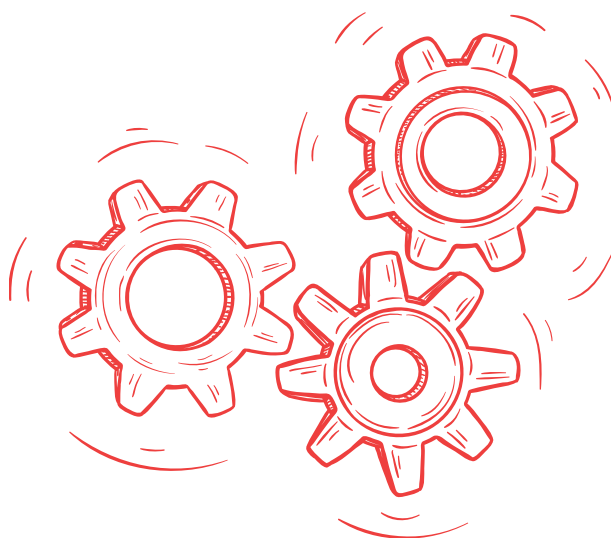




GUIÃO IT





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IT



Introduction

Hello everyone and welcome to LBEC 2024! IT is a practical challenge in which you, the participants, are faced with the challenge to create a functional prototype that solves a certain problem that the IT Responsibles have prepared for you. To achieve this goal, you will enter the testing facility as a group of two to five people, and you will have 24 hours to get to the best solution you can achieve.

In our increasingly resource-conscious world, understanding and managing our environmental impact is crucial. Juggling daily schedules while keeping track of utility consumption can be a daunting task. This project dives into the realm of **sustainable living management**, aiming to empower users with the tools they need to **optimise their resource utilisation and stay organised**.

Feeling overwhelmed by rising utility bills and struggling to stay on top of important events? Existing solutions often lack a **unified platform**.

This project proposes the development of an innovative **App/website** that acts as a one-stop shop for **sustainable living management**. The app/website will track your **energy, water, and gas consumption**, providing valuable insights to help you **identify areas for improvement** and **reduce your environmental footprint**. Additionally, an integrated **calendar** allows you to **seamlessly manage your schedule**, ensuring you never miss a beat.

This user-friendly platform offers a holistic approach to sustainability, combining **consumption tracking** with **scheduling functionality**. Imagine **gaining control over your resource usage** while **staying organised** – all in one convenient location.

Ready to simplify your life and make a positive impact? Join us on this journey towards **sustainable living and efficient organisation!**

Main Task

Your main task is to build an App/Website that helps a user manage and control their energy, water and gas consumption as well as add important events to their in-app calendar;

To help you design this we divided the project into smaller steps in order to guide you;

In the first 15 min of the competition the IT Responsible will go over the more important aspects of the project.

This breakdown outlines the core functionalities of your app, allowing flexibility in implementation while achieving the desired features:

1. Data Model - You may model this however you want but here are some suggestions:

- **1.1 Define Resource Model:**
 - Create a data structure to represent resource types (energy, water, gas) with attributes like unit price and unit type (e.g., kWh, litres).
- **1.2 Define Consumption Data Model:**
 - Create a data structure to store consumption data, including timestamps, resource type, consumption amount, and a flag indicating "not at home" status.
- **1.3 Define Ideal Consumption Model:**
 - Design a data structure to store ideal consumption calculations based on user preferences and external factors.
- **1.4 Define Calendar Event Model:**
 - Create a data structure to represent calendar events with attributes like title, date and time.

2. User Interaction:

- **2.1 Resource Consumption Input:**
 - Develop functionality for users to input resource consumption data, including specifying the resource type, amount, and "not at home" status.
- **2.2 Calendar Event Management:**
 - Implement features for users to add, edit, and delete calendar events.

- **2.3 User Authentication:**

- Implement a login screen requiring users to enter valid credentials (username/password or alternative) for authorized access to the app/website.
- Upon successful login, redirect users to the Home page.
- The interface should be user-friendly and secure, potentially masking passwords during input.

3. Data Processing and Visualisation:

- **3.1 Consumption Aggregation:**

- Process consumption data to calculate daily, weekly, and monthly totals for each resource type.

- **3.2 Cost Calculation:**

- Calculate the total cost of consumption for each resource and period (daily, weekly, monthly) by multiplying consumption by unit price.

