

DrQuizz- Medical Webapp

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Abstract

This project aims to introduce a user-friendly and affordable application for non-invasive health assessments, focusing on visual capacity, color discrimination, and auditory acuity. The application provides individuals with a convenient means to monitor and raise awareness about essential aspects of their health. Through this tool, users can efficiently track their health conditions, promoting proactive healthcare practices. The project's significance lies in offering a practical solution for individuals to assess key health indicators easily.

Keywords: *Health assessment, visual capacity, color discrimination, auditory acuity, proactive healthcare.*



Introducere

This application provides an innovative platform for users to assess key aspects of their health such as visual capacity, color discrimination, and auditory acuity. By facilitating these evaluations, the application plays a crucial role in enhancing users' awareness and ongoing monitoring of their health conditions in a manner that is both efficient and user-friendly.

The primary objective of this project is to deliver a non-invasive, accessible, and affordable method for individuals to engage with essential health metrics. This proactive approach not only empowers users to manage their health more effectively but also supports early detection and intervention for potential health issues, ensuring better health outcomes and increased quality of life.

1. Application features

1.1. Account Management:

This feature allows new users to create an account and provides the option for already registered users to log in to their existing accounts (user, doctor, admin), granting access to the platform.



Fig 1. Log-in form
 Author: Lenard Nagy

1.2. Completing the tests (user):

The logged-in user can choose from three distinct tests to complete, after which they will receive the results, that will be stored.

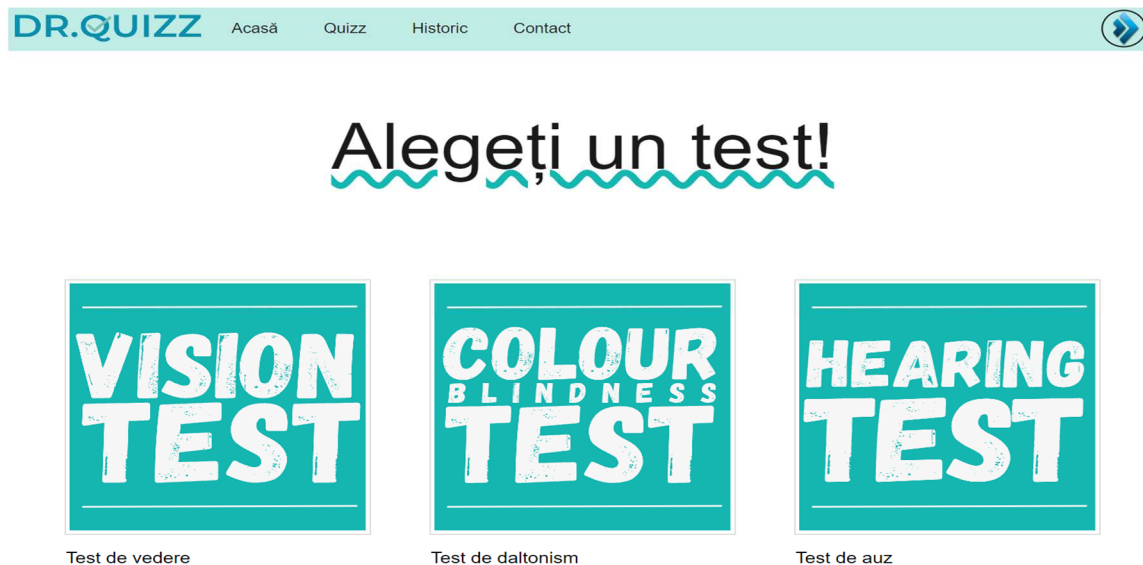


Fig 2. Test selection
 Author: Lenard Nagy

1.3. History (user):

Each completed test will be saved in a history log, which can be accessed and viewed by the account holder. Here, the results will be displayed both in tables and visually on an interactive and dynamic graph.

