İstanbul
Bilgi Üniversitesi

ENGR 372 - User Interface Design

ECOBILITY
WEB PAGE DESIGN

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1. Introduction

Plastics have a wide usage area and a weight that is difficult to give up in our daily life. With its low production and recovery costs, high resource efficiency, design, and application richness, plastic production has been developing rapidly all over the world for 50 years. What comes to mind when you think of plastic? Shopping bags, water bottles, toys... However, these materials, which are used in almost every area of life, do not disappear in a short time in nature. About 300 million tons of plastic are produced every year around the world. However, none of the commonly used plastics is destroyed in a short time by itself in nature. In a study conducted in 2017, it was determined that only 9% of end-of-life plastics produced to date are recycled. Therefore, the large production and widespread use of plastics raise serious environmental concerns. [1]

The reason for the emergence of this project is to encourage the use of plastic to decrease in order to raise awareness about this bad trend. The main purpose of the studies is to provide better quality, more sustainable, and cleaner environment. Today, many people are not aware of how "by using non-recyclable products, nature is harmed and therefore the future". For this reason, the project was implemented in order to create a common awareness in society and to encourage people to use recyclable (environmentally friendly) products.

Basically, the aim of the ECOBILITY group is to create a common awareness by promoting the use of environmentally friendly products and to reduce the demand for non-environmentally friendly products. Keeping people up to date and informing about plastics and other non-environmentally friendly products used in daily life better demonstrates the purpose of this project.

In this project, which was designed by the team, there are nature-friendly and less harmful options for plastic products that are frequently used. Section 3.2. These products and their options are explained in detail. In addition, the impact of plastic waste reduction on the environment of activities such as reducing the use of plastic bottles and cardboard cups in our daily lives Section 3.4. has also been discussed. In this section of the website, the amount of plastic waste that is reduced can be calculated quantitatively by entering the product selection number, etc. information.

Thus, it makes the website not only informative about plastic waste but also makes it a more active platform by involving the user in the project. At the same time, various information symbolized by graphics in order to give an idea to the user will keep the motivation of the user on reducing plastic waste. No matter how small the changes are, this website was created in the hopes of still making a big change for the world.

2. Mission and Vision

2.1. Mission

Ecobility Group's mission is: To take a step toward a greener world, which is described as a waste management strategy that includes preventing or limiting waste generation by examining waste generation reasons or assuring trash recovery.

2.2. Vision

Ecobility Group's vision is: "Understand that every action taken to improve the world makes us a better person. With this motto, it is pledged to limit the usage of plastic garbage, both for the sake of children and ourselves. The team wants to live in a world that is both green and peaceful."

3. Manual of the Ecobility Website

3.1. Home Page

The home page is the main page of the website. On the home page, the "Who Are We" box, sign-in and sign-up buttons, "Did You Know?" cards, and boxes that show how to be more sustainable on the campus can be found. When the website is opened for the first time, this is the page that will occur. Also, when the home button on the sidebar is clicked, it will be directing the user to the home page as well, which is also shown in Figure 3. 1.
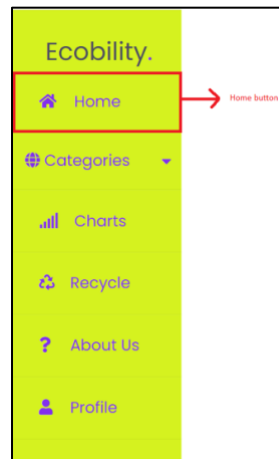
Figure 3.1. Sidebar of Website

In the top right corner, sign-in and sign-up buttons are placed which is shown in Figure 3.2. When the sign-in button is clicked, the login page will show up to the user to enter a valid username and password. When the sign-up button is clicked, the registration page will open in order to register to the Ecobility website.

Figure 3.2. Sign-in, Sign-up Button

The "Who are we?" box which is shown in Figure 3.3 explains our aim of creating this website and there is also a "Learn More" button which is circled with red in Figure 3.3. inside it which is linked to the "About Us" page in order to learn more about the vision of Ecobility and the team members, etc.
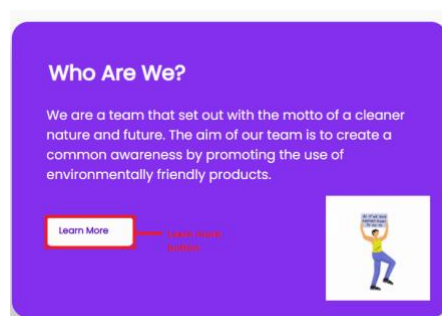

Figure 3. 3.3. "Who are we?" box

With scrolling down on the page, "Did You Know?" cards can be seen. These cards are designed to show some facts about plastic and related topics which are shown in Figure 3.4.

