

FLY.AY

Fully Live Your Academic Years

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1 Introduction

FLY.AY, *Fully Live Your Academic Years*, arises from the need to plan a student's days between undelayable study commitments, recreational interests and sporting activities: the *mens sana in corpore sano* of ancient memory. Our agenda is, in fact, staggered in order to organize the daily routine in *study, free time* and *wellness*. All of this without forgetting the cultural aspect of our life: there is space for the books we want to read, theatrical performances or films not to be missed, and for all the other interests according to the preferences of the user.

But, since we don't want to forget absolutely anything, it also manages birthdays and all kinds of *festivity*.

FLY.AY is an app to support students into adulthood and provides help into managing the small big tasks related *finances*. For instance, we are talking about the deadline for the payment of taxes or, for all off-campus students, the house's rent and any other bills.

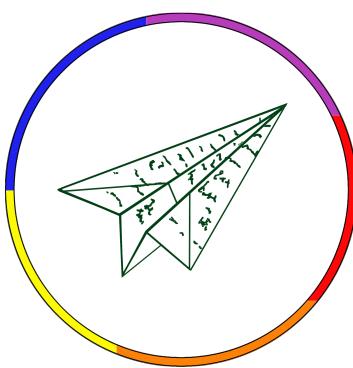
There are several apps that allow you to mark every appointments, so as to keep all in mind. And there are just as many that, instead, allow you to take every kind of notes. One of the strengths of FLY.AY is combining these two features into just one application. Why download multiple applications if we can have only one?

Furthermore, our work has the underlying purpose of making every day more spendable to all those students who are less organized in study as in life. What makes FLY.AY truly innovative is that, unlike any other application, is able to create automatically a study planner. And obviously, keeping track of every type of scheduled task, you will not give up on anything anymore and never again find yourself behind with the study! Our study planner is fully customizable. You can choose the studying days, the interval of the day during which you want to study (morning, afternoon, evening), a minimum and a maximum of hours per day, how much before the actual exam date you want to finish the study program and then dedicate yourself to a total recap. Depending on the type of study you will be facing, you can choose whether to divide your study by topics or pages. In the first case, you can mark both all main topics and their respective subtopics. If you prefer a study by pages, you will have to set the number of total pages, the maximum/minimum number of pages you want to study per day. In both cases, we can consistently manage the way in which you want to focus on review: by main topic/sub topic or after a fixed number of pages. Likewise the exercises.

After filling in all the required fields, your study plan will be generated. At this point, all you have to do is respect it!

But in case you don't succeed it, don't worry: we give you the possibility to select some days of flexibility, a sort of comfort zone for any kind of sudden change of plans. Just try not to abuse it...

The application gives to each user reassurance about the study progress along with metrics used to evaluate the actual situation, by visualizing the amount of work that still needs to be done. And each time it will update, depending on whether the daily goals have been reached or not.



Now, let's go into the details of the app. After logging in, we will see on the *home* all the events of the current day. By selecting one event, we can access the details. From the main page, we can go to *calendar*, which gives an overview of the events scheduled for the month: a little dot characterizes the days in which there are tasks to do. By selecting a day, we have a preview of the appointments.

Next to the home, there is the *search*: you can therefore look for an event that interests you by title, by category or by place.

Then we can find the module to *add the event*. The forms are diversified according to the selected category and subcategory. The categories are differentiated by colors. As we can see from the image above, the colors are five and the mapping color-category is the following: *blue-study*, *purple-wellness*, *red-free time*, *festivity-orange*, *yellow-finances*.

Going further, there are the *lists*: here, you can mark everything to do. For some more standard actions, such as the shopping list, you can load a pre-filled template. Within the list it is possible to sort the items in alphabetical order, select/deselect them, delete them or decide that they should be deleted after a predetermined time, and save the list as a template.

The last part is the *profile*. Here, you have an overview of the profile and the possibility to access the *settings*. In addition to the typical actions of username/password changes or addition of another email, you can manage notifications. You can then choose the type and quantity of notifications to be received. You can select whether to receive a notification that reminds you of the plans for the day, the next, and so on. You can set also the time you usually wake up or the lunch break interval to better organize the day.

In the next paragraph, we will see what users think about our idea.

2 Requirements analysis

To realize our application we followed different steps, aiming to build a good product and to minimize the error along the way. We followed the *user centered design* approach, that is methodology for creating a software centered around users' need and priorities.

Since humans become the center of our interest, the system is created according to their perspective. Their idea and opinion can change through time and so does the system accordingly. This is why the user is involved throughout the whole process lifecycle.

So, the very first thing was to learn as much things as possible about our type of product and the final customers. To do that, we started collecting some requirement, as to say what the product should do and what it must have.

2.1 Competitors Analysis

To have a clear idea on what we should and shouldn't do, competitors applications were analyzed. They served the purpose to provide both a guideline and something from which diverge. We wanted to capture their strength and weakness; their functionalities and unique features; and more importantly their reputation. To do that, other than use ourselves the analyzed products, we also made a research among the various reviews. We decide to study three application, one for each main aspects of FLY.AY.

Google Calendar

This is considered as one of the best app for events tracking. It's realized by a team that continuously update the content of the smartphone application leading to the download by more than 1 billion people.

- *Appreciated aspects:* One of the most important thing is the synchronization of your phone contacts and phone calendar, so that the app can take automatically import information stored by the end user. Furthermore, if you have multiple google accounts they will be synchronized, but you can still decide what category of events display from them. The graphic is well organized, giving the possibility to display events in multiple way (day, 3 days, week, month visualization) and the user is able to customize various aspects of the calendar. Finally, it's possible to use the service both from smartphone and from computer having a synchronized interaction.
- *Criticized aspects:* Unfortunately there are some problems when there are more than one account: it may happens that the same event, saved on two different accounts, is repeated; in addition, every imported account activity is divided into standard categories without possibility to customize. Other minor design aspect not particularly appreciated were the fact that the distinction between event and remainder is not clear and, in the opening view, the beginning and ending of a month is not highlighted (just like in the month view were the last two rows belongs to the following month). Among the most crucial aspect, we found that, if some failures happen, then data are lost and they are difficult to retrieve. More over, the huge number of functionalities are not illustrated by tips, so users miss them and not being able to fully exploit the application.
- *Unique features:* One of thing that most attract the eye is the style, considered very elegant and unique. Another aspect, useful to ease people's life, is the possibility to integrate different Google services to have a better interaction. Finally, the fact that the calendar learns by your habits and preferences was highly appreciated.

Trello

Trello is a tool used to manage lists; extremely helpful in organizing chore to be completed alone or inside a group. Considered fundamental when working with others, to have a clear view of what team members are doing and what it has been already done. Here, we are going to analyze only the free version for smartphone.

- *Appreciated aspects:* The first one is, of course, the possibility to share lists with your friends, family or colleagues. The use is very easy and intuitive for everyone, and the fact that it's versatile and adaptable for working and life's chores makes it important for every necessity. There is also the computer version that, if wanted, can be synchronized with the phone.
- *Criticized aspects:* The application does not allow to have an overall picture of the day, because gives only the opportunity to enumerate things to be done, with no further details. The app is organized with different walls for different chores, each containing some lists. Some user reported that change the walls order could be interesting, functionality not yet integrated. Another flaw concern the impossibility of having sub-tasks, when the main one is too complex. Not all desktop functionalities are supported in the mobile version, but the worst aspect is that the right/left lists' scrolling may trigger out the settings, even if the user is not searching for them. In addition, this type of scroll is not left-handed friendly.
- *Unique features:* The wide customization through usage of photo, video, comments etc.. is extremely appreciated; as also the fact that different typologies of user with no particular technology skill are able to use the app without having problems.

My study life

The last research was done on My study life, that specifically deals with the organization of the academic life, keeping track of every possible deadline and university activity.

- *Appreciated aspects:* Its main feature concern the organization of every kind of studying event with plenty of details, giving the user notification for every activity and special reminder for lessons' rooms. There is also the possibility to use the service both from smartphone and from computer having a synchronized interaction, allowing everyone to always update the signed content
- *Criticized aspects:* One of the most criticized aspect is the fact that it's not so much graphically developed and, contrarily to what expected, some interactions still result unclear (as, for instance, the difficulty to change an event time previously indicated). There is also no possibility for changing colors and no available calendar synchronization.
- *Unique features:* According to users' perspective, the functionality of keeping track of the studying progress is crucial to have everything under control. In addition, the highlighting of the number of classes, tasks and exams signed within the app makes impossible to forget something and allows to be prepared for it.

We then summarize our collection of information in the following table:

	<i>FLY.AY</i>	<i>Google Calendar</i>	<i>Trello</i>	<i>My Study Life</i>
<i>Free</i>	✓	✓	✓	✓
<i>Account</i>	✓	✓	✓	✓
<i>Managing events</i>	✓	✓	✗	✗
<i>Managing list</i>	✓	✗	✓	✗
<i>Study events</i>	✓	✓	✗	✓
<i>Study planner</i>	✓	✗	✗	✗
<i>Search</i>	✓	✓	✓	✓

2.2 User analysis

After this first step, we started to analyzed people. They are usually not aware of the requirements, but they may highlight a perceived need that will be taken into consideration during the implementation phase. So to

move on, we had to answer one important question: who will use our application? After coming up with an answer, we were ready to provide the first conceptualization.

2.2.1 User Profile

Firstly, we gave a general description of our target user and his characteristics.

The main subscriber of FLY.AY should be young people, between 18 and 30 years old or, in any case, anyone who is experiencing the complicated university life. There are no specific gender or profession restriction. The app could potentially be used all over the world, since the study plan adapts to the person who creates it and not to the environment in which it's used. The skill required with technology are not high; basic knowledge of a smartphone is sufficient. In conclusion, there are no specific limitations.

2.2.2 Persona and scenario

To better understand our target, we come up with two fictional people that have the scope to describe the typical user, based on the previous user profile. Then we placed them inside a context: a story that describes how a particular persona behave in a certain situation.

Maria Ferranti

Maria is a girl of 22 years old, born and living in Rome. She has just finished her bachelor degree in Physics, and now she is starting the master degree. Mary is a bit shy and this led her to have few friends, but their bond is strong!

Maria spends a lot of time studying, because she always wants to do her best, and this forced her to give up on tennis.

The girl loves her family and cares about their opinion, that's why she gets upset when they encourage her to go out more often.

Her studying motivation comes from the desire to help young minds to grow and develop. In fact, her main goal is to become a university professor.

Due to her studies Maria is pretty good into using her laptop, and she also likes to take notes over the tablet. She likes technology when that can ease her life.

Maria's scenario

It's a September Saturday morning and Maria is enjoying some relax before starting her first year of the Master degree. She is a bit thoughtful because, the previous night, her friends proposed to take again some tennis lessons, so they will be able to play together. She is afraid about the fact that a new academic path is going to start soon, and she will attend many lessons. This because her study plan provides lots of exams in the first year and, of course, she wants to attend them with the goal of obtaining good grades. Although this year will be different; Maria promised herself that she will not give up on anything. She is determined to find a way to manage both the university tasks and personal life, having complete control over everything. She needs to optimize her days, having reassurance about the fact that there is time for doing everything. Will she be able to do so?

Domenico Bianchi

Domenico is 23 years old, born in Tivoli. He moved to Bologna to study Mechanics Engineering and he should have finished the bachelor degree last year.

Domenico is an extremely extroverted guy that makes friends so rapidly, with no effort at all. He is fascinated by the nightlife of the new city that allows him to do a lot more stuff than when it was in his hometown.

Although, his family is starting to press him because they would like to see more results.

His studying motivation comes from the desire to work in Ferrari, but the boy is starting to realize that he is late in achieving life's goal. In fact, Domenico often distracts himself using PlayStation, but even chatting with his friends and playing with them.

Domenico's scenario

It's a Friday night and Domenico is going to a degree party of two of his university best friends. He is happy for them, but at the same time he realizes how much in late he is. In few weeks, he will have an exam and he really wants to succeed in it. But as always, his week schedule is full of appointments so he's not capable to judge if the available time is enough for him to pass the exam. And how can he organize his study to have good results?

His life is getting out of hand, because he has too much things to control and organize, even because living alone requires lots of responsibilities.

It's arrived the moment for him to change the direction of his life!

2.3 Questionnaires

To understand the actual opinion of possible users and to touch as more people as possible, we designed a questionnaire. Each question was accurately written in order to not lead the user to a certain response and to always make them feel comfortable in responding. The survey was anonymous and analyzed with a small circle of helpers, to check the clarity of the questions, before spreading it out.

2.3.1 First questionnaire

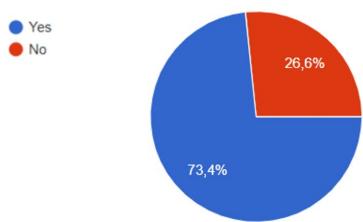
The idea our project evolved and changed during time. The first one was to create an application that could ease the life of both students and worker. This is why we thought about 2 different user's typologies. In the first case, we wanted to support users with study handling; while in the latter, help remembering work meeting and all sort of deadlines. The survey arrived to 203 people; a good number for considering the data statistically relevant. Here, we report some of the responses collected by this type of users.



We tried to understand how people relate to the use of calendar application and to the organization of their routine.

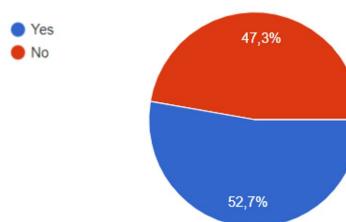
During you daily routine, do you have a busy schedule?

203 risposte



Have you ever forgot an appointment?

203 risposte



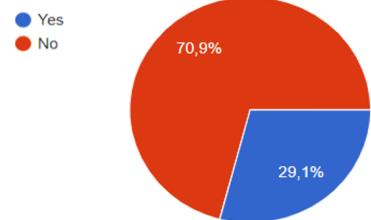
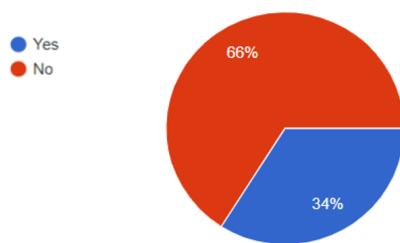
At this point, we wanted to understand if users would enjoy a fully complete type of application, dealing with all these kinds of events. We wanted also to get the idea of what could be considered in the actual realization.

In despite of what we thought, the idea of sharing activities with friends or family was not appreciated by users.

Have you ever succeed in organizing all your daily, working and other appointments within the same app? Would you like to share your activities with your friends?

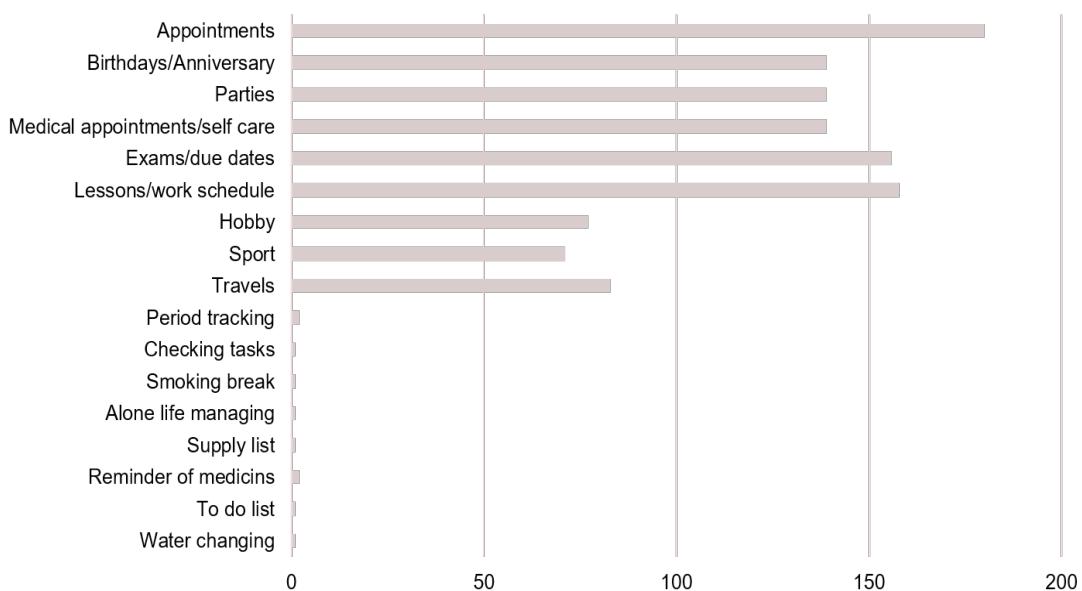
203 risposte

203 risposte



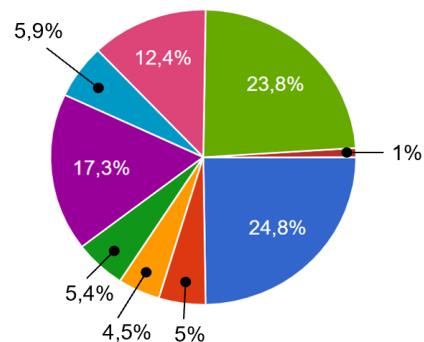
With

the survey emerged that users were interested in remembering the following things, considering also their suggestions.



2.3.2 Second Questionnaire

- Architecture
- Economics
- Jurisprudence
- Civil and Industrial Engineering
- Information Engineering, Computer Science and Statistics
- Literature and Philosophy
- Medicine and Odontology, Pharmacy, Psychology
- Mathematics, Physics and Natural Sciences
- Political Science, Sociology, Communication



Even if the results of the first survey were quite good, we rapidly realize that our application, although could manage lots of aspects altogether, did not have that something more that could allowed us to emerge among others apps.

At this point we decided to narrow the target of our project so that we could be able to focus on something that no one else have never considered.

