



FUTURE

Future University Hub

Human Computer Interaction a.y. 2022/2023

Sapienza University of Rome

Presented by:

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Alessandro Pisent
Francesco Giuseppe Gallo
Giovanni Della Pelle**

TODAY AGENDA

1. A general description of our Project
2. User profiles, personas and scenarios
3. Questionnaire and Interview
4. Task Analysis
5. Prototype 1
6. Expert Based Evaluation
7. Errors correction and prototype 2
8. Think Aloud
9. Controlled Experiment
10. Final Product
11. Conclusions



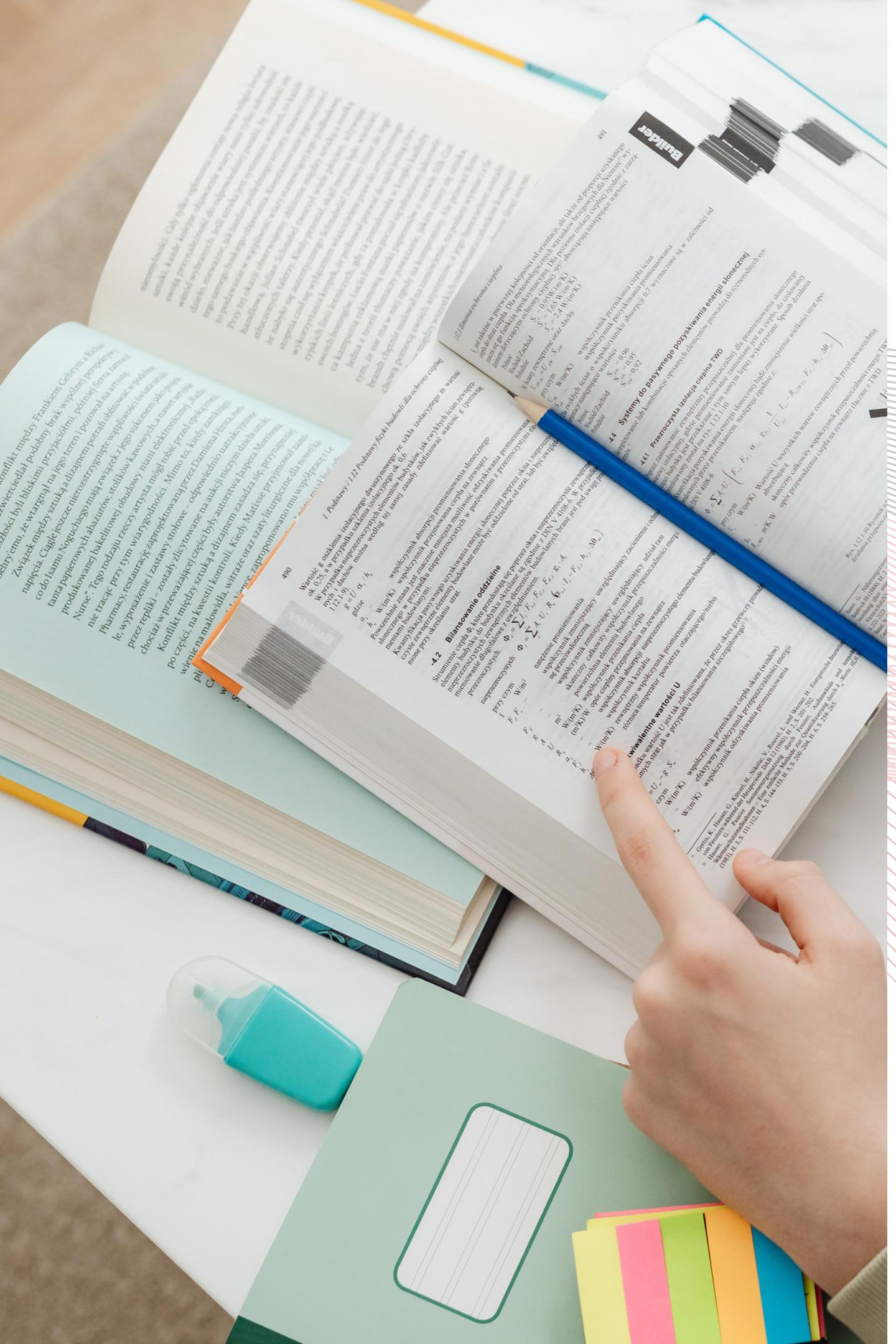
THE IDEA

FUH is designed to create a **hub** for university students, offering a wide range of useful features to enhance their experience at university.

The app is developed to be a **centralized platform** for enrolled and future students, offering a wide range of useful features in order to support them during their entire university careers.

Features : course section

- Course Description
- Syllabus
- Exam modalities
- Course material (for enrolled users)
- Lesson log
- Exam dates and book the exam





Features: administrative section

- Virtual student card
- Personal Data
- Booklet with the exam statistics
- Career plan
- Tuition fees section to check paid and unpaid ones



Features: places section

- Map of all university relevant places
- Map of all university libraries
- Business hours and location of administration

COMPETITORS

Private Applications



MYLIBRETTO

PROS:

- Lesson Hours
- Tuition fees management
- University news
- Stats and graphs on marks

CONS:

- Not integrated with university internal systems
- Pro features have to be paid



UNIWHERE

PROS:

- Exams Hub with marks and next exams
- Classes reviews
- Tuition fees section with paid and unpaid ones

CONS:

- Limited integration with university internal system

University Applications



Infostud



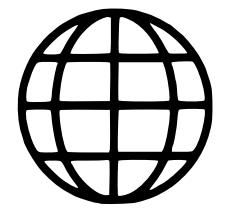
Classroom



Piazza



Moodle



Professors personal sites

CONS:

- Informations are all scattered
- Bad design overall
- Not uniform design language
- There isn't a calendar feature
- News not all together

Legend

- = features not included
- = features partially included
- = features included

To summarize

					
	MYLIBRETTO	UNIWHERE	INFOSTUD	CLASSROOM	FUH
Tuition fees payment	●	●	●	●	●
Personalized lesson hours	●	●	●	●	●
Exam marks	●	●	●	●	●
Exam booking	●	●	●	●	●
Class material	●	●	●	●	●
News about the class	●	●	●	●	●



USER PROFILE, PERSONAS AND SCENARIOS

User Profile

Age

18-25 years

Gender

Any

Profession

University student

Education

High School

Technology

Smartphone with internet connection

Location

Italy

Persona & Scenario



PERSONA

Evaristo is a 24-year-old student from Rimini enrolled in the Faculty of Economics at La Sapienza University in Rome. He has two loving mums: Gianna and Rita.

He spends his days at the university, attending lectures, studying and conducting research in the lab, or attending workshops and seminars, he immerses himself in the vibrant academic environment.

Evaristo is a very generous and smart person that loves to work as a volunteer, helping people that live in poor condition.

In his spare time, he works as a dog trainer in an education centre in Rome with his dog Ettore, a beautiful Bernese that is 4 years old.

SCENARIO

Today Evaristo woke up relieved and happy, having finalised his course choices for the upcoming academic year. In the previous week he had been attending the initial lectures of each course to decide which to take, and yesterday he sent his study plan, bringing him finally a sense of relaxation. Today, while commuting on the subway, he struggled to remember the lecture rooms and the courses of the day. He had to search online for the information, which took time and effort. The next day, Evaristo learned about the FUH app, which synchronised his schedule with his study plan, making it easier for him to access and view his courses on his smartphone calendar.

Persona & Scenario



PERSONA

Phoebe, a 21-year-old foreign student, hails from the city of Louisville, nestled in the state of Kentucky. While pursuing her education, she selflessly devotes her spare time to assisting her family on their farm back home.

She is a bright and curious student. She has recently decided to pursue a degree in Bioinformatics in Rome at la Sapienza University of Rome.

In her spare time, Phoebe enjoys exploring the outdoors and going on hikes with her dog. She loves the feeling of being surrounded by nature and finds it helps to clear her mind after long hours of studying and research.

SCENARIO

Phoebe is preparing for an exam in her bioinformatics course and needs to review key concepts and materials. To begin her review, Phoebe first gathers her lecture notes from each class. These notes serve as her primary source of information, capturing the main ideas, definitions, and explanations discussed during the lectures. But she doesn't have all the materials that she needs so Phoebe seeks out the lecture slides provided by her instructor. These slides often contain representations, diagrams, and important points discussed in class.

Persona & Scenario



PERSONA

Sandro grew up in Fiumicino with two sisters and one brother in a small flat. Despite being 35, he decided to pursue a degree in Psychology because he has a strong desire to understand the complexities of the mind.

He is a charismatic and sensible guy that is able to speak four languages: Italian, English, German and Spanish. He worked as a freelance photographer for low-cost and private airlines.

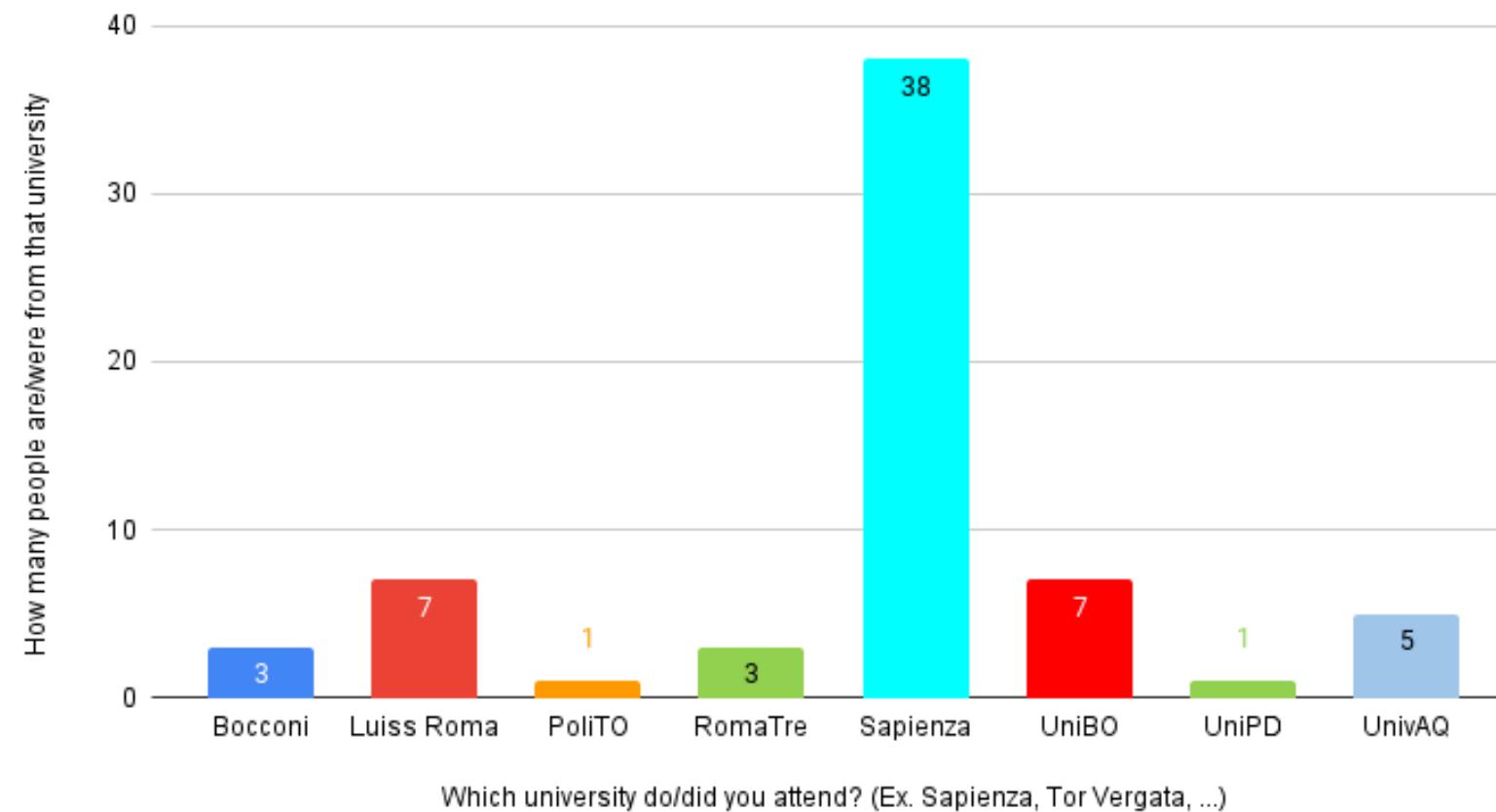
In his spare time he spends a lot of time reading fantasy books and playing board games with his family. He is very appreciated in the Rome D&D Community as a master.

SCENARIO

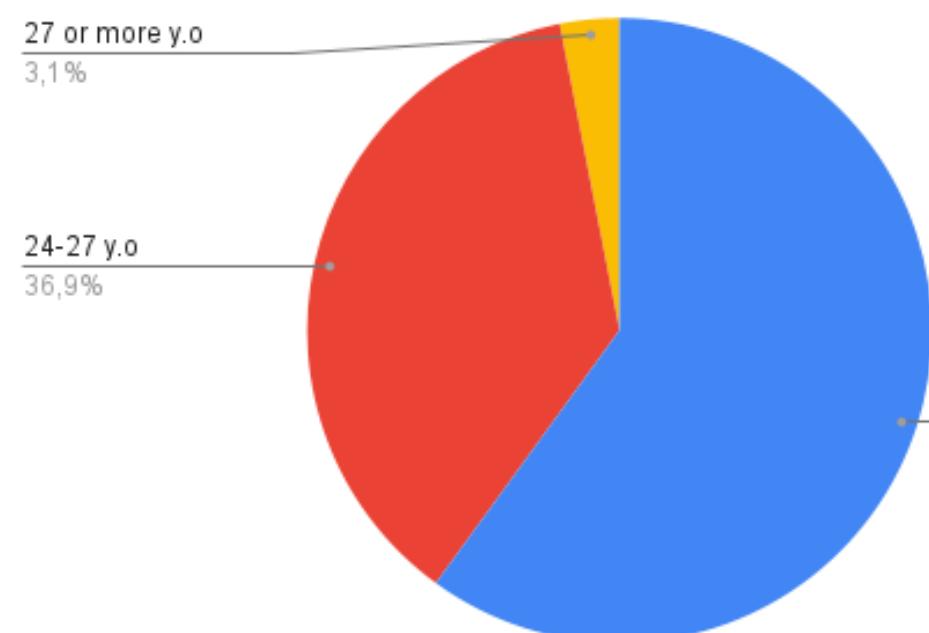
Today, early in the morning, Sandro headed to the university library to prepare for his exams. However, finding no available seats, he searched for an alternative spot. Frustrated, he decided to explore spare classrooms and eventually found one that was well-lit and quiet. This change improved his concentration significantly. During lunch, Sandro, frustrated with the time wasted searching for a suitable study place, decided to finally download the FUH app, as he was advised for a long time by his colleagues. Through the app's "library" feature, he discovered previously unknown libraries scattered throughout the university, providing him with more study options.

QUESTIONNAIRE

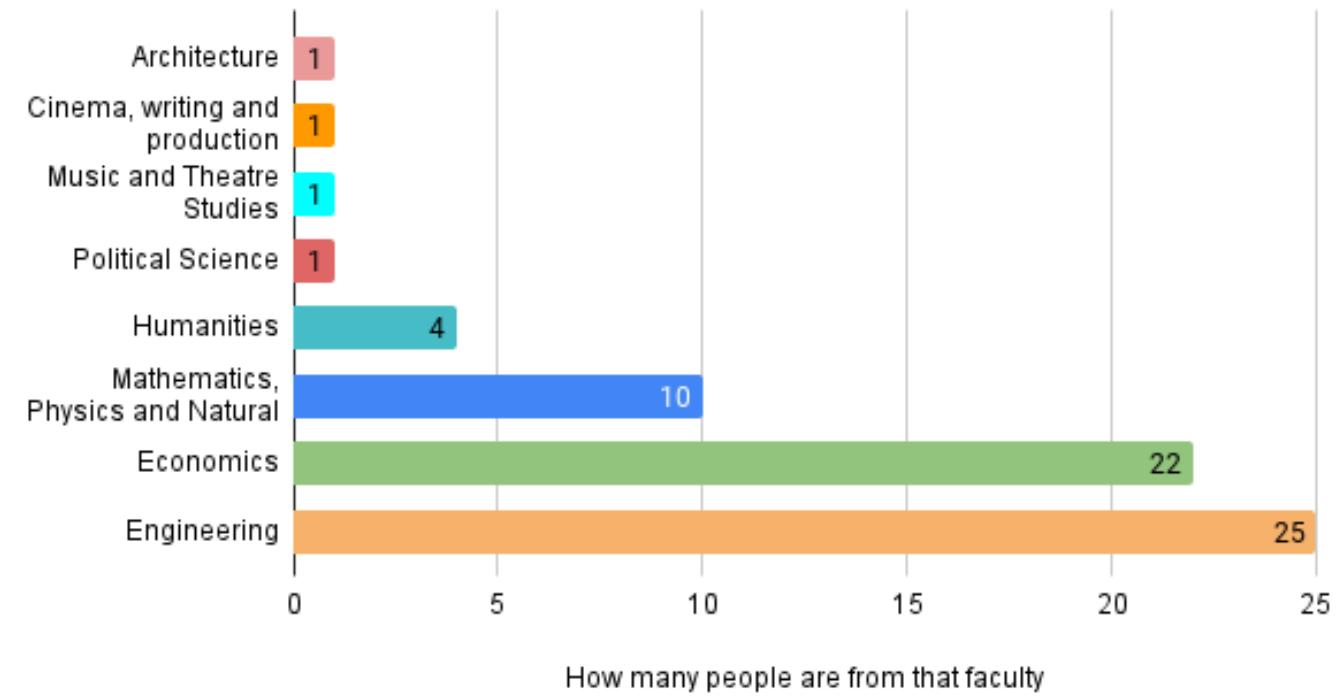
Which university do/did you attend? (Ex. Sapienza, Tor Vergata, ...)



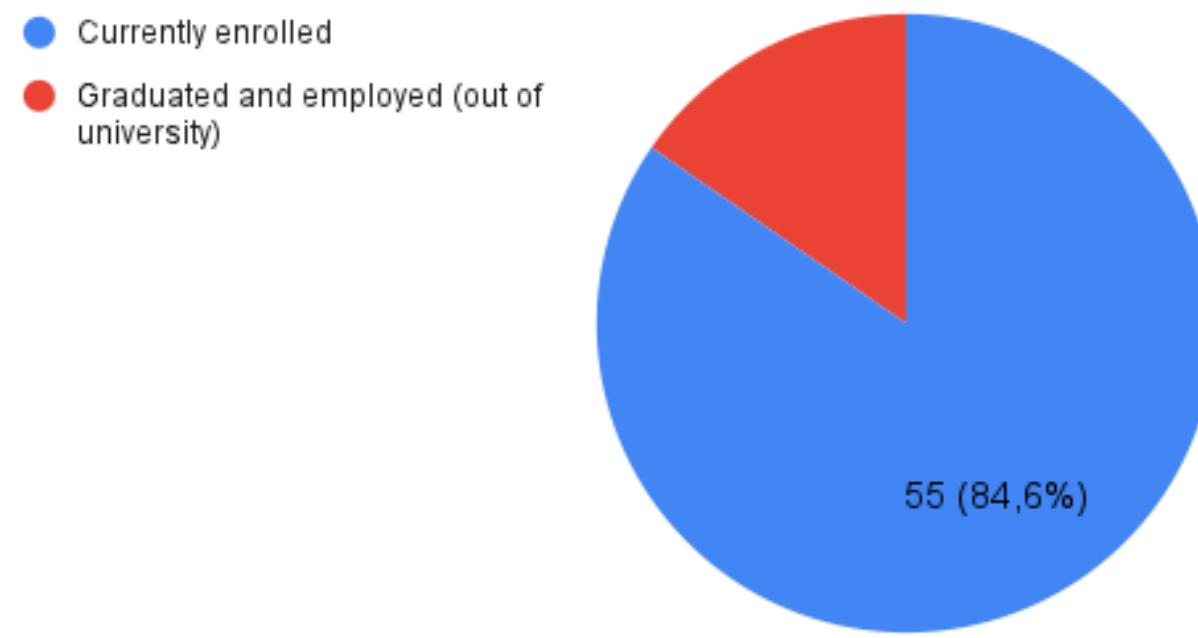
What is your age?