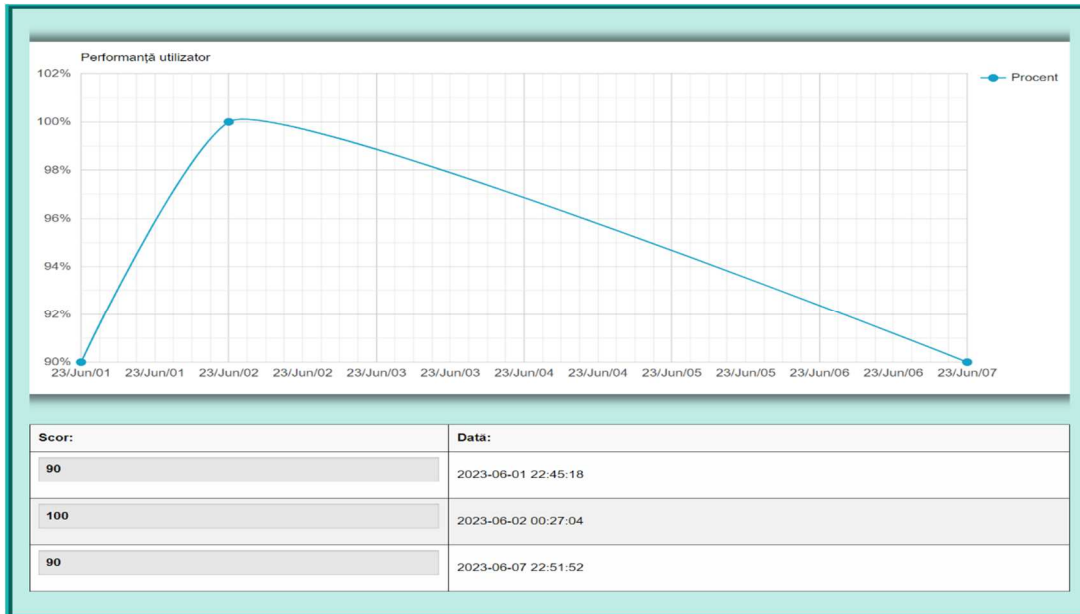


Fig 3. Test results
Author: Lenard Nagy

1.4. Message Reading (user):

In specific cases, a "doctor" type account can send a one-way message to a patient for the purpose of reviewing the results.

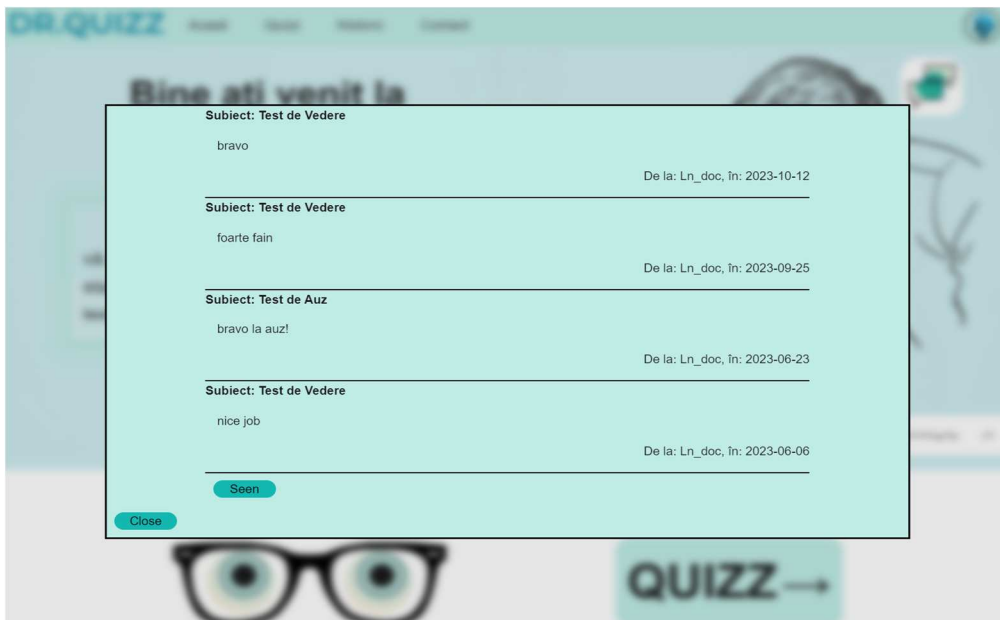
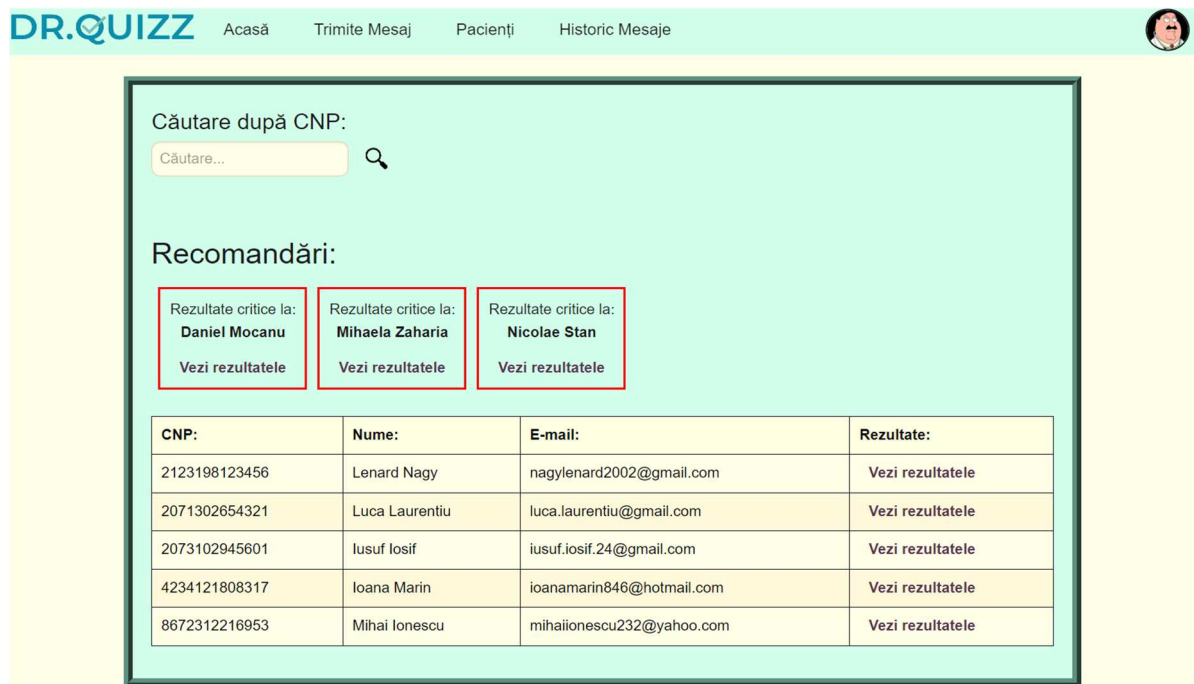