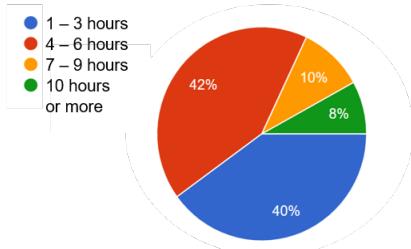
FLY.AY was finally born; it still manages every aspects of life (where work events can be considered as any

other), but is innovative because, unlike any other application, is able to create automatically a study planner. This is the unique feature that will lead users to download our app! With this second questionnaire we reached 202 people. We divided the survey among faculties to understand how the study approach changes and if it's influenced by the field of study. Here, we are going to analyse only the most significant answers of the faculties that allow us to conduct an appropriate study.

Architecture

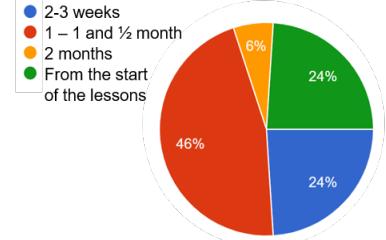
Generally, how many hours per day, do you employ studying (not considering lessons time)?

50 risposte



On average, how much time before do you start preparing an exam with respect to the exam date?

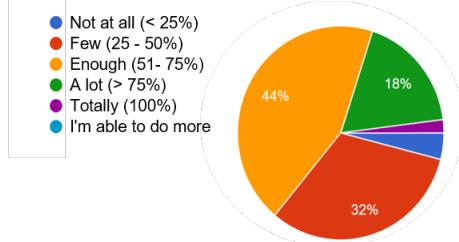
50 risposte



On average, how much can you live up to your expectations regarding the passing of exams during an exam session?

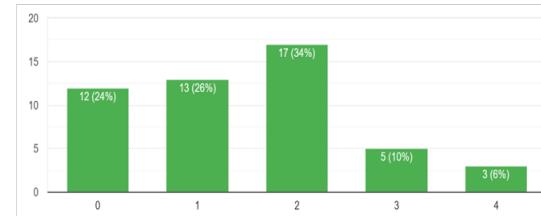
48 risposte

Not at all (< 25%)
Few (25 - 50%)
Enough (51 - 75%)
A lot (> 75%)
Totally (100%)
I'm able to do more



How often do you had to prepare an exam in less than 2 weeks?

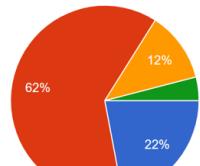
48 risposte



Do you organize your study?

50 risposte

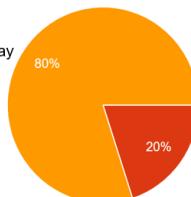
Always
Almost always
Almost never
Never



If the answer is never, tell us why:

5 risposte

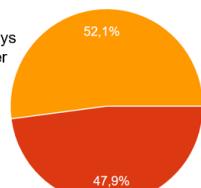
I don't need to
I would not follow it
I program day by day
For laziness



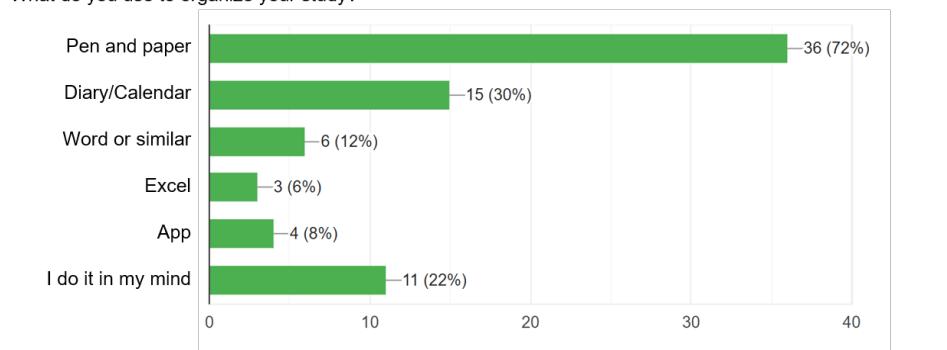
If you do, are you able to respect your own chosen timing?

48 risposte

Always
Almost always
Almost never
Never



What do you use to organize your study?

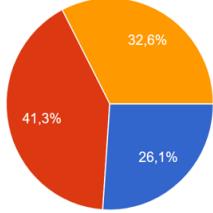


Engineering, Computer science and Statistics

Generally, how many hours per day, do you employ studying (not considering lessons time)?

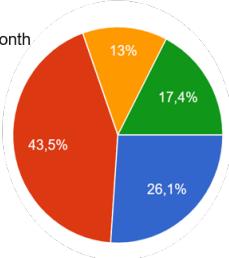
46 risposte

- 1 – 3 hours
- 4 – 6 hours
- 7 – 9 hours
- 10 hours or more



On average, how much time before do you start preparing an exam with respect to the exam date?

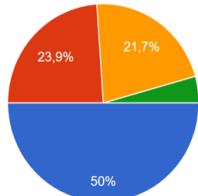
- 2-3 weeks
- 1 – 1 and ½ month
- 2 months
- From the start of the lessons



Do you organize your study?

46 risposte

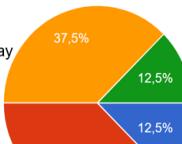
- Always
- Almost always
- Almost never
- Never



If the answer is never, tell us why:

8 risposte

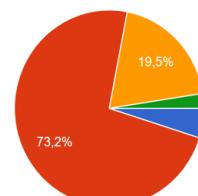
- I don't need to
- I would not follow it
- I program day by day
- For laziness



If you do, are you able to respect your own chosen timing?

41 risposte

- Always
- Almost always
- Almost never
- Never



What do you use to organize your study?

Pen and paper



Diary/Calendar



Word or similar



Excel



App



I do it in my mind

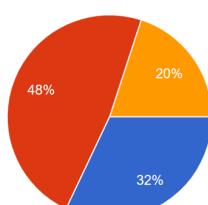


Medicine and Odontology, Pharmacy, Psychology

Generally, how many hours per day, do you employ studying (not considering lessons time)?

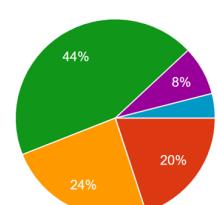
25 risposte

- 1 – 3 hours
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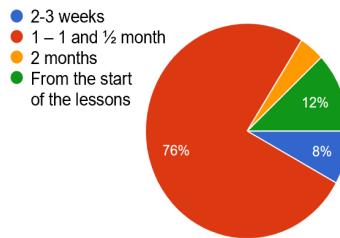


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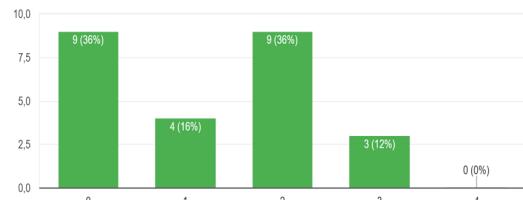
- Not at all (< 25%)
- Few (25 - 50%)
- Enough (51- 75%)
- A lot (> 75%)
- Totally (100%)
- I'm able to do more



On average, how much time before do you start preparing an exam with respect to the exam date?



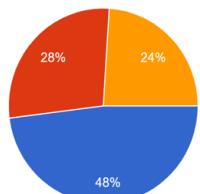
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Do you organize your study?

25 risposte

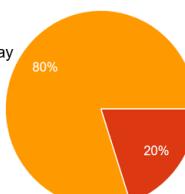
- Always
- Almost always
- Almost never
- Never



If the answer is never, tell us why:

5 risposte

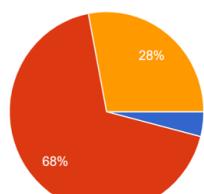
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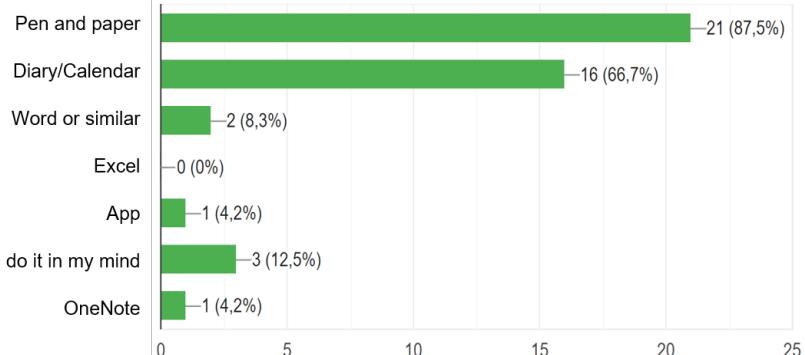
If you do, are you able to respect your own chosen timing?

25 risposte

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- Almost always
- Almost never
- Never



What do you use to organize your study?

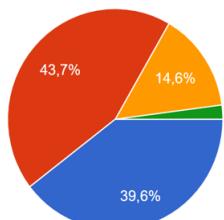


Mathematics, Physics and Natural Sciences

Generally, how many hours per day, do you employ studying (not considering lessons time)?

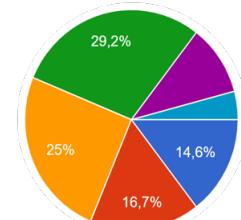
48 risposte

- 1 - 3 hours
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- 7 - 9 hours
- 10 hours or more



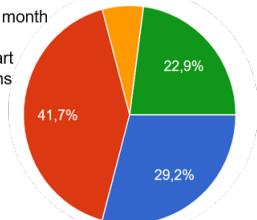
On average, how much can you live up to your expectations regarding the passing of exams during an exam session?

- Not at all (< 25%)
- Few (25 - 50%)
- Enough (51- 75%)
- A lot (> 75%)
- Totally (100%)
- I'm able to do more

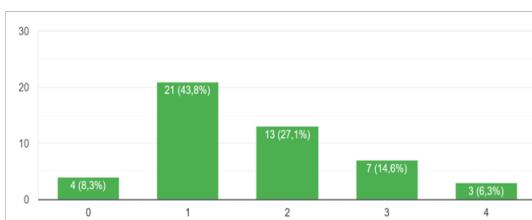


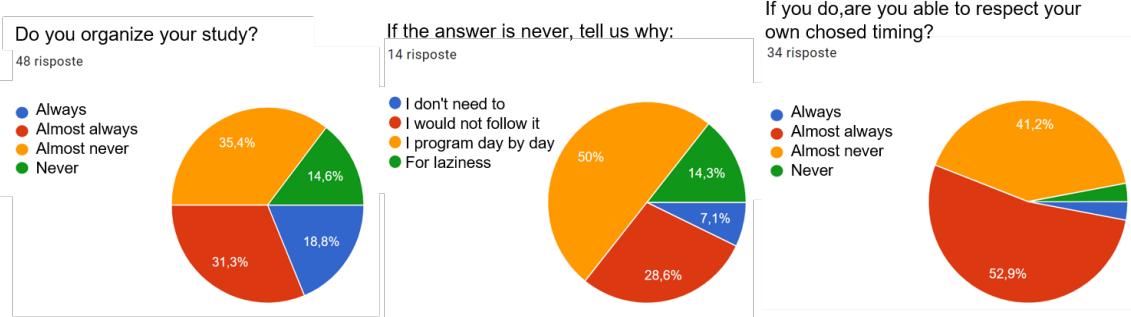
On average, how much time before do you start preparing an exam with respect to the exam date?

- 2-3 weeks
- 1 - 1 and 1/2 month
- 2 months
- From the start of the lessons

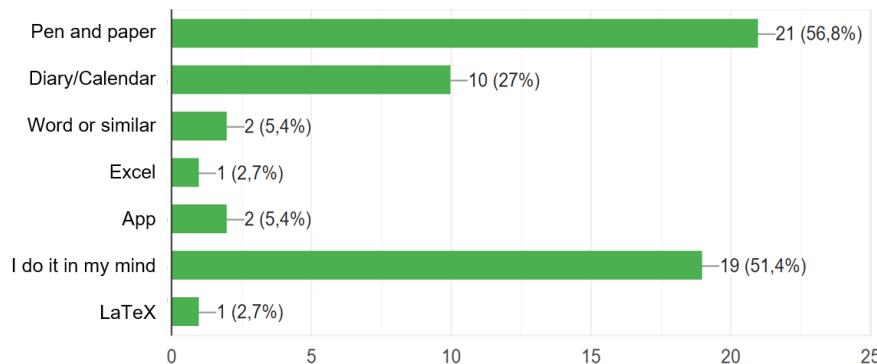


How often do you had to prepare an exam in less than 2 weeks?





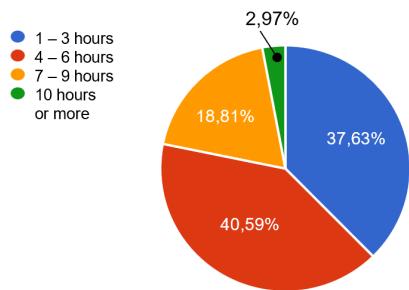
What do you use to organize your study?



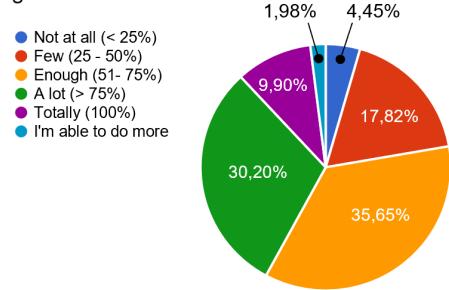
2.3.3 Summarizing faculties study

We can notice that, even if all faculties have different level of commitments due to their daily schedule, students study among 4-6 hours. In addition, almost everyone organizes their study plan or, if they don't create it, the reason is because a day-by-day study is preferred. Especially the future architects have difficulties into respect what planned but in general, in all the other faculties, a little less of the majority is not able to follow it. For what concerns the number of passed exams, at Medicine is above the 75%, while in the other faculties the average is around 51-75%, even if at Mathematics, Physics and Natural Sciences we have a more variegated situation. By summing to all previous data even the others faculties we obtained:

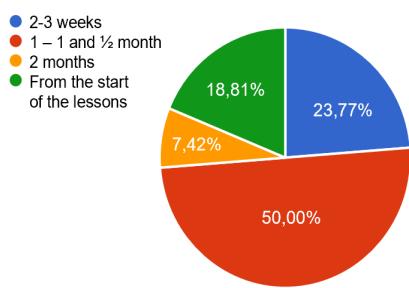
Generally, how many hours per day, do you employ studying (not considering lessons time)?



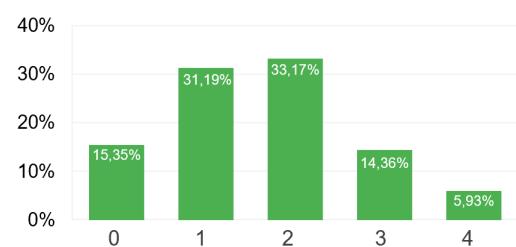
On average, how much can you live up to your expectations regarding the passing of exams during an exam session?



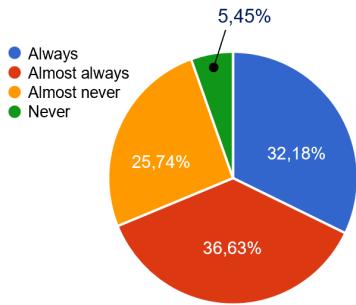
On average, how much time before do you start preparing an exam with respect to the exam date?



How often do you had to prepare an exam in less than 2 weeks?



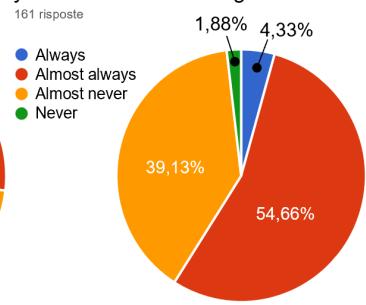
Do you organize your study?



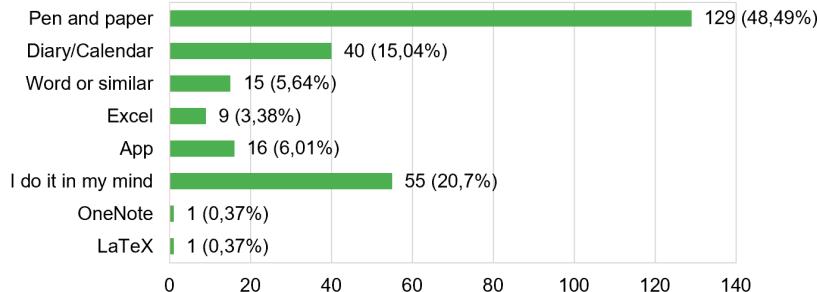
If the answer is never, tell us why:

- 41 risposte
- I don't need to
 - I would not follow it
 - I program day by day
 - For laziness

If you do, are you able to respect your own chosen timing?



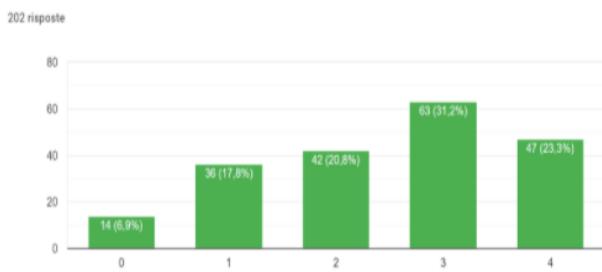
What do you use to organize your study?



2.3.4 General result

Then, we asked everyone to answer specific questions directly related on how we wanted to create our application, mainly to understand if we were going in the right direction.

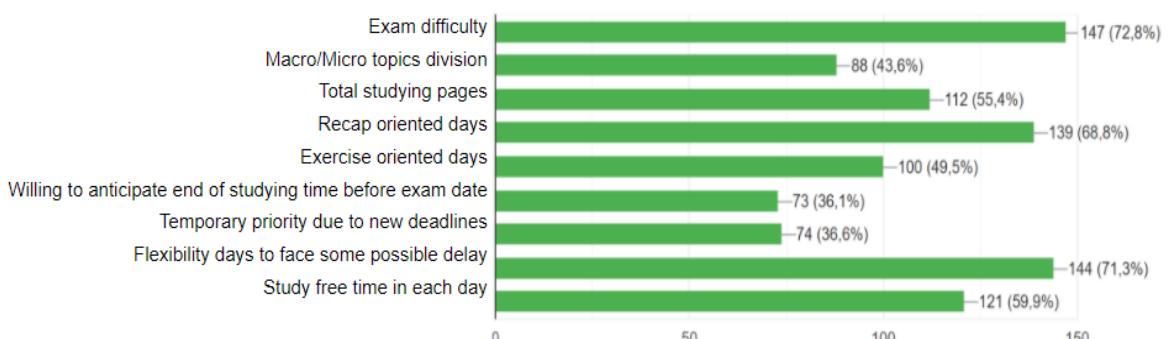
How much will you consider useful an app that could keeps track of your event and consider them during the automatic creation of a study plan?