- **3.3 Ideal Consumption Calculation:**

- Develop logic to calculate ideal consumption based on user preferences (e.g., acceptable temperature range) and "not at home" periods.
- This can involve defining user-configurable temperature ranges and incorporating external temperature data (API or manual input).

- **3.4 Data Visualisation:**

- Implement charts or visual aids to display consumption trends (daily, weekly, monthly) for each resource type.
- Consider including cost and ideal consumption alongside actual consumption in the visualisations.

4. Additional Considerations:

- **Data Persistence:** Choose a suitable method (e.g., local storage, database) to store and retrieve user data (consumption, calendar events).
- **User Interface and User Experience:** Design an intuitive user interface for easy interaction with the app's functionalities (data input, visualisation, calendar).

Extra Tasks

Beyond the main task, you will also have extra tasks that are **not mandatory** and will add some **extra points** to the evaluation.

Extra Task 1 - Implement Email Reminder Functionality:

Develop functionality to allow users to:

- Enable or disable email notifications for individual events or all events in the calendar.
- Set preferred notification timing (e.g., 1 hour before, 1 day before) for each event or establish a default notification time.
- Users must receive notifications for it to be considered a successful implementation.

Extra Task 2 - Implement an Import and Export Functionality:

Develop functionality to allow users to import and export their resource consumption data and ideal consumption settings.

Import Functionality:

- Users should be able to import data from a predetermined file format (e.g., CSV, JSON).
- The imported data should be validated to ensure accuracy and compatibility with the application's schema.
- Successfully imported data should be integrated into the existing data structures.

Export Functionality:

- Users should have the option to export their data to a chosen file format (e.g., CSV, JSON).
- The exported data should be formatted in a clear and structured manner, allowing for easy import into other applications or for user-generated backups.



Logistics

You will have 24 hours to solve this challenge and, during this time you will have to:

- Solve the challenge that the IT responsible proposes to you;
- Prepare the presentation on Wednesday, 20th of March.

Not only will you have your main tasks, but also **Extra Tasks** to award you extra points during the 24 hours:

- The Extra Tasks are not mandatory but they will give you extra points if executed;
- The extra points will be discriminated in “Evaluation Criteria - Objective Criteria”.

You will be given the opportunity to participate in additional activities, **Mini-Tasks**, during the 24 hours:

- These additional tasks are not mandatory and won't contribute extra points.
- The other Mini-Tasks are associated with other awards unrelated to the competition. In this case, you will compete with the other teams and participants from both categories to win the awards.
- These tasks are made to be chill, meet the other teams, and have fun.

Be mindful that **30 minutes before the competition ends** you will be warned of the time left.

- After the 24-hour competition, there will be a day of Presentations on March 20th. You need to attend this session to present your ideas, answer the Jury's questions, which includes university professors, and finish the competition.

Schedule

Before the competition, you will receive the schedule of the event which must be respected, but you can adapt to organise your work.

Questions

At the beginning of the competition, you need to choose two people from your team to be the Team Representatives. Your Team Representatives will have to attend the Question Time during the competition. Throughout the rest of the competition, the IT Responsibles will attend to your room every time needed to help you and explain some questions you have.



Rules

- You will have coffee breaks and meals that we provide and suggest enjoying at the scheduled times. The time for these breaks is included in the 24 hours of competition. The same applies to the time you decide to spend resting, in the fun zone, or doing the Mini-Tasks;
- Electronic devices will be allowed during the competition, as well as access to the Internet;
- To build the prototype you can use any technology you like as long as you finish the main task proposed to you;
- The IT responsible will be available during the 24 hours of the competition to answer any questions you might have;
- You can not share code with other teams;
- The ability to **leave** the building is decided by the organisation and every situation is evaluated to decide if it is valid or not;
- The IT Responsible and the Main Organiser reserve the right to apply any penalty that they consider necessary, after deliberation;
- The Competition starts at 14:00 of the 16th and ends at 14:00 of the 17th.
- Of those 24 hours, at least 8 must be spent working in the working rooms!



Materials

Welcome Pack

You will have some materials that you will keep even when the competition is over:

- Pencil;
- Pen;
- Eraser;
- Paper sheets.

Delivery & Presentation

Project

After the 24 hours here are some points to bear in mind:

Project Submission:

- **Deadline:** You have until the **end of the competition** to submit your project as a **zip file**, down below you have the **link** where you should submit it.
- **Grace Period:** A 15-minute grace period is available after the competition ends to address any technical difficulties with submission.

