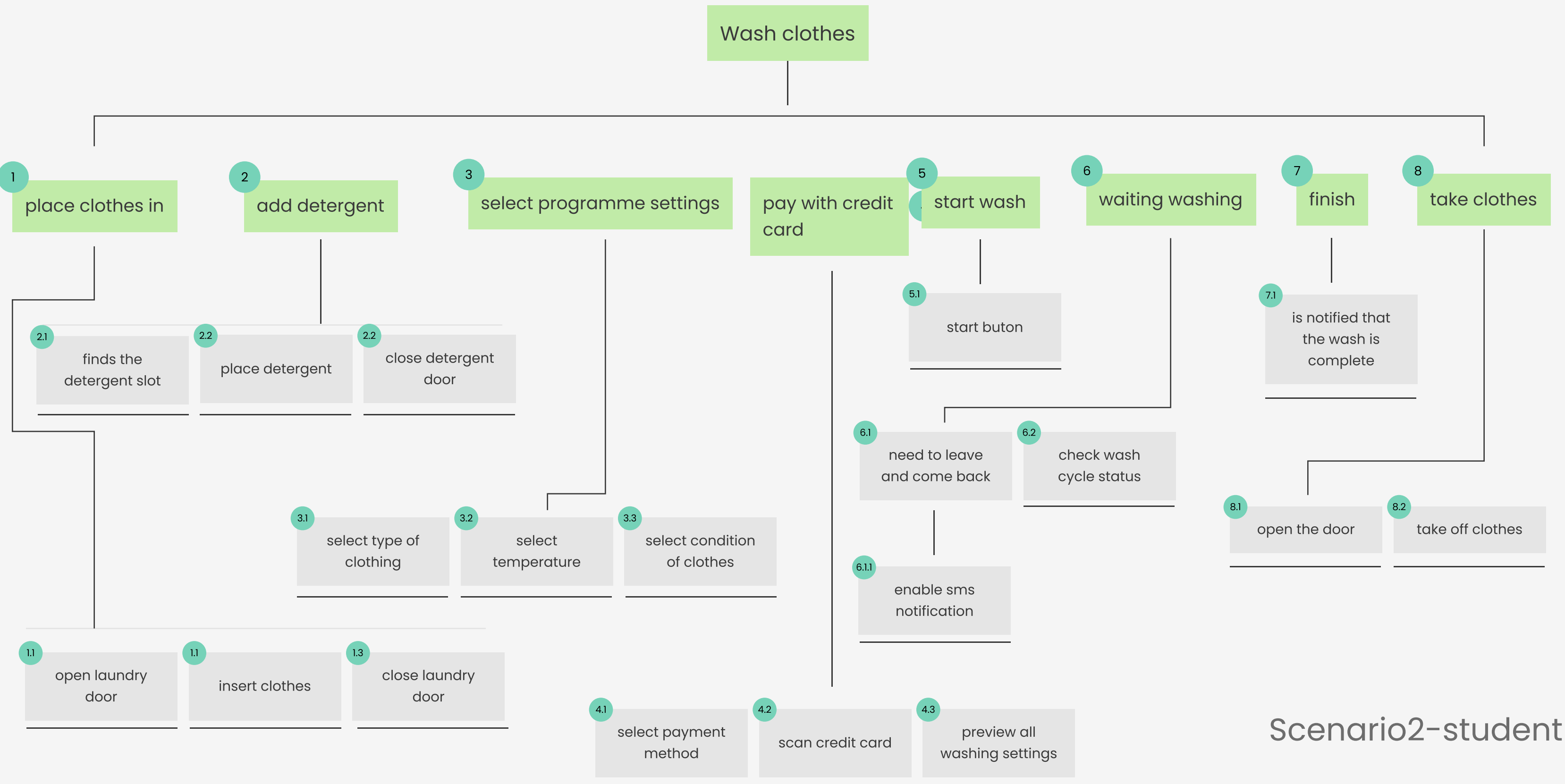# Design Requirements

Requirements

1. Few and understandable programmes

2. Two payment methods(cash & credit card)

3. Custom settings available

4. Countdown timer until washing process ends

5. Stages of washing process indicators

6. Accepted currency labeling

7. Icons labels acting as action signifiers

8. Preview of chosen settings

Hierarchical Task Analysis

Wash curtains & blankets

1 place clothes in

2 add detergent

3 select programme settings

4 pay cash

5 start wash

6 waiting washing

7 finish

8 take clothes

2.1 finds the detergent slot

2.2 place detergent

2.2 close detergent door

5.1 start buton

6.1 see the process and the time remains

7.1 is notified that the wash is complete

3.1 select type of clothing

3.2 select temperature

3.3 select condition of clothes

8.1 open the door

8.2 take off clothes

1.1 open laundry door

1.1 insert clothes

1.3 close laundry door

4.1 select payment method

4.2 drop coins in the receiver

4.3 preview all washing settings

Scenario1-housewife

Wash clothes

1. place clothes in
   - 1.1 open laundry door
   - 1.1 insert clothes
   - 1.3 close laundry door

2. add detergent
   - 2.1 finds the detergent slot
   - 2.2 place detergent
   - 2.2 close detergent door

3. select programme settings
   - 3.1 select type of clothing
   - 3.2 select temperature
   - 3.3 select condition of clothes

4. pay with credit card
   - 4.1 select payment method
   - 4.2 scan credit card
   - 4.3 preview all washing settings

5. start wash
   - 5.1 start buton

6. waiting washing
   - 6.1 need to leave and come back
     - 6.1.1 enable sms notification
   - 6.2 check wash cycle status