If an event overlaps to a study moment, what would you prefer to happen?



If there were an app able to automatically ideate your study plan, what do you think it should take into account?



From that emerged what a user consider extremely important for both preparing a study planning and behave in case of impossibility to follow it.

As we can see the difficulty, the flexibility day to cope possible delay and recap days are the factor that the user take most in consideration.

2.4 Interview

Finally, we organized some interviews with some representative of our target user. The interviews allowed us to gather more specific information, helping us to strengthen some ideas and to have new one along with different point of views.

Laura

The first interviewed was Laura:

- 23 years old
- born and lives in Naples
- Università degli Studi di Napoli Federico II, 1st year of MSc in Engineering Management
- Favourite activity colour: red

Laura is a very organized person and extremely curious; for this reason, she will download our application, but mainly to understand if her expectations can be reached. For the first times, to completely trust the application, she will compare the study planning of FLY.AY with her own. Then, if everything works well, she will start to use it because the idea behind the project fascinate her. Especially for the fact that we aim to integrate calendar, lists and study functionalities altogether.

With this interview emerged that:

- *approvals*: she considers our idea a life saver for many students that have difficulties into organizing their studying time. The possibility of dividing and re-calculate by pages/topic done is considered interesting along with the indication of flexibility days. She approved the creation of lists parallel to calendar events.
- *advices*: according to her point of view, we should integrate to the difficulty division for exam also the one for each topic. Then, we should replace *finances* category, that she will not use that much, with another one including activities different from study or free-time (as volunteering). On the other hand, *free-time* category should be expanded including social, relax at home and family activities. It could be useful to divide the study plan in different phases. The first used to get an idea of the subject, and the others to compute a detailed study. The possibility to have control over the plan is fundamental to better personalize it. It could be a plus having some motivational and inciting quotes. While organizing lists, she prefers a timing order considering priority and deadlines.

Andrea

Then we talked with Andrea:

- 20 years old
- born and lives in Rome
- Università degli Studi di Roma La Sapienza, 2nd year of BSc course in Mechanical Engineering
- Favourite activity colour: blue

Andrea is a very precise person who does everything with a certain method. He realizes that, in order to succeed in his academic life, the organization of study plan is a crucial step. So, since organizing the study could be difficult, he will use FLY.AY, checking the suggested plan and modifying it, if necessary. On his account, it is

important to balance the available time with the amount of thing to study considering also some days to rest or to focus more. This is why, at the beginning, he will trust FLY.AY around 70% and, once convinced, he will use it to optimize the planning phase of its study. According to his considerations, we understood the following things:

- *approvals*: FLY.AY is seen as something very useful and he wants to use it, also because he values the creation of lists inside this app. Furthermore, Andrea would like to receive some motivational messages, to alleviate the studying days. According to his needs, *finances* category is important to sign some jobs. Finally, since he likes to have control, every proposed solution when some study goals are not reached are considered important.
- *advices*: integrate a professor section, in which sign up how/when to contact them could ease a lot the student's life. The app should considerate when a break must be taken after tot. hours of study and flexibility days should be added per week other than at the end of the study plan. For what concern the notifications, he will use three different kind: one in the morning to recap daily events, the second one in the afternoon to underline what still needs to be done and the last one in the evening to check events of the following day. Considering its opinion, the list checked items and the unchecked should have a different type of order. Checked list's item should be grouped at the end of the list with some light color.

David

At the same time, another of us interviewed David:

- 22 years old
- born in Siena and lives in Pisa
- Università degli Studi di Pisa 4th year of BSc course in Mathematics
- Favourite activity colour: light blue

David likes to have control over everything that he does. Considering his study method, he believes that this kind of applications is not so useful. Due to his type of academic subjects, he has to studies day by day following the lessons and this leads to the possibility to keep everything in mind. Although, if lots of user would benefit from FLY.AY, he will download it as well out of curiosity. When he organizes his study, sometimes he is forced to prioritize a subject over others especially on the proximity of a midterm. That's why every other activities, including house managing, are postponed.

- *approvals*: our idea is interesting especially for the *finances* category. In fact, since he is an off-campus student, the possibility to remind every sort of payments will ease his life. Due to this life style, David will exploit a lot the use and the creation of list's models, in particular when he has to move back home or go to the supermarket.
- *advices*: the subcategory should be customizable, so that we could give to the user the chance to move a subcategory to a main category. As previously stated, sometimes some topics must be sacrificed if there is not so much time left and so an importance indicator may be a good thing. Furthermore, there should be a functionalities highlighting the time interval between an exam dates and the others so that its easier to establish priorities and a plan. For what concern notification, he would like to integrate the possibility of not-disturb-functionality for *festivity* events. Send more notifications if there is a delay into following the plan, and less (even once a week) if everything is going as expected; this because notification may also distract. Finally, the order of the unchecked list's item should be chosen by the user: for example, if there exists a sequence, checked and unchecked items should be left together.

Margherita

And lastly Margherita:

- 24 years old
- born and lives in Rome
- Università degli Studi di Roma La Sapienza, 6th year of MSc course in Architecture
- Favourite activity colour: green

Margherita is a very busy person and between study, sport, work and social life, she has lots of events to manage during her day. She already uses a Calendar app to keep track of her events, but she would download FLY.AY because she is curious of the services provided of the app, and she considers it more complete for her lifestyle. Margherita would rely on our app for her study program, considering the service provided by FLY.AY very interesting but, at the same time, she wonders if it's able to manage in best possible way all problems that can slow down set study goals.

- *approvals*: FLY.AY could be determinant for the student life management. In particular, she considers useful to have a single application to control university and private appointments, in order to have a more complete overview of her day.
- *advices*: for what concern the study field she would value study statistics and exam simulation tool into profile page. She'd like to have funny phrases to stimulate her study and the possibility to define a priority number between macro categories, in order to better manage the overlap of multiple events. She wants to have notifications more frequently, if she is late with study program. Talking about lists, she would like also suggestions based on personal user preferences or internet most rated items and a sorting by popularity or reviews. The creation of list models with default items could allows to save time. As other suggestion, she would integrate sleep management, adding statistics into profile page to monitor the rest activity and a piggy bank service.

2.5 Card sorting

The last method experimented for user requirements was the *Card Sorting*. This is a user testing technique that focuses on establishing the best structure for the content of an application with the main goal to make it user-friendly. It's a technique that works by way of determining the domain knowledge of your users, discovering their mental models.

Users simply sort cards with topics or menu labels into categories or groups that make sense to them.

We used an online tool that allowed us to create this cards and spreading them through a link.

The main reason behind the use of the sorting card came from the necessity to understand how to categorize the different event's typology and also for establish a hierarchy in the definition of a study plan.

So firstly, we used this instrument to understand how assign the subcategories to the right main category. From the table shown below, we can deduce that there were three critical choices. The first was about whether including the sport inside the *free time* category (60%) or inside the *wellness* one (40%). This because someone perceives it as a hobby to be fulfilled in the work off periods, while others identify it as a moment of self care.

The second one is about assigning the birthday inside *festivity* (60%) or *free time* (30%). *Festivity* was mainly associated with vacations and so a birthday event could be seen also as a social time to spend with friends.

The last controversial selection concerns the placement of travel; 50% of the interviewer putted it inside *free-time*, but the remaining were considering it as a moment of relax and *festivity*. In conclusion, this is the best mapping according to our user:

	STUDY	WELLNESS	FREE-TIME	FINANCES	FESTIVITY	unsorted
Exam	100%					
Lessons	100%					
Study group	100%					
Study time	100%					
Intership	80%			20%		
Body care		100%				
Med-appointment		90%		10%		
Medicines		80%		20%		
Films and TV series			100%			
Sportive events			100%			
Theatre			90%	10%		
Books	20%		80%			
Friends or Family		20%	80%			
Sport		40%	60%			
Travels		20%	50%	20%	10%	
Outflow				100%		
Revenue				100%		
Holidays		10%			90%	
Long weekend		10%			90%	
Birthday			30%	10%	60%	

Then, we wanted to verify that the items chosen for the study planner are suitable to fully represent its features. We asked the user to sorting the items by considering what they perceived as important and correlated. Here the proposed items and the order of the user preferences:

Category	Contains	Cards	Freq	Avg pos
		Date of ending study	30	1.3
		Days in which study	30	2.4
		Period of day in which study	30	3.2
		Exam difficulty	30	4.8
		Maximum hours to study per day	30	5.6
		Safe days (if there are some delay)	30	6.1
		Minimum hours to study per day	30	6.2
		Organization study by pages	30	8.7
		Organization study by topics	30	11.0
		Total number of pages	30	11.3
STUDY PLANNER	20 different cards	Maximum pages per day	30	11.8
		Date for starting recap	30	12.7
		Minimum pages per day	30	13.2
		Main topics list	30	13.3
		Difficulty level for each topic	30	14.5
		Sub topics list	30	14.7
		Day of recap after finishing main	30	16.3
		Precence of exercises options	30	16.9
		Day of recap after finishing sub	30	17.6
		Presence of project options	30	18.4

After realizing this preliminary phase, we were finally ready to represent all the information gathered. As we will see in the following chapter.

3 HTA & STN

To formalize previous requirements we used the conceptual model, that has the scope of formally describing, in a clear and unambiguous way, aspects of the project. We will need this model to analyze and describe how people reach their goals and also to describe user's task, to understand what they need from the system and how this should work. All of this is possible thanks to the task analysis.

Hierarchical Task Analysis is a detailed examination of the tasks that users must execute to accomplish particular aims. It describes an activity in terms of its specific goals, sub-goals, operations, and plans in order to have a complete representation of the action. HTA involves identifying, in a top down manner, the overall aim of the goal, then the various sub-goals, as well as, the conditions under which they need to be completed to reach that purpose. In this way, complicated planning tasks may be represented as a hierarchy of operations.

On the other hand, *State Transition Network* represents a dialog between the user and the system, in which the system could support the tasks that the customer has to execute. It provides a description of which the available actions are at a certain point, and the consequent state the system will reach.

Now, will follow the HTA and STN of the main tasks that the user can do in our application.

3.1 Search event

In the *search event* task, the user searches the event he needs; events that may be for remembering when something will happen, as well as something of the past. He inserts key element as filter for doing the research and, when the results are showed, he selects the event he is interested in.

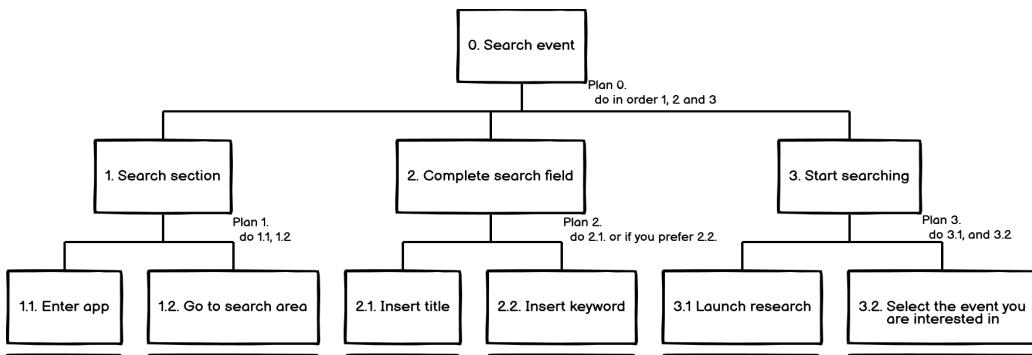


Figure 1: HTA Search event

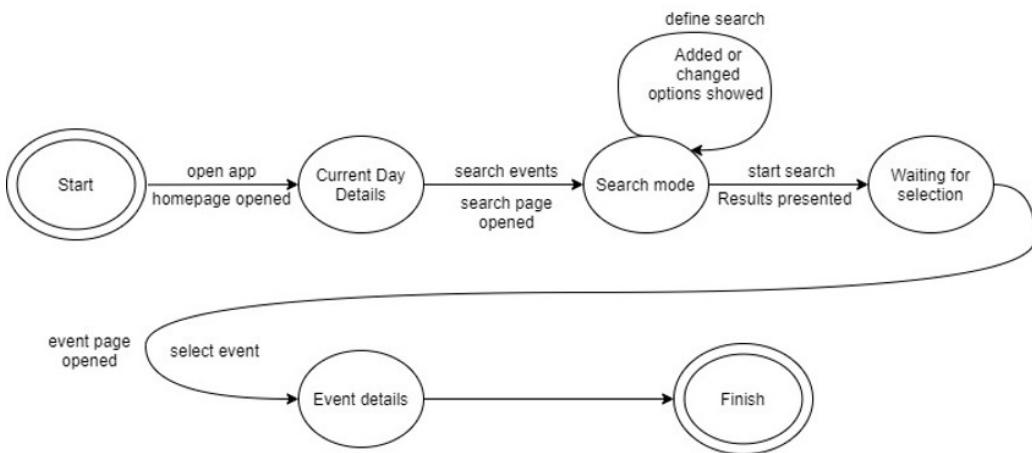


Figure 2: STN Search event

3.2 Add event

In the *add event* task, the user adds a new event in his agenda in order to do not forget it. To complete the information of his future appointment, he inserts the title of the event, the time, the location in which it will be and he optionally notes down other details.

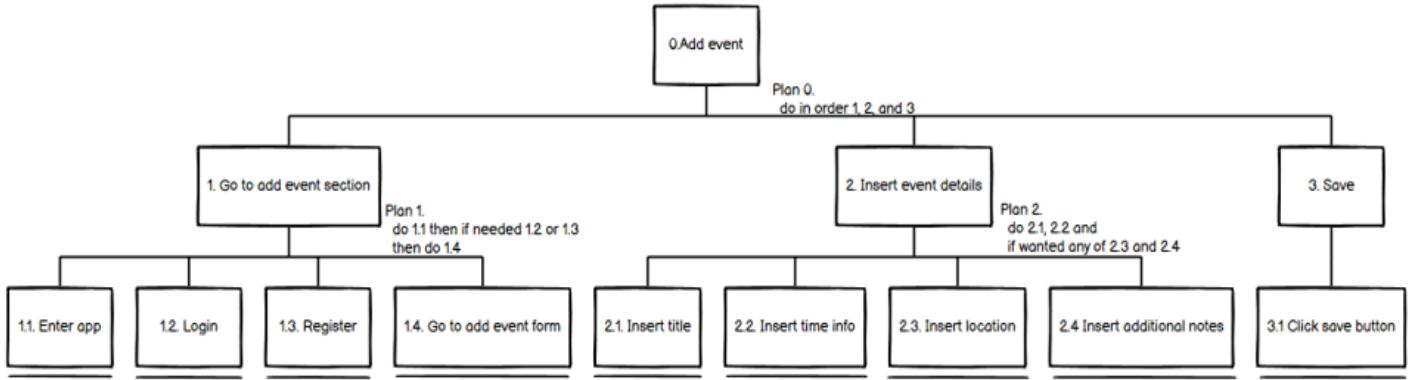


Figure 3: HTA Add event

Moreover, we can see how to *create a plan for preparing an exam*. The student creates his plan of study step by step. He starts by computing the amount of things to study he has, and decides if proceeds by pages or topics. Then, he computes the available time and the exam date for which he wants to complete its knowledge. Furthermore, he establishes the daily goals that he wants to achieve. The creation of these events will be one of the main activity for FLY.AY.

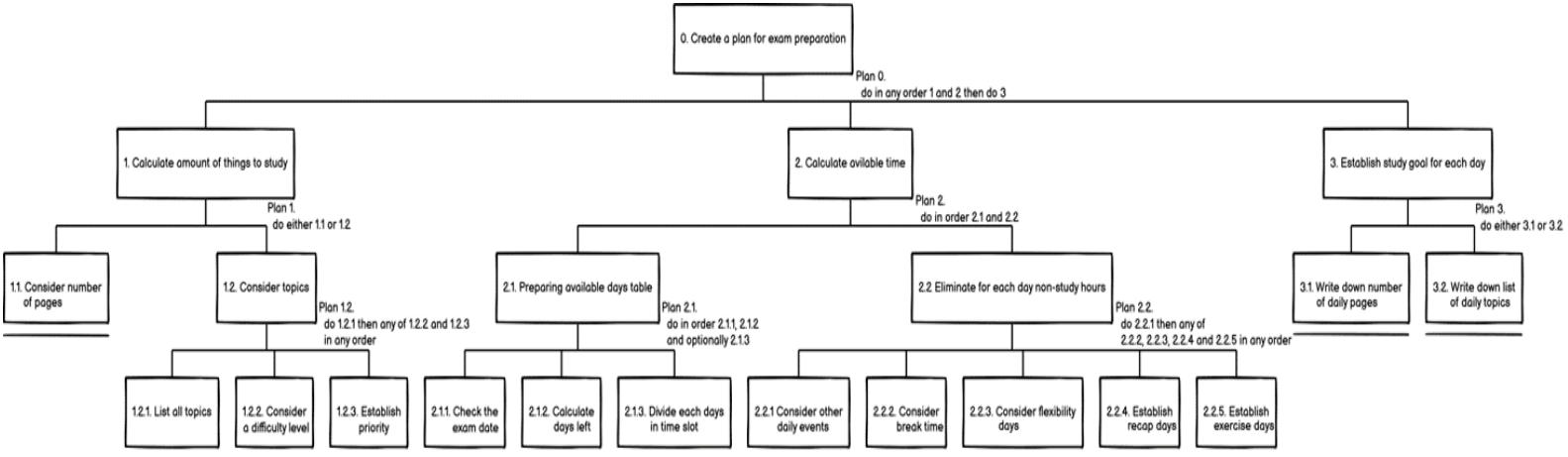


Figure 4: HTA Add Study event

The STN of the generic *Add event* task is the following:

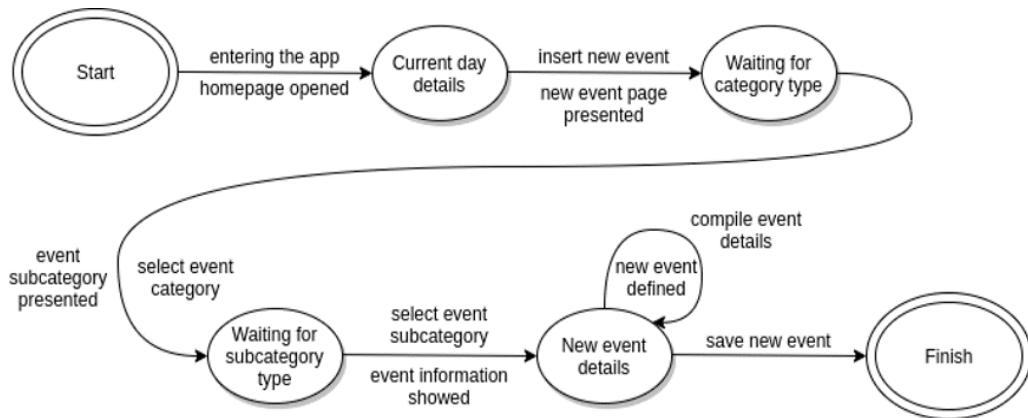


Figure 5: STN Add event

3.3 Creating list

In *creating list*, the user can set up a new list in which he writes a sequence of things that he wants to remember. He can also check the items when he made them, in this way he has a clear view of the situation.