Figure 3. 3.4. "Did You Know?" boxes

"How can we be Eco-friendly at campus?" part of the page can be seen under "Did You Know?" cards as it is scrolled down which is shown in Figure 3.5. These boxes emphasize some actions you can take to help make the campus and by that our future more sustainable.
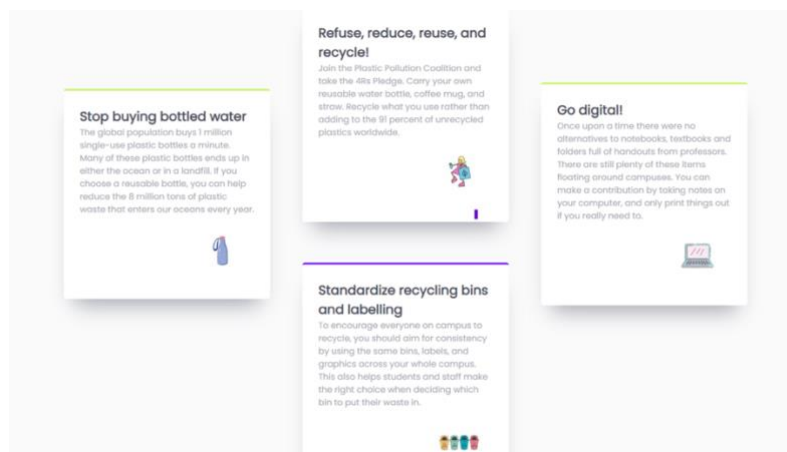

Figure 3. 3.5. Mini-info Cards

3.2. Categories Page

On the sidebar, the "Categories" page can be seen as 3 sub-pages which are "Bathroom Products", "Kitchen Products" and "Outdoor Products". By clicking on the "Categories", a drop-down menu will open for the product pages as can be seen in Figure 3.6.

Each sub-page contains the most used non-eco-friendly products every day by almost every one of us. Since the motto of Ecobility was "cleaner nature and future" by creating a common awareness with promoting the use of eco-friendly products, it can be said that this page works exactly in the service of this need.

Figure 3. 3.6. Sidebar Categories Section

Bathroom, Kitchen, and Outdoor Products pages consist of 10 products each. For Bathroom Products the products are Shampoo, Deodorant, Hygiene Pads, Toothbrushes, Sponges, Make-up Remover Pads, Make-up Tools, and Hairbrushes. Kitchen Products are Grocery Bags, Kitchen Paper Tissue, Teabags, Kitchenware, Pipettes, Kettle, Dummy, and Non-stick Pans. As for the Outdoor Products, these are Cups, Food bags, Face Mask, Lighter, Ice-cream Cups, Clothes, Hand Sanitizer, and lastly Water Bottle.

For each non-eco-friendly product, an alternative product is suggested. Also, in order to draw more attention, flip cards have been used in this manner as seen in Figure 7 below. The flip card on the right side in Figure 3.7 is the demonstration of a hovered flip card on the page Bathroom Products. When hovered over the cards they will rotate simultaneously and show an alternative for that specific product.

On top of that, there are also small texts written for each product that might encourage people more to use eco-friendly alternatives as the flip card has hovered over. Some of the texts include information about the harmful ingredients in non-eco-friendly products while some of them also give some facts about that product, and why we should not use that specific product. The same applies to the other 2 sub-pages, Kitchen and Outdoor Products.
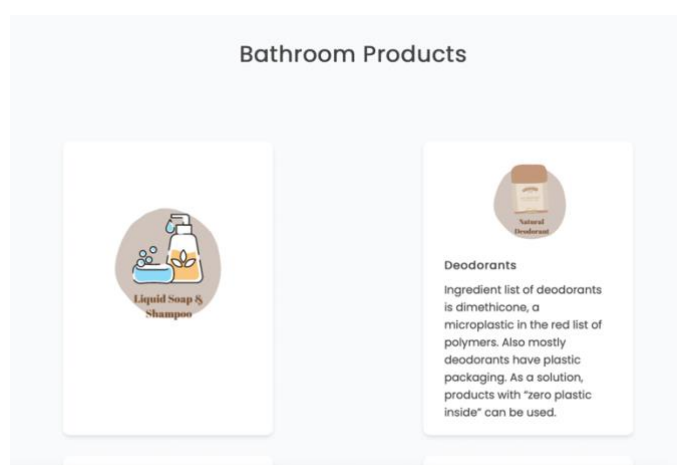