7. finish
   - 7.1 is notified that the wash is complete
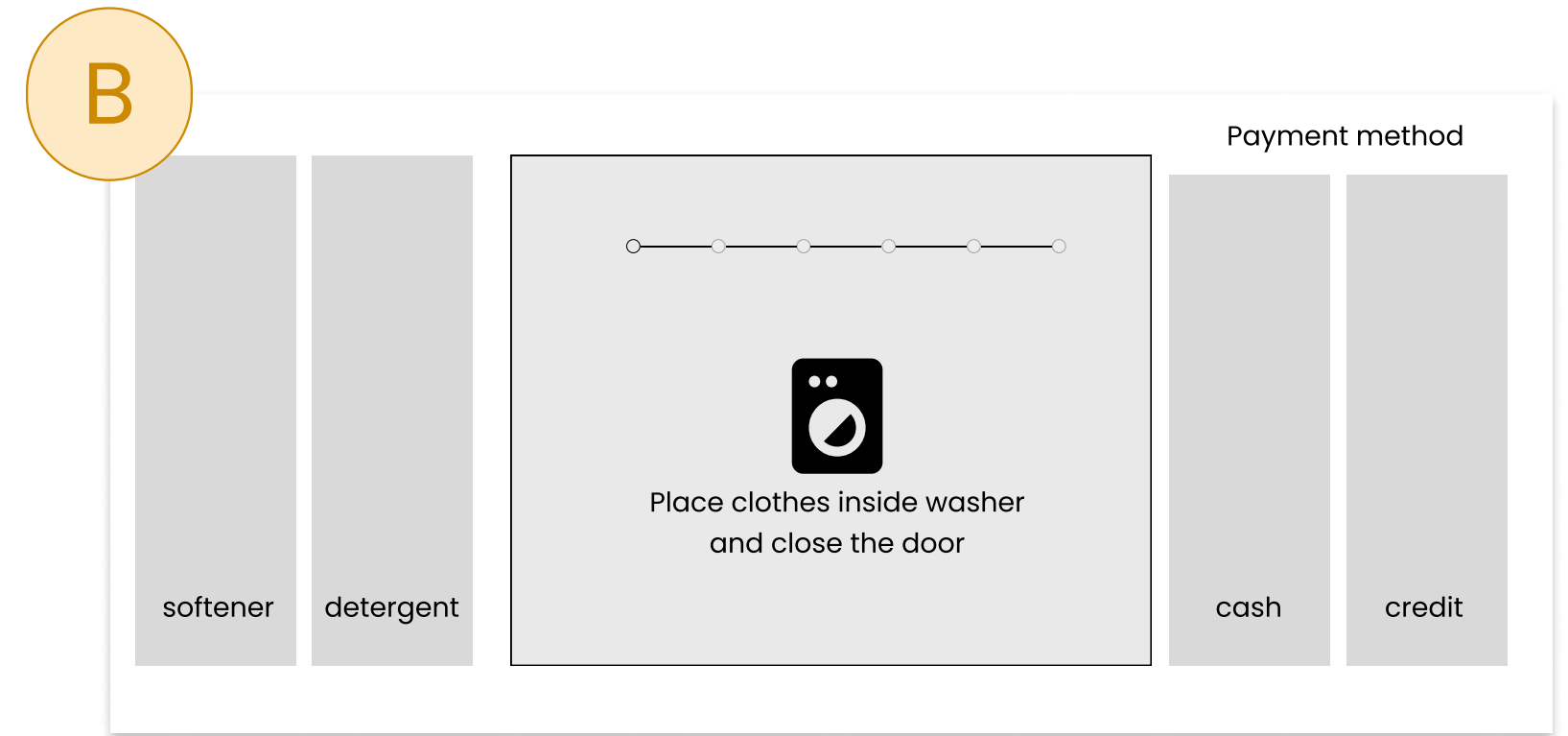