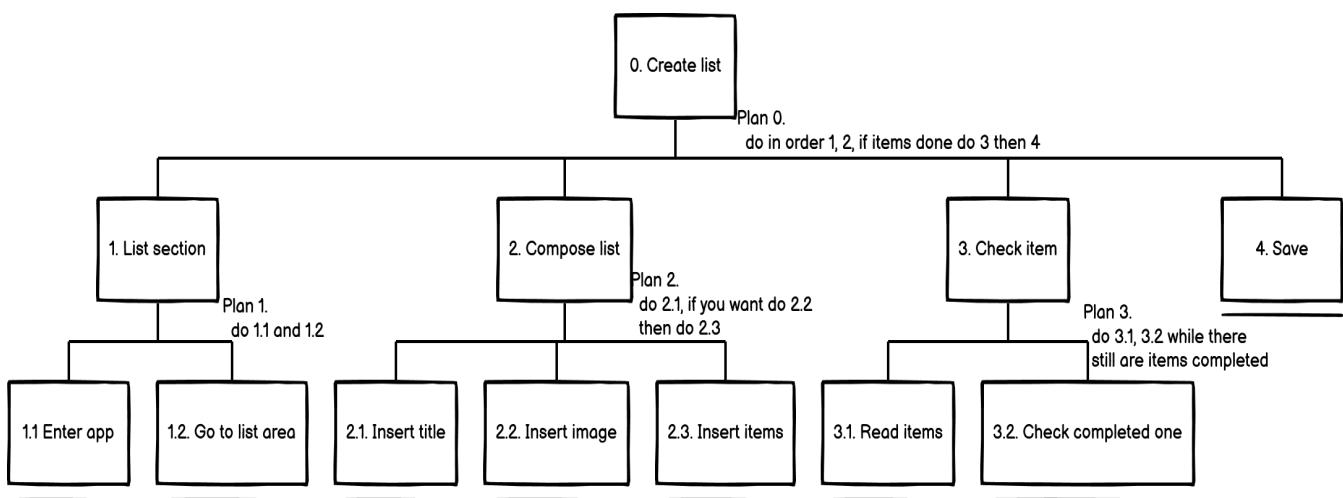


Figure 6: HTA Creating list

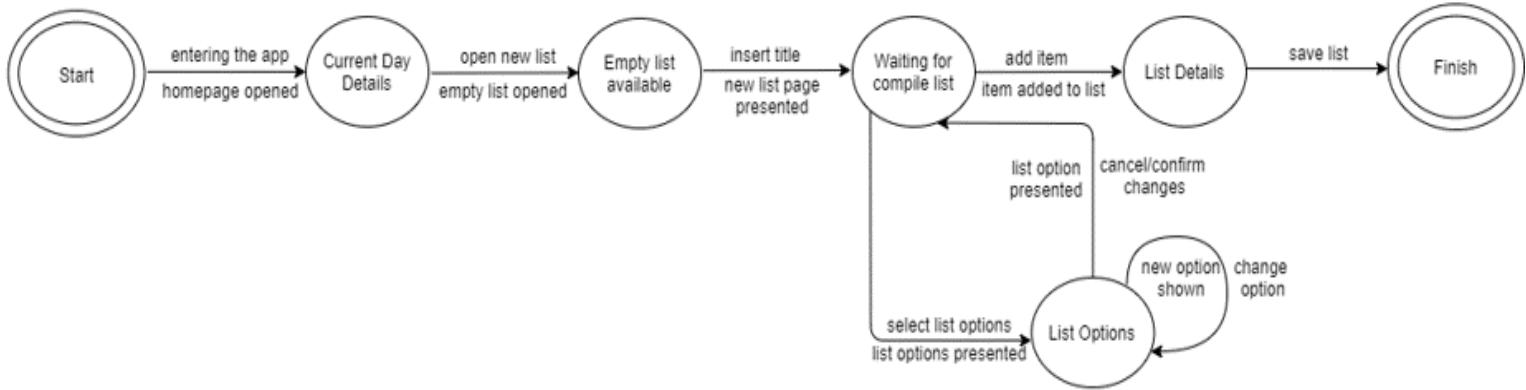


Figure 7: STN Creating list

3.4 Settings managing

To achieve the *settings managing*, the user must go to the profile where he can see all his information and from there accessing the settings. Here he can manage his options, for example, the changing of account information and other aspects related to the application.

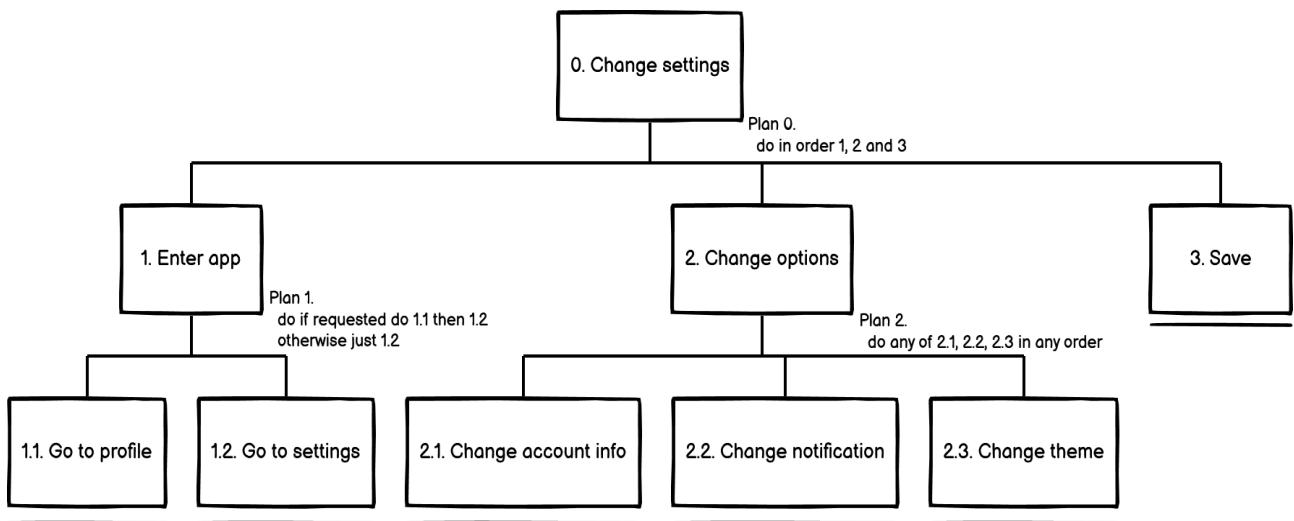


Figure 8: HTA Profile managing

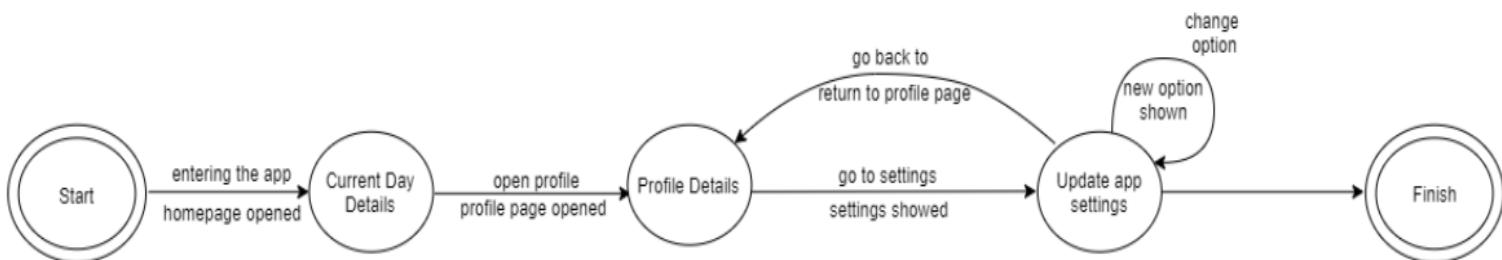


Figure 9: STN Profile managing

3.5 Entity-relationship schema

To represent the domain knowledge that every user has to posses in order to execute the task, we can use the ER schema. This knowledge is related with the HTA, but it is not represented with the same formalism. The entity relationship techniques allows to focus on objects, actions and their relationship.

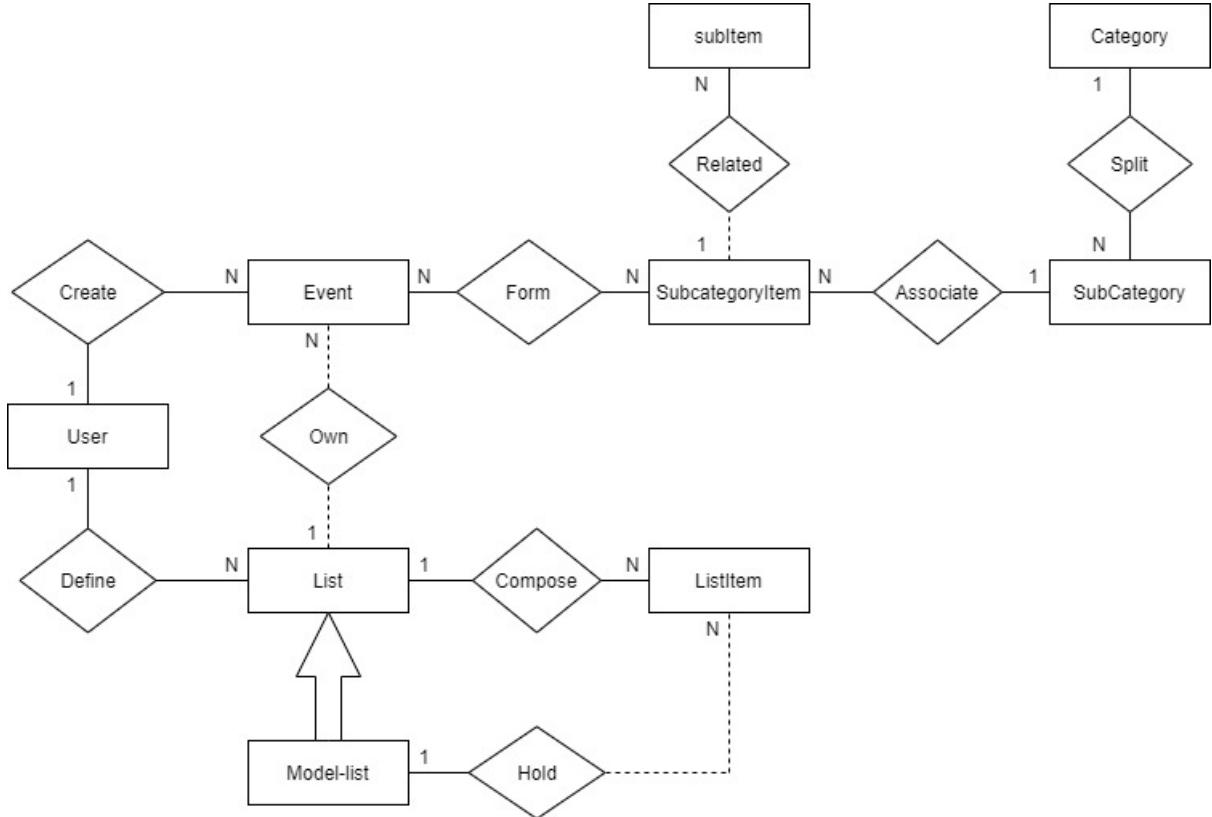


Figure 10: ER schema

4 Expert Based Evaluation

The expert based evaluation is a fundamental step, which is done having the first prototypes of the system, in our case the *mockups*. The sooner we evaluate our prototype, the better is for discovering problems at a low cost. This is extremely important for proceeding with a working implementation, because detects problems in an early stage, thus avoiding waste of time creating a not ideal interface.

Evaluation is an expensive activity in terms of resources, time, people involved and so on, but with a correct evaluation we get our system in such a way that it really meets user's needs and goals.

To get ready for the evaluation, we realized the mockups of the application and the set of actions that the user can perform on it, with the consequent response of the system. We show the prototype of the main tasks submitted to the evaluation.

Search the event “HCI lesson”, to see the event details.

Action 1: press text field input for the title and digit the name of the event “HCI lesson”

Response 1: each digit is displayed as typed, flashing cursor moves to next position

Action 2: select the “study” category

Response 2: the system shows the selected category

Action 3: press text field input for the place of the event and digit “SPV”

Response 3: each digit is displayed as typed, flashing cursor moves to next position

Action 4: start the research through the button

Response 4: details are collected by the system and results are displayed

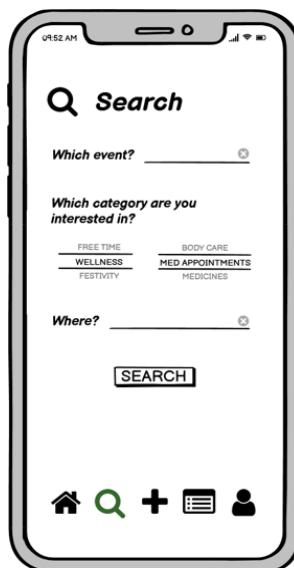


Figure 11: Mockup Search

Add an event to not forget your daily appointments.

Action 1: press text field input for the title and digit the name of the event “HCI exam”

Response 1: each digit is displayed as typed, flashing cursor moves to next position

Action 2: select the “study” category

Response 2: the system shows the selected category and the correlated subcategories

Action 3: select the “exam” subcategories

Response 3: the system shows the selected subcategory

Action 4: select the date on 21/01/2021

Response 4: the system shows the selected date

Action 5/6: select the start/end time on 10:00 AM/ 11:00 AM

Response 5/6: the system shows the selected time

Action 7/8: press text field input and digit the place of the event “DIAG” / ”B2”

Response 7/8: each digit is displayed as typed, flashing cursor moves to next position

Action 9: press the “save” button

Response 9: details are collected by the system and the new event is displayed

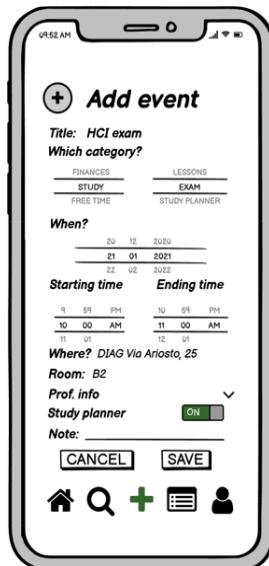


Figure 12: Mockup Add event

Create a list to not forget the films that you want to see and that you saw.

Action 1: press text field input for the title and digit “Film”

Response 1: each digit is displayed as typed, flashing cursor moves to next position

Action 2: press on the screen for inserting an item and digit the to be seen film “Inception”

Response 2: each digit is displayed as typed, flashing cursor moves to next position

Action 3: press enter to continue with a new item

Response 3: the system will add a checkbox for the previous item and the cursor is in position for the next

Action 4: insert an item; digit the to be seen film “The judge”

Response 4: each digit is displayed as typed, flashing cursor moves to next position

Action 5: press enter to continue with a new item

Response 5: the system will add a checkbox for the previous item and the cursor is in position for the next

Action 6: insert a new item; digit the already seen film “The circle”

Response 6: each digit is displayed as typed, flashing cursor moves to next position

Action 7: press enter to continue with a new item

Response 7: the system will add a checkbox for the previous item and the cursor is in position for the next

Action 8: select checkbox to mark that the film “The circle” has been seen

Response 8: the system shows the selected film as seen

Action 9: press the alphabetic order icon to organize the list

Response 9: the system shows the list ordered

Action 10: exit this new created list

Response 10: the system will ask to confirm the creation



Figure 13: Mockup List

Visit your profile to see your categories, your archive and change your settings.

Action 1: press options menu icon

Response 1: the system shows a menu

Action 2: press settings icon

Response 2: the system shows settings page

Action 3: press text field input and digit your new password

Response 3: each digit is displayed encrypted, flashing cursor moves to next position

Action 4: press eye icon to check your digit

Response 4: each typed digit is displayed

Action 5: press the back button

Response 5: the system shows the profile

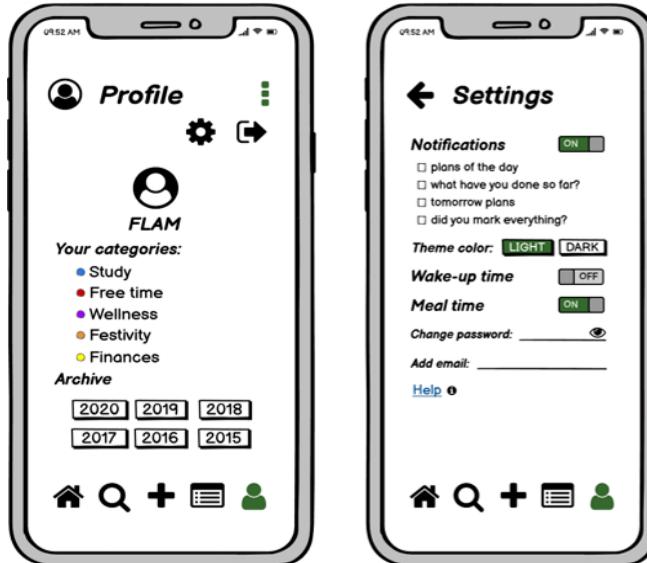


Figure 14: Mockup Profile

Now, we will see in details the results of the two expert evaluations that we made: *Heuristic Evaluation* and *Cognitive Walkthrough*.