Figure 3.7. Bathroom Products

3.3. Charts Page

The chart page consists of 3 different interactive charts and each chart gives statistics for given specifications. Figure 3.8., shows the statistics of the largest 10 countries worldwide that recycled their plastic the most. According to the bar chart, India was the largest country with 60% recycled and the USA was the least with 11%.
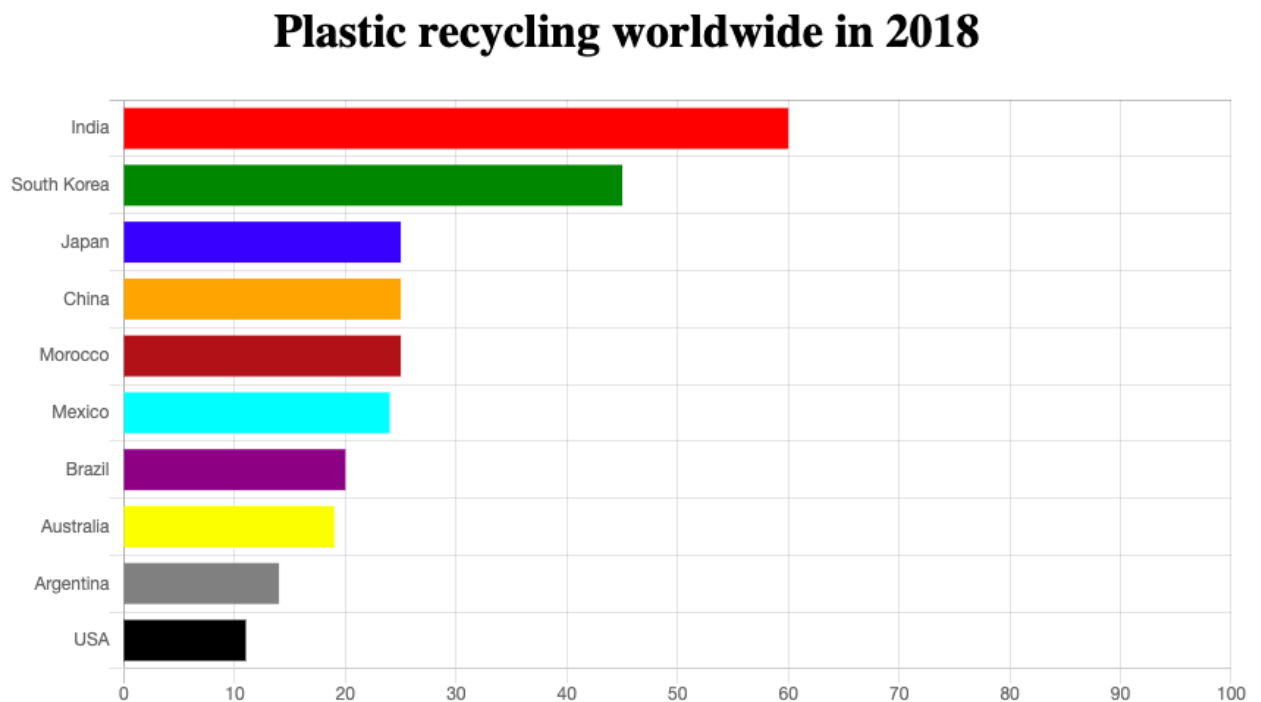

Figure 3.8. Plastic Recycling Chart

Figure 3.9. shows the statistics of recycling as a percentage of waste generation in the United States from 1960 to 2010. Lead-acid batteries were the most it reached 100% of recycling waste and the least was with Plastic with 25% of waste generation. Paper was the only item before 1960 with 18%.

Recycling as a percentage of waste generation in the United States
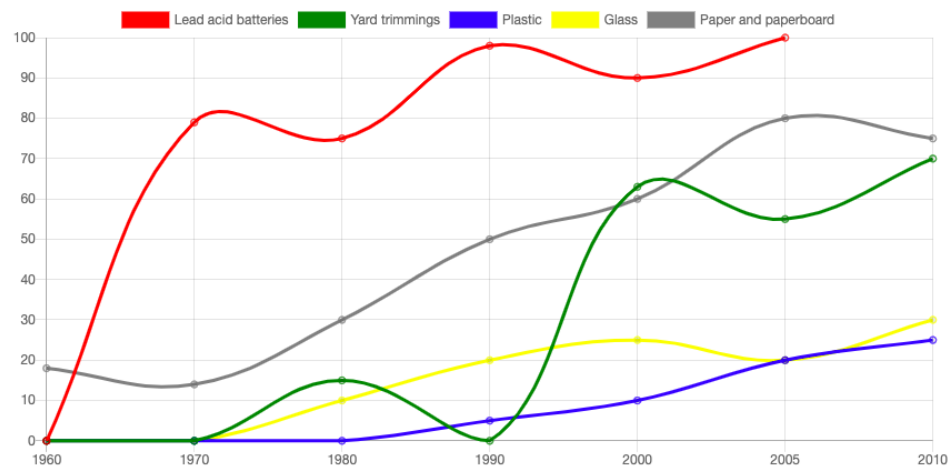
Figure 3.9. Waste Generation Chart

Figure 3.10. shows the statistics of the Recycling Wastes in the US in 2007, According to the pie chart, almost 45 percent of the municipal solid waste is comprised of paper and plastic (before recycling). Paper was first at 32.7% and plastic was fourth at 12.1% of the total 254 million tons generated that year. Second and third place were yard trimmings at 12.8% and food scraps at 12.5% ("Recycling Paper") It is seen exactly how much each item has its percent of recycling wastes.