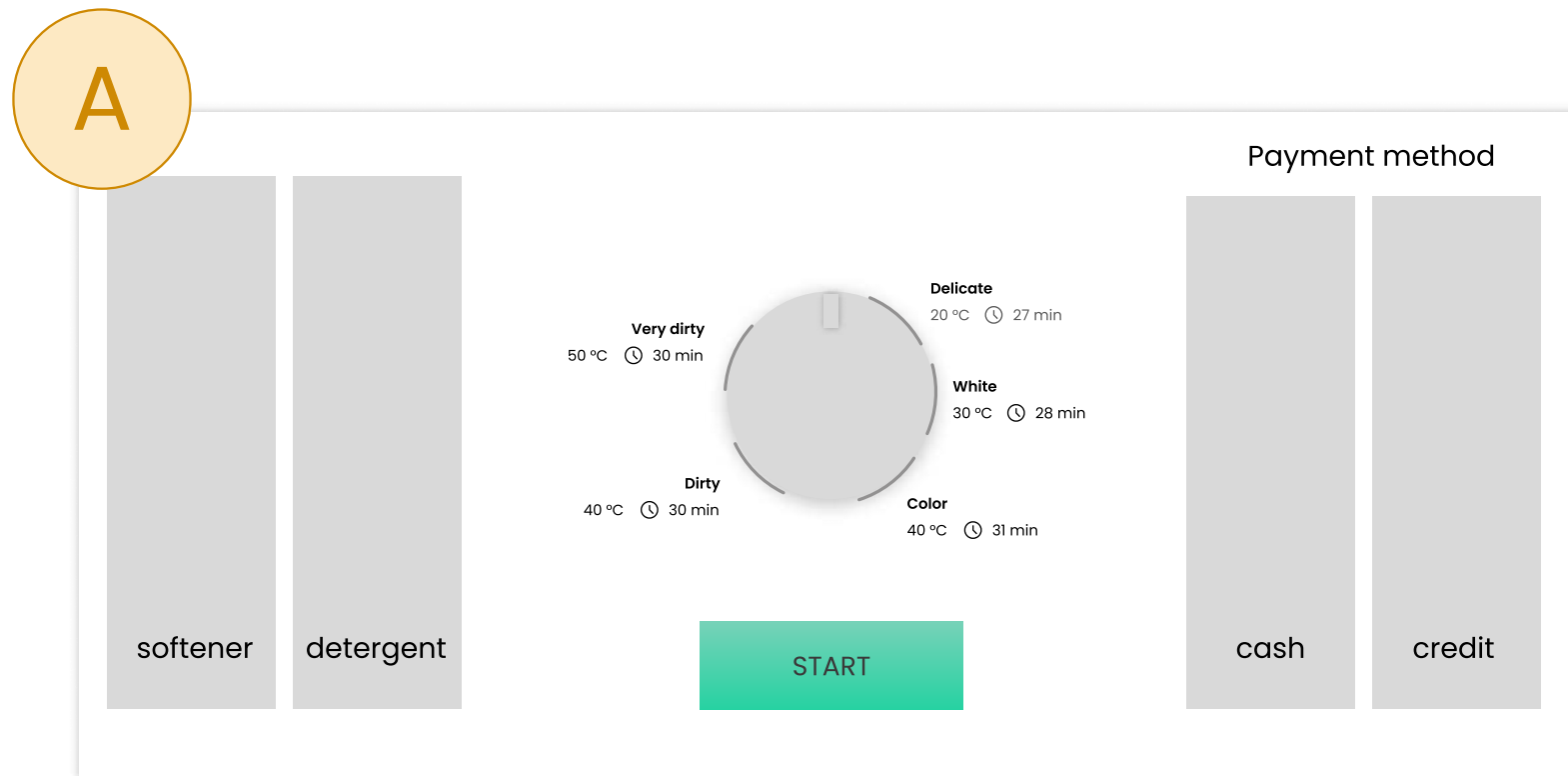
8. take clothes
   - 8.1 open the door
   - 8.2 take off clothes