4.1 Heuristic Evaluation

Heuristic Evaluation is an inspection method used to evaluate if the system follows general usability criteria. The expert should check if the system is consistent and evaluates if the usability problem that may occurs is a *major problem*, a *minor problem* or just something that could be left as it is. The evaluation is made by assign *severity* level.

The Heuristic Evaluation is based on the *Jakob Nielsen's 10 Usability Heuristics*:

1. *Visibility of system status*: the system should always keep users informed about what is going on, through appropriate feedback within reasonable time.
2. *Match between system and the real world*: the system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.
3. *User control and freedom*: users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.
4. *Consistency and standards*: users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.
5. *Error prevention*: even better than good error messages is a careful design which prevents a problem from occurring in the first place.
6. *Recognition rather than recall*: make objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable
7. *Flexibility and efficiency of use*: accelerators (unseen by the novice user) may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
8. *Aesthetic and minimalist design*: dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.
9. *Help users recognize, diagnose, and recover from errors*: error messages should be expressed in plain language, precisely indicate the problem, and constructively suggest a solution.
10. *Help and documentation*: even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large. whenever appropriate.

Our expert based evaluation was done by the professor Valeria Mirabella, which reported that the following heuristics have been violated.

The *severity* number identify:

- 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

Frame	Heuristic violated	Severity	Description / Comment
Add event	Aesthetic and minimalist design	3	The pages are too cluttered with a lack of hierarchy. Consider content hierarchy
Search	Recognition rather than recall	2	Help users in understanding which kind of information can be inserted in “Which event” field
Add event	Error prevention	3	Highlight the required fields
Film	Recognition rather than recall	3	Provide some contextual support. Icons used are quite common but are often used associated with different action. Consider to organize the interaction in steps in order to guide the user in the process.

Figure 15: Heuristic Evaluation

4.2 Cognitive Walkthrough

Cognitive Walkthrough is related with the idea of discover cognitive efforts of the user and how well the system supports the user executing the actions.

The idea of method provides the expert walks through the system in order to understand if the actions provided by the system well support the user in doing such task. The analysis is guided by four predefined 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?

The expert uses this question to analyze the system.

Let see how the analysis was made on the prototypes.

Add an event to not forget your daily appointments

Action 1: press text field input for the title and digit the name of the event “HCI exam”

Response 1: each digit is displayed as typed, flashing cursor moves to next position

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

Action 2: select the “study” category

Response 2: the system shows the selected category and the correlated subcategories

1. Is the effect of the action the same as the user’s goal at that point?
Yes

2. Will users see that the action is available?

Yes

3. Once users have found the correct action, will they know it is the one they need?

Yes

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

Yes

Action 3: select the “exam” subcategories

Response 3: the system shows the selected subcategory

1. Is the effect of the action the same as the user’s goal at that point?

Yes

2. Will users see that the action is available?

Yes

3. Once users have found the correct action, will they know it is the one they need?

Yes

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

Yes

Action 4: select the date on 21/01/2021

Response 4: the system shows the selected date

1. Is the effect of the action the same as the user’s goal at that point?

Yes

2. Will users see that the action is available?

Yes

3. Once users have found the correct action, will they know it is the one they need?

Yes

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

Yes

Action 5/6: select the start/end time on 10:00 AM/ 11:00 AM

Response 5/6: the system shows the selected time

1. Is the effect of the action the same as the user’s goal at that point?

Yes

2. Will users see that the action is available?

Yes

3. Once users have found the correct action, will they know it is the one they need?

Yes

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

Yes

Action 7/8: press text field input and digit the place of the event “DIAG” / ”B2”

Response 7/8: each digit is displayed as typed, flashing cursor moves to next position

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

Yes

2. Will users see that the action is available?

There is no explicit function to select the restaurant. User could get confused

3. Once users have found the correct action, will they know it is the one they need?

Yes

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

Yes

Action 9: press the “save” button

Response 9: details are collected by the system and the new event is displayed

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

Yes

2. Will users see that the action is available?

Yes

3. Once users have found the correct action, will they know it is the one they need?

Yes

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

Not evaluable

The analysis of the other main tasks is carried out in a similar way to the one presented, so not to dwell too long it is omitted.

5 Mockups

In light of what emerged thanks to the expert evaluation, we revised the mockups presented. In particular, the bigger changes was done on the list prototype and so we updated accordingly the correspondent actions, as follows:

Create a list to not forget the films that you want to see and that you saw.

Action 1: press text field input for the title and digit “Film”

Response 1: each digit is displayed as typed, flashing cursor moves to next position

Action 2: press input for inserting an item and digit the to be seen film “Inception”

Response 2: each digit is displayed as typed, flashing cursor moves to next position

Action 3: press the button to add the film to the list

Response 3: the new item will be displayed by the system

Action 4: press text field input and digit the already seen film “The circle”

Response 4: each digit is displayed as typed, flashing cursor moves to next position

Action 5: press the button to add the film to the list

Response 5: the new item will be displayed by the system

Action 6: select checkbox to mark that the film “The circle” has been seen

Response 6: the system shows the selected film as seen

Action 7: press the alphabetic order icon to organize the list

Response 7: the system shows the list ordered

Action 8: exit this new created list

Response 8: the system will ask to confirm the creation



For what concern others updates, we focused on a clarification of the icons presented, through a label, and we highlighted every possible text field input for the completion of the forms.



Then, we continue to design the rest of the application for having a precise guideline to follow during the implementation.