Fig 4. Messages
Author: Lenard Nagy

1.5. Patient search and Recommendation system (doctor):

Doctors can search for any user-type account within the platform using the patient's personal identification number (CNP).

Additionally, the system recommends three patients who have shown poor performance in their assessments, allowing doctors to prioritize their review and intervention.



DR. QUIZZ Acasă Trimite Mesaj Pacienți Historic Mesaje

Căutare după CNP:

Căutare... 🔍

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Fig 5. Patient Search and Recommendation System

Author: Lenard Nagy

1.6. Viewing and editing patients results (doctor):

After searching for a specific patient, the doctor has the ability to view their results. If any results are found to be suspicious, fraudulent, or abnormal, they can be edited or completely deleted. (See [Pic 3](#))

1.7. Messaging (doctor):

It provides the option to send a message to a specific "user" after reviewing their test results giving them valuable feedback.

Fig 6. Message Sennding
 Author: Lenard Nagy

1.8. Editing & Viewing messaging history (doctor)

After successfully sending a message, the doctor can view the sent messages and being able to edit or delete them.

CNP:	Data:	Topic:	Mesaj:	Acțiune:
21231023333333	2024-04-16 19:35:07	Test de Auz	Rezultate frumoase!	Modifică Șterge
10731899876543	2024-01-09 00:54:15	Test de Vedere	bravo la vedere!	Modifică Șterge
10731891234567	2024-01-05 19:54:44	Mai Multe	Rezolva testele!	Modifică Șterge

Fig 7. Message editing
 Author: Lenard Nagy

1.9. Search/View/Edit all existing accounts (admin):

The admin can search for any type of user within the application using their personal identification number (CNP).