Scenario2-student

# A/B

Alternative Conceptual Design

These are two interface choice mockups
A (left): An analog rotating dial, where the user can choose the desired program with the corresponding time and temperature
B (right): A digital touch screen interface, closer to what we are used to using in our everyday lives (smartphones, etc.) where all the information and steps takes are displayed
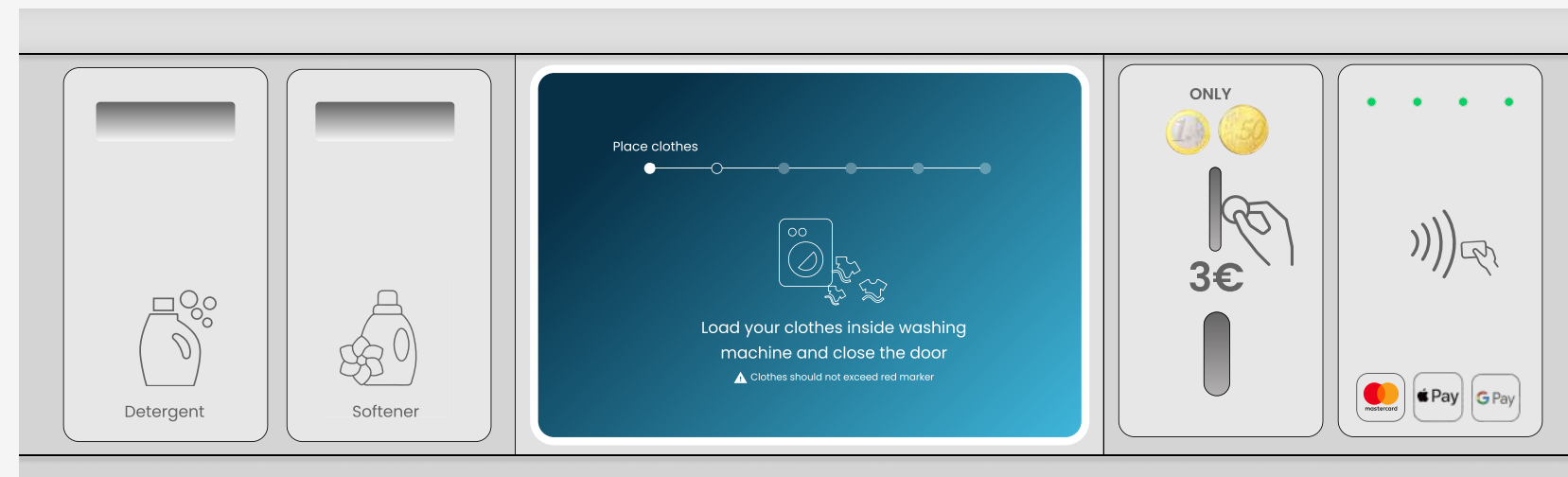
We chose to go with B as we believe it is a more clear and comprehensive way to communicate messages and directions to the users
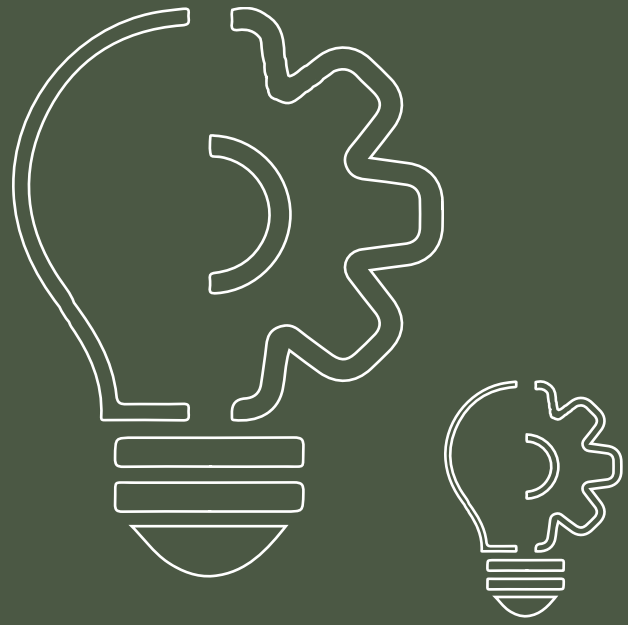
Detailed Design of Interface

Laundry Process:

1. Load the laundry

2. Add detegernt and softener in respective containers

3. Select the right washing programme depending on the clothes

4. Select payment method: cash/credit card

5. Press Start button

6. Wait until programme finishes

7. Take clothes

ONLY 3€

Place clothes
Load your clothes inside washing machine and close the door
⚠ Clothes should not exceed red marker