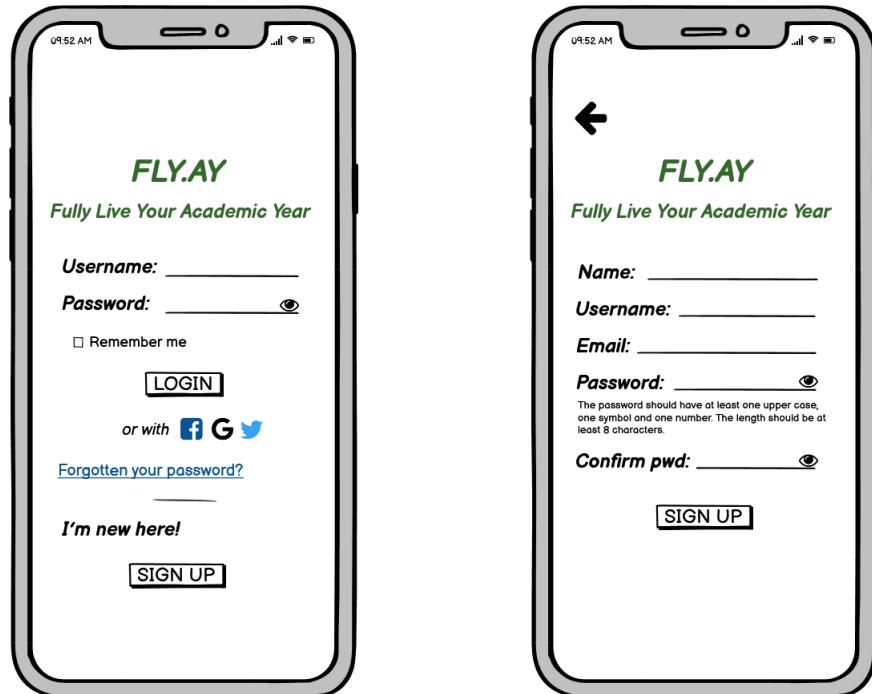


Figure 16: Login and Signup pages

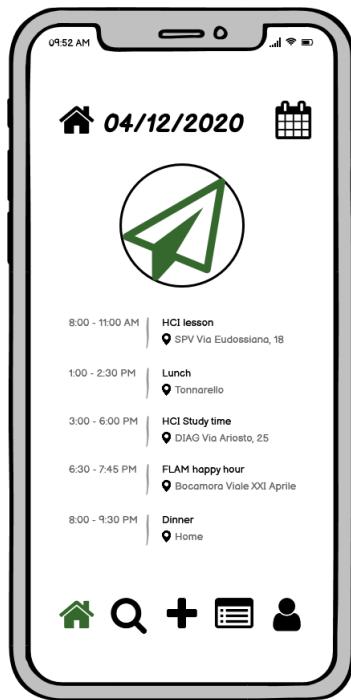


Figure 17: Home page

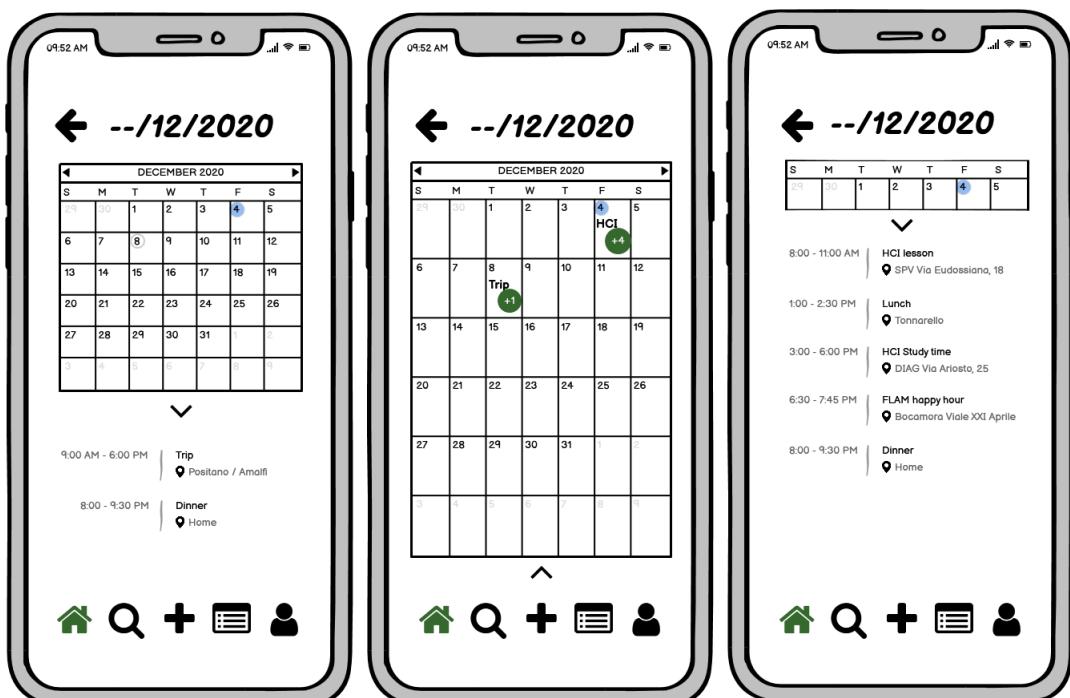


Figure 18: Display calendar in three different ways



Figure 19: Display details of an event, modify the event

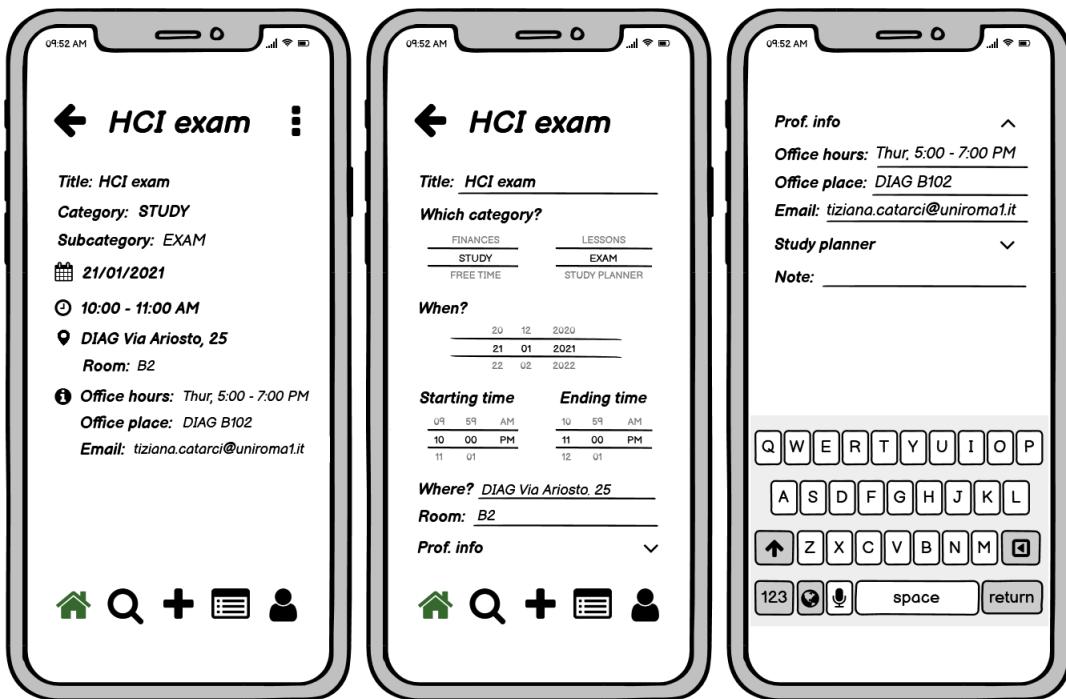


Figure 20: Display details of a study event and edit of the event



Figure 21: Add periodic event

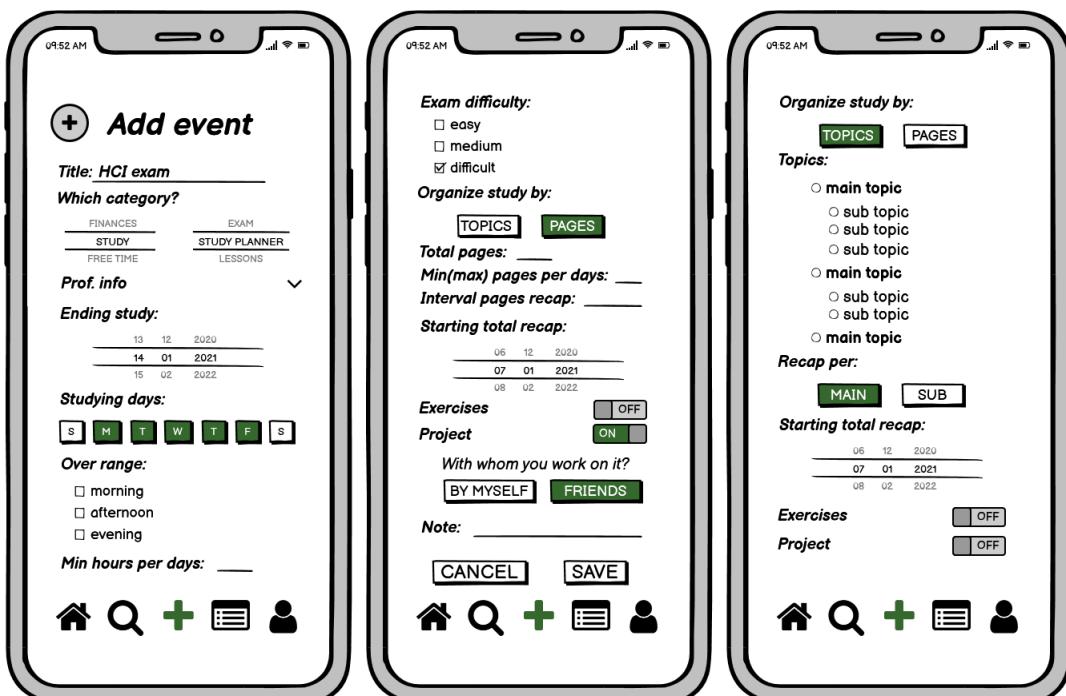


Figure 22: Create study planner



Figure 23: Add event completing the form and save changes

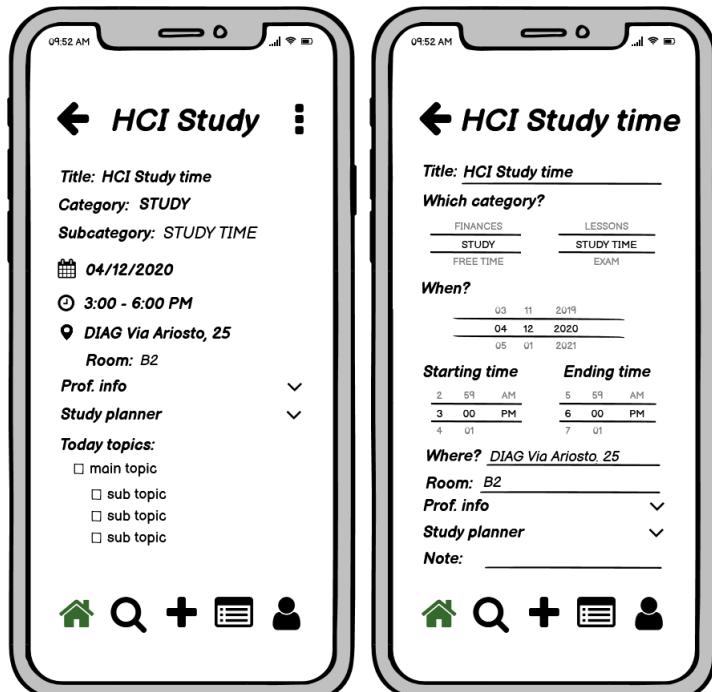


Figure 24: Display details of a study planner event, click to modify

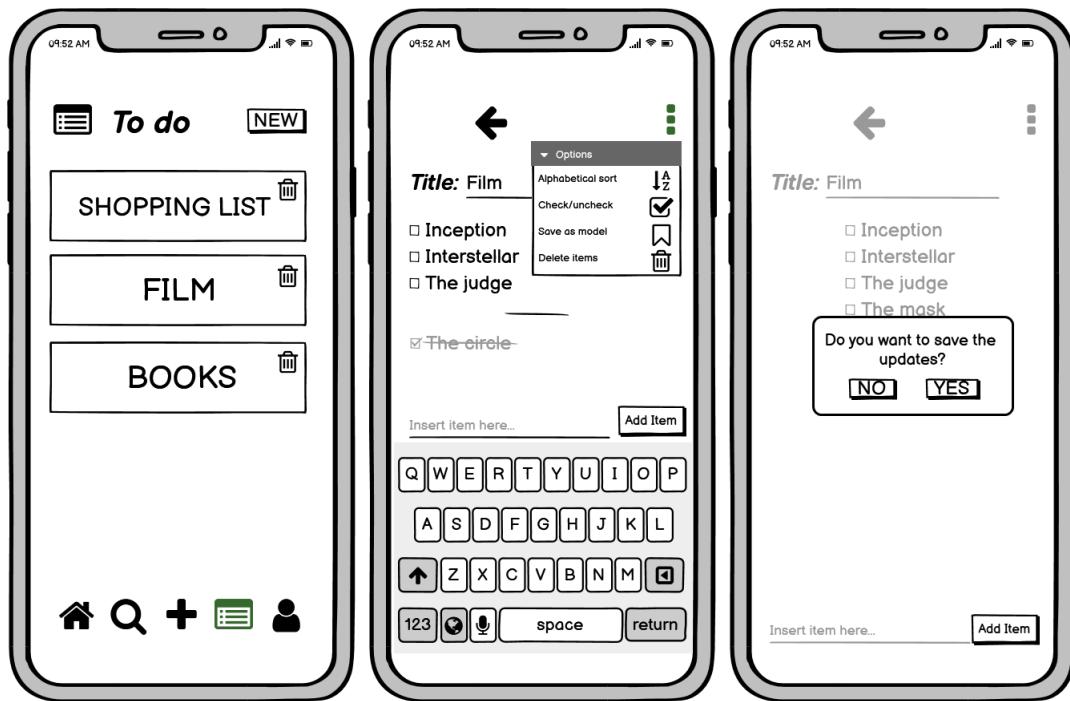


Figure 25: Display details of a list and modify the content



Figure 26: Display details of a list and modify the content

6 Evaluation through user participation

Once the first prototype was up and running, we needed to have a feedback from the customer and we achieved that through three types of evaluation techniques. These experiments were conducted over a group of subjects, representative of the future users, that did not participate in any of the previous phases. Due to this emergency time that we are living, we exploited the functionality of *TeamViewer* that allowed us to reach more people, collecting more relevant data.

Our tester were asked to compute some specific task, there were carefully designed such that we could have a clear situation over the entire system.

Let's see these evaluation techniques more in details.

6.1 Think Aloud

Through *Think Aloud*, we had the possibility to observe the user while performing a specific task and reasoning over his action. We asked them to give us specific comments about what they were doing, why and, more importantly, what they expected as result.

We were not allowed to help in any way, we just recorded the experience and take notes as the user spoke. This observational method is extremely simple, although still capable to provides us with useful insight, but the main problem is that this approach is depending on the person performing the actions and so the come out can be subjective.

The task created to represent a typical user goals were two, conceived in a way that would be more similar as possible to a real life situation goal.

Task #1

- The 10th of February, you have a study event in the morning, but due to a medical appointments you are forced to postpone it to the afternoon, modify the event.

Here, we are going to show how the users behaved to terminate the given goal specifying: the incidents realized, the associated priority (1 as major and 4 as minor), the steps that took them to realize that error and how to solve the problem in case it is bad. As we can see even from this table, there were no problems with this task.

	Related incidents	Priority	Description	Reason	Good or bad	Solution
Finding calendar	none	4	User had difficulties into finding the calendar: "The calendar should be in the home, oh here it is! It would be better bigger"	after the log in, the user analyzed with attention the homepage	Good	change calendar icon
Modify inside details	none	4	User tried to modify the event directly from the detail without going into edit: "I'm trying to modify from the event details, because is more rapid"	click on the calendar and the right day, click on it for details, try to click directly on displayed hours, then click on options menu	Good	none

Table 1: Think aloud task #1

The participant executed the right set of step in the right order, predicting correctly the response of the system. We notice that some users preferred find the event through the search form rather than the calendar and some of them suggested to make the calendar icon more visible.

Now, we are going to report the outcome of the second task.

Task #2

- You have signed to the gym and you decided to go every Tuesday and Thursday, create the appropriate events.

	Related incidents	Priority	Description	Reason	Good or bad	Solution
Wellness category	none	4	User saved the event in the subcategory <i>body care</i> "I find that sport could be inside this typology"	click on add event, inserted title, click on wellness category instead of free-time	Good	make category customizable
No title	none	4	User tried to save the event without inserting the title	choose of category, of time and of periodicity and then save	Good	none
Customized	none	4	User tried to insert the periodicity through customized: "Like this I can chose the day that I want, wait I have to insert it manually, every week will be better"	click on add event, compiling the form, select last option customized instead of the second every week	Good	none

Table 2: Think aloud task #2

According to our users this task presented no problems, the form was very clear and no difficulties arise. Since some users preferred *wellness*, as we can see also in the user requirements analysis, we thought that the best solution was to make everyone choose according to their preferences.

6.2 Cooperative evaluation

To experiment different type of evaluation we also tried the cooperative one. Here, we made a variation of the think aloud process, since we encouraged the user to see himself as a collaborator rather than an experimental participant. To do so we talked with them, being careful to not give too much information. Even for this reason, we selected two task that did not require to much explanation from our side.

Task #1

- To the exam scheduled for 16th of February, add the division by pages, setting total pages equal to 100, minimum pages to 6 and maximum to 10. Then, adjust the recap starting from 11th of the same month.

	Related incidents	Priority	Description	Reason	Good or bad	Solution
Modify inside details	none	4	User tried to modify the event directly from the detail without going into edit: "I'm trying to click here on details"	click on the calendar and the right day, click on it for details, try to click directly on the screen, then click on options menu	Good	none

Table 3: Cooperative evaluations #1

To have even more comment on the realized operations, we asked for a *Post task evaluation*. This means that they listened their on argumentation to give more details on them.

From this, it is emerged that the flow of actions was well guided by icons and texts. Some of them stated that the form contained lot of information, and to reach the goal they carefully read everything (wasting a bit of time). Although they also realized that, to obtain a good study plan, all that questions were necessary.

Task #2

- Your eyes are a bit under stress, try putting the dark theme.

With this goal, we wanted to be sure that the settings were easy to reach and to find. Fortunately, this was confirmed by our users that stated that whoever uses a phone nowadays knows that usually the profile pages contains the settings.

In addition, the dark theme was extremely appreciated, because less tiring and both icons and text seems more highlighted.

6.3 Controlled experiment

At this point, we asked to test some properties in order to verify a precise hypothesis. To conduct this experiment other than subjects and hypothesis we needed to carefully considered the variables present.

Firstly, we tried to predict the outcome of the experiment by formulating hypothesis. Among the variables, we manipulated the independent one, that in both case concerned the design of the interface (especially the clarity of the icons) and we measured the dependent one in terms on time spent and number of errors produced to reach the goal.

As last thing, we chose 12 participants for each test, to have significant and representative results. The method chose, mainly due to the number of testers available, was the *within-groups* one and to avoid having biased results, by the transfer of learning, we divided the participant into two groups to have them try the interfaces in different order.

After collecting the data from everyone, we interpreted the result with *ANOVA*. The analysis of variance is a statistical technique that allows us to deal with several populations and check whether or not the means of several groups are equals, so that we can verify if our hypothesis is true.

Let's now see specifically each test with their results.

Test #1

- The 17th of February, you have dinner with friends: check the shopping list and create a new one for the games to be done in the evening (write 4 items).

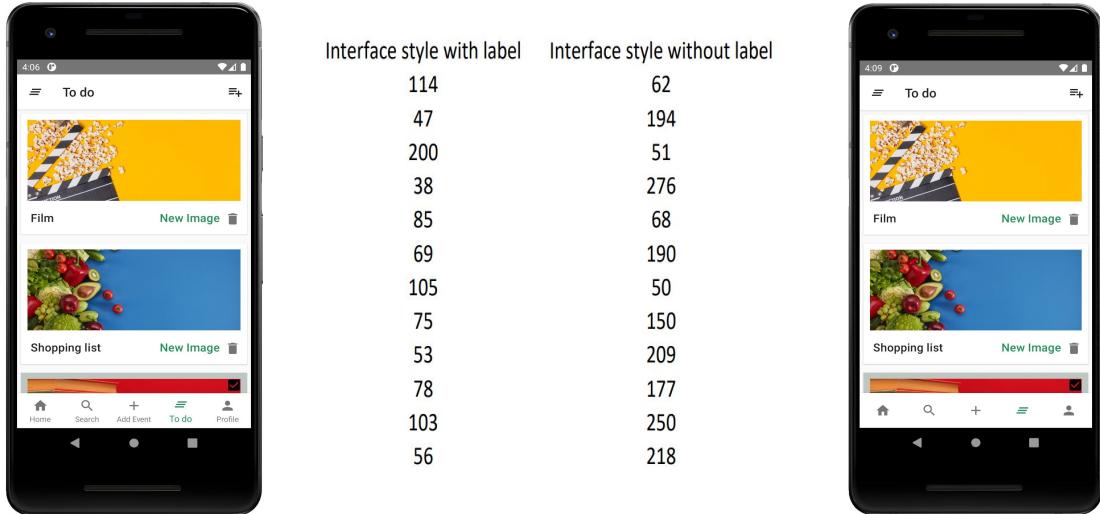
With the first test we wanted to see how the users relate themselves with the icons of our application; especially for what concern the bottom navigation bar. We build two interfaces: one having both label and icons and one only icons.

As a matter of style and lightness of the design, we preferred the second option, even because the majority of the icons were standards and known by the user, but we thought that a label could help into fastening the interaction (especially during the first uses of the application).

We conceived this particular operation to test because it's the most difficult one to realize without labels.

First hypothesis: users will interact better and easier with labelled icons.

on the time spent:



ANOVA

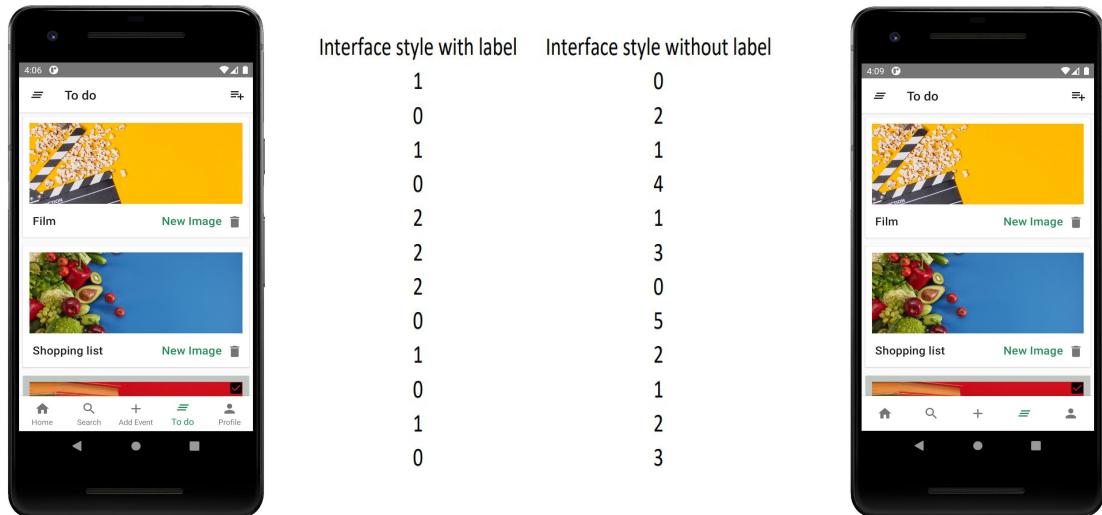
RIEPILOGO

Gruppi	Conteggio	Somma	Media	Varianza
Colonna 1	12	1023	85,25	1882,93182
Colonna 2	12	1895	157,916667	6523,90152

ANALISI VARIANZA

Origine della variazione	SQ	gdl	MQ	F	Valore di significatività	F crit
Tra gruppi	31682,6667	1	31682,6667	7,53736048	0,011807763	4,3009495
In gruppi	92475,1667	22	4203,41667			
Totali	124157,833	23				

on the errors:



ANOVA

RIEPILOGO

Gruppi	Conteggio	Somma	Media	Varianza
Colonna 1	12	10	0,83333333	0,6969697
Colonna 2	12	24	2	2,36363636

ANALISI VARIANZA

Origine della variazione	SQ	gdl	MQ	F	Valore di significatività	F crit
Tra gruppi	8,16666667	1	8,16666667	5,33663366	0,030645614	4,3009495
In gruppi	33,6666667	22	1,53030303			
Totale	41,8333333	23				

To calculate the shown results table, we used an *Excel tool* that allows to study the *F* value and compare it with the *F-critic*. If the *F* is bigger than the *F-critic*, then we can reject the null hypothesis (stating that there are no difference among the two interfaces). In both our case, we can see that this is verified ($7.54 > 4.3$ and $5.34 > 4.3$) and so our hypothesis is true.

After that, we also asked a brief comment on the experience and we understood that the labeled navigation bar is considered more intuitive, although some subjects stated that the other interface could be better on the long run, as being visually lighter. Furthermore, we realized that the users could easily identify every other icons and so the only potential problem could be generated from the *to do list*, that were in some cases associated with the right icon through an excluding reasoning.

Test #2

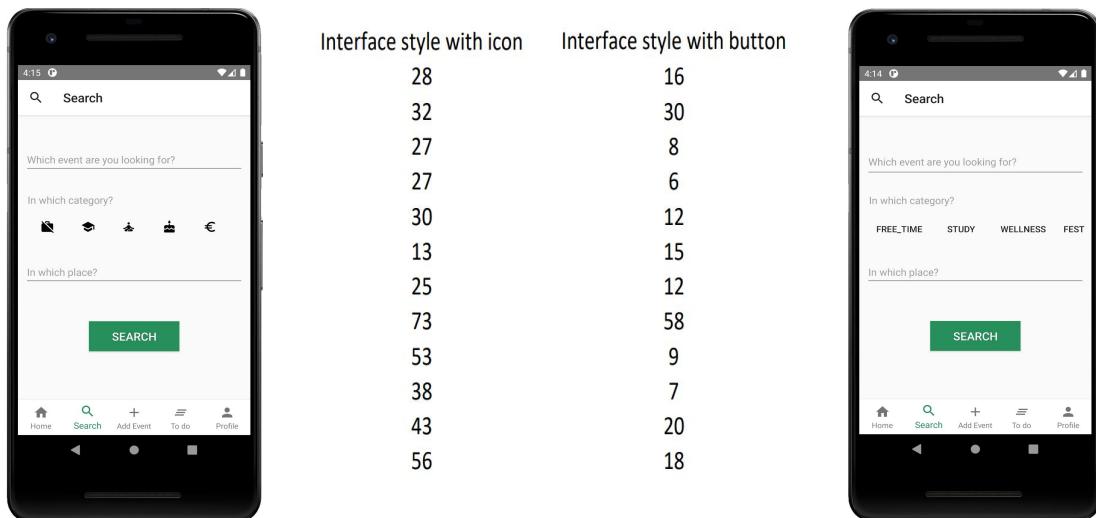
- You don't remember when you have planned a dinner with your friends: look for this *free-time* events.

Here, the evaluation was intended for the search form. Even in this case, our design choice was conflicted between beauty and practicality. We design an interface were each category was represented by an icon and another one were the name were explicitly written inside a button.

Similarly as before, we asked for the most complex actions, to see the behaviour of the participants.

Second hypothesis: users will interact better and easier with the search form having an explicit list of the event's categories name.

on the time spent:



ANOVA

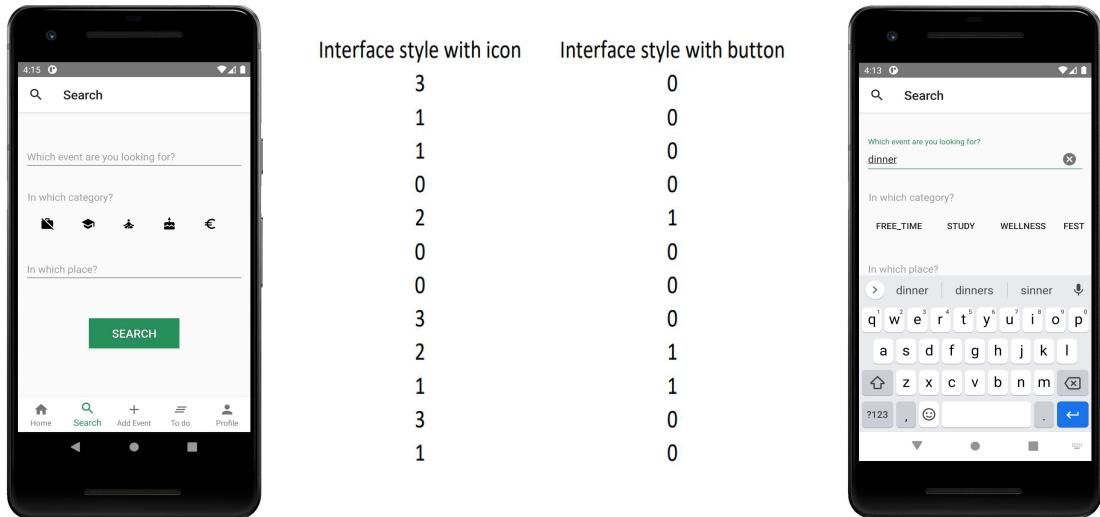
RIEPILOGO

Gruppi	Conteggio	Somma	Media	Varianza
Colonna 1	12	445	37,0833333	274,992424
Colonna 2	12	211	17,5833333	206,992424

ANALISI VARIANZA

Origine della variazione	SQ	gdl	MQ	F	Valore di significatività	F crit
Tra gruppi	2281,5	1	2281,5	9,46710257	0,005515192	4,3009495
In gruppi	5301,83333	22	240,992424			
Totali	7583,33333	23				

on the errors:



ANOVA

RIEPILOGO

Gruppi	Conteggio	Somma	Media	Varianza
Colonna 1	12	17	1,41666667	1,35606061
Colonna 2	12	3	0,25	0,20454545

ANALISI VARIANZA

Origine della variazione	SQ	gdl	MQ	F	Valore di significatività	F crit
Tra gruppi	8,16666667	1	8,16666667	10,4660194	0,003803533	4,3009495
In gruppi	17,1666667	22	0,78030303			
Totali	25,3333333	23				

Comparing both F values obtained with the F -critic, we can see that even in this case our hypothesis was confirmed by the data. Some subjects reported their difficulty especially into distinguish the *wellness* category from the *free-time* one, even if the color could guide them into the right selection.

