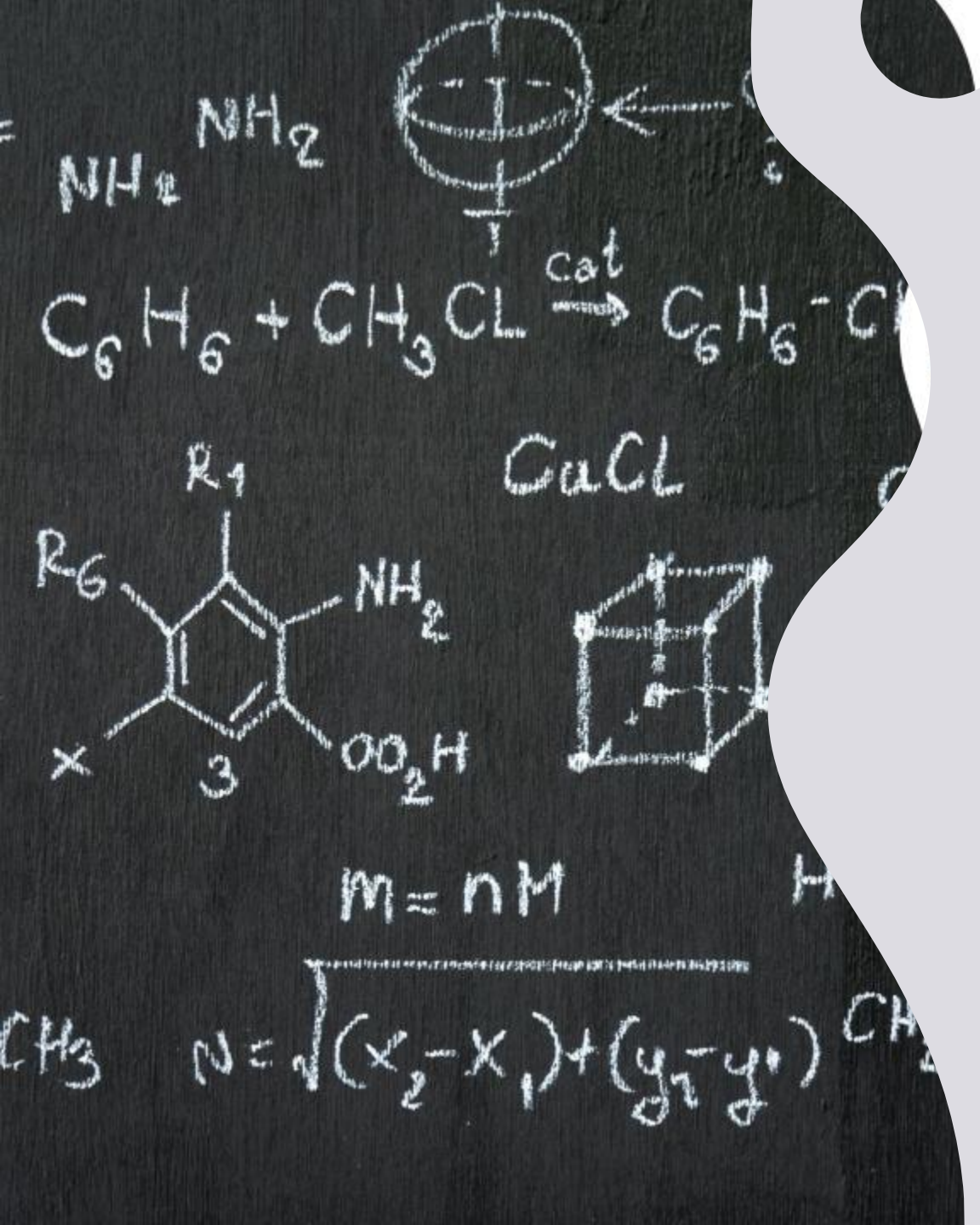

MatheMedica Python Library Project

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Introduction

The **MatheMedica** Python library is an integrated toolkit designed to provide solutions for both mathematical and medical computations.

This project reflects a multifaceted approach to problem-solving by addressing common mathematical and healthcare needs within a single software solution.

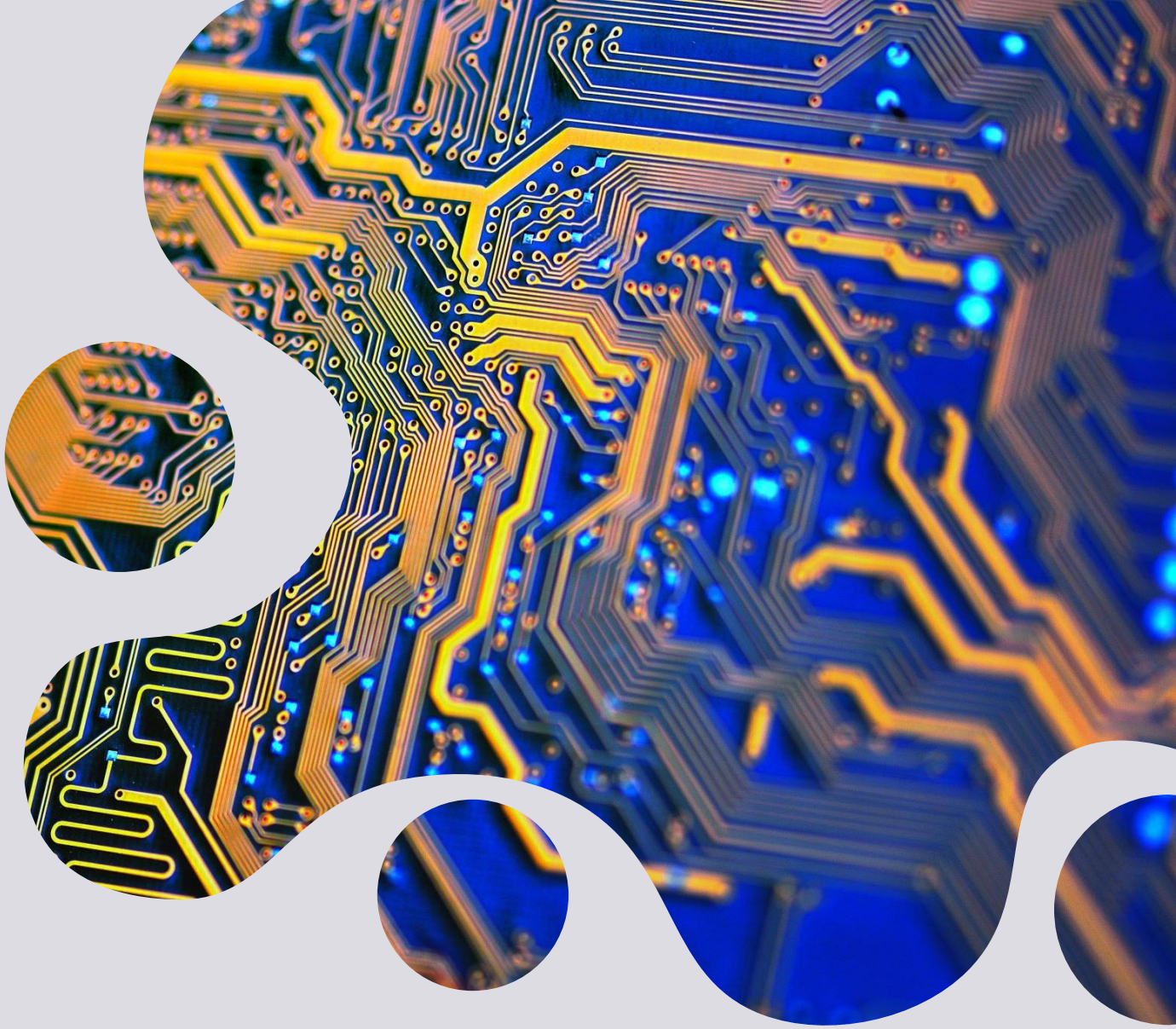
The library comprises a comprehensive collection of functions categorized into Mathematical Functions and Medical Functions, ensuring versatility and usability across diverse applications.

Project Objective

The primary objective of this project was to develop a reusable Python library that simplifies complex mathematical and medical calculations.

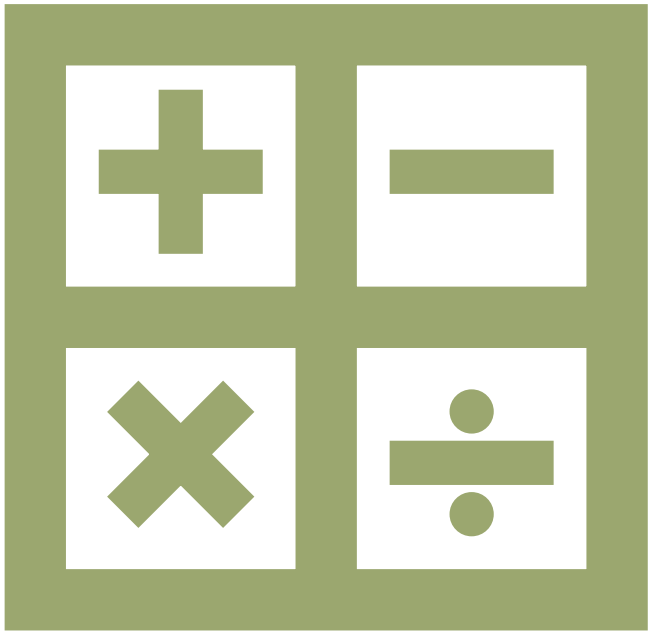
It aims to assist students, researchers, and healthcare professionals by automating repetitive tasks, ensuring accurate results, and promoting efficient data processing.

Features and Functionalities



Mathematical Functions

- Pascal's Triangle (regular and reversed)
- Matrix operations (addition, subtraction, multiplication)
- Prime number verification
- Area and volume calculations for various geometric figures
- Armstrong and perfect number checks



Mathematical Functions

Palindrome detection

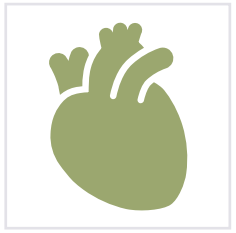
Permutations and combinations

Divisor and GCD calculations

Fibonacci series (both forward and reversed)

Mean, median, and mode computations

BMI and body fat percentage calculations



Glucose, blood pressure, and oxygen level tracking

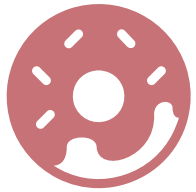
Cholesterol and protein level analysis

Sleep quality and hydration evaluation