STOP

⚠ No refunds for cancelled wash cycles
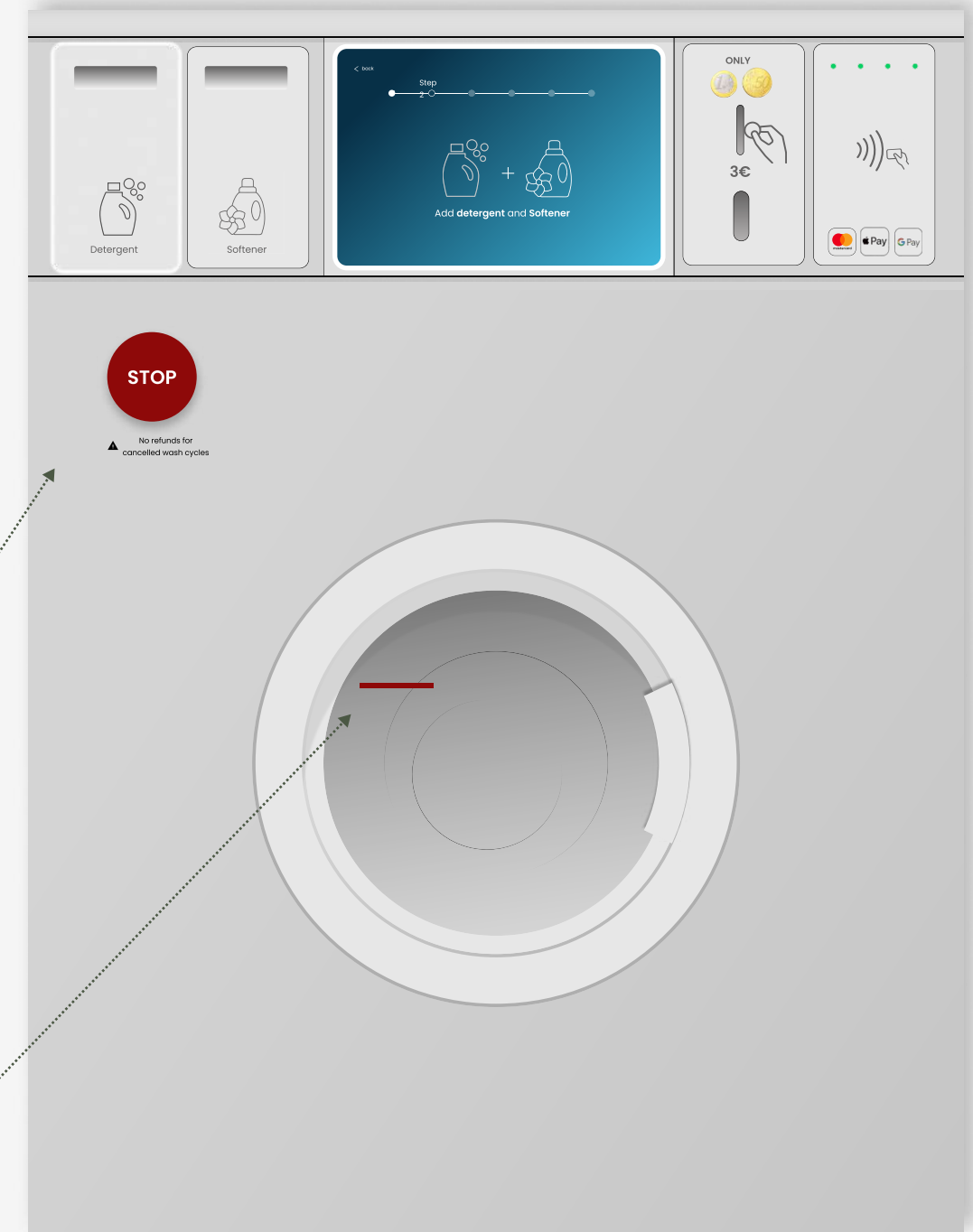
Add **detergent** and **Softener**