Recycling Wastes in the US in 2007
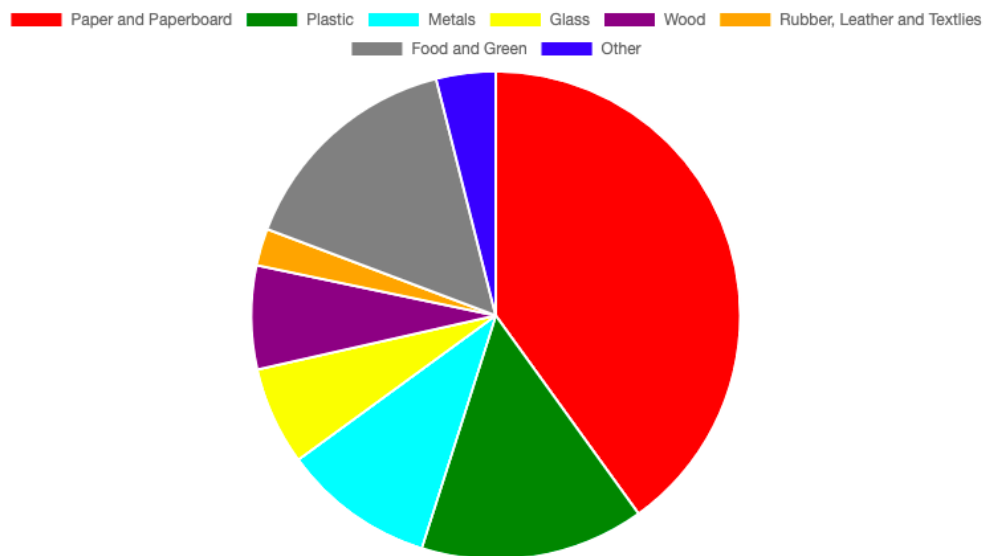
Figure 3. 3.10. Recycling Wastes

3.4. Recycle Page

The Recycle page aims to enable users to track the products they recycle in their own lives or the plastic footprints they reduce by using different products, in grams and kilograms. Also, it aims to motivate users to make more recycling to live in a cleaner environment.
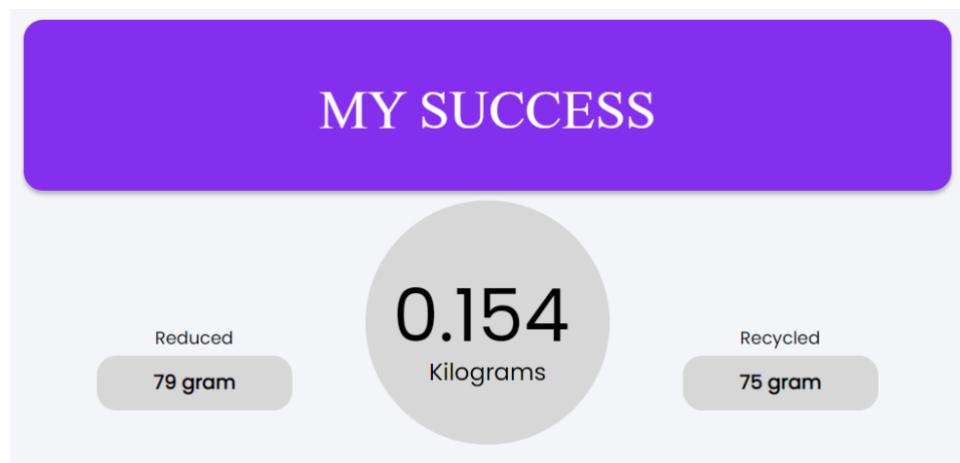

Figure 3. 3.11 Recycle Page

As it can be seen in Figure 3.11., the two text boxes show the grams that are reduced and recycled by the user, and in the middle circle, the results will be summed up showed as kilograms for more accurate information.

In the middle of the page, the "MY HISTORY" section can be seen by the users. This section allows users to make retrospective follow-ups of the products that they have recycled and reduced. Also, the date and time information will also be available if the user is signed in.
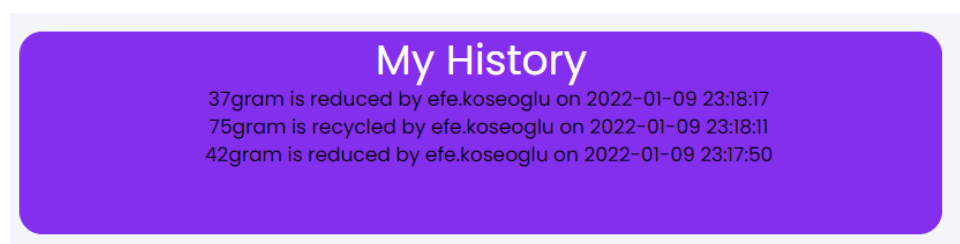

Figure 3.12 History Part

Users will be able to see the last 5 information of the calculations on the page as can be seen in Figure 3.12.