Project Presentation:

- **Date:** Teams are required to present their projects on Wednesday, **March 20th**.
- **Presentation Requirements:** Teams should bring their own laptops to download and demonstrate the **previously submitted zip file** containing the project code and assets. This file should be identical to the presented project, ensuring your presentation aligns with the submitted work.

Competition End:

- **No Modifications:** Once the competition concludes, you may not modify or continue working on your project.
- **Time Constraint:** No additional time will be granted past the competition deadline.
- **Cleaning Up:** Please leave your working area clean and tidy.

Failure to adhere to these instructions may result in penalties or disqualification.



IT



Delivery of the Project

In order to **deliver the project** it must be delivered as

“[LBEC 2024][IT][PROJECT]-TeamName”

to the following address within the **24 hours of competition**:

lbg-almada-lbec-submissions@googlegroups.com

You should receive a **confirmation reply within 2 hours after the competition ends**.

If that doesn't happen, **contact the organisation as soon as possible**. If you do not contact us your documents will not be considered in the final evaluation.

The Zip file should be named: Project_TeamName

If the name of the document is not with this designation, the document will not be considered delivered.

Presentation

About the presentation, the rules that you need to follow are:

- You should present your project using digital support (PowerPoint, Prezi, or other methods that allow exporting as a PDF).
- Your digital support must be in a PDF convertible format and may contain a video of the project.
- The presentation time must be between **10-15 minutes**. If the time is over, the Jury and the organisation can interrupt the presentation, and anything you say after the 15 minutes will not be taken into account.
- In the case of PowerPoint or other digital support, you may have any number of slides.
- The **digital support** needs to be in **English** but your **oral presentation** can be in **Portuguese**.
- After the oral presentation, the Jury will ask some questions for you to clarify or justify some points. This inquiry should not take longer than 10 minutes.



IT



Here's an outline of what we'd like to see:

1. Technology Stack and Architecture:

- Briefly discuss the technologies you used to build your app (programming language, frameworks, libraries, databases, etc.).

2. Development Decisions and Rationale:

- Share key decisions you made during development. This could include:
 - Why you modeled data a certain way.
 - The reasoning behind choosing specific technologies (e.g., programming language, database).
 - Any challenges you faced and how you overcame them.

3. Project Demonstration:

- Showcase your project in action! Walk us through each implemented feature, explaining its functionality and user experience.

Delivery of the Presentation

In order to **deliver the presentations**, the **digital support and the PDF** version must be delivered as

“[LBEC 2024][IT]-TeamName”

to the following address within the **24 hours** of competition:

lbg-almada-lbec-submissions@googlegroups.com

You should receive a **confirmation reply within 2 hours after the competition ends**.

If that doesn't happen, **contact the organisation as soon as possible**. If you do not contact us your documents will not be considered in the final evaluation.

The **Presentation should be named**: Presentation_TeamName

If the name of the document is not with this designation, the document will not be considered delivered.



Jury Presentation Tests

Each Presentation will follow the following structure:

- **10-15 minutes:** Present the project with support of the presentation you prepared, during this time you must test all of your projects features;
- **10 minutes:** Jury Questions (consult “Jury Questions” chapter)

Jury Questions

After the Presentation, the Jury will have questions about your work. The questions and answers can be in Portuguese.

Here are some points the Jury will consider:

- **Completeness:** Does the app deliver all the core functionalities outlined in the checkpoints?
- **Intuitive Interface:** Is the user interface clear, well-organised, and easy to navigate?
- **Usability:** Can users easily input data, manage calendar events, and view resource consumption trends?
- **Code Quality:** Is the code well-written, documented, and easy to understand?

Evaluation Criteria

The Evaluation Criteria will be segmented into 2 distinct evaluations:

- Objective Criteria;
- Subjective Criteria.

Objective Criteria

Project Checkpoints (CP)

This breakdown emphasises checkpoints based on observable functionalities:

1. Core Functionalities - Initial Prototype (60 points):

- **1.1 Resource Consumption Input (10 points):**
 - Users can enter resource consumption data (type, amount) for each resource (energy, water, gas).
 - Ability to specify "not at home" status for each entry.
 - Ability to specify Temperature for each entry.
- **1.2 Calendar Management (15 points):**
 - Users can add, edit, and delete calendar events.
 - Events are displayed on a calendar interface.
- **1.3 Consumption Overview (25 points):**
 - App displays daily, weekly, and monthly consumption totals for each resource.
 - Basic visual aids (bars, charts) are included to represent consumption trends.
- **1.4 User Authentication (10 points):**
 - Implement a login screen requiring users to enter valid credentials (username/password or alternative) for authorized access to the app/website.
 - Upon successful login, users can access resource management functionalities (consumption input, calendar, visualization).
 - The interface should be user-friendly and secure, potentially masking passwords during input.