detergent

softener

Main screen

coins slot

credit card

STOP button

red marker

Screen 1 — Place clothes

Load your clothes inside washing machine and close the door

⚠ Clothes should not exceed red marker

Screen 2 — Add detergent

< back

Add **detergent** and **Softener**

Screen 3 — Select programme

< back

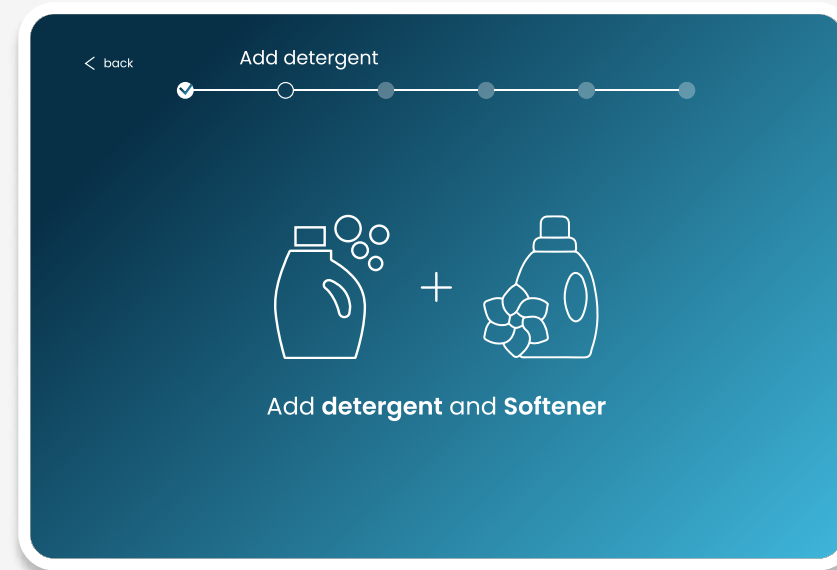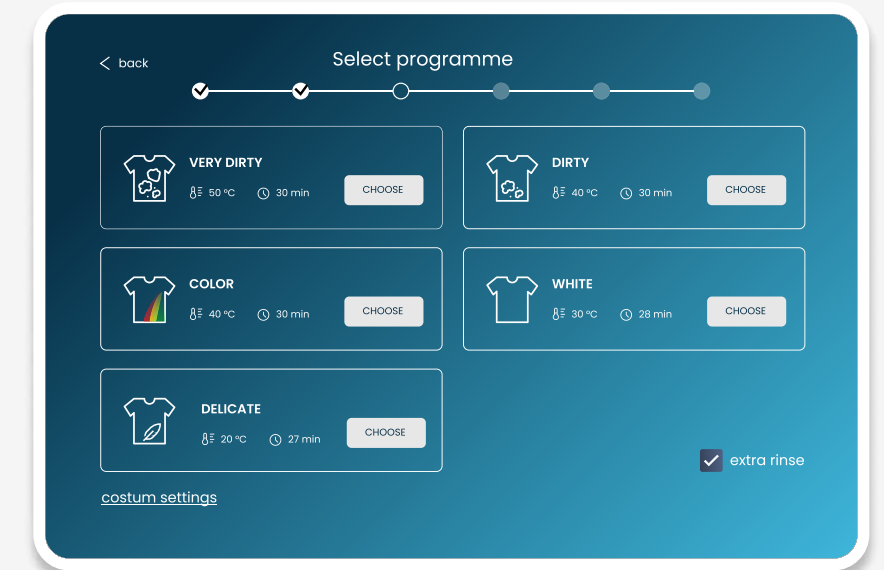| VERY DIRTY | 50 ℃ | 30 min | CHOOSE |
DIRTY	40 ℃	30 min	CHOOSE
COLOR	40 ℃	30 min	CHOOSE
WHITE	30 ℃	28 min	CHOOSE
DELICATE	20 ℃	27 min	CHOOSE

☑ extra rinse

costum settings

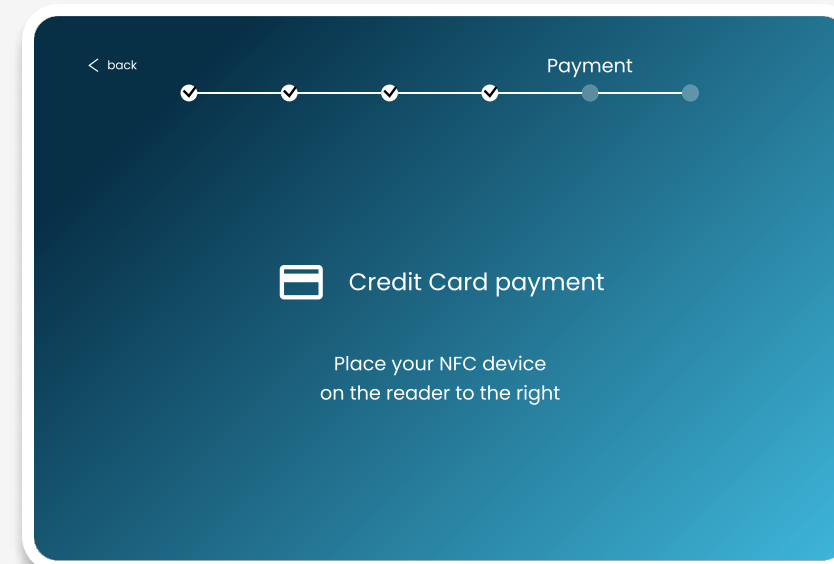Welcome screen prompting the user to load their clothes into the washing machine