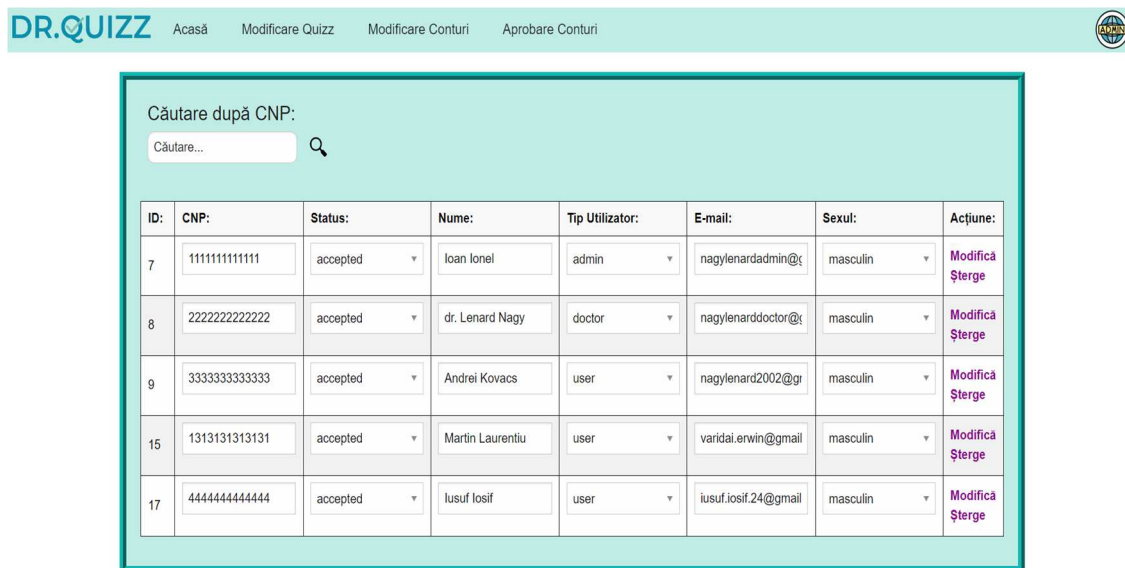


Fig 8. Account Editing
Author: Lenard Nagy

1.10. Account approval (admin):

Every new user who creates an account will be placed on a waiting list. The admin is responsible for either confirming or rejecting the respective account.

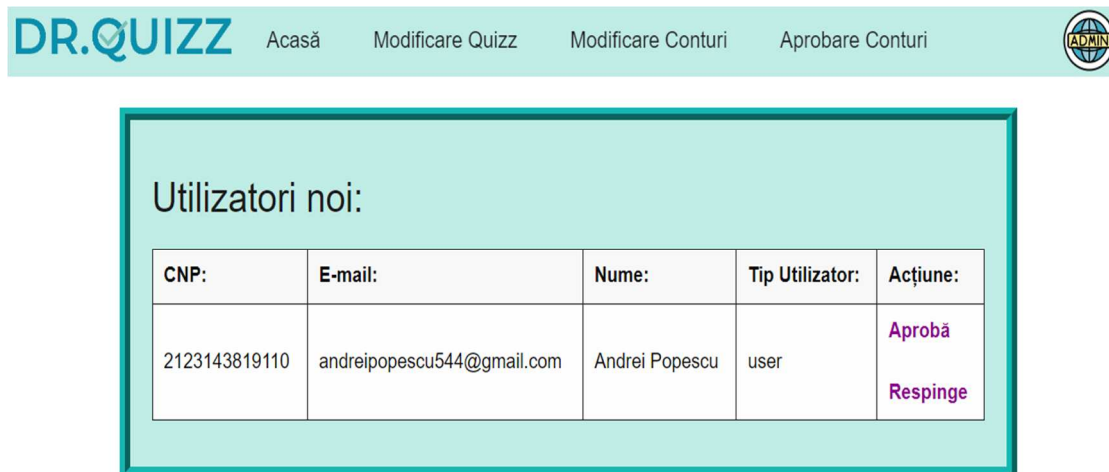


Fig 9. Account Confirmation
Author: Lenard Nagy

1.11. Edit existing tests (admin):

The admin has the capability to edit the color blindness test and the hearing test. They can add various color images to the color blindness test and different frequency sounds to the hearing test.



Fig 10. Quiz Editing
Author: Lenard Nagy

1.12. Viewing/Editing Personal Account and Profile Picture Upload (common)

Every user type can access and edit their personal account information, including email, username, gender, and password. Additionally, users have the option to upload a profile picture, with a default profile picture provided until this feature is utilized.