2. Advanced Functionalities - Enhanced Prototype (40 points):

- **2.1 Cost Calculation (10 points):**

- System calculates the total cost of consumption for each resource (daily, weekly, monthly) based on user-provided unit prices.

- **2.2 Ideal Consumption Calculation (15 points):**

- Ability to specify user-defined acceptable temperature ranges.
- App calculates ideal consumption for each resource considering "not at home" periods and user-defined acceptable temperature ranges.

- **2.3 Enhanced Visualisation (15 points):**

- Consumption trends are visualised with more comprehensive charts, including cost and ideal consumption alongside actual consumption.

Extra Tasks (ET) - Extra Points

For each Extra Task completed, you will be awarded the following extra points:

1. Extra Task 1 (ET1) - Email Reminder Functionality (10 points):

- Users can enable or disable email notifications for individual or all calendar events.
- Users can set preferred notification timing (e.g., 1 hour before, 1 day before) for each event or establish a default notification time.
- Functionality successfully sends email reminders at the designated times.

2. Import and Export Functionality (10 points):

- Users can import resource consumption data and ideal consumption settings from a predefined file format (e.g., CSV, JSON).
- Imported data is validated for accuracy and compatibility with the application's schema.
- Validated data is successfully integrated into the existing data structures.
- Users can export their data to a chosen file format (e.g., CSV, JSON).
- Exported data is formatted in a clear and structured manner, allowing for import into other applications or user-generated backups.

Subjective Criteria

Jury Evaluation (J)

The Subjective Criteria will be evaluated by the Jury.

During the evaluation, the jury will evaluate your project according to subjective criteria, which may include the following parameters:

- **Usability:** Is the app intuitive and easy to use? Can users navigate it **easily and accomplish their tasks efficiently?**
- **Performance:** Does the app respond quickly and smoothly? Are there any lag times or performance issues?
- **Reliability:** Does the app function consistently without crashing or displaying errors?
- **User Interface (UI):** Are the controls and menus well-organised and easy to understand?
- **Code Quality:** Is the code well-written, documented, and easy to maintain?

Presentation (P)

The Jury will also evaluate your presentation based on some parameters:

- **Support:**
 - Design;
 - Selection of information;
 - Technological skill;
 - Creativity.
- **Presentation Skills:**
 - Confidence;
 - Stage Presence;
 - Language;
 - Clarity.

Formula

All the scores will be given by the jury on the 20th of March.

The Final Score (FS) will be determined by the following equation:

$$FS = 0,6 * (CP + ET1 + ET2) + 0,2 * J + 0,2 * P$$

The Jury (J) score will be from 0 to 100.

The Presentation (P) score will be from 0 to 100 and it will be determined by the following equation:

$$P = 0,5 * \text{Support} + 0,5 * \text{Presentation Skills}$$

Penalties

The penalties may be applied at any stage of the competition. The situations that may lead you to lose some points are:

- If you disrespect any of the regulations of the test:
- The test will be considered non-valid;
- A penalty will be added to your score each time you disrespect the test regulations;
- The jury reserves the right to apply any penalty that seems adequate;
- If you do not respect the rules of the Competition or guidelines of the script regulations;
- Any trade of code between teams leads to the disqualification of both teams;
- If any team hinders the work of any other team, that team will be disqualified;
- If the room is damaged and in worse condition than when the competition started;
- To ensure a fair and smooth competition for all participants, we kindly ask that teams adhere to these regulations or they shall be penalised.

Disclaimer

- The disqualifications and penalties description is susceptible to changes during the 24 hours of the competition. Any modifications will be communicated to the participants, organisers, and jurors.
- Please read this document with full attention. There are many indications of possible penalisations described in other chapters.



Questions & Doubts

During the IT task, if there is any question the Team Representative can meet with the IT Responsible for any clarification. He is:

- Guilherme Franco - +351 933054016.

Only this member can clarify and attend to any doubt about the topic, and only their decision counts. There will be a document with FAQ in the Shop

Contacts

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