Second screen, instructing the user to add clothes softener and detergent

Third screen showing the available wash programs the user can choose from, along with information about the temperature and time set for each one

Payment Method

< back

Cash CHOOSE

Credit Card CHOOSE
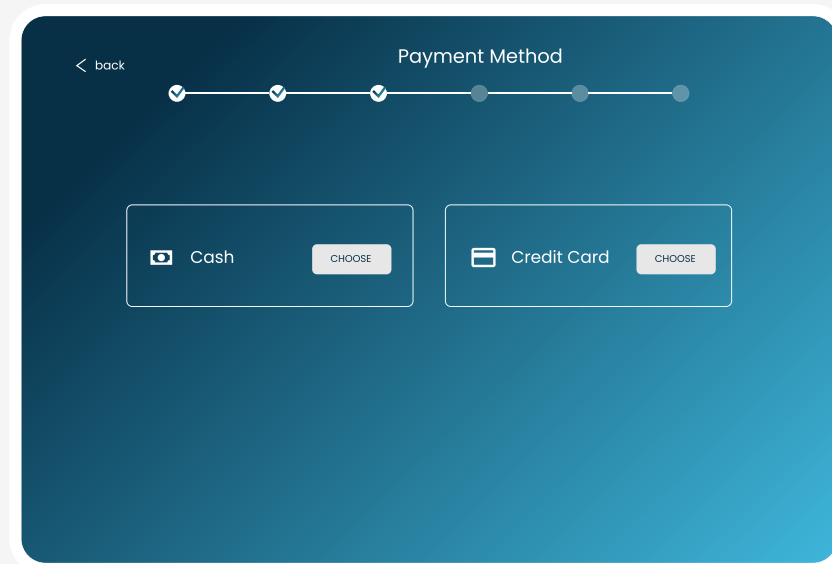
Fourth screen asking what the desired payment method is

Payment

< back

Credit Card payment

Place your NFC device
on the reader to the right

Fifth screen prompting the user to pay contactlessly by touching their card/phone on the NFC reader

Preview

< back

VERY DIRTY

50 ℃   30 min   START

Receive sms when the wash cycle is done?

Sixth screen showing a preview of the selected wash program, start button and an option to be alerted when the wash is finished

Door lock

Washing...

15min

VERY DIRTY   50 ℃

Receive sms when the wash cycle is done?

Seventh screen showing current wash status (System Visibility)

Prototype link

New Features

Programmes

Programmes are very clear now for the users and are the following:

- **Very dirty**   50 ºC   🕐   30 min
- **Dirty**   40 ºC   🕐   30 min
- **Color**   40 ºC   🕐   35 min
- **White**   30 ºC   🕐   28 min
- **Delicate**   20 ºC   🕐   28 min

Sms notification

The machine has the ability to text the user via SMS to notify him when the washing is finished

Feedback signifiers

There is an LED indicator around the detergent, softener slots and NFC tag that signify where the user should focus

The washer makes a beep sound every time the user presses a button on the touch screen

Trade-offs & Dilemmas

Trade-offs & Dilemmas

- Trade-off between modernizing the washing machine (with a touch screen) and using the standard dial - some older people might experience some difficulties in using it
- Dilemma regarding how many & what programs should be available, we had to ask users and discuss

- Trade-off between too much and too little information displayed on screen - Info displayed should be just enough to inform the user but not confuse or overload (low cognitive load)
- Dilemma as to where we should put the "Stop" button on the washing machine

THANK YOU..!

Chatzilygeroudi Evangelia

Sosopoulos Konstantinos