At the end of the Recycle Page, there are buttons as shown in Figure 3.13. which direct users to the "Reduced" and "Recycled" Pages, which are necessary for users to upload new information to the site.
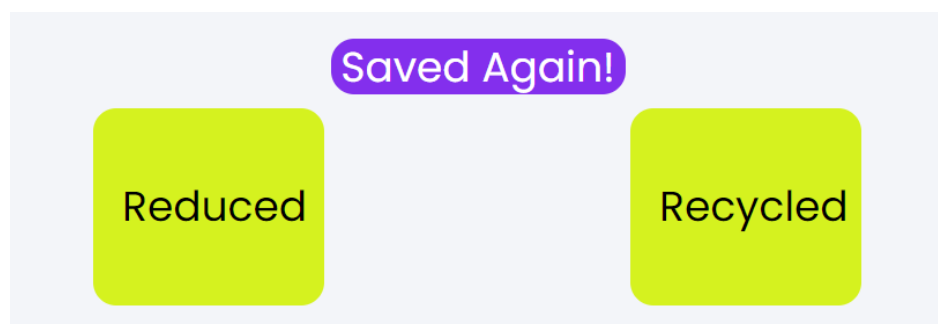

Figure 3. 3.13 Buttons

3.4.1. Reduced & Recycled Part

When the Recycled or Reduced button is clicked, Figure 3.14 & Figure 3.15 screen is opened on this page, after all, values are entered, the calculate button should be clicked. It will be calculated, and the results will be given immediately on the screen as a gram you can see how many grams of plastic you recycle or how many grams of plastic you blocked to spread to nature by using eco-friendly products instead. Also, there are 10 different products on each page. The products form is indicated and explained how it works in figure 3.14.

Figure 3.14. Reduced Calculation Page

Figure 3.15. Recycled Calculation Page

Figure 3.16. Unit of recycled page

Figure 3.17 is an example of how the calculation works. When the calculation is finished, the results will be shown immediately on the screen.

Figure 3.17. Calculation example

3.5. About Us Page

On the main page, under the "Who we are?" box, it is explained who the Ecobility group is and what its purpose is. The user is sent to the "About Us" part by clicking on the learn more section under this header. The mission and vision of the organization are outlined in-depth on the About Us page as shown in Figure 3.18.
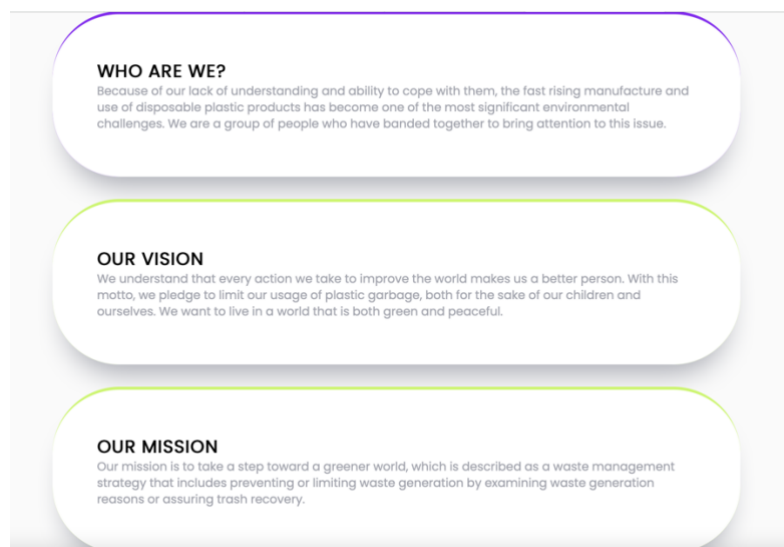