Fig 11. Personal Account Editinng
Author: Lenard Nagy

2. Technologies

2.1.2 Introduction for the technologies

At the core of our web application lies a comprehensive and well-rounded technological stack that includes HTML5, CSS3, PHP, JavaScript, SQL, and Python—each serving a distinct purpose to ensure a seamless and robust application.

HTML5 and CSS3 are employed to manage the front-end, creating an engaging and visually appealing user interface that enhances user experience.

JavaScript plays a vital role in enriching user interactivity with dynamic, making the application more responsive and intuitive for users.

PHP is utilized for managing server-side processes and facilitating robust database interactions, while JavaScript significantly enhances user interactivity with dynamic content and real-time updates.

SQL plays a crucial role in efficient and secure data storage and retrieval, forming the backbone for our database needs. It ensures that all health assessment data is handled with integrity, supporting complex queries and large data operations with ease.

Incorporating Python into our stack, we harness its capabilities for a sophisticated recommendation system using artificial intelligence. Python analyzes patient data to identify those requiring priority attention, efficiently utilizing libraries like Pandas and scikit-learn for robust data analysis and machine learning, enhancing the application's predictive accuracy.

2.2. HTML5 & CSS3

Motivation:

The web application is meticulously crafted using HTML5 and CSS3 to ensure a seamless user experience. HTML5, with its enhanced semantic elements, contributes to a meaningful page structure, optimizing accessibility and search engine visibility. Meanwhile, CSS3 provides advanced styling options and responsive design capabilities, creating an aesthetically pleasing and user-friendly interface. The widespread support for HTML5 and CSS3 across modern browsers guarantees a consistent experience for all users.

2.3. JavaScript

Motivation:

JavaScript is a client-side scripting language that brings dynamism and interactivity to the application. Operating on the client side, it minimizes the need for server requests, enhancing the overall user experience. The support for asynchronous operations enables the application to fetch and update data without requiring page refreshments. Furthermore, JavaScript enjoys universal support across major browsers, ensuring cross-browser compatibility.

2.4. PHP

Motivation:

PHP is a server-side scripting language that plays a pivotal role in the application's functionality. It facilitates server-side processing, handling tasks such as form data processing, interaction with databases, and dynamic content generation. Its seamless integration with databases is particularly beneficial for managing

user data and health assessments. The active PHP community ensures a wealth of resources and support for developers.

2.5. MySQL (Structured Query Language)

Motivation:

MySQL is crucial for efficient database management within our application. As a powerful relational database language, it is fundamental in securely storing and retrieving health assessment data. SQL's robust features, including constraints, transaction control, and relational database capabilities, ensure comprehensive data integrity and consistency.

These features enable accurate and reliable data operations, which are essential for maintaining the privacy and security of sensitive health-related information.

Additionally, SQL's scalability supports complex queries and large datasets, making it indispensable in managing the extensive data needs of a healthcare application. This solid foundation allows for precise data analysis and reporting, enhancing the overall functionality and reliability of the system.

2.6. Python

Motivation:

Python drives the server-side functionality of our application. It facilitates the deployment of sophisticated recommendation algorithms that accurately identify patients requiring urgent medical attention. Python's robust capabilities enable the implementation of complex machine learning models that are trained on comprehensive real-world datasets. These models are then used to predict potential health abnormalities with high precision, ensuring that doctors can proactively address patient needs.

Conclusion

The development of this web application represents a significant advancement in making essential health assessments—such as vision tests, color blindness tests, and hearing tests—accessible from home. The project simplifies access to crucial health information while utilizing a robust technological framework.

HTML5 and CSS3 create a smooth, visually appealing user interface, while JavaScript adds dynamic, interactive features. PHP manages server-side processes and database interactions efficiently, supported by SQL for secure and swift data handling.

The integration of Python enhances the application's capabilities through a recommendation system that uses artificial intelligence to analyze patient data. By employing libraries like Pandas and scikit-learn, Python helps identify at-risk patients early, offering a proactive approach to health management.

Overall, this application leverages a combination of HTML5, CSS3, JavaScript, SQL, PHP, and Python to cater to diverse health monitoring needs, enhancing user experience and health management effectiveness. It exemplifies how technology can integrate into healthcare to improve accessibility and preventive care.

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