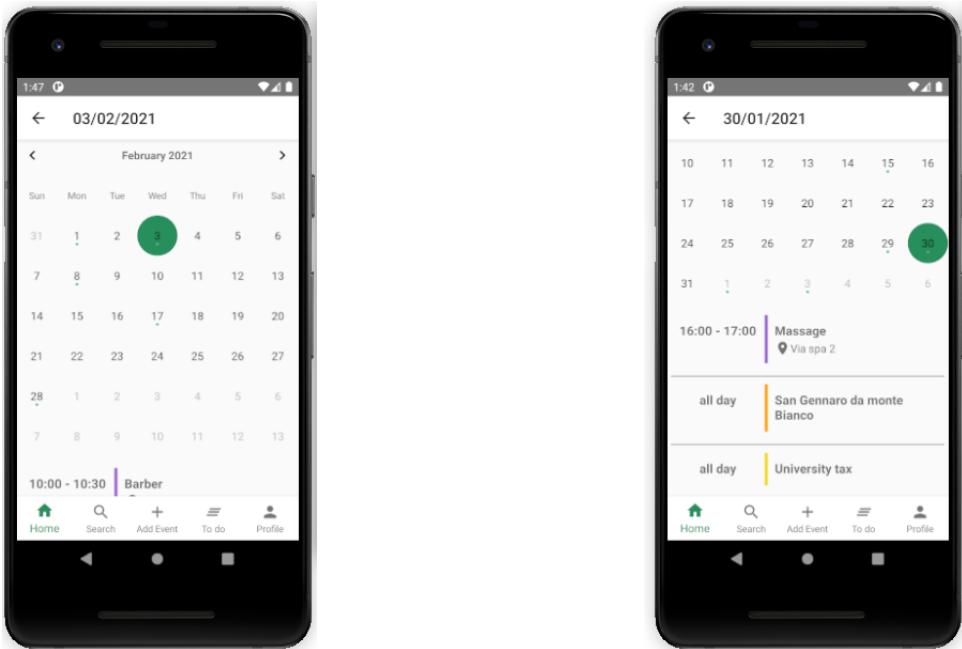
In the end, they all appreciated the icons suggesting for a blended type of design.

7 Demo

The final result, considering the outcome of all the above phases, will be now presented.

7.1 Calendar

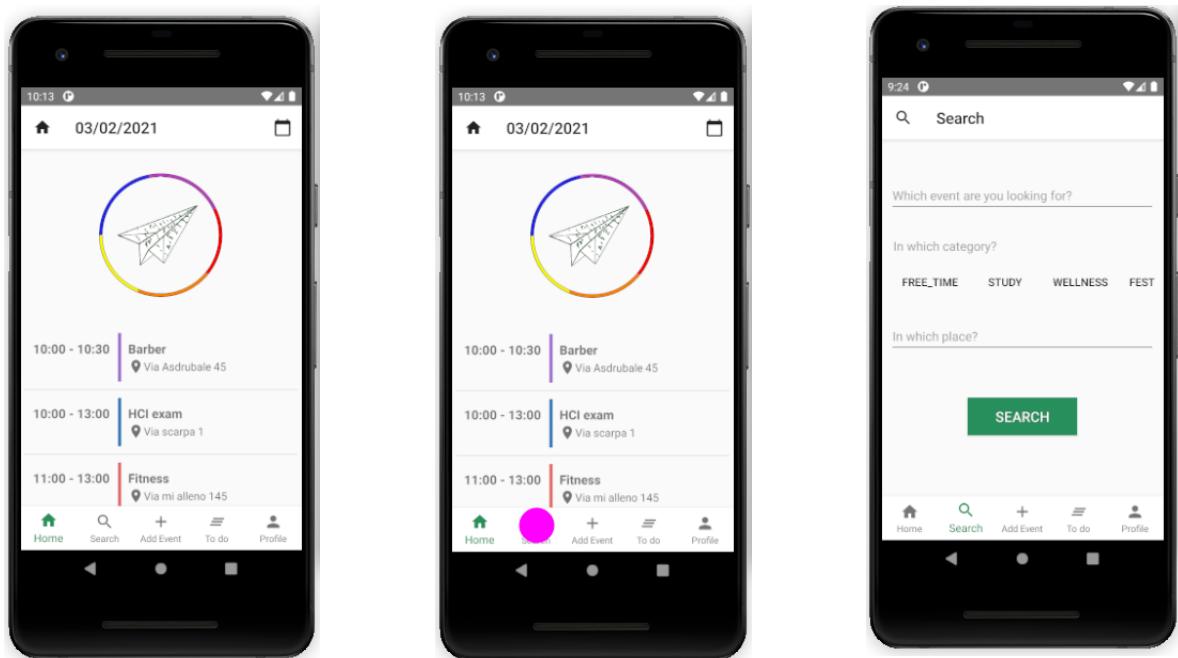
A user can visit the calendar to see his activity in program.



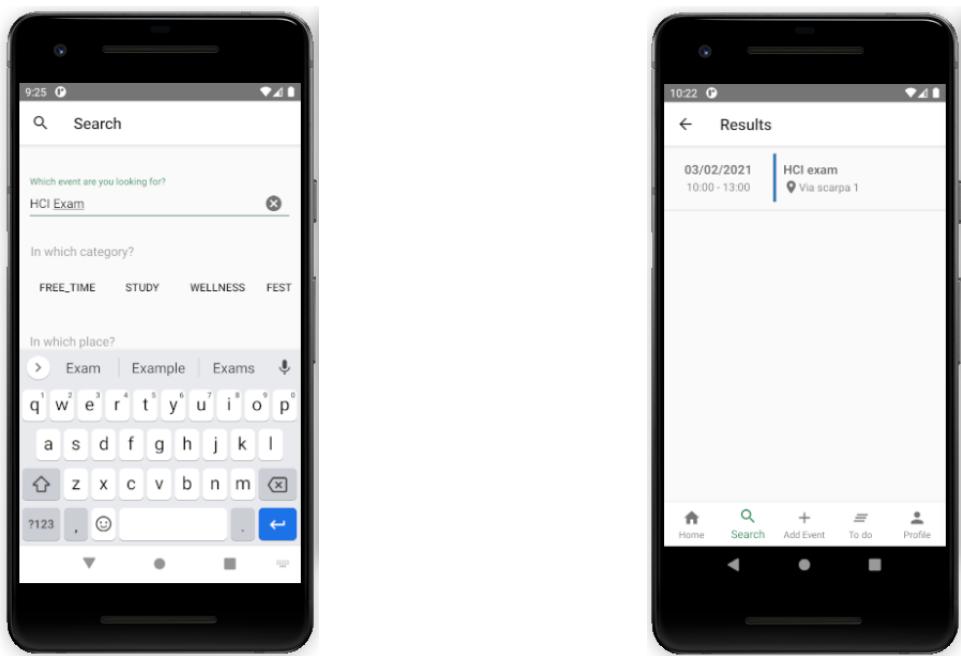
By clicking on the day, all related events will be shown.

7.2 Search Event

User searches *HCI exam* event.



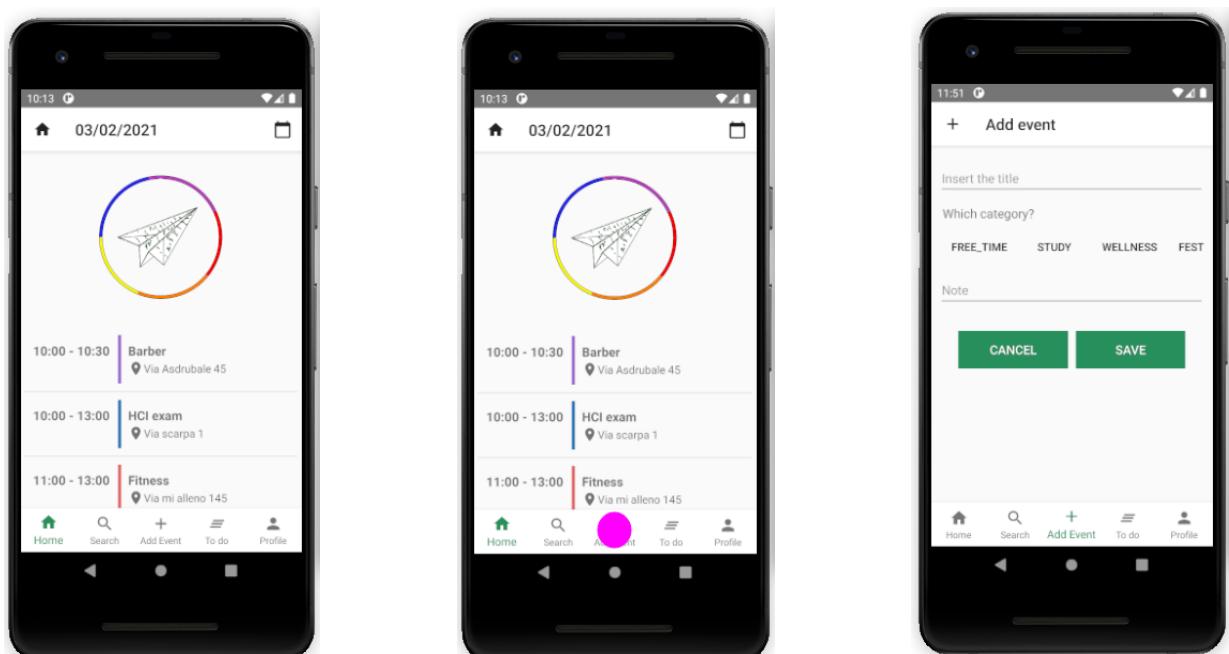
To search "HCI exam" event, we must press on 'search' icon presented in the bottom navigation bar to open the search page.



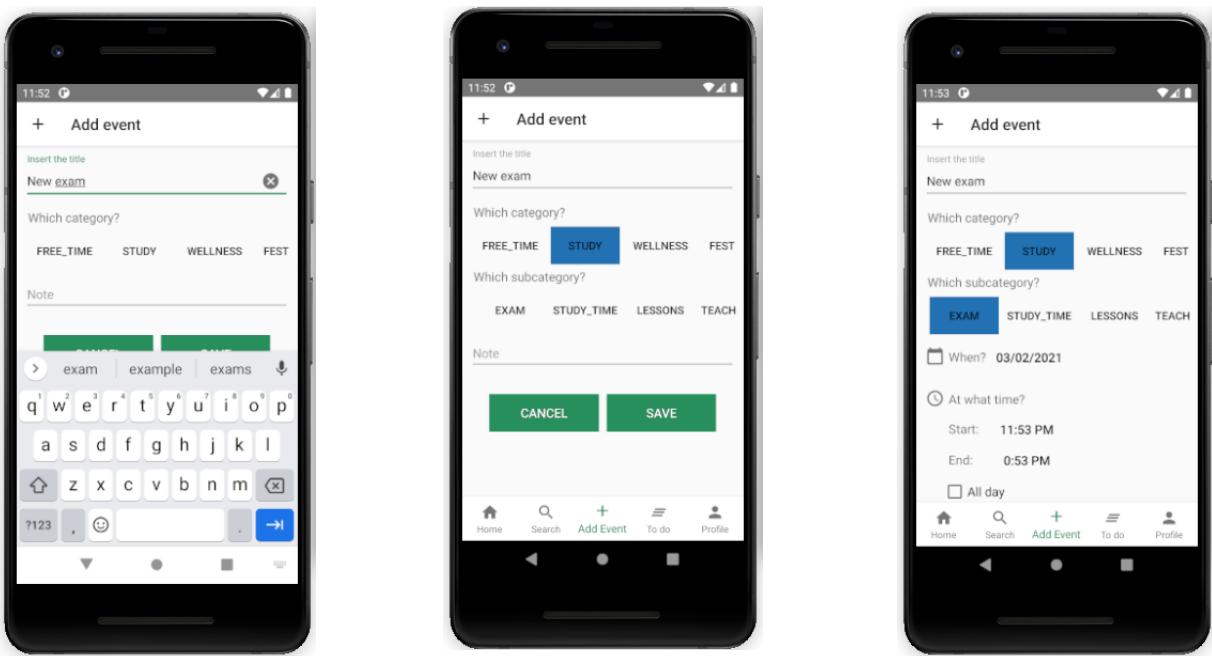
For example, event can searched by title, so that the system display the correspondent results.

7.3 Add Event

User creates a new exam event with study plan.

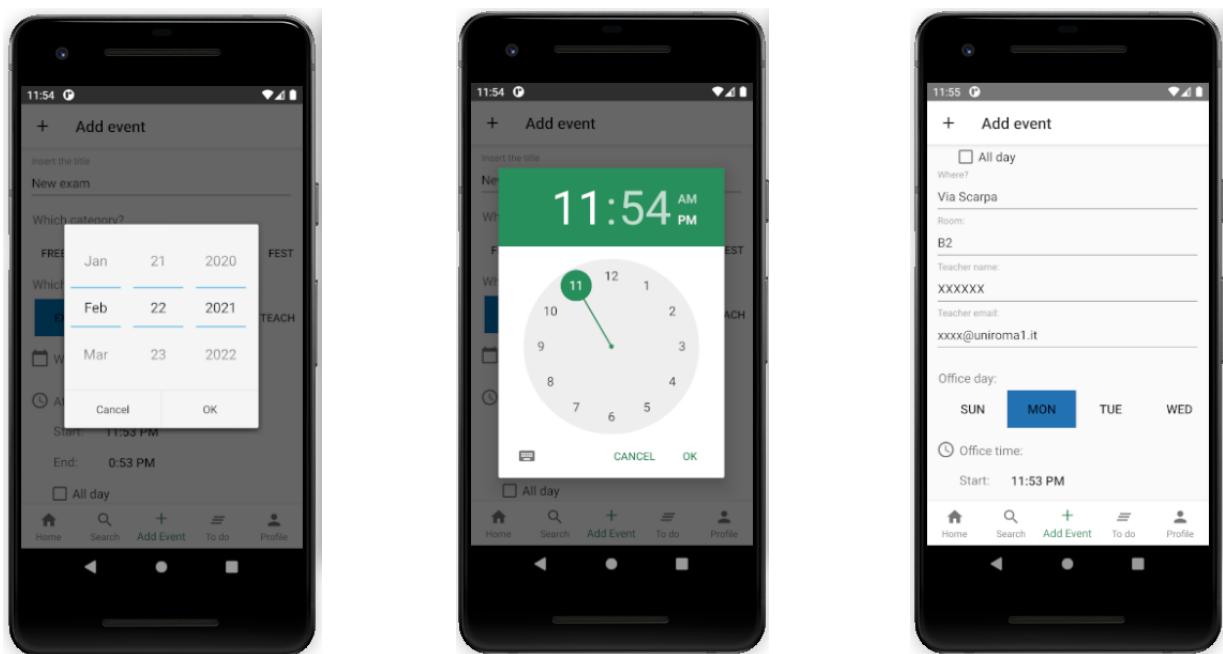


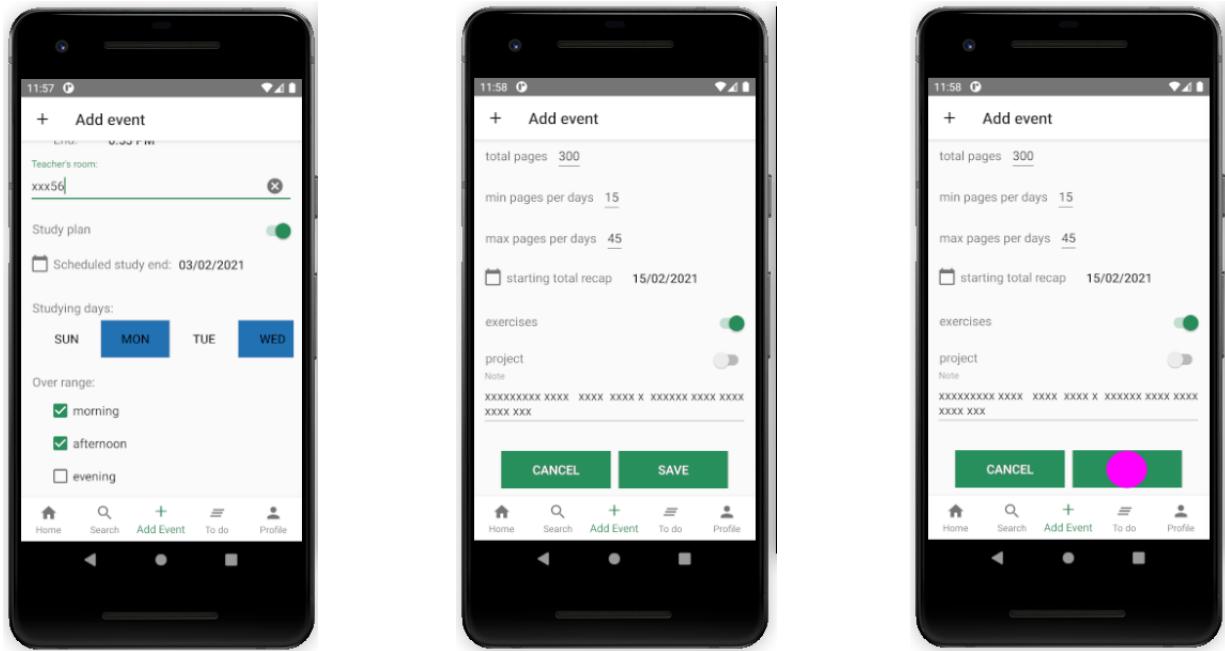
The user presses on the 'add event' icon to open page to create the event.