Figure 3.18. About Us Page

Ecobility team members, contact information, and training information can be found at the bottom of the page. The crew can be contacted at the e-mail addresses for more information on the page. Board members are also represented by Memojis added above their names as shown in Figure 3.19.
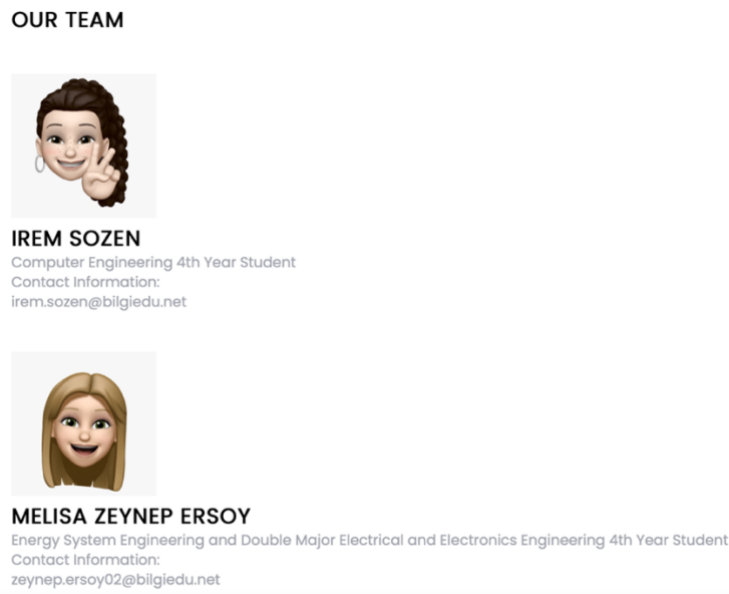

OUR TEAM

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Figure 3.19. Team members

3.6. Profile Page

When the "Profile" button is clicked on the sidebar as seen in Figure 3.20., the profile page will open directly.
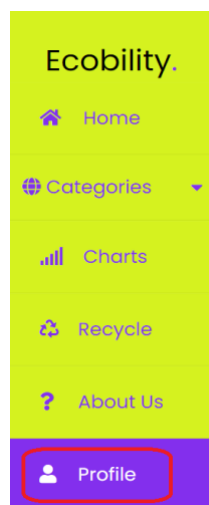

Figure 3.20. Sidebar Profile Section

When the profile page is opened, if there is no login, the user is directed to the login page as in Figure 3.21. On the login page, there is a redirect to the home page after logging in with a username and password.

In the registration section, there are certain areas and controls are made. A warning is given when the fields are empty. In addition, warnings are also received based on the database match check based on username and mail. During the registration, the passwords entered for confidentiality purposes are encrypted as md5, and database registration is realized.
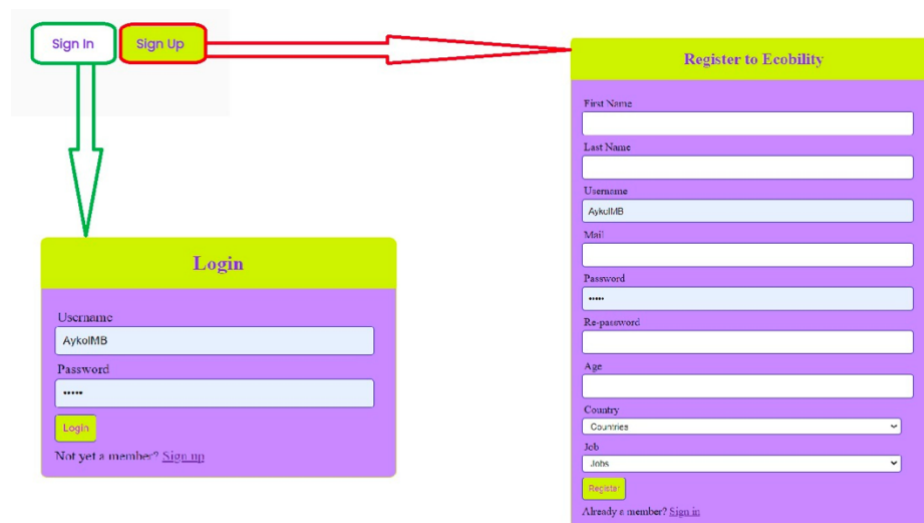

Figure 3.21. Login/Registration Section

When the profile page is opened, the user can see the information about how much reduction and recycling has been made, as well as the registration information itself. In addition, on the right side of the panel, the hour and date information is provided by a flip card as can be seen in Figure 3.22.
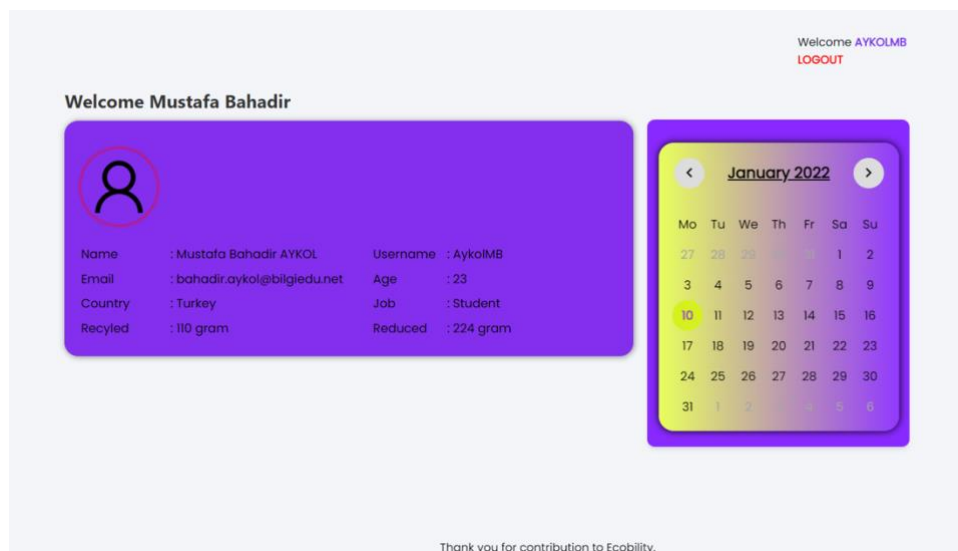
Figure 3.22. Profile Example