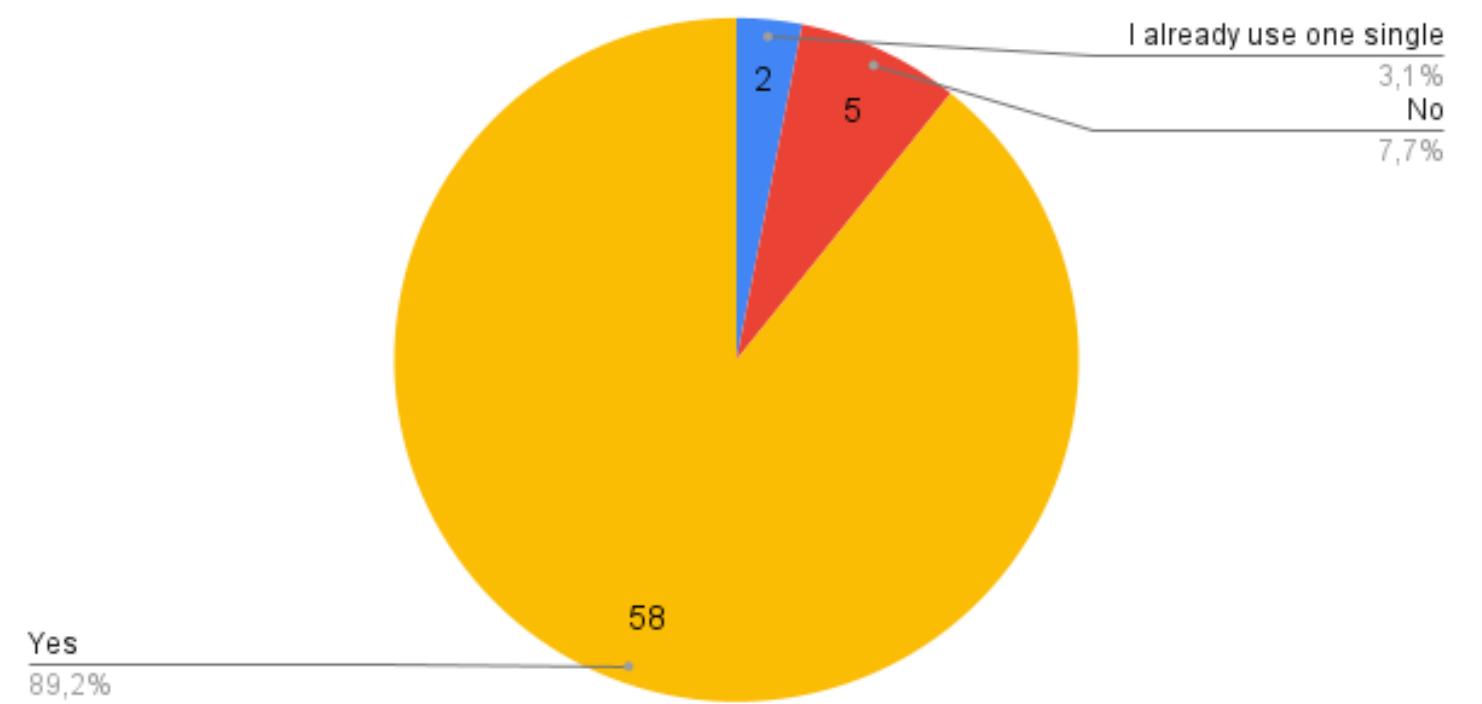
What faculty do/did you attend?



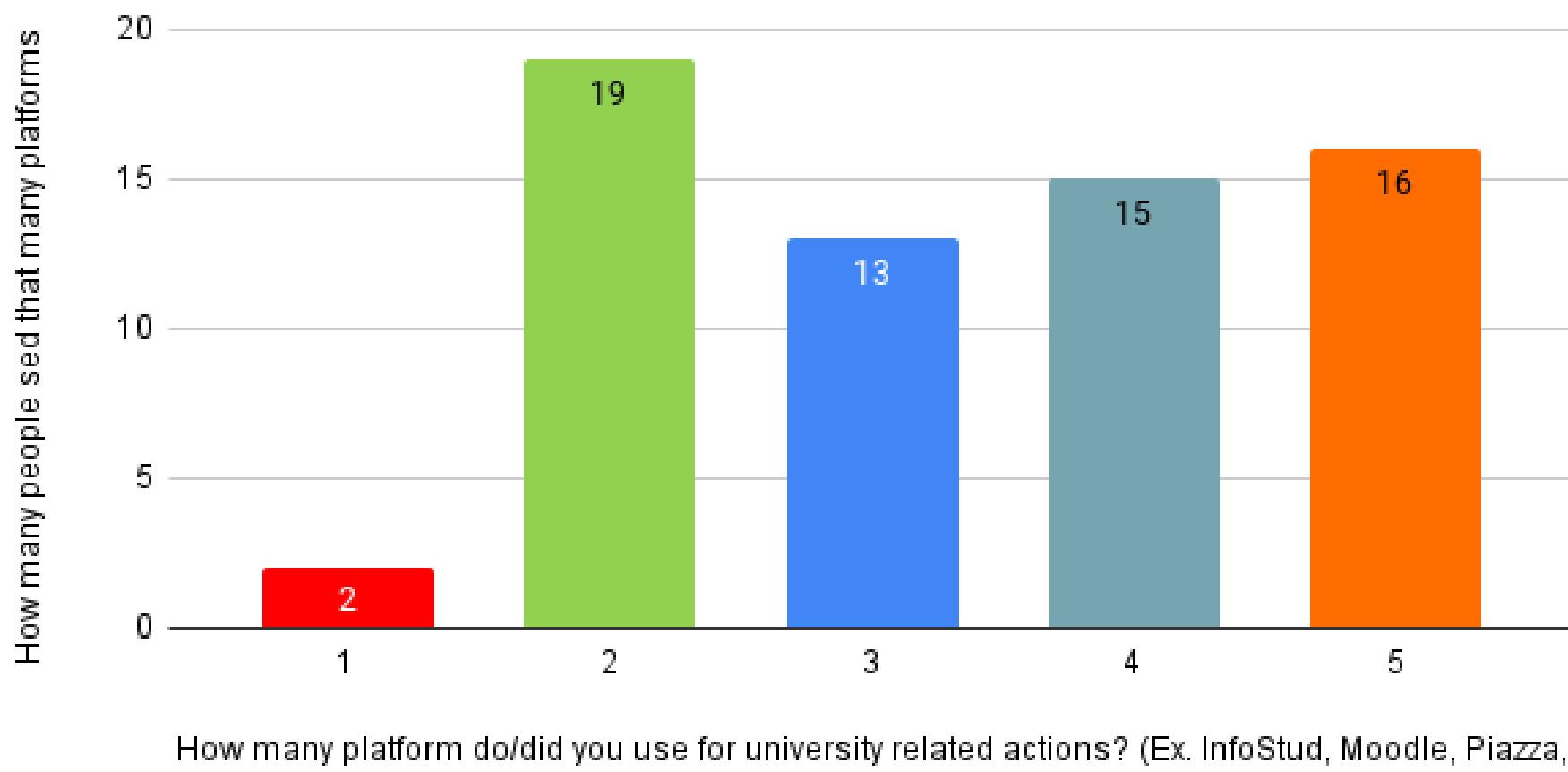
What is your university status?

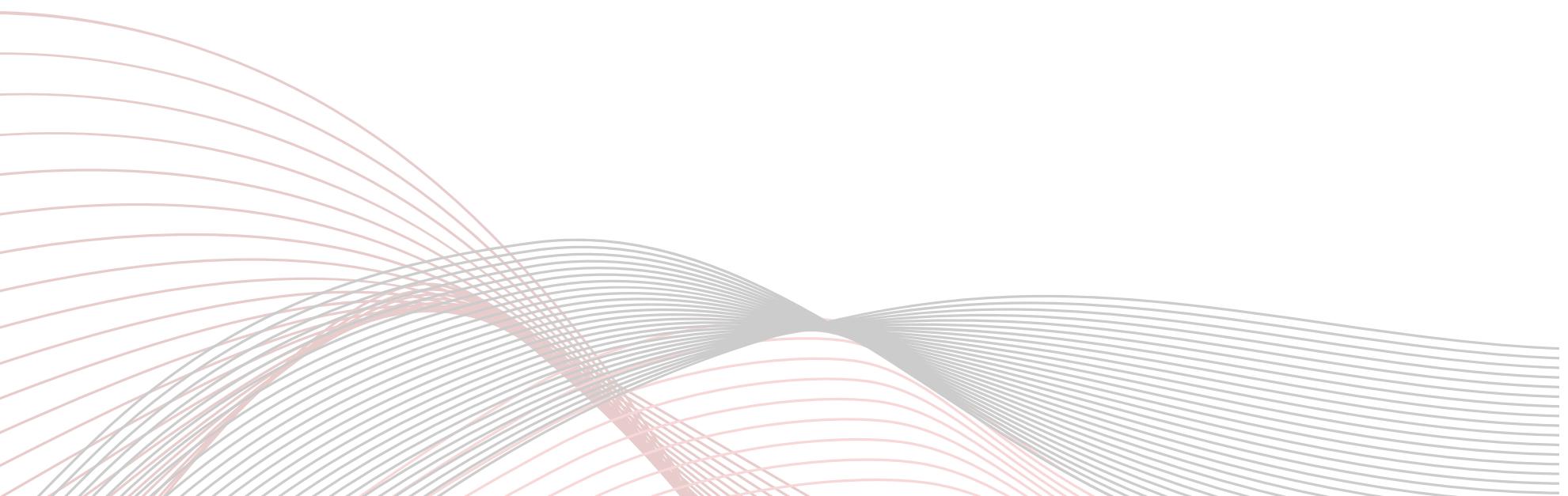


Would you prefer using one single platform for all university related actions?

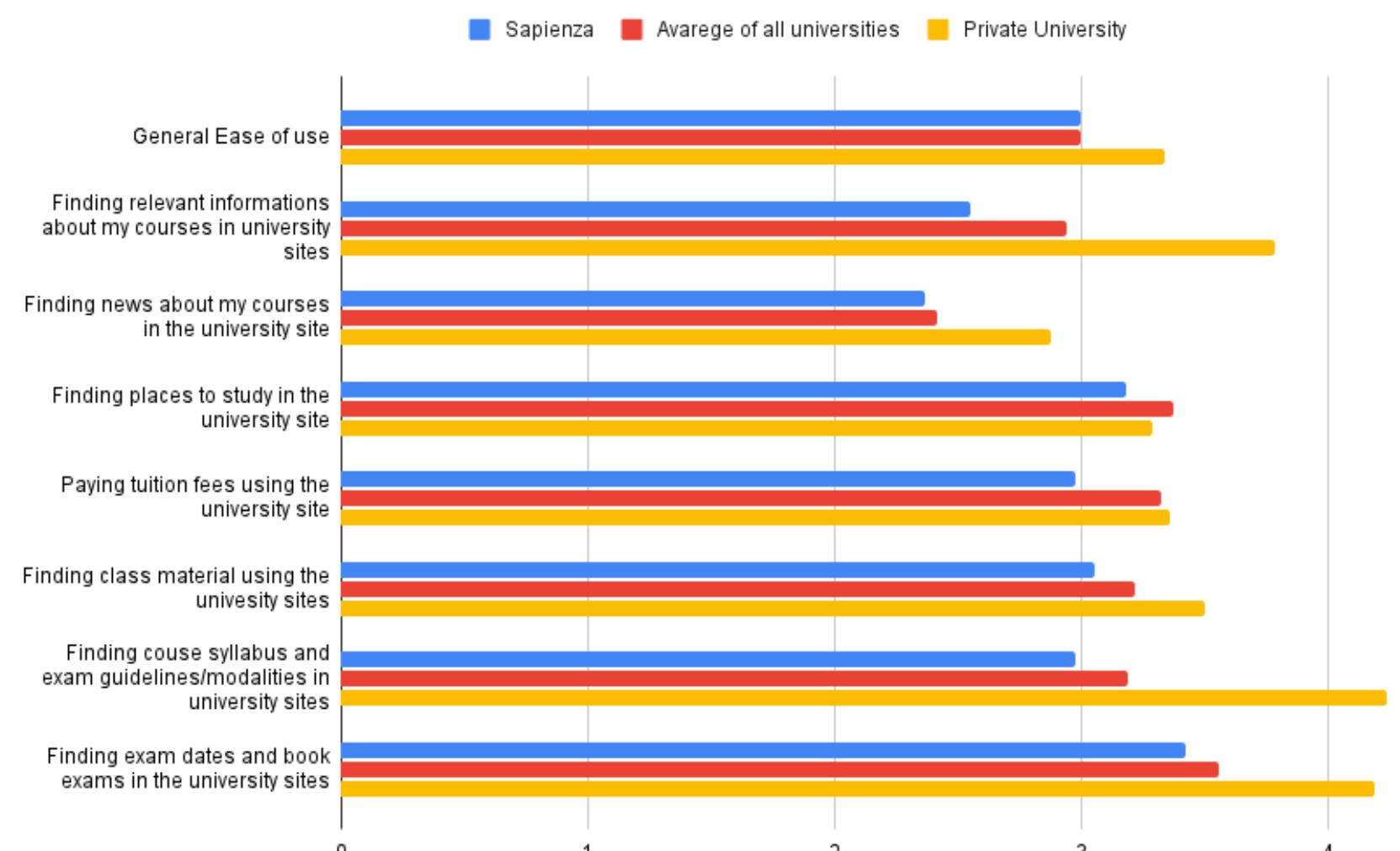


How many platforms do/did you use for university related actions?
(Ex. InfoStud, Moodle, Piazza, Segreteria virtuale..)

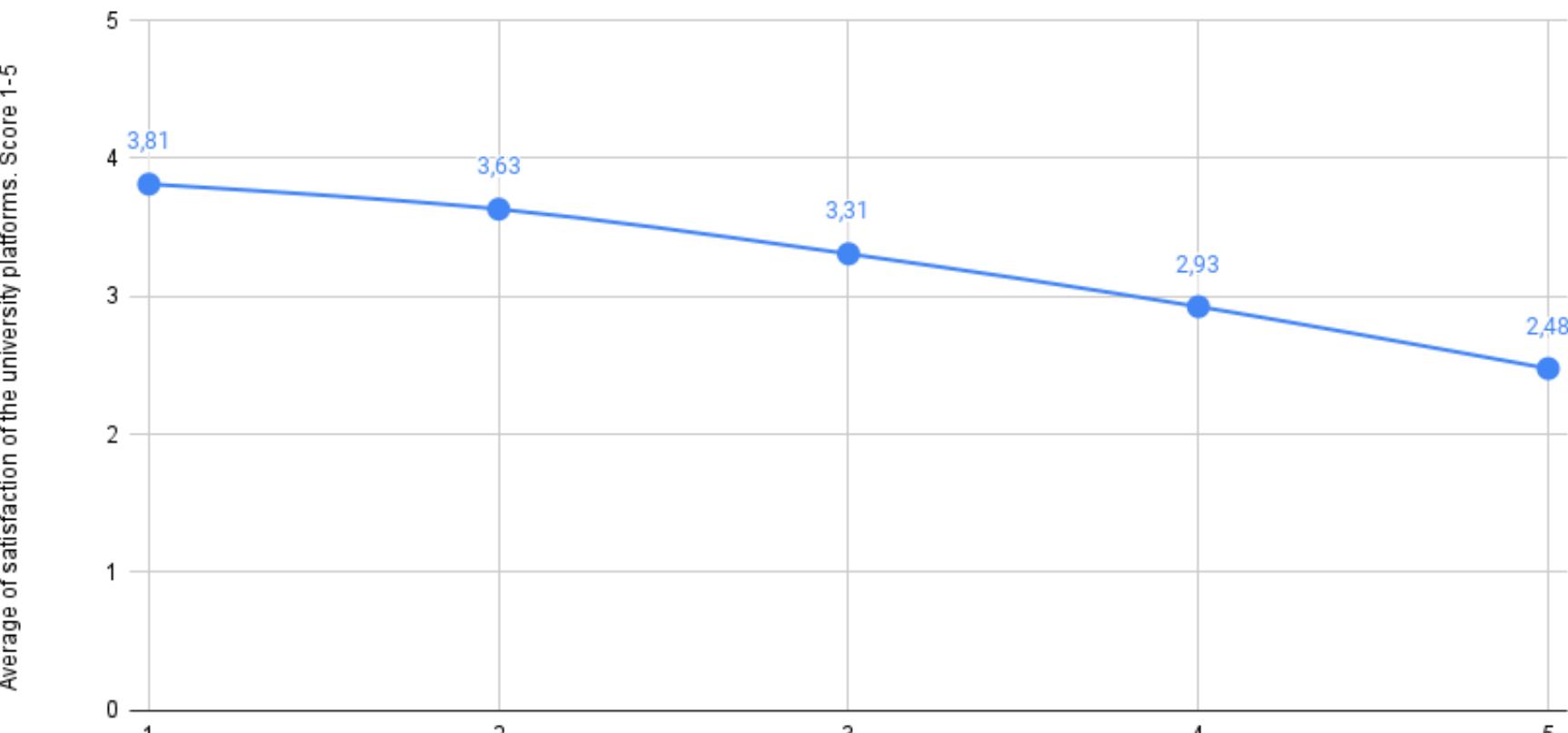




Comparison with general satisfaction of users between Sapienza and Private Universities

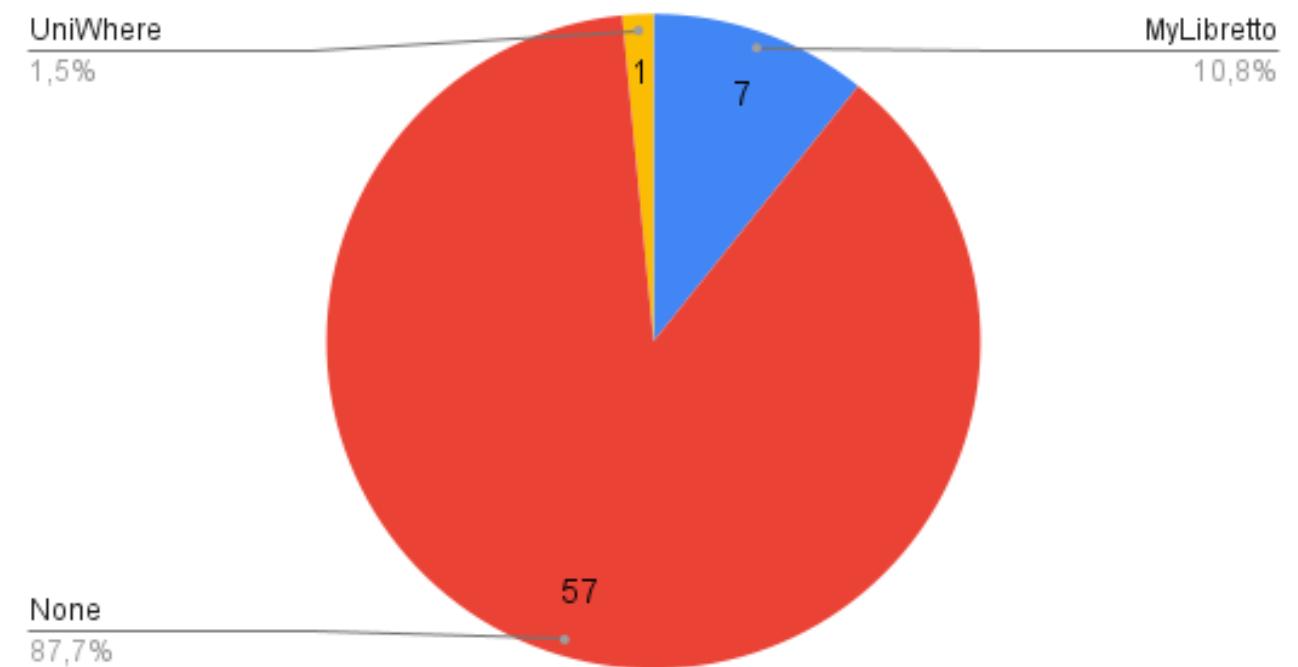


Average of satisfaction with respect to how many platform do/did you use for university related actions? (Ex. InfoStud, Moodle, Piazza, Segreteria virtuale..)

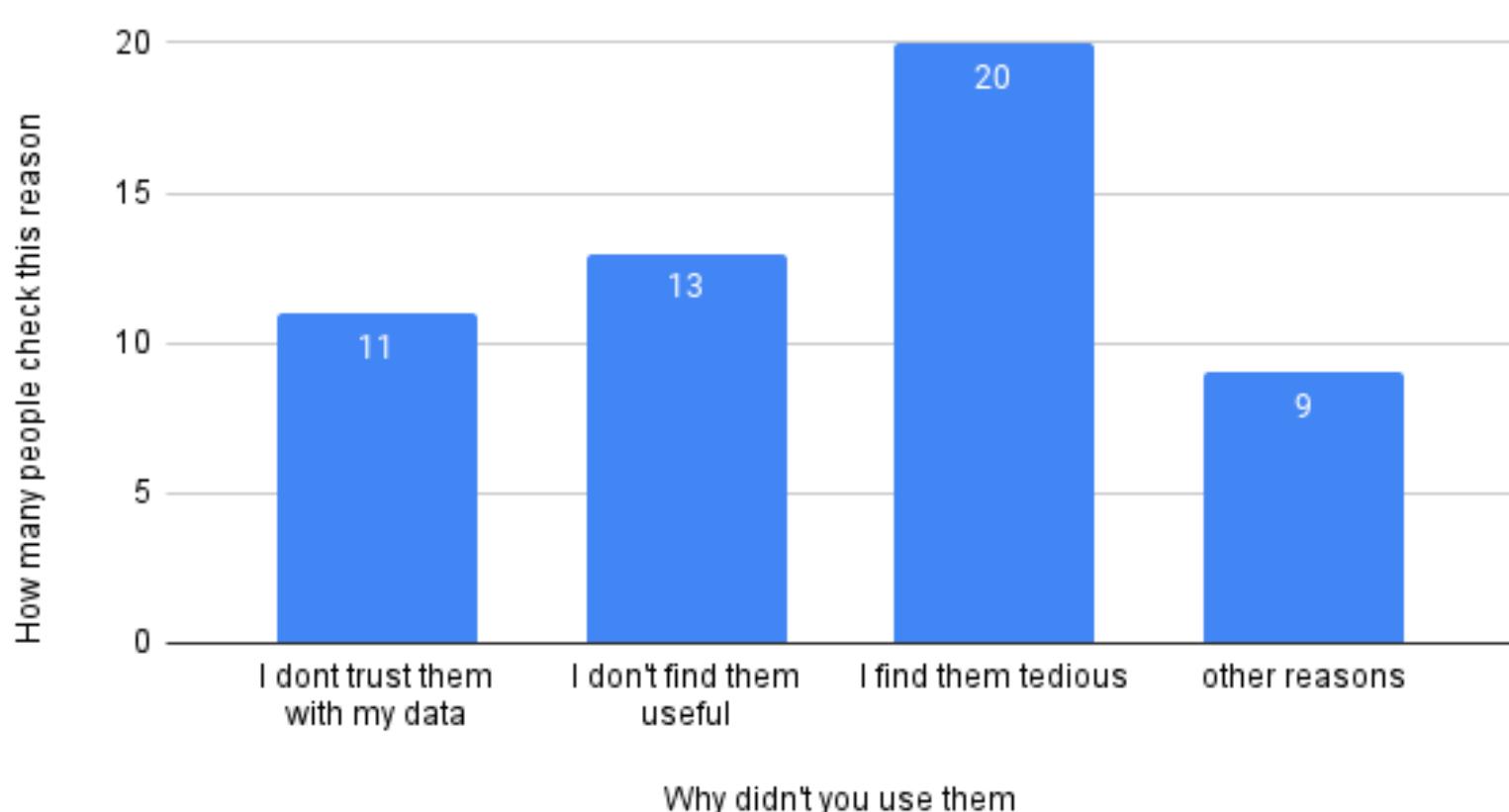


How many platform do/did you use for university related actions? (Ex. InfoStud, Moodle, Piazza, Segreteria virtuale..)

Do you use any external platforms?



Why didn't you use them



“ Usability and minimalism are key, creating a clean interface that focuses on essential features and enhances my ability to navigate and interact with the platform. ”

“ Having news updates about classes, such as a professor missing or changes in the schedule, keeps me informed and prepared for any changes. ”

“ As a student, I value an easy and clear platform that provides availability of study materials and recorded lectures for seamless learning. ”

The background features a vibrant red color with a subtle texture of fine, wavy lines that create a sense of depth and motion. These lines are more concentrated in the center and spread out towards the edges.

INTERVIEW

Interview



Ivan is one of the top students of his course, while talking with us he explained the main difficulties he had to face during his academic journey by having to use so many platforms.

Ivan

- 23 years old
- born in Melfi (PO)
- lives in Rome



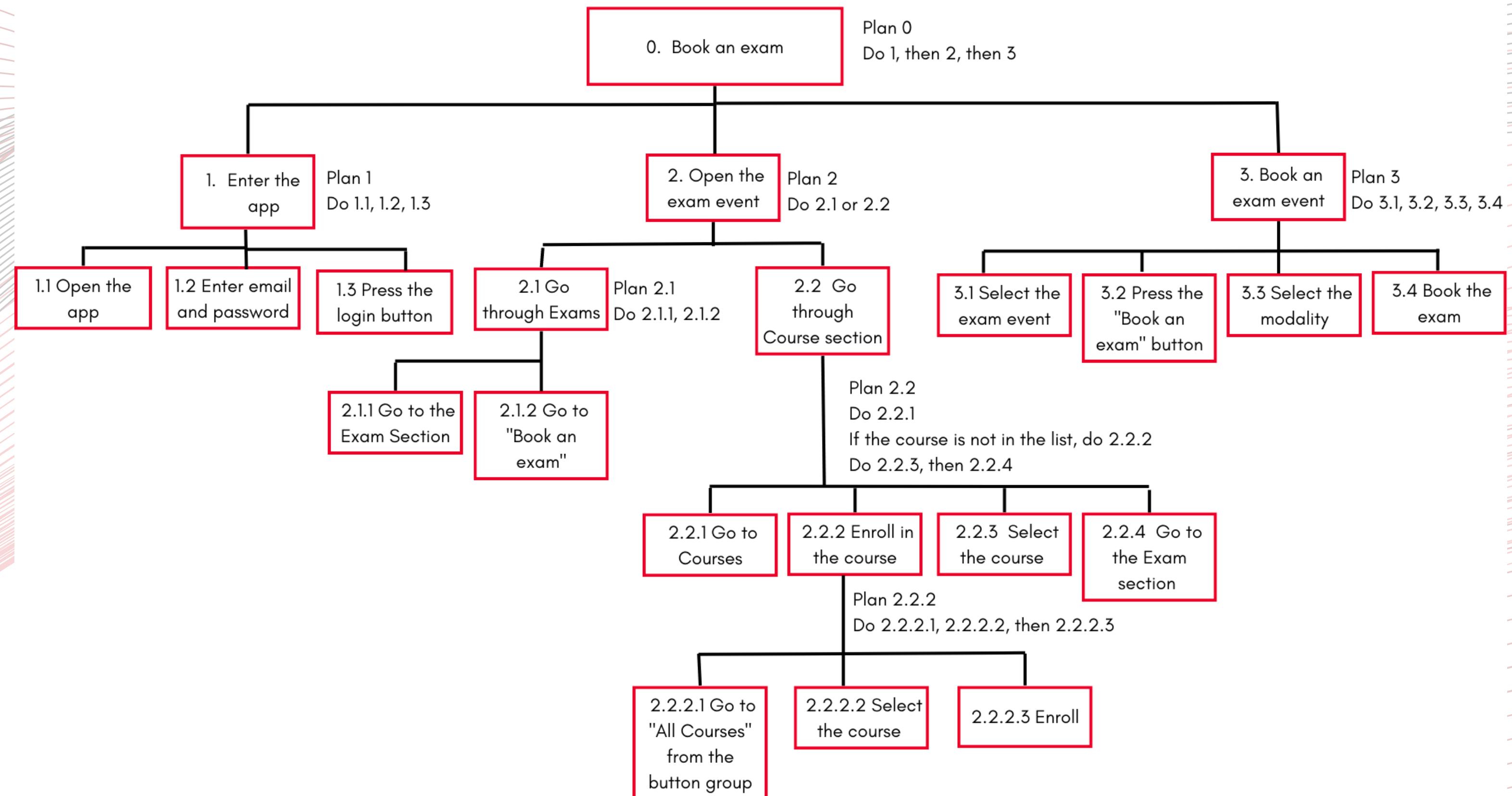
- Section providing all the relevant places, like the main locations or the libraries, as he really feels comfortable in studying in libraries
- News about cancelled classes



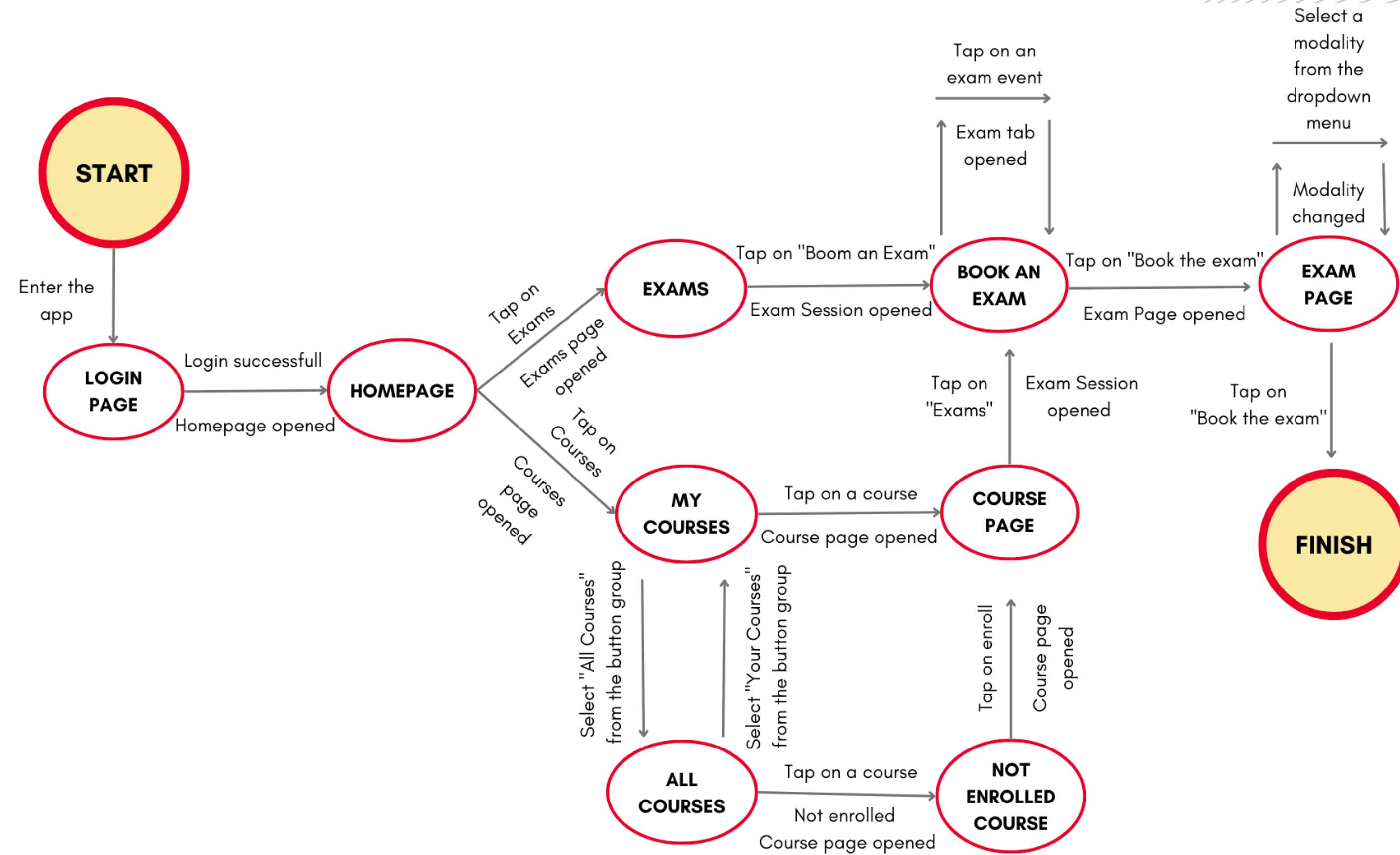
He really liked our idea of having a single app to feature all university related matters

TASK ANALYSIS

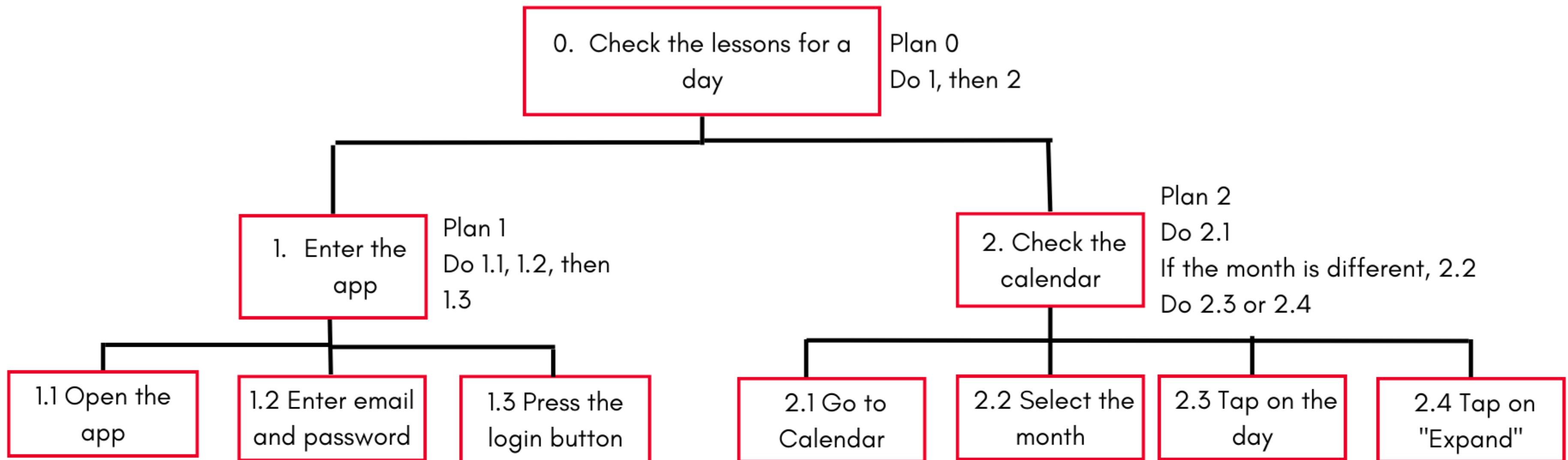
HTA: Book an exam



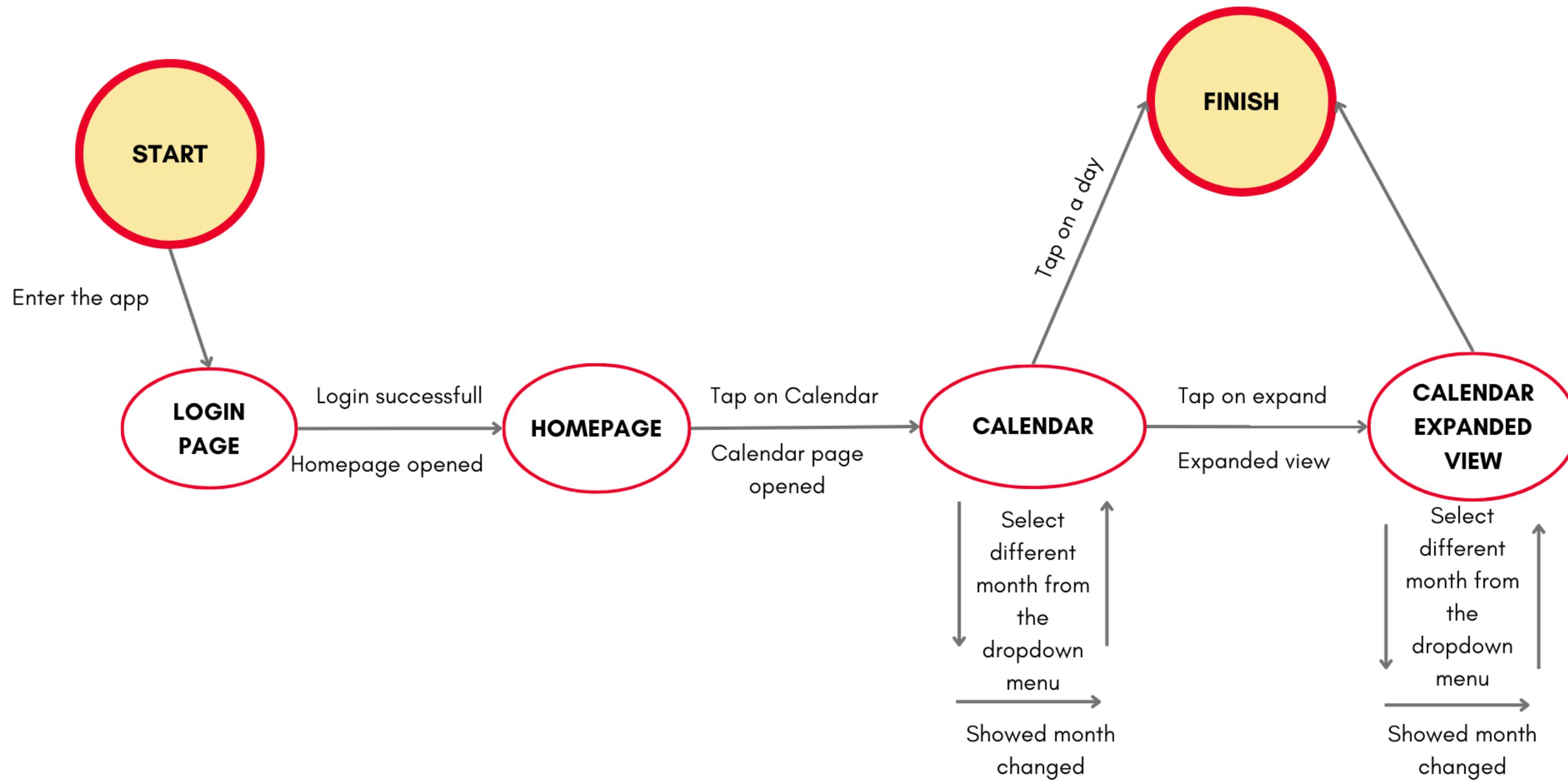
STN: Book an exam



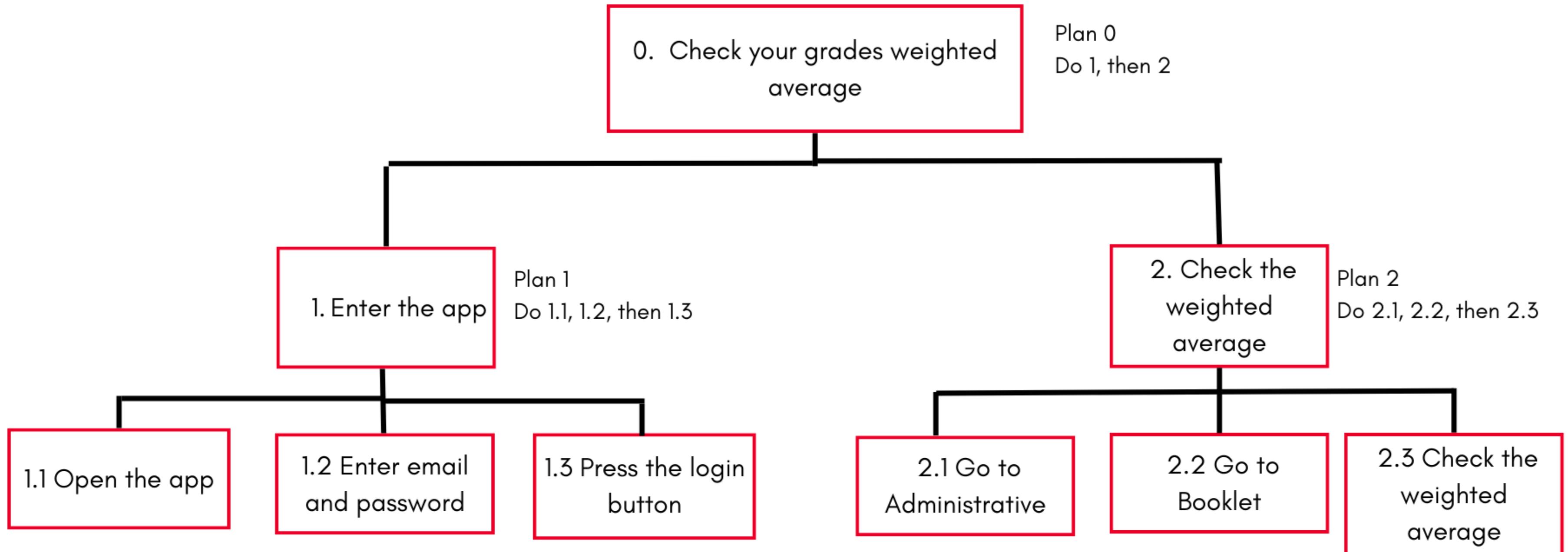
HTA: Check the lessons for a day



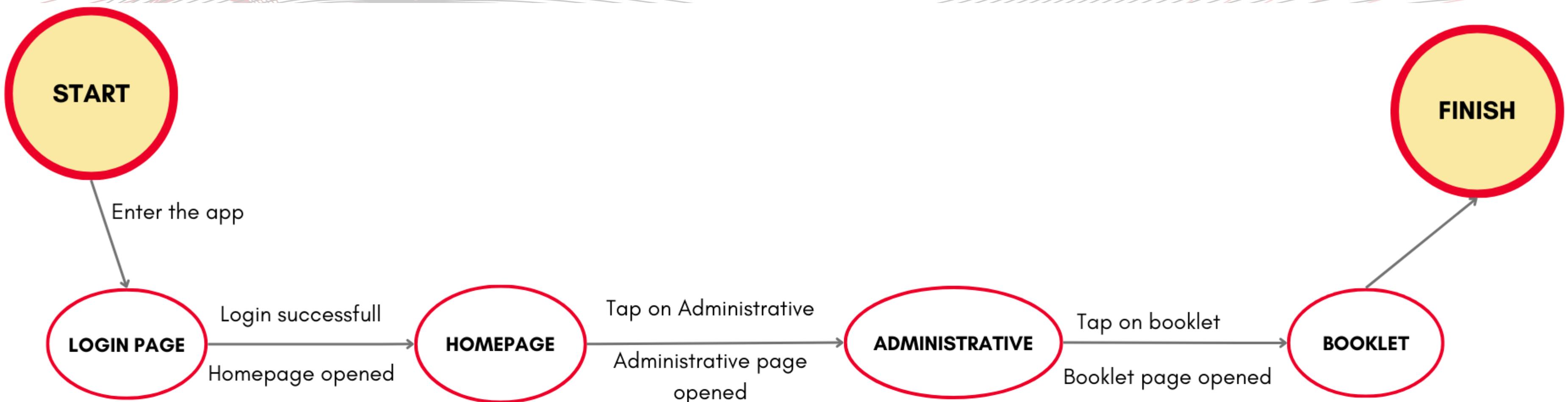
STN: Check the lessons for a day



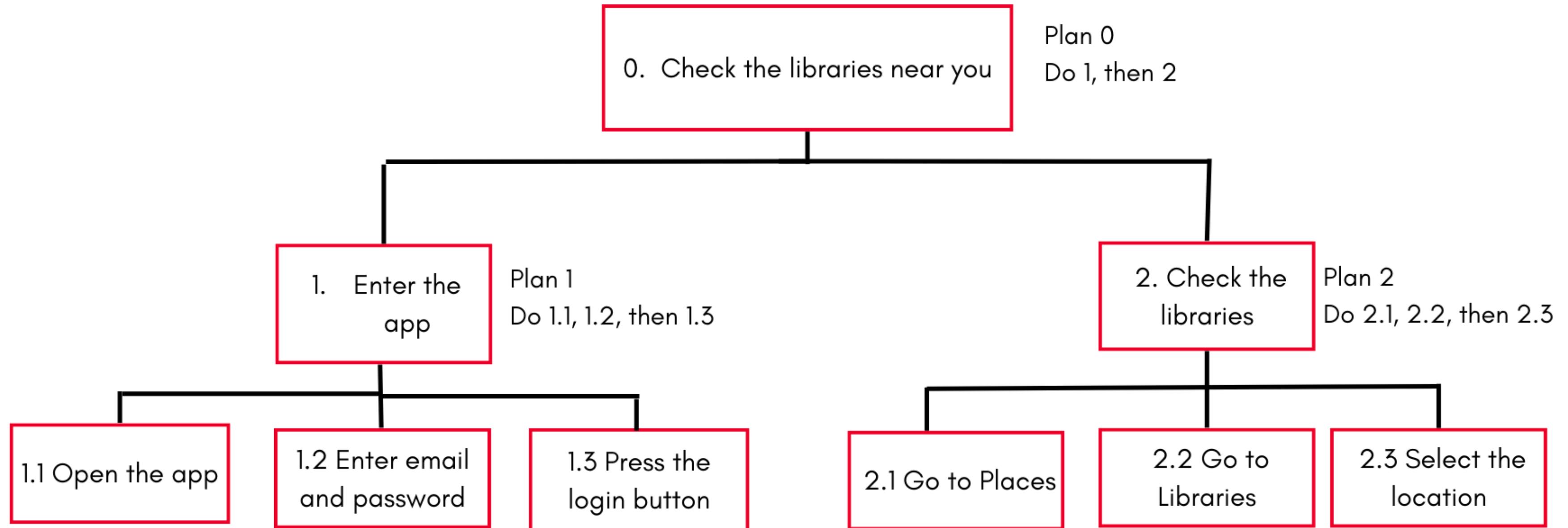
HTA: Check the average of the exam



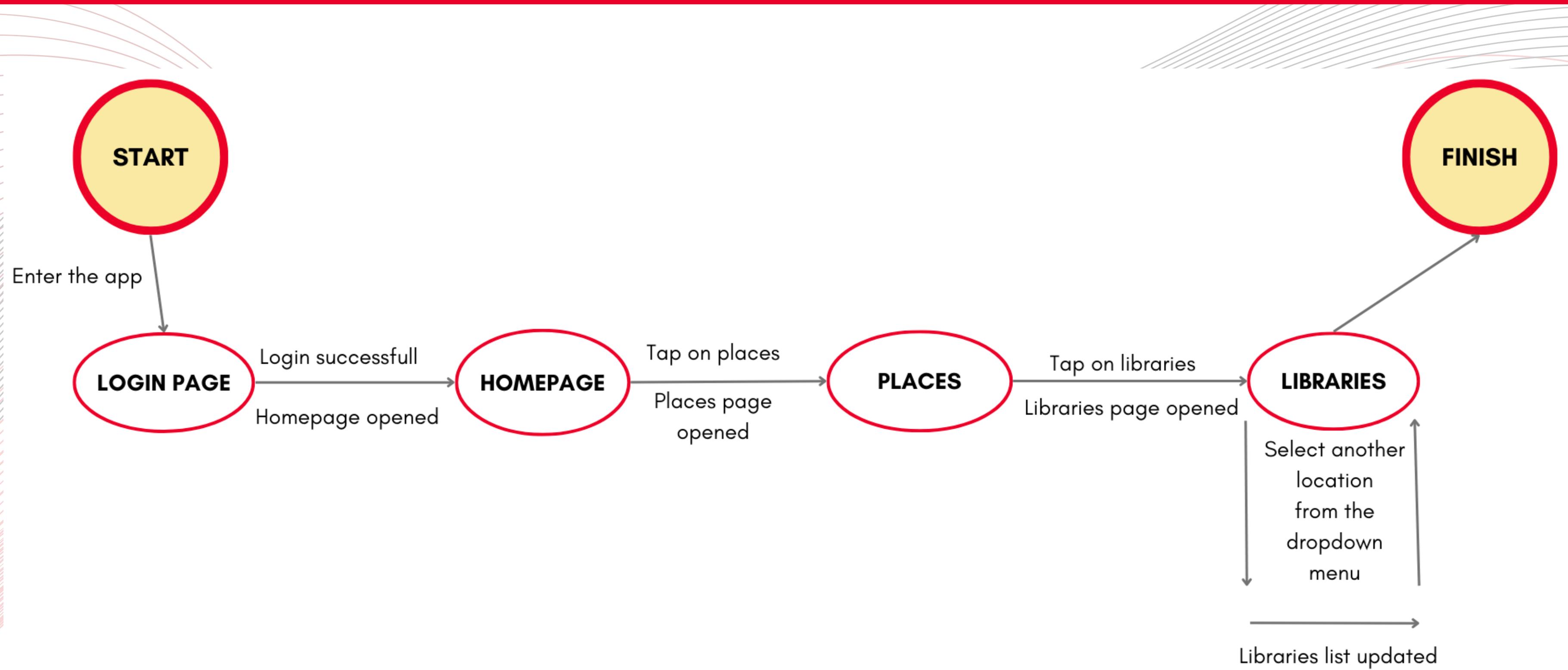
STN: Check the average of the exam



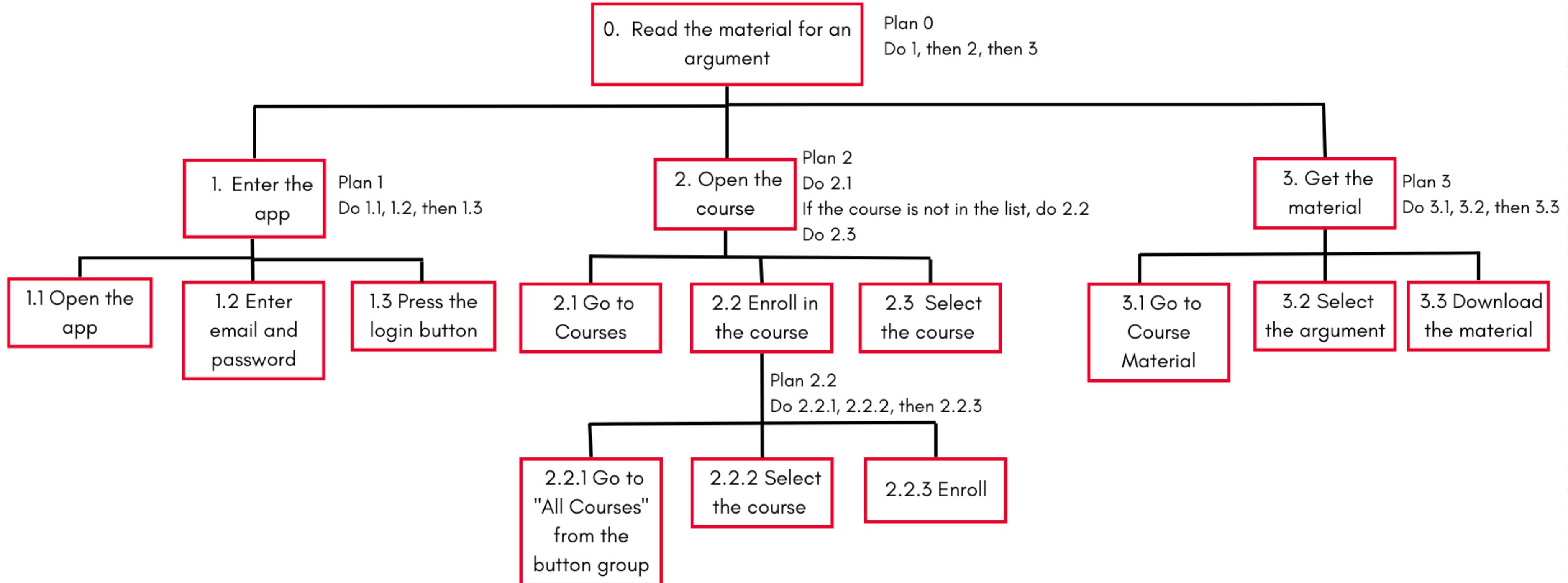
HTA: Check the libraries in the university



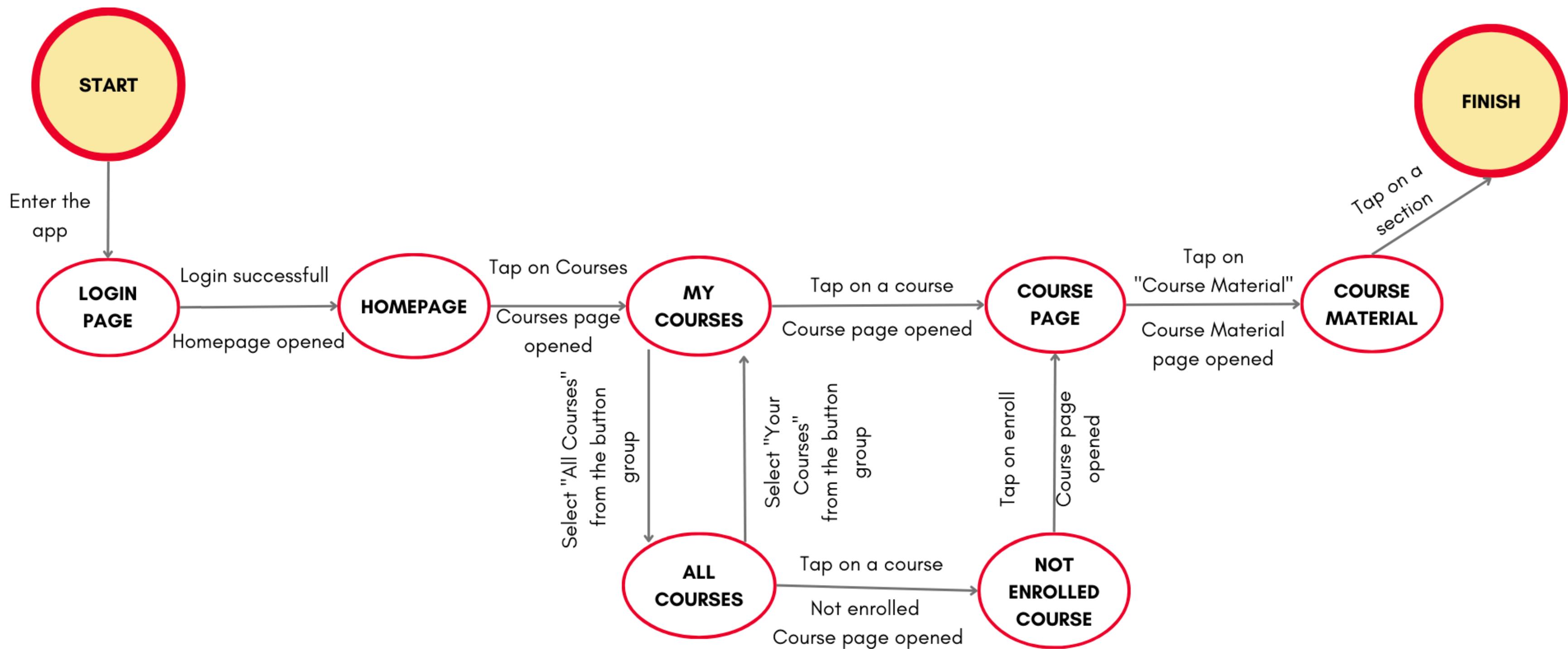
STN: Check the libraries in the university

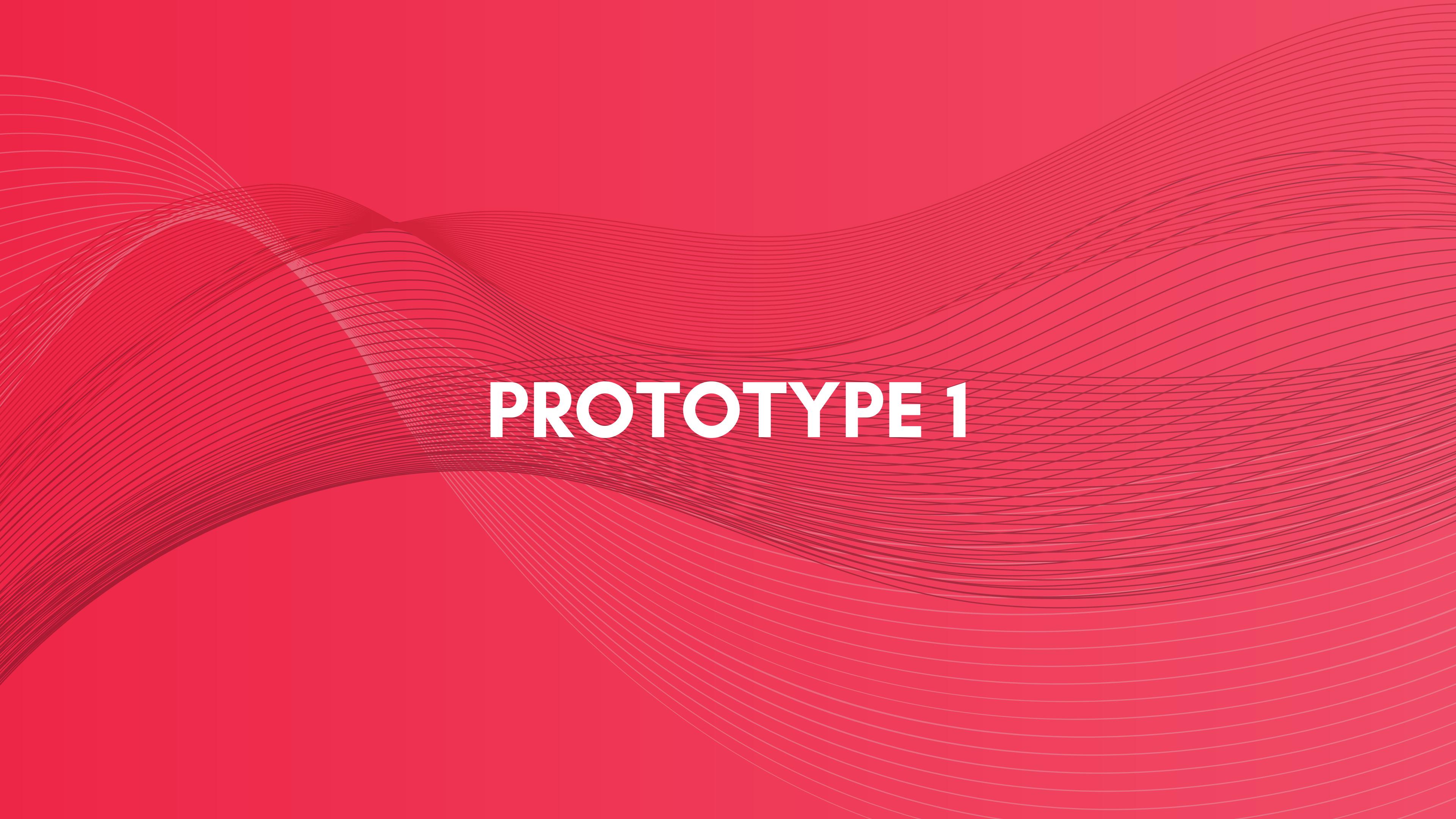


HTA: Read the material of a course



STN: Read the material of a course



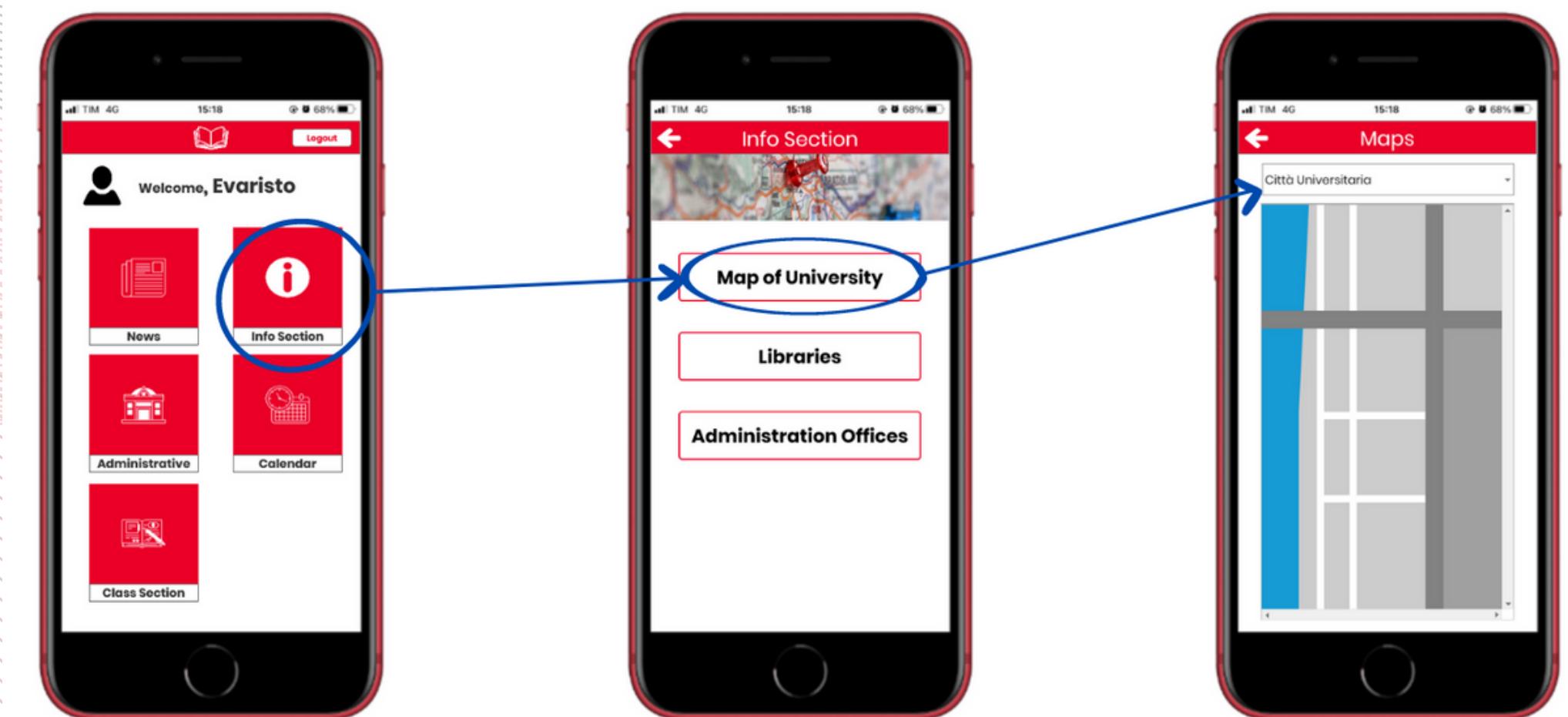
The background features a dense pattern of thin, light gray wavy lines that curve and overlap across the entire frame, creating a sense of depth and motion.

PROTOTYPE 1

Main functionalities

Explore the university map

- Stay up to date with the latest university news
- Check the status of tuition fees
- Book and view upcoming exam
- Keep track of schedule
- View the course material
- View the virtual card



Main functionalities

Explore the university map

Stay up to date with university news

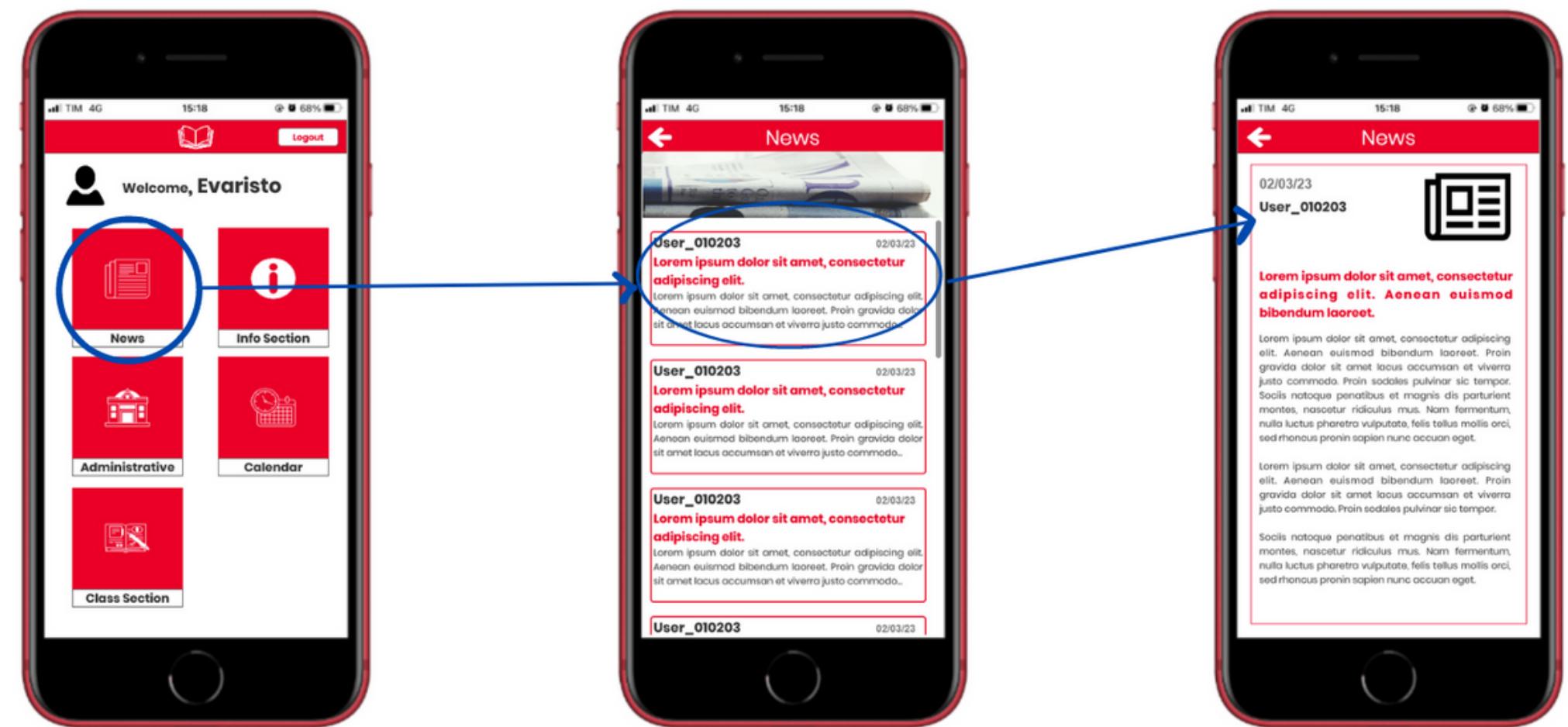
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Main functionalities

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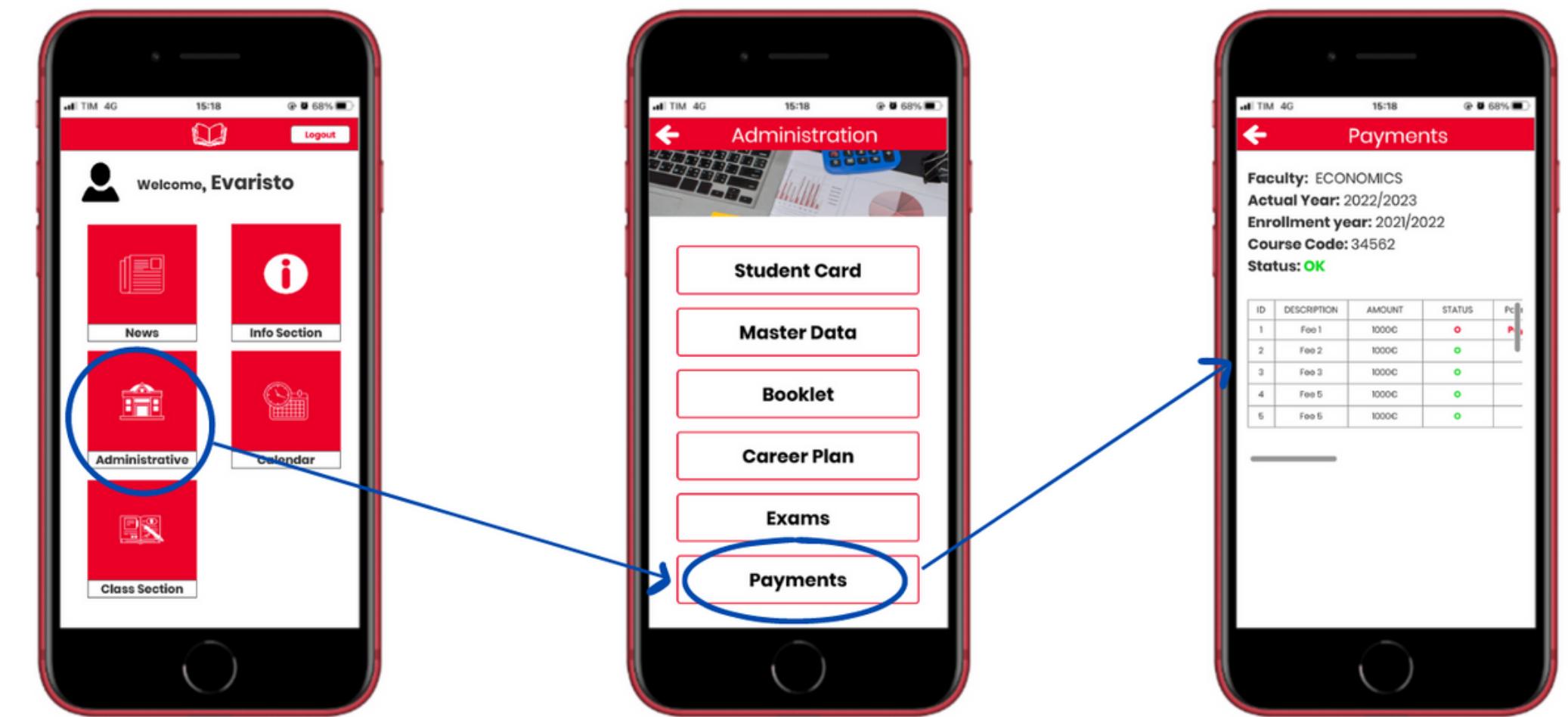
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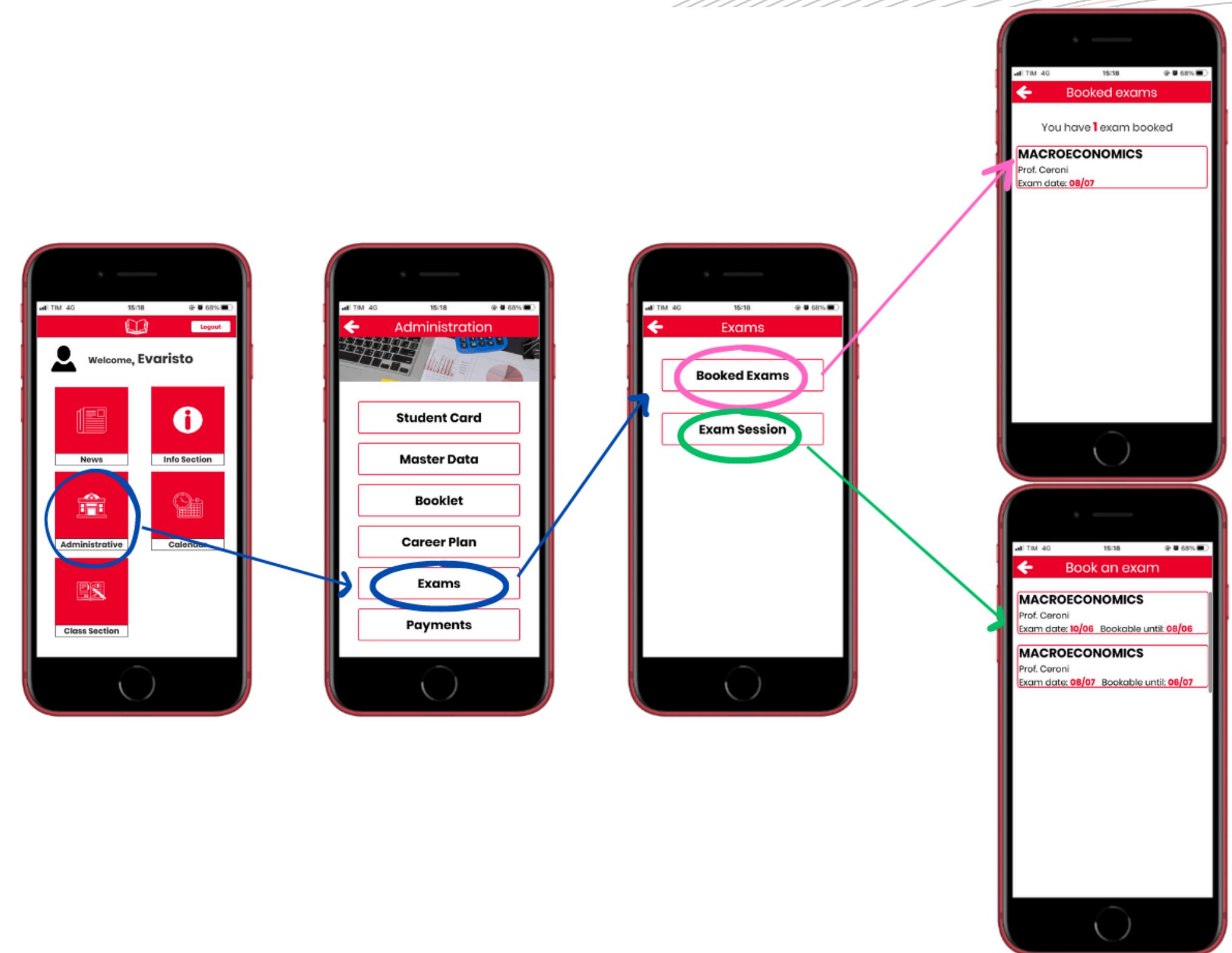
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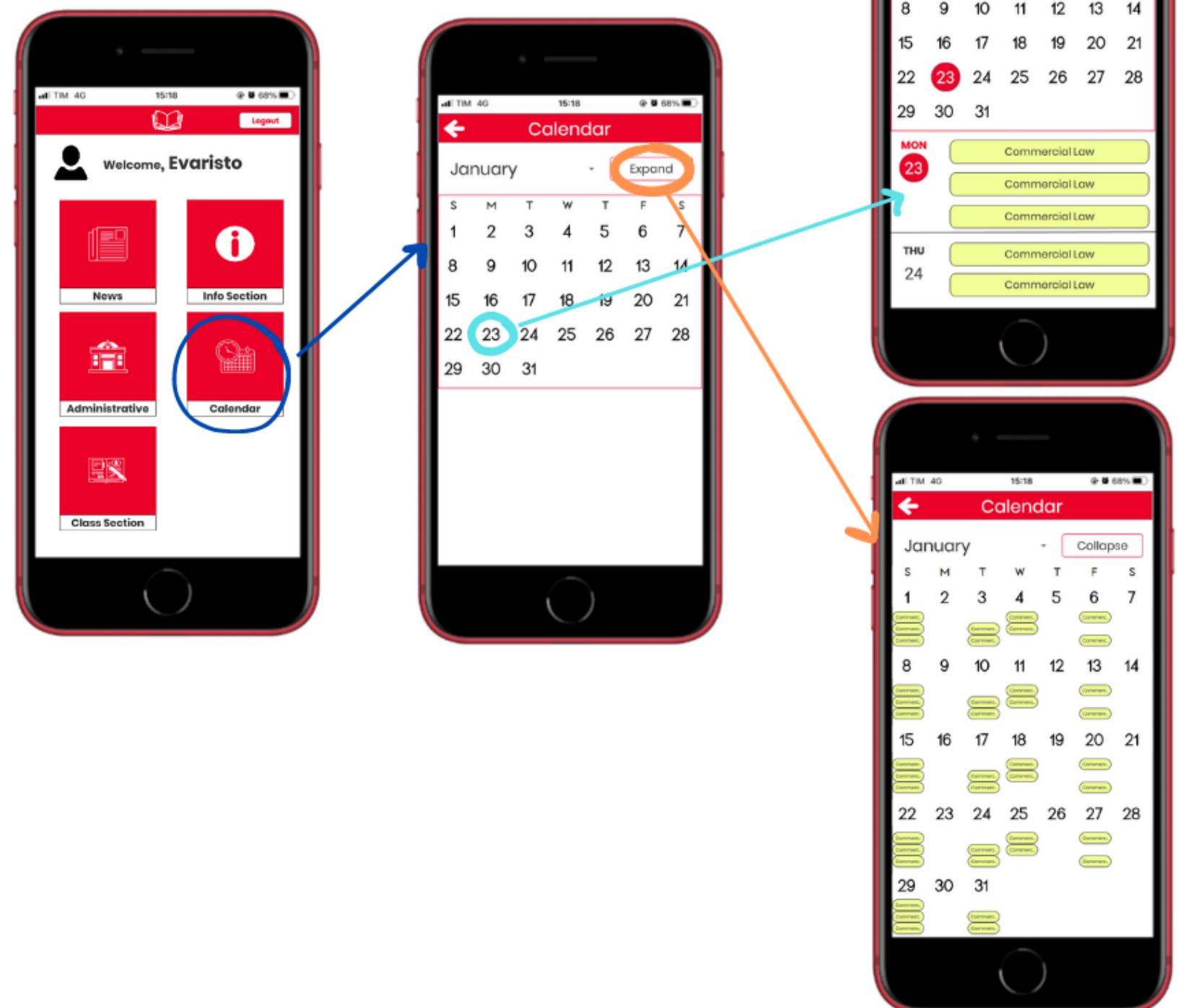
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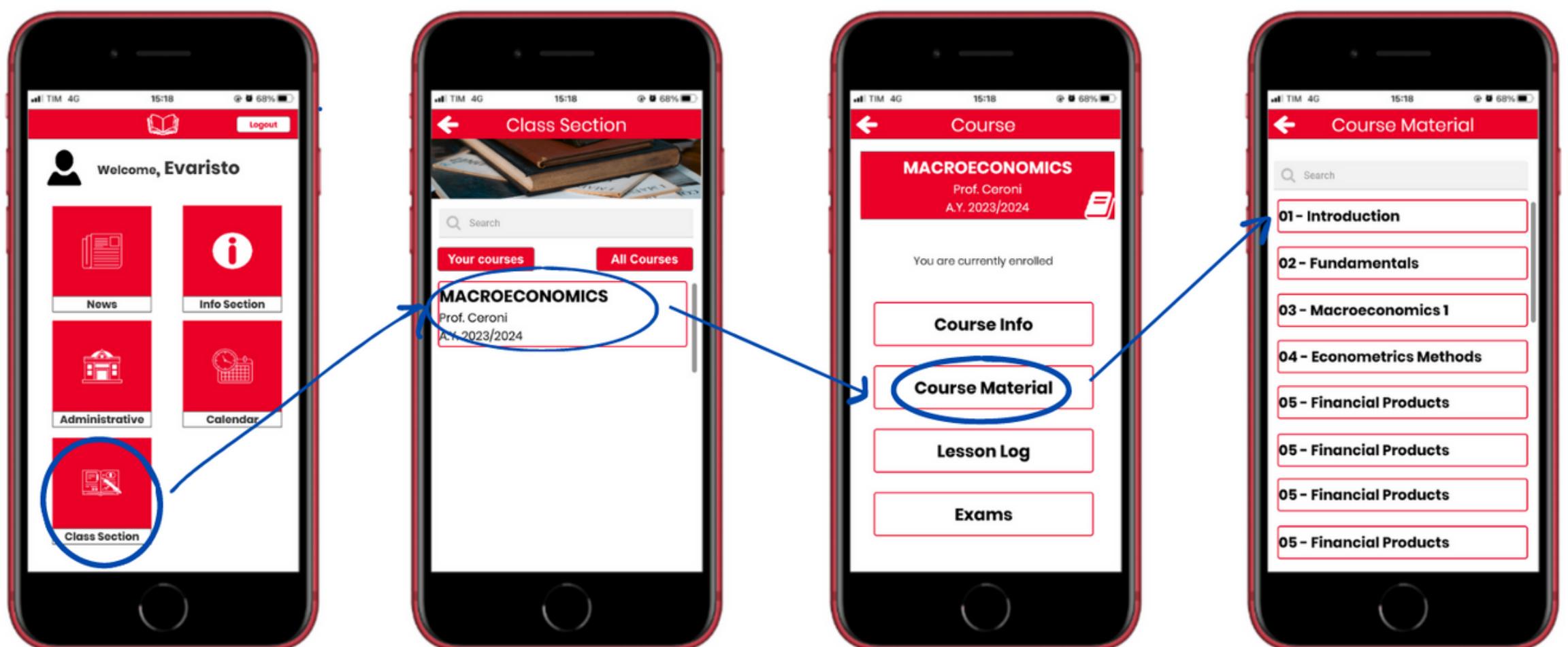
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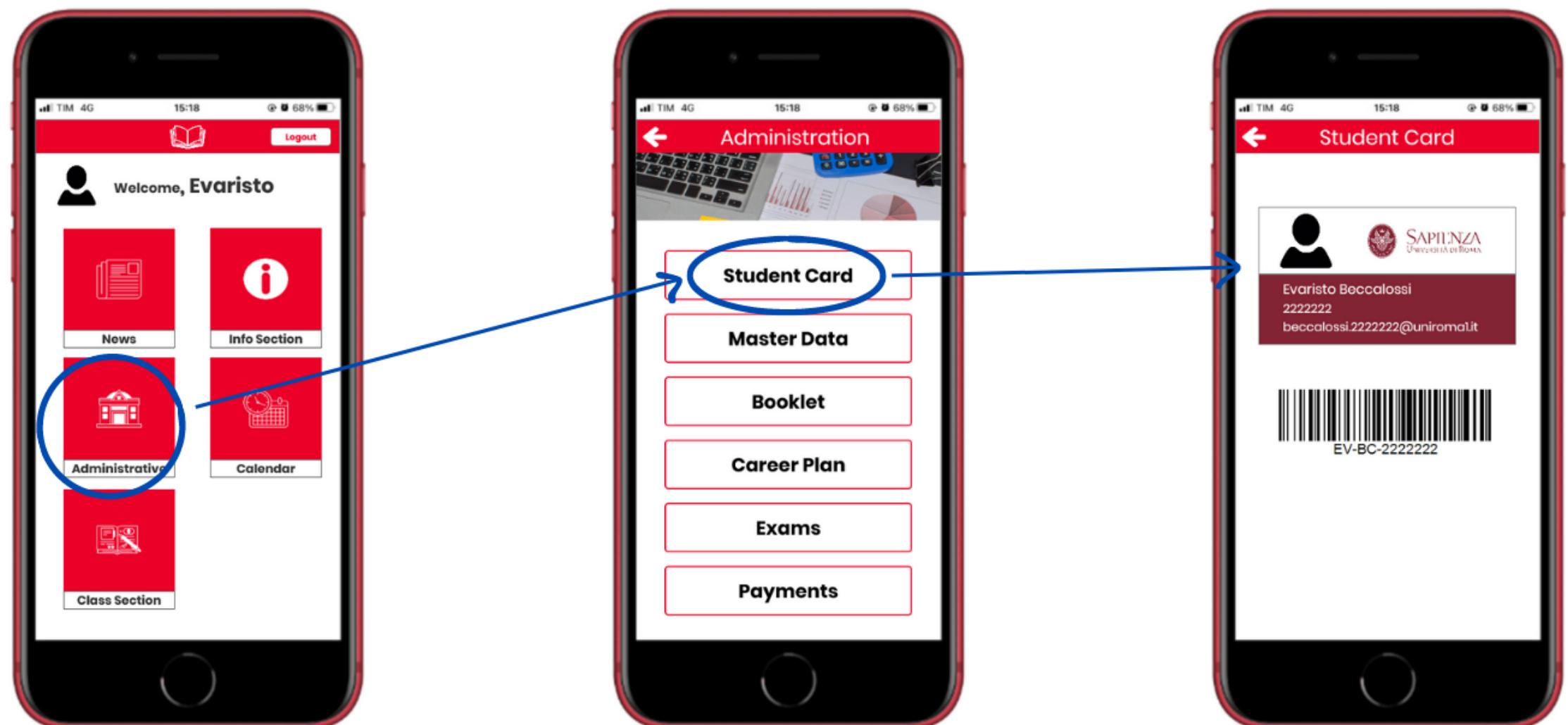
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EXPERT BASED EVALUATION

Heuristic Evaluation

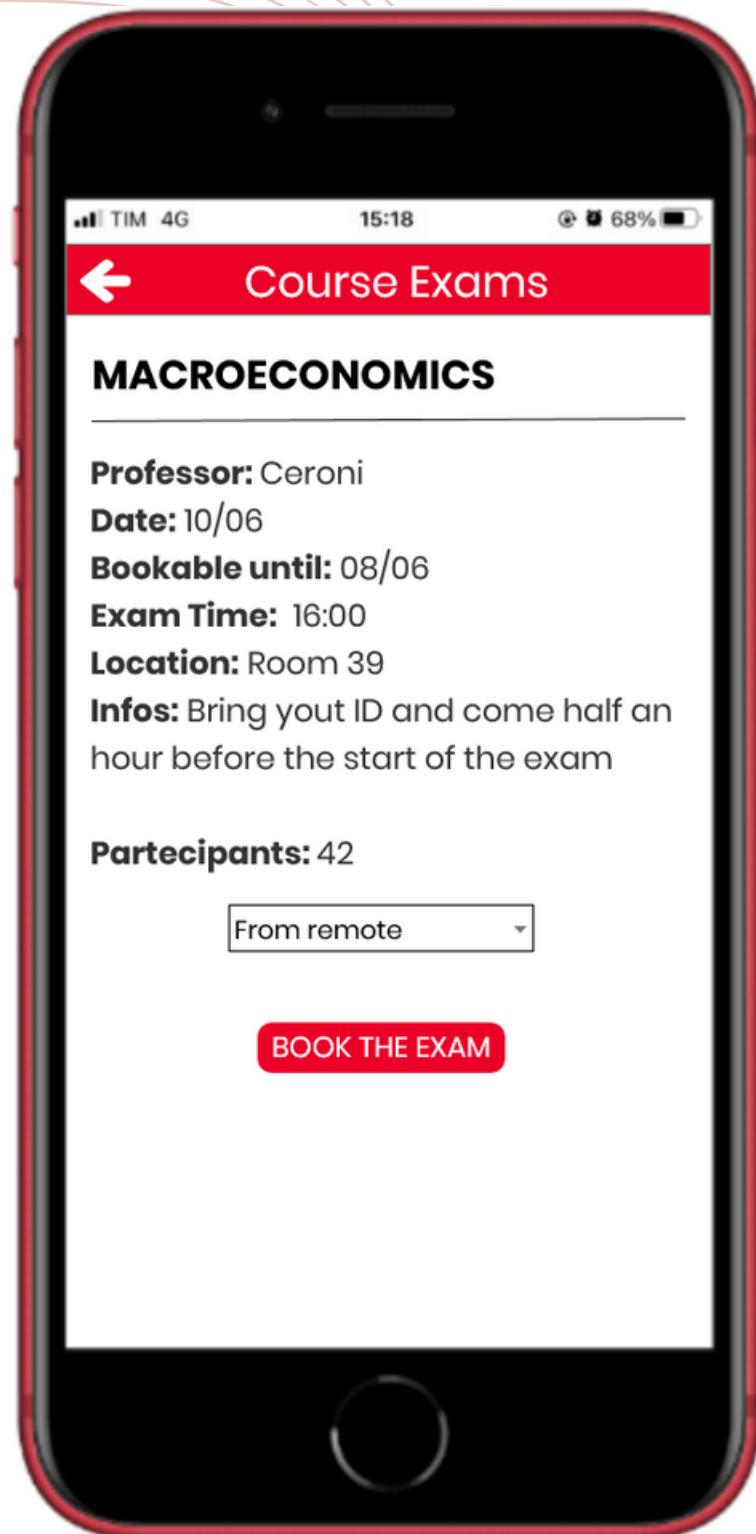
Page	Heuristic violated	Severity (1-5)	Description/comment
Login	Help users recognize, diagnose, and recover from errors	4	Include a “Forgot password” link
Homepage	Aesthetic and minimalist design, Flexibility and efficiency of use	2	Are all the sections of equal importance? For example, if the most common use of the app is to check today's classes, maybe the calendar section should have more relevance in the page
Homepage	Aesthetic and minimalist design	1	It is not necessary to add “section” near the section name (Info section, class section)
Homepage	Match between the system and the real world, Recognition rather than recall	3	The “Info section” contains info regarding the university places(map, libraries, administration offices). I suggest choosing a more representative section name. Note: having clear labels helps the user navigate the contents easily, and in this case is especially relevant because the app is providing a lot of information so it's easy to get lost
Homepage	Match between the system and the real world, Recognition rather than recall	3	The “Class section” contains the list of courses, I suggest using the same word (“Courses”)

Heuristic Evaluation

Page	Heuristic violated	Severity (1-5)	Description/comment
Class section	Visibility of system status, Consistency and standards, Recognition rather than recall	4	It is not clear which of the two filters (if any) are selected. The default selection is "Your courses" or "all courses"? By clicking all courses it is understandable that the right guess is the former (as the list expands), but it should be clear from the beginning
Class section	Recognition rather than recall, Flexibility and efficiency of use	4	The feature of enrolling to a course is too hidden (class section > all courses > select a course > enrol me). I suggest simplifying this flow
Administration section	Match between the system and the real world	2	What does "Master Data" stand for? Also "Persona" is a little bit unusual (e.g, maybe something like "your profile" is more common)
Administration section	Flexibility and efficiency of use, User control and freedom	3	I suggest separating the exams stuff from the administration one, as I believe it is something especially important for the final user (a student). However, the homepage already has a lot of sections, so in this case I suggest to try and test different arrangement versions.
Booklet	Flexibility and efficiency of use, User control and freedom	3	Exams statistics are a little bit too hidden, I feel this is a feature that students usually find useful

Cognitive Walkthrough

TASK: Book an exam for the Macroeconomics course on date 10/06 in presence



Action 1: Tap on Exams button

Response 1: Exam page opened

Action 2: Tap on "Exam Session" button

Response 2: Exam Session page opened

Action 3: Tap on the exam event

Response 3: The system displays the exam details

Action 4: Tap on the "Book the exam" button

Response 4: Exam Page opened

Action 5: Select in presence from the dropdown form

Response 5: The system shows the selected option

Action 6: Tap on the "Book the exam" button

Response 6: The system shows if the exam is booked successfully or not

Cognitive Walkthrough

The process of a **cognitive walkthrough** typically involves the following **questions**:

1. 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?)
2. Will users see the action is available?
3. Once users find 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?

The expert answered **yes** to all the questions.

The expert **notes** are:

- **Action 1 – Note:** "Instead of two buttons taking up space, it is better to display instantly engaging information like booked exams or exams for the current session, with a button for other sessions."
- **Action 6 – Note:** "Ensure clarity by avoiding confusion-inducing back arrow buttons for critical tasks like booking exams. It is better to use clear labels and consider alternative options to avoid potential cancellation misunderstandings."

ERRORS CORRECTION AND PROTOTYPE 2

Correction of HE violations

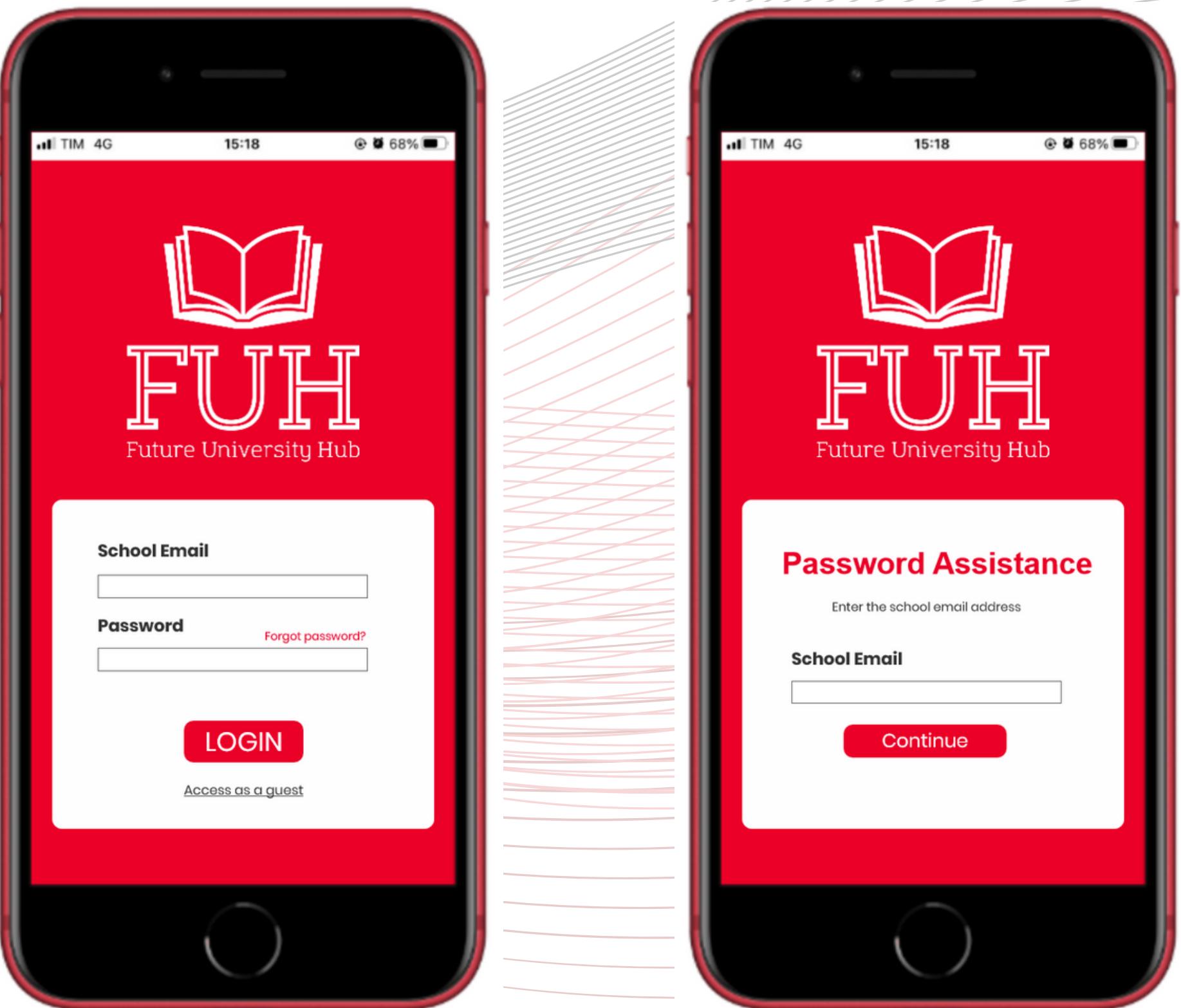
Heuristic violated:

Help users recognize, diagnose, and recover from errors

Page: Login

- The “Forgot password” link was included

Note: the login phase depends on each university authentication process, so it changes according to it. It may be a link to the university site, email or a routing with an external application.



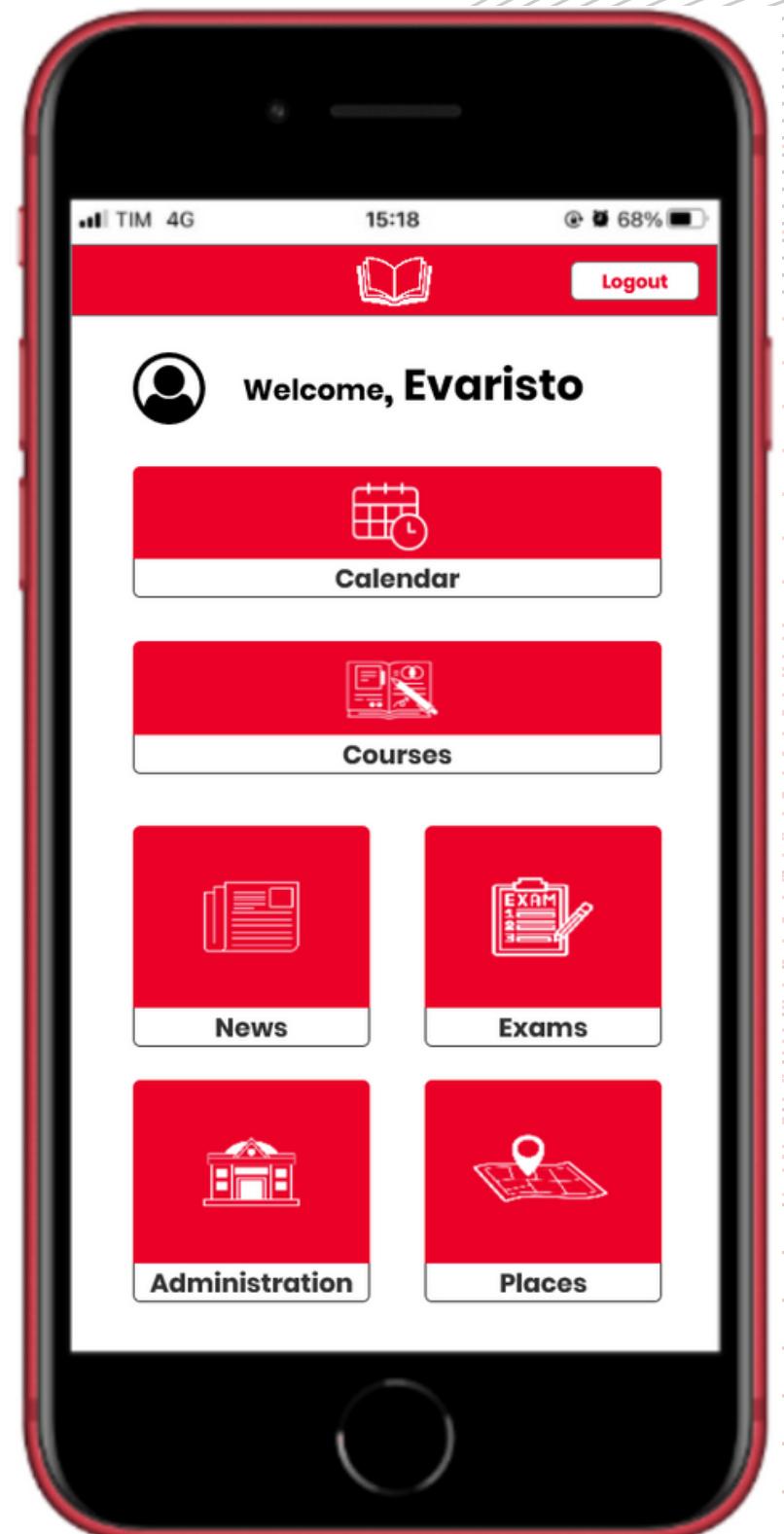
Correction of HE violations

Heuristic violated:

Aesthetic and minimalist design, Flexibility and efficiency of use, Match between the system and the real world, Recognition rather than recall

Page: Homepage

- The calendar and the courses sections have more relevance in the homepage
- The “section” near the section name was removed (Course section, Administrative section, ...)
- The “Info section” was renamed with “Places” to have a more clear label
- Every “class” was renamed to “course”



Correction of HE violations

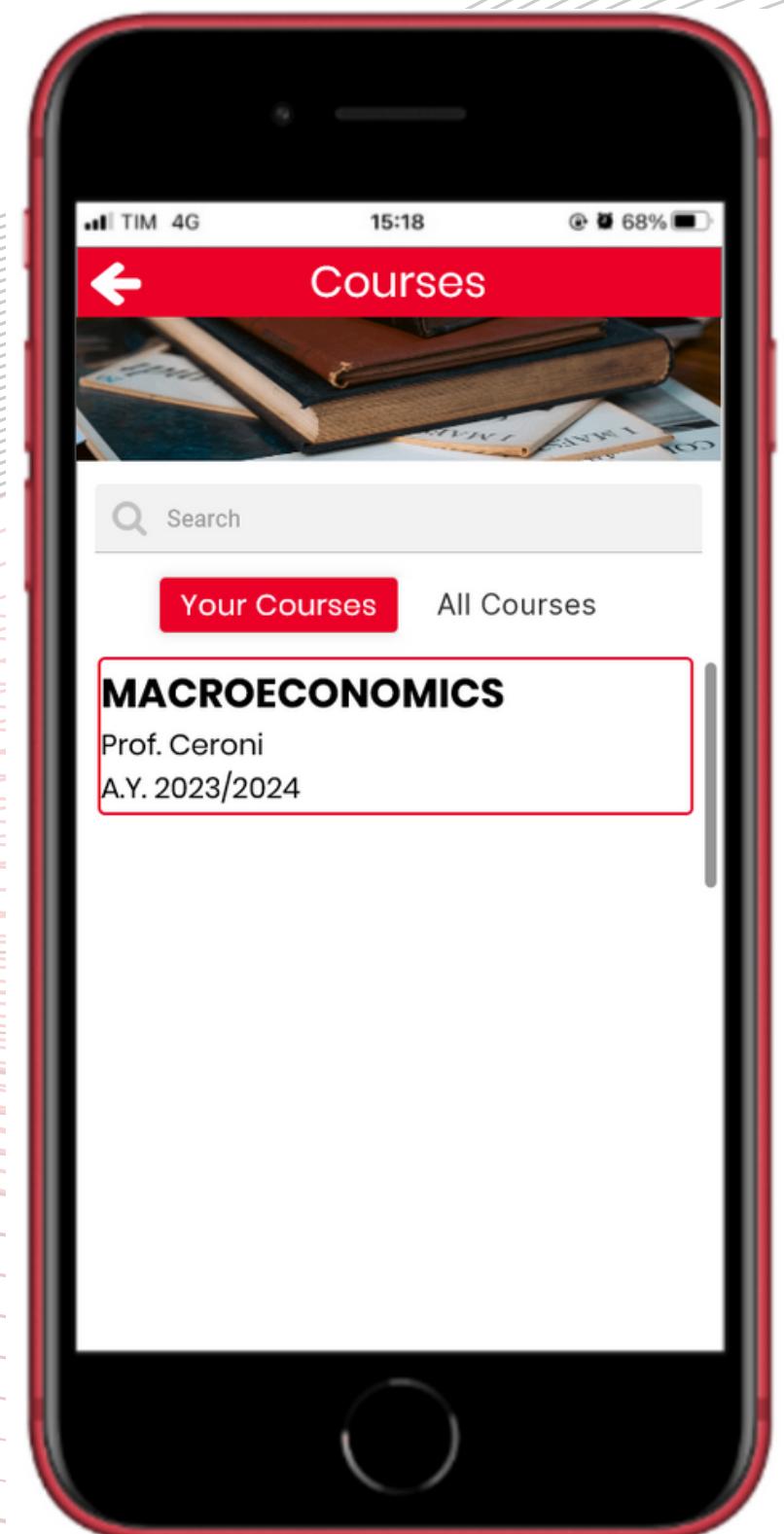
Heuristic violated:

Visibility of system status, Consistency and standards,

Recognition rather than recall

Page: Class section page

- The "your courses" and "all courses" buttons have become a button group that clarifies the selected section



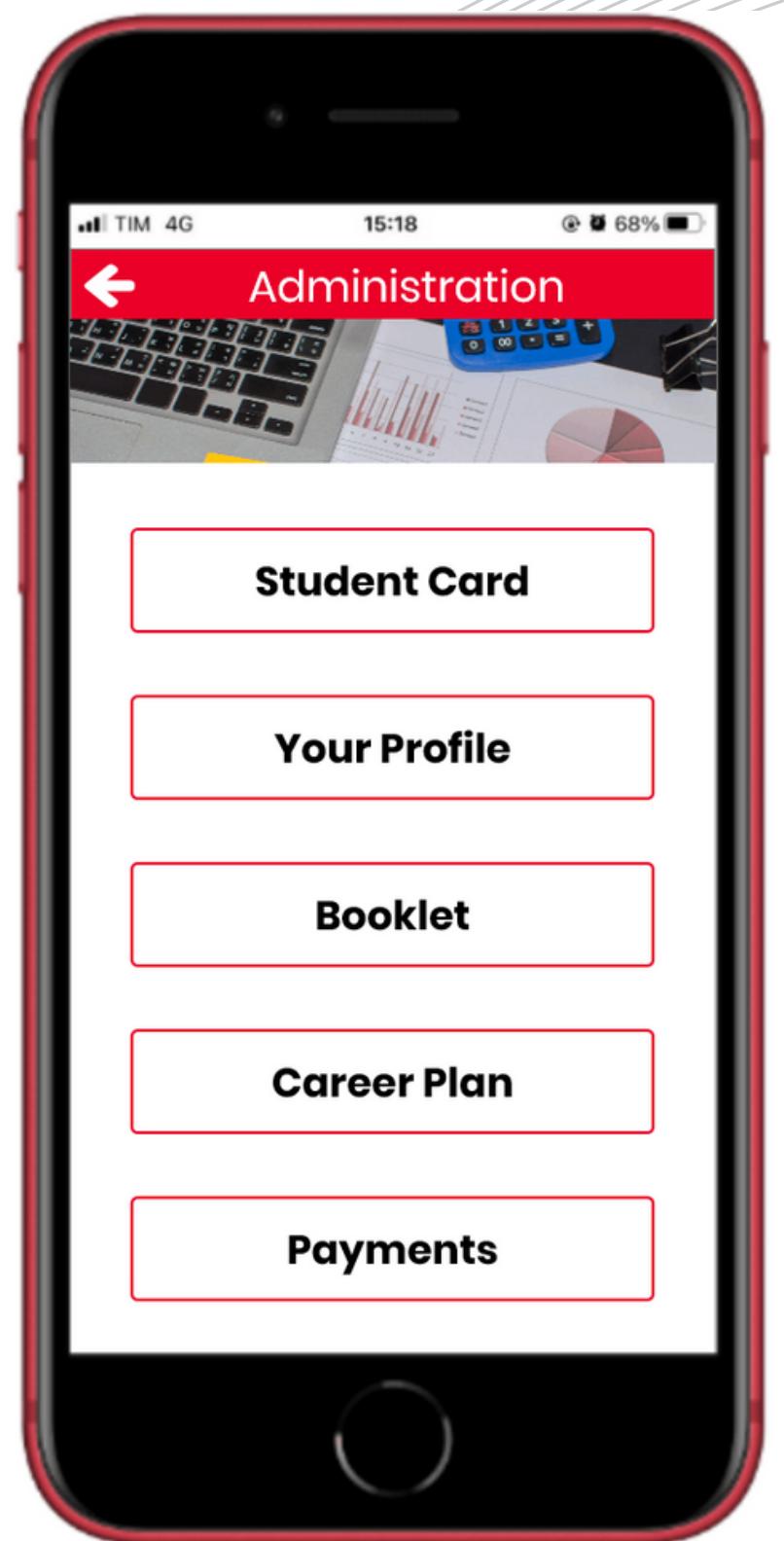
Correction of HE violations

Heuristic violated:

Match between the system and the real world

Page: Administration section page

- The button “Master Data” was renamed to “Your Profile” to have a more clear label



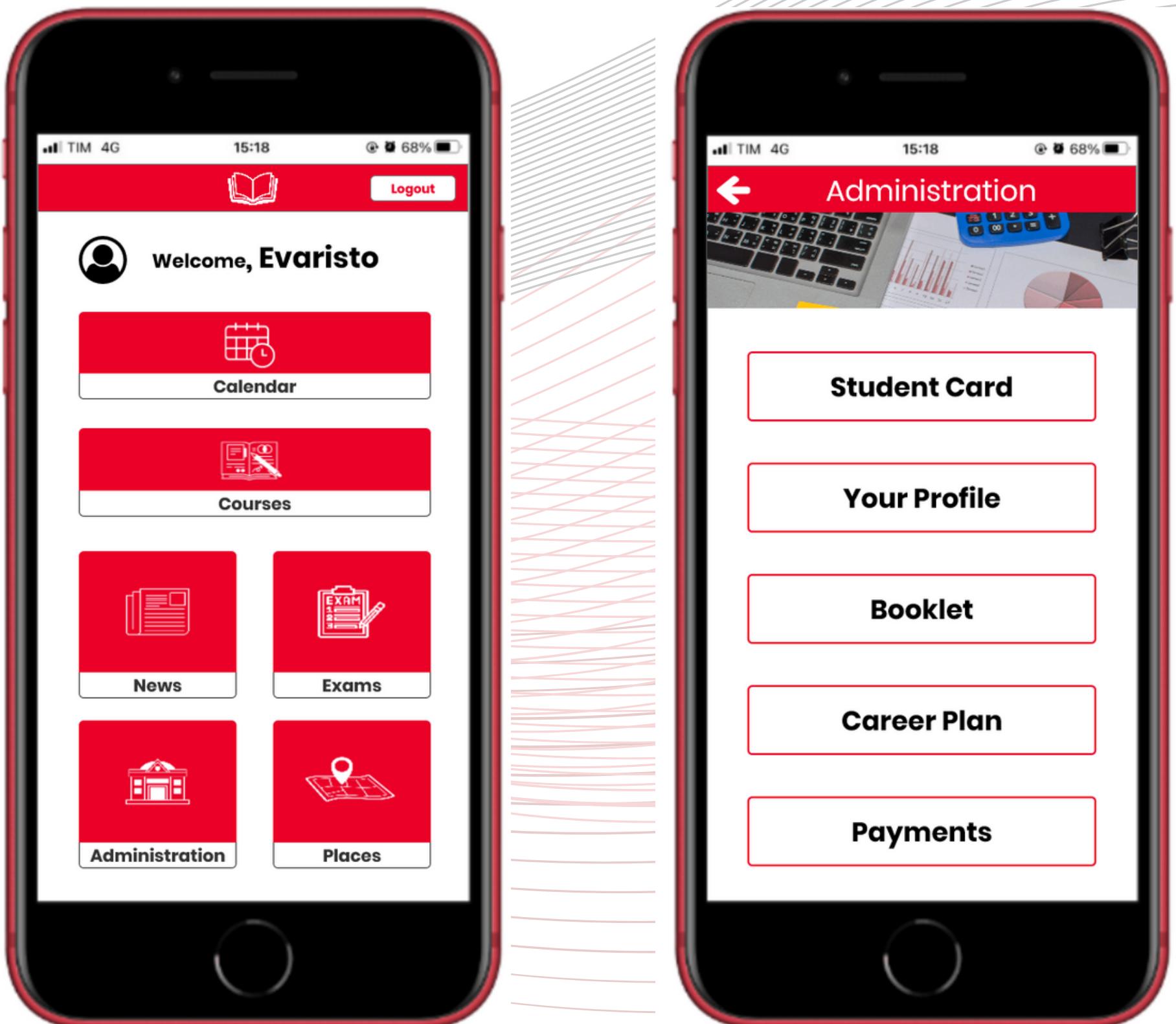
Correction of HE violations

Heuristic violated:

Flexibility and efficiency of use, User control and freedom

Page: Administration section page

- Now the “exams section” is separated from the “administration section” to get an easy interaction with this important part



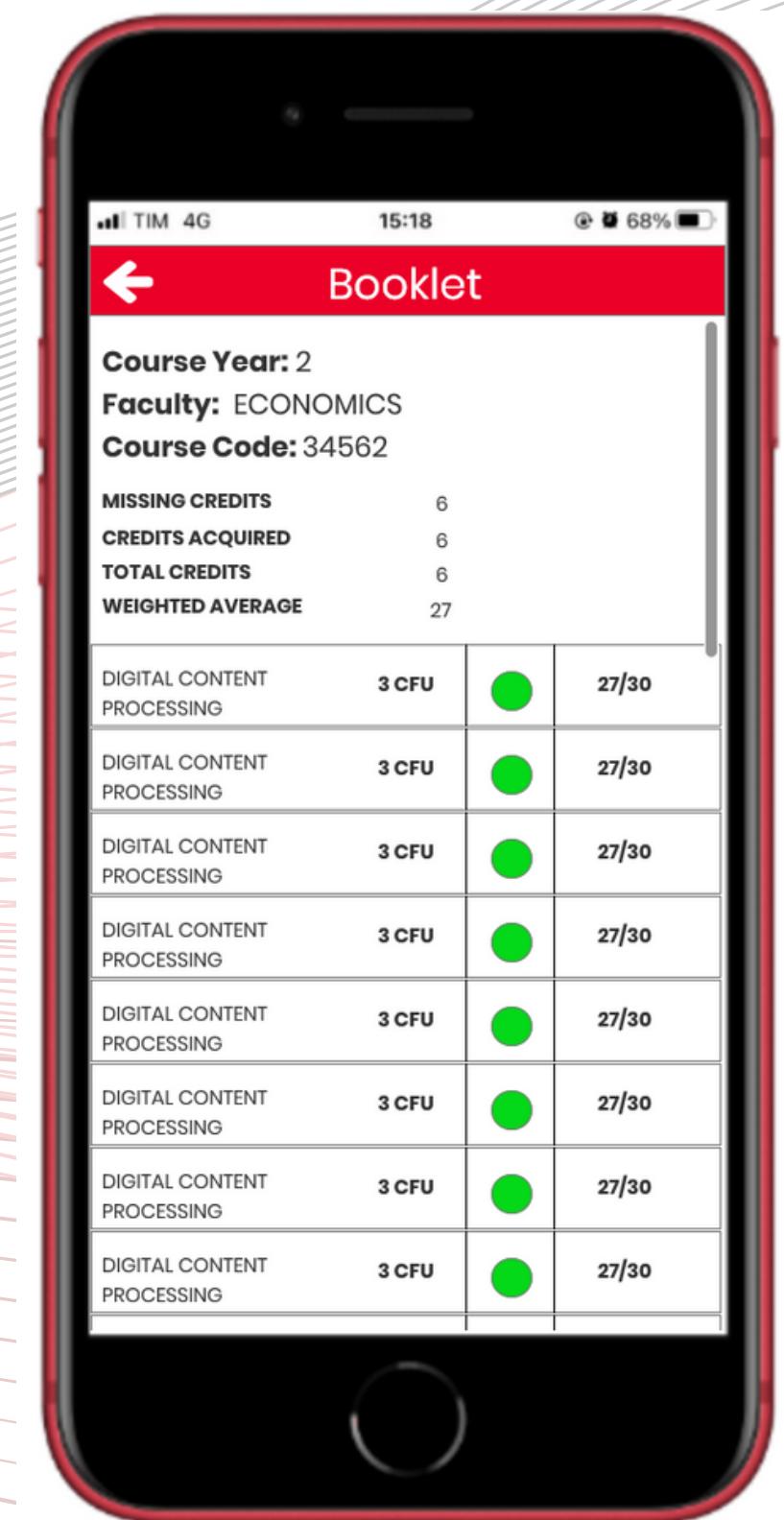
Correction of HE violations

Heuristic violated:

Flexibility and efficiency of use, User control and freedom

Page: Booklet page

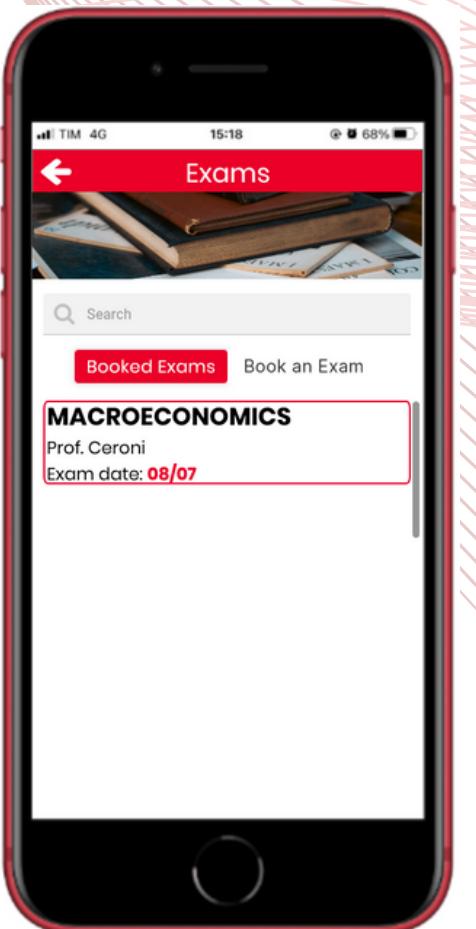
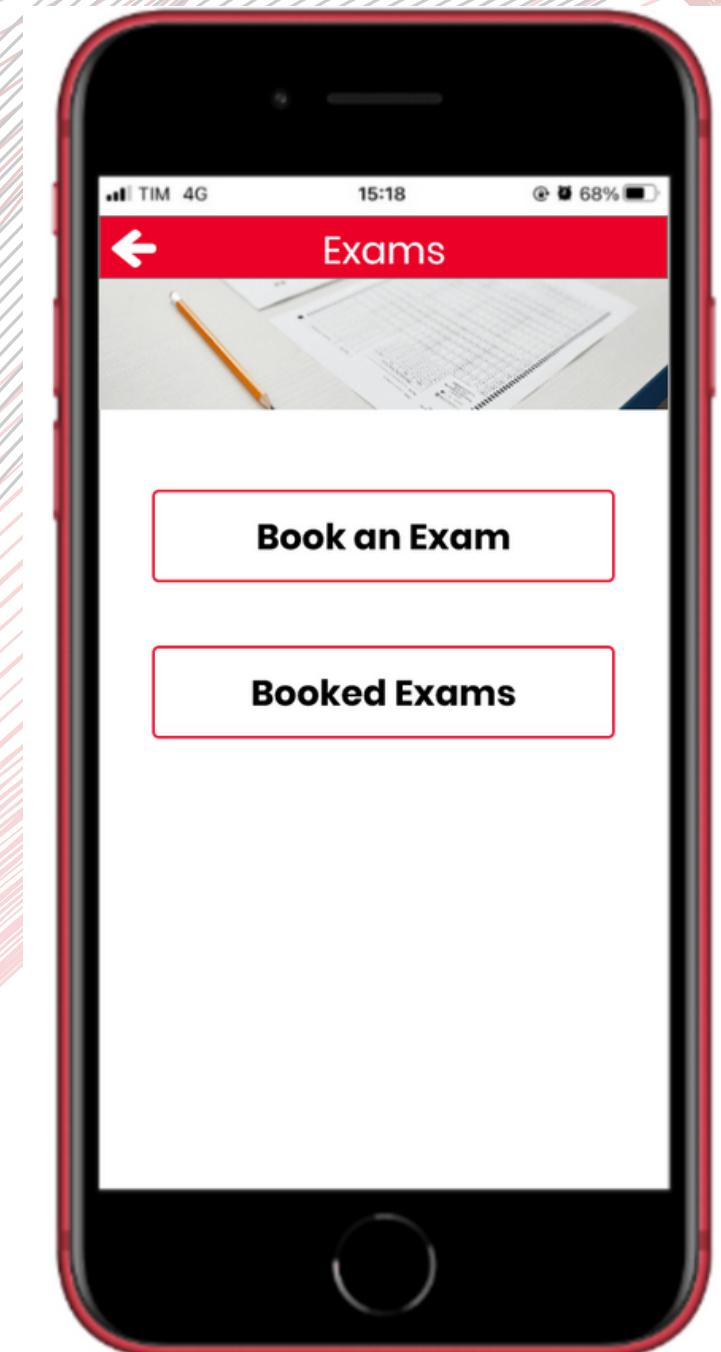
- The exam statistics are highlighted on the top of the page



Correction of CW

The **first note** is:

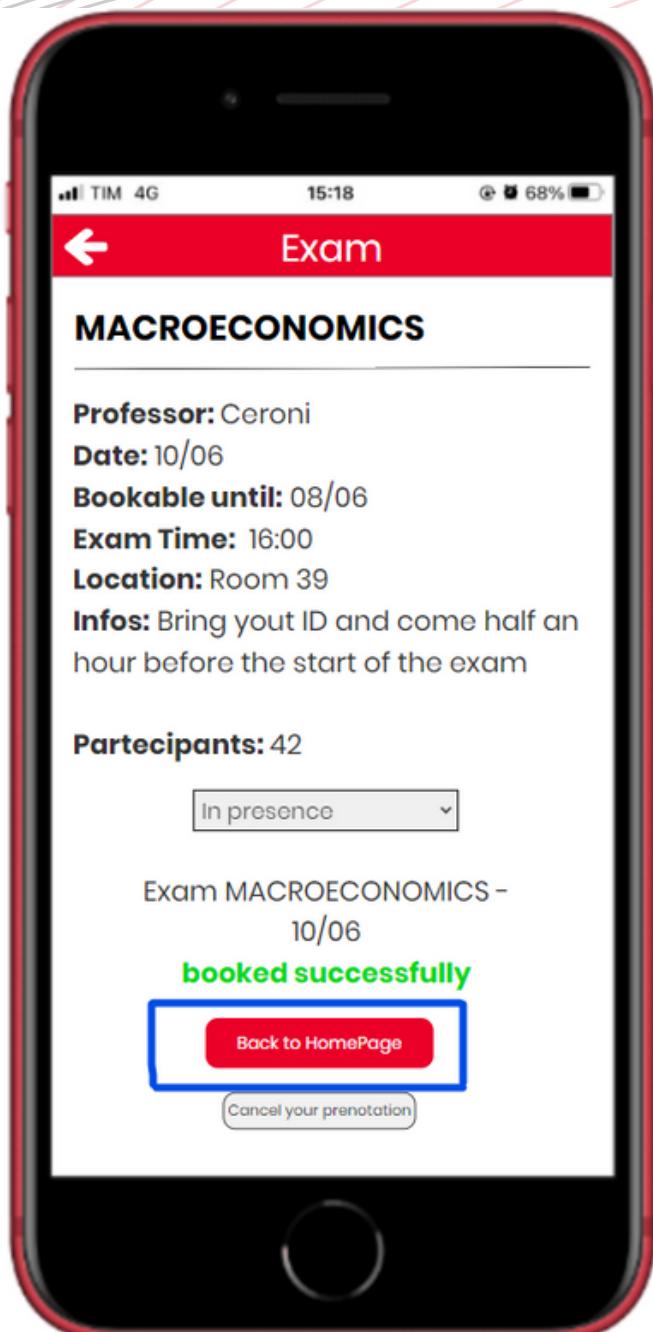
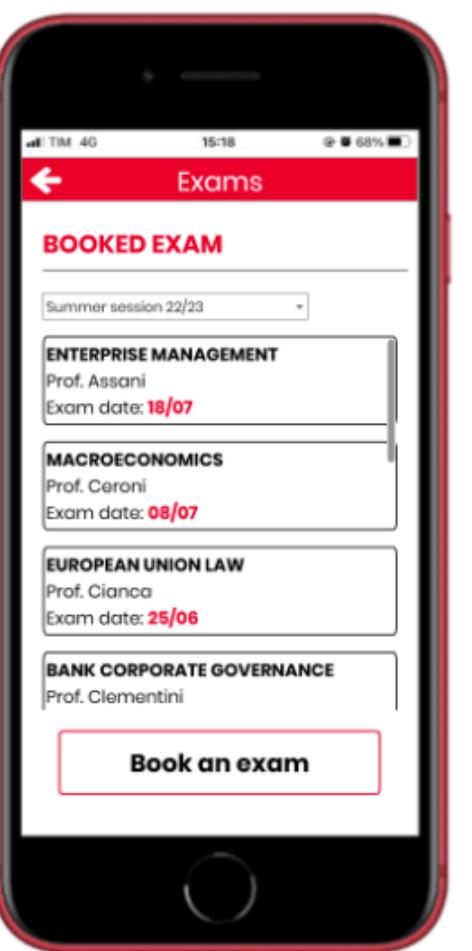
“Instead of two buttons taking up space, it is better to display instantly engaging information like booked exams or exams for the current session, with a button for other sessions.”



Two potential prototype of exam page

The **second note** is:

“Ensure clarity by avoiding confusion-inducing back arrow buttons for critical tasks like booking exams. It is better to use clear labels and consider alternative options to avoid potential cancellation misunderstandings.”



The background features a dynamic, abstract design composed of numerous thin, light gray lines that curve and overlap to create a sense of depth and movement, resembling a stylized wave or a network of thought.

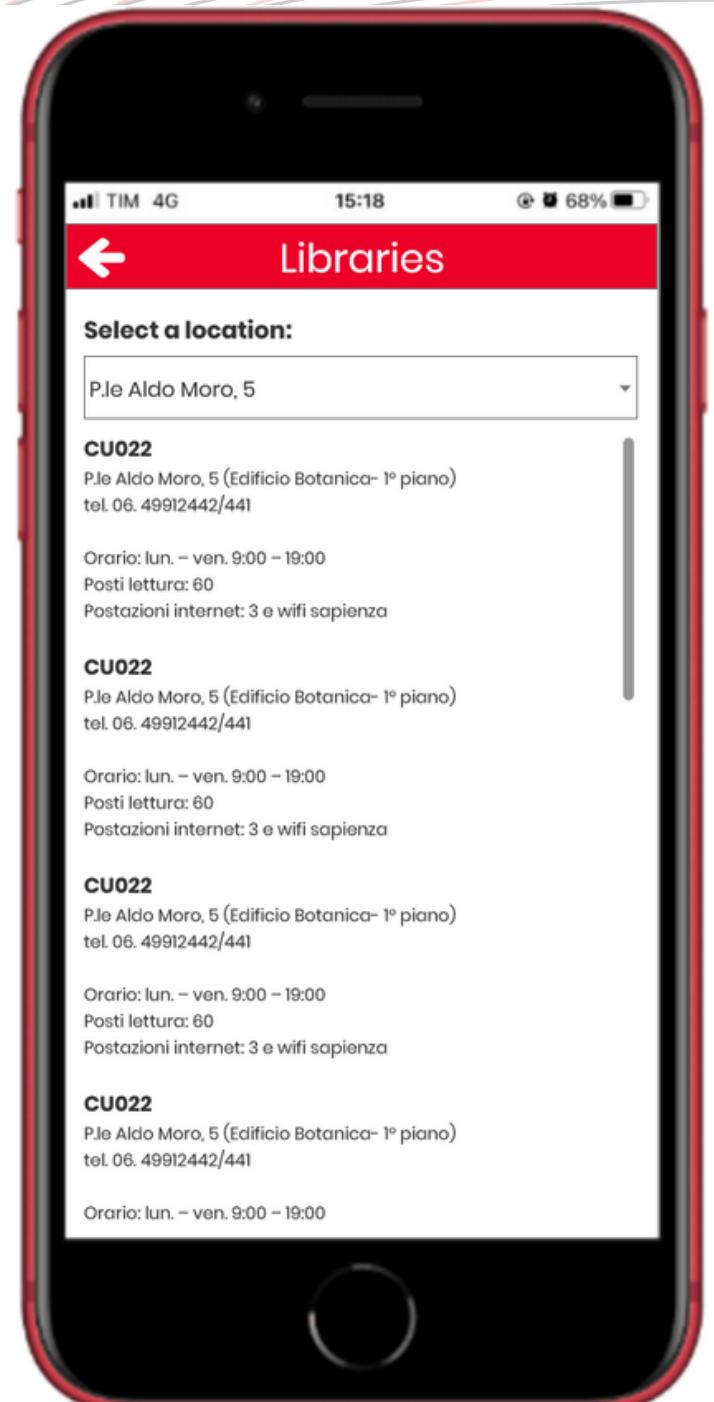
THINK ALOUD

The **Session** was composed by:

- **7 participants:** students between 18 and 25 years of age
- **5 tasks:**
 - Book an exam
 - Find the study material of a course
 - Find the paid university fees
 - Find out today's schedule
 - Find a library to study in a specific university location
- **Protocol Analysis:** Paper and Pencil, Audio

Conclusions:

- Most of the subjects appreciated the plain and intuitive aspects of the app, and especially of the Homepage.
- All the tasks were accomplished at the very first attempt
- **Problem:**
 - One of the subjects was not able to find at first the bar to change the university location on top of the page
 - Took him some time to notice it and accomplish the task
- **Solution:** we added a sign over the search bar, reporting “select a location” which made the bar more visible and easy to find



CONTROLLED EXPERIMENT

Experiment 1 - Null hyp rejected

Users: 20 People that match our user profile (university students between 18-25 y.o.)

Variables:

- Independent: the constraint of following the exam section path or the course section path
- Dependent: The time in seconds to complete the task

Hypothesis:

- NULL: Booking an exam from the exam section or from the course section takes the same time
- OUR: Booking an exam from the exam section takes less time than booking it from the course section

Experiment:

- Task: Book the exam of Macroeconomics with professor Ceroni for the 10th of June in presence
- Assumptions: user is already logged and in the homepage

ANOVA Analysis:

- $F = 8,434$
- P-value = 0,0061039
- $F\text{-crit} = 4,005238$

Experiment 2 - Our hypothesis is confirmed

Users: 10 People that match our user profile (university students between 18-25 y.o.)

Variables:

- Independent: none
- Dependent: The path chosen by the user

Hypothesis:

- NULL: The users choose the exam path or the course path with a comparable frequency
- OUR: The vast majority chooses the exam path

Experiment:

- Task: Book the exam of Macroeconomics with professor Ceroni for the 10th of June in presence
- Assumptions: user is already logged and in the homepage

Result:

- all 10 people used the exam path

Experiment 3 - Null hyp rejected

Users: 20 People that match our user profile (university students between 18-25 y.o.)

Variables:

- Independent: the constraint of following the exam section path or the course path
- Dependent: The time in seconds to complete the task

Hypothesis:

- NULL: Booking an exam starting from the home page via the exam section or starting from the course page via the course section takes the same time
- OUR: Booking an exam starting from the homepage via the exam section takes more time than starting from the course page via the course section

Experiment:

- Task: Book the exam of Macroeconomics with professor Ceroni for the 10th of June in presence
- Assumptions: user is already logged, users taking the course path start from the course page

ANOVA Analysis:

- $F = 16,36638$
- P-value = 0,000246641
- F-crit = 4,09817

Controlled Experiment: Conclusions

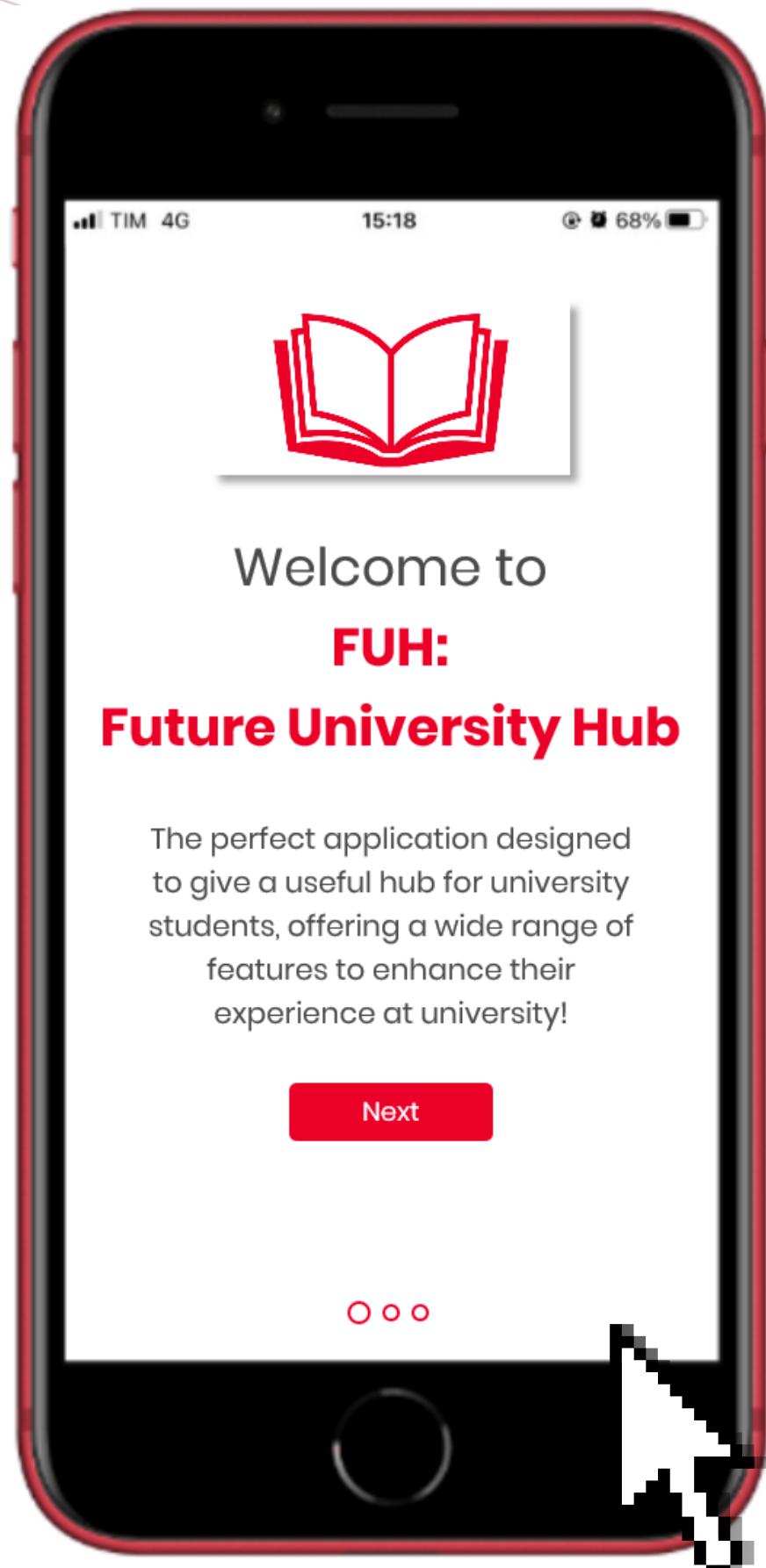
The results of the experiments certifies our hypothesis: the idea of booking an exam from the two paths is valuable.

A poll conducted on potential users shows that they would spend most of the time on the app in the course section: while a user that accesses the app to book an exam will surely take the “exam section” path, if the user is already using the application he/she will probably be in the course section. Having a direct way to book the exam from the course page will enhance the usability of the application.

The background features a dynamic, abstract pattern of thin, light gray lines forming a series of overlapping, undulating waves. These waves create a sense of depth and motion against a solid red background.

FINAL PRODUCT

Final Product



Let us start executing the application



CONCLUSIONS

Conclusions

- The **idea** behind this application rises from the confusion generated by the multiple platforms.
- It aims to provide an **intuitive** and **understandable interface** for common university tasks.
- **User-Centred Design** approach enhanced understanding of **user needs** and **guided development**.
- The **project** improved technical skills in mobile interface development.
- Further work is needed to distribute the application to a **wider audience**.
- Overall, the project provided **valuable insights** and **refined working methods**.
- The knowledge and skills gained will benefit **future user-centric application development**.



THANKS FOR YOUR ATTENTION!