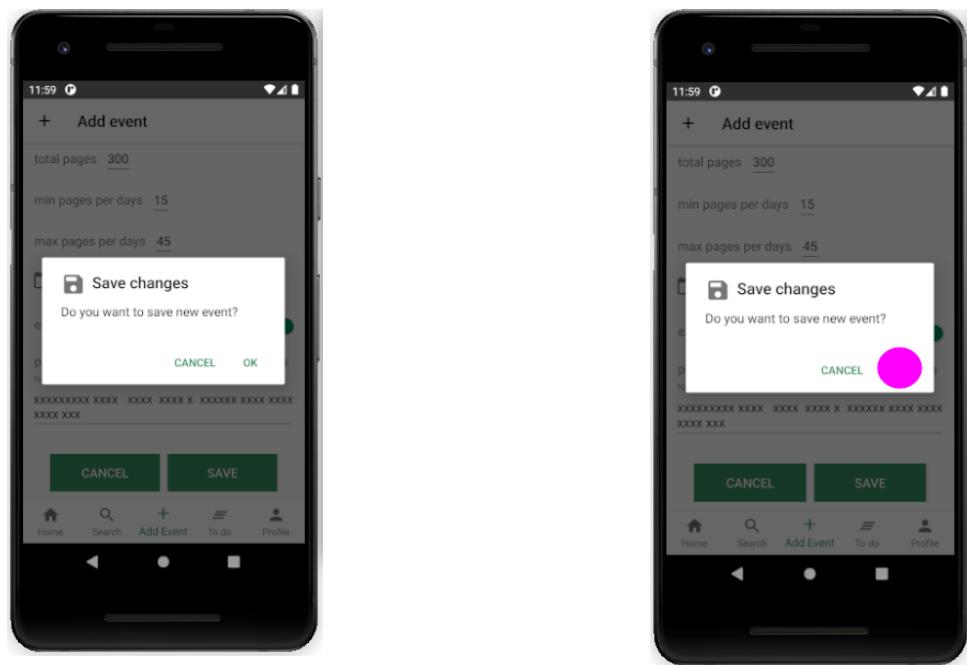
To insert the event details, it is necessary to select category and subcategory, needed to open the form correlated to the event that you want to create.

As we can see, the color of the study category selected is blue, this was intended to fastening the process of learning the right association between color/category.





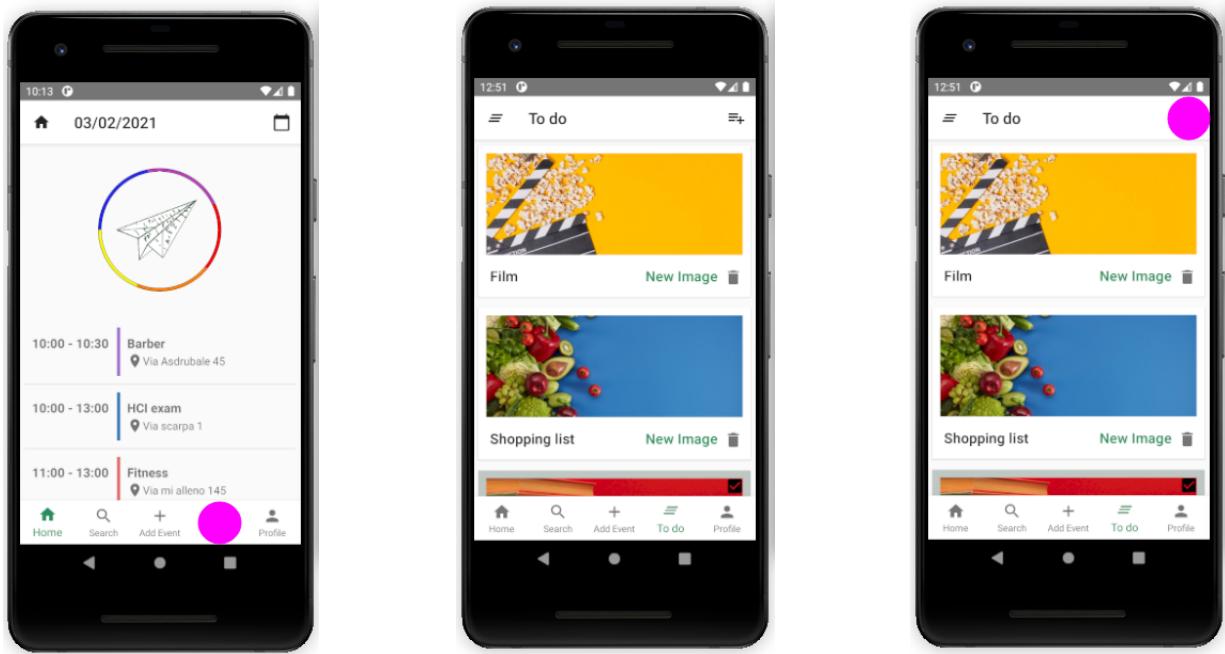
User compiles the form area, inserting necessary information to complete event details, after that presses on save button.



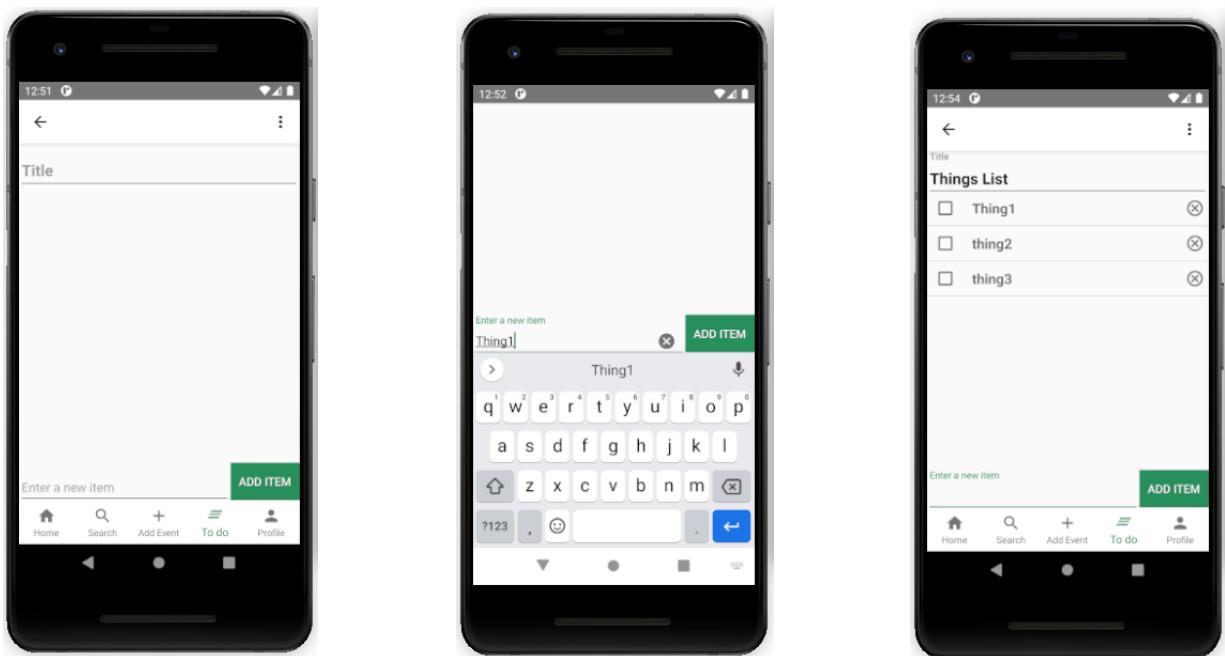
It is necessary to confirm the creation of the new event, so clicking on 'OK' option conclude successfully the task.

7.4 Create List

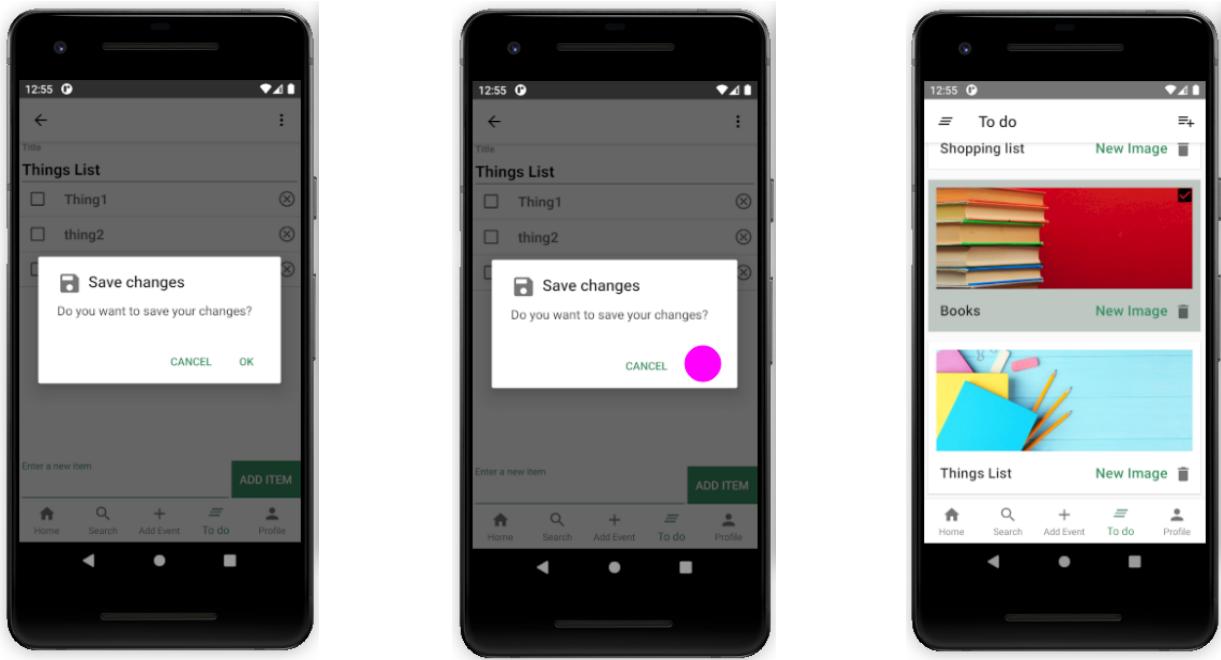
The user wants to create a "Things list" to remember over time.



The user presses the 'list' icon in order to open the lists page; here, you can create a new list by pressing the icon on the toolbar.



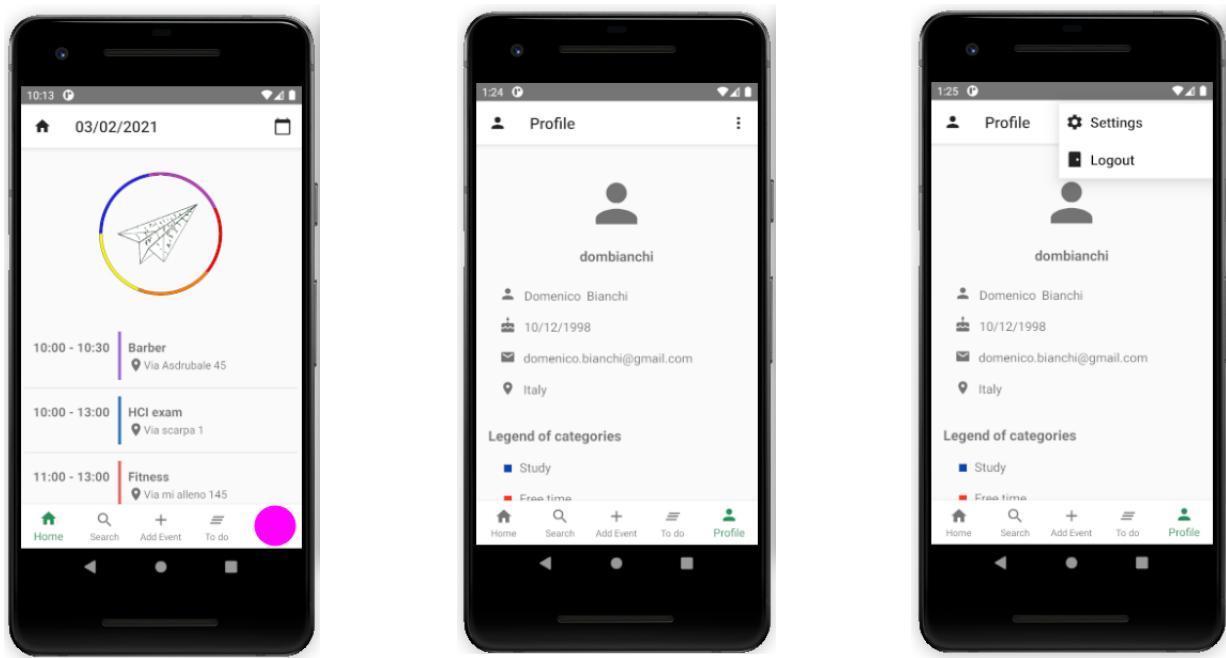
To create the list, it is necessary to define title of the list and add items.



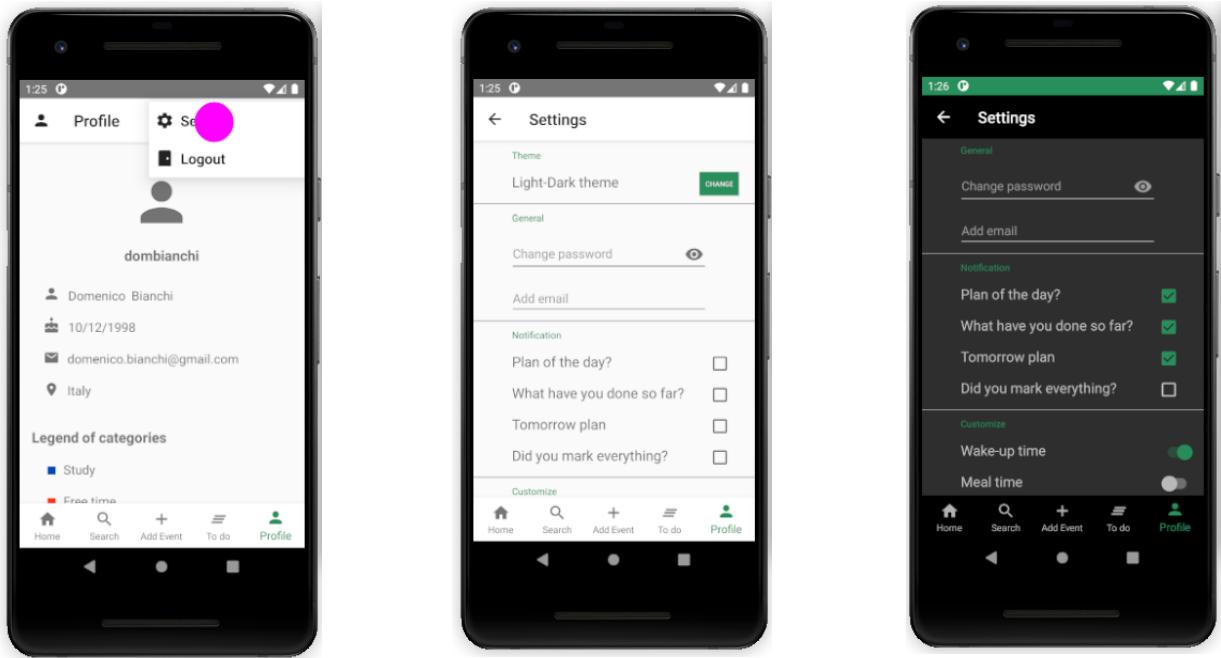
To save the list, the user must go back and confirm the operation.

7.5 Profile managing

To check personal information, settings area must be accessed.



To do that, a person must press on the 'profile' icon to open user details page. While to access in the settings area, it is necessary to open the menu on the toolbar and select 'settings' option.



In the settings page, it is possible customize the app according to the user's needs.

8 Conclusion

The work we have just completed was stimulating as it allowed us to learn the different phases of design and evaluation of an application. It was also formative even because we gained confidence with *Android Studio*. In fact, the app was entirely developed with the support of the latter.

8.1 Future works

During the design, we had a lot of ideas on how to expand our work. The discussion with users was precious, they allowed us to find out what a user would like in an app of this type in order to do not hesitate even for a moment into downloading it.

As we previously said, the main feature of our app is to automatically generate a study plan. However, it is possible that unexpected events may occur prevent you from respect it. In fact, we introduced some safe days. However, in some cases, you may also decide that you don't want to use those days, but indicate if you prefer to recover at other free times of the day or at times designed for other activities.

It should also be possible to integrate how many breaks and for how long time.

Additionally, a perfect study planner should take into account both exam difficulty and the difficulty of a single topic.

Then, the study tasks should be organized in such a way as to take into account that in some periods, during the festivity for example, the student may choose to spend less time studying, in order to spend more time with his family. So, lighten the study load in those days and intensify it in the others. In short, the student who chooses to rely on our study plan, must only correctly indicate all his preferences and that's it!

The more the app knows the better it will perform its tasks.

We also thought that, if this app was successful among many students, we could include the ability to organize collective events. For example, let's focus again on the study plan. As in our case, a group project must be created: a single user could manage the events related to group meetings and, with a simple invitation, make sure that they also appear in the agenda of his colleagues.

Additionally, for a clearer view of future events, two more calendar views could be introduced. Pulling it all down, allows us to understand how many events we have for each single day; pulling it up, it gives us an overview by week and no longer by month.

We could also make the sub-categories absolutely customizable. For example, sport is on the border between wellness and free time. Some users may want to include it in the first one instead of the other one.

The possibilities with this app are infinite, and in his small way could really save some university students life.

9 References

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