4. Database Connection Explanation

In this section database connection parts are explained in detail.
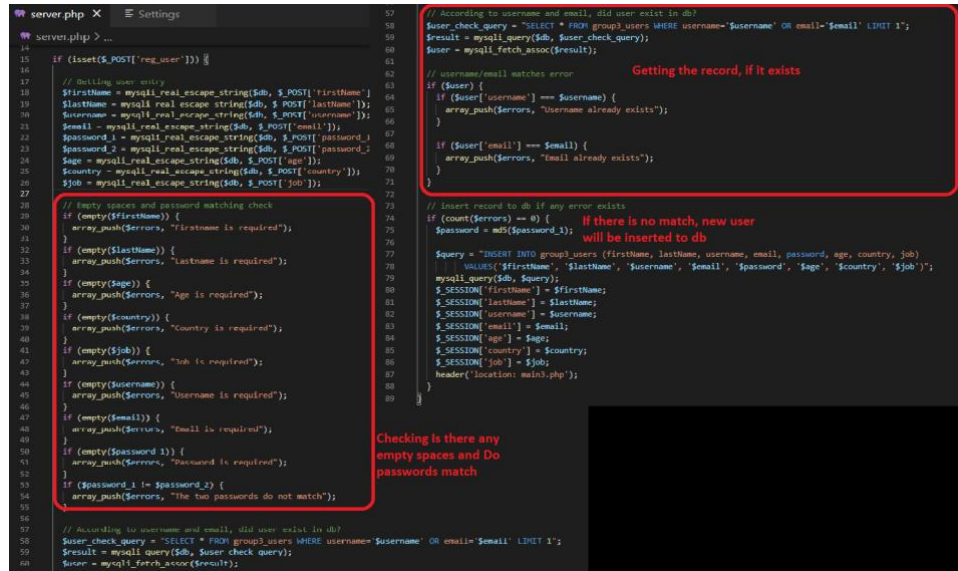

Figure 4.1. Database Connection Part 1

After the user fills in the fields on the registration page, some checks are made. If a blank space is left or the passwords do not match, the recording will be stopped with an error. If an error is not received at this stage, the previous registration status is reviewed with the username and e-mail address. If no error is encountered here, the user's record is created.
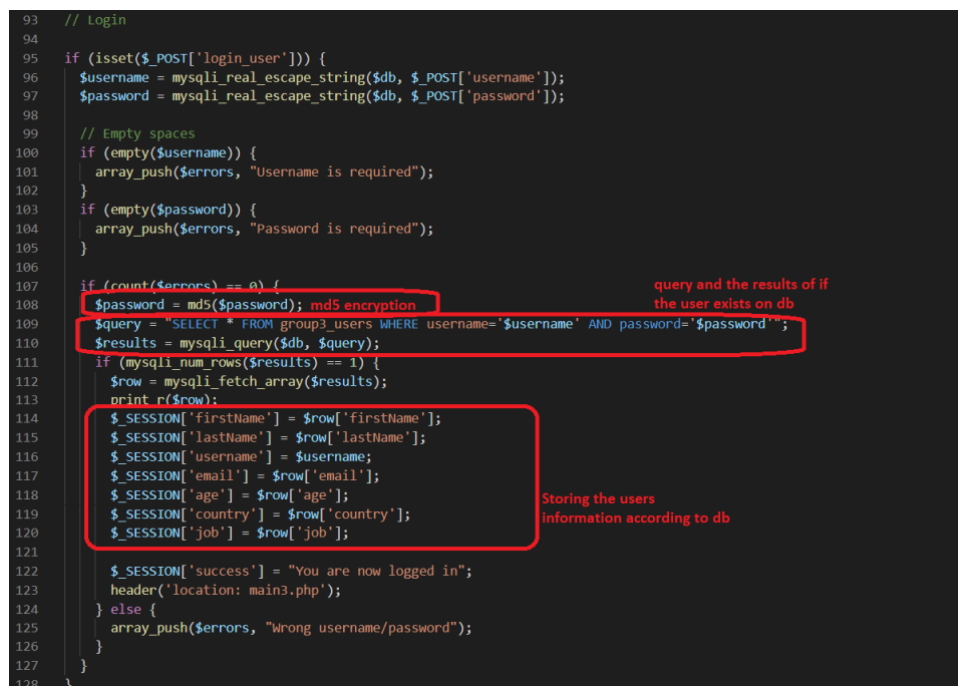

Figure 4.2. Database Part 2

During login, it is checked whether the username and password entered by the user match the database. If found, the user's data is retrieved from the database.
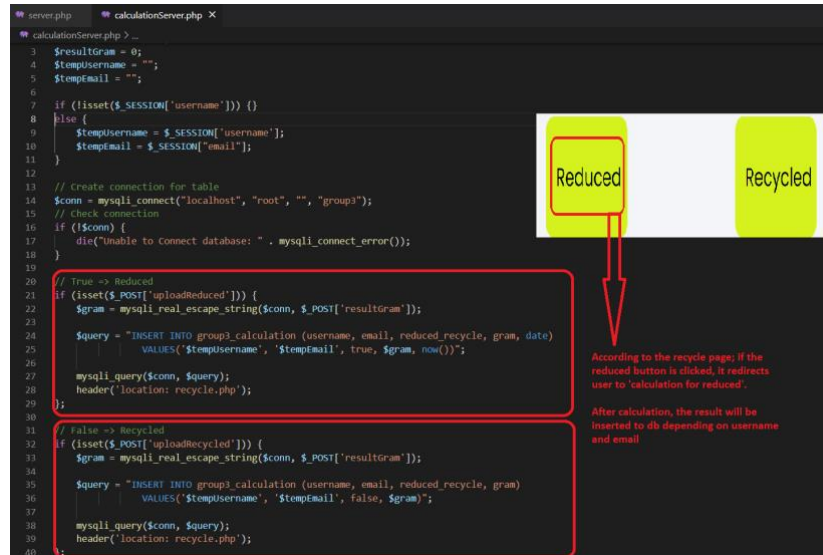

Figure 4.3. Database Part 3

When the user enters the Recycle Page, the user is greeted by 2 buttons. By selecting one of these buttons, calculations are made, and database registration is performed.
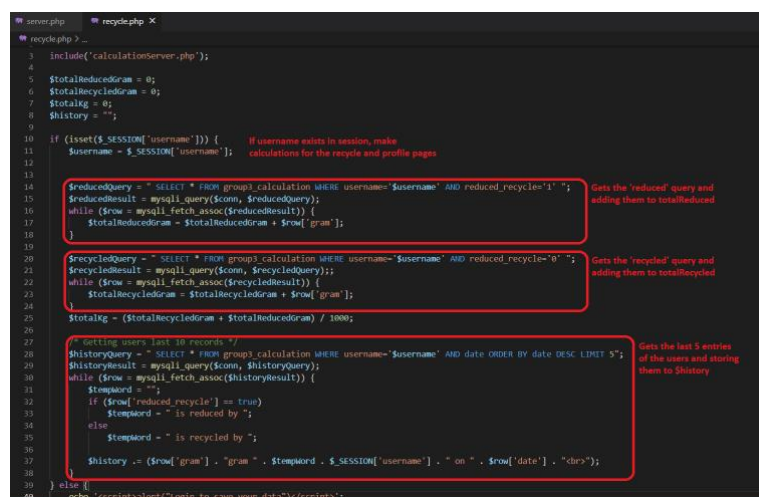

Figure 4.4. Database Part 4

Old data is kept on the Recycle page and profile. For this, the reduce and recycle states are taken from the database and the user is informed according to their past behavior.

5. Conclusion

The purpose of this project is to raise individuals who are more sensitive to the environment. Thanks to the website, it will be possible to reduce the use of plastic and to use products that will support nature instead of plastic products that we frequently use in daily life. Thanks to the different pages on the website, different footnote information is given to the user, and alternative products are shown. In addition, the calculation of how much of each product is reduced and how much it affects the environment is shown. In the creation of this website, HTML, CSS, JS, and PHP were used.

6. References

For "Did You Know?" and "How can we be Eco-friendly at campus?" sections:
 https://earth911.com/inspire/eco-friendly-sustainable-at-university/

https://www.forbes.com/sites/trevornace/2017/07/26/million-plastic-bottles-minute-91-not-recycled/?sh=7b6b8197292c

https://www.planet.veolia.com for Figure8.

https://timelines.issarice.com/wiki/Timeline_of_recycling for Figure9.

https://mason.gmu.edu/~mvance2/analysis.html for Figure10.

Doodles used in this website are taken from Canva (https://www.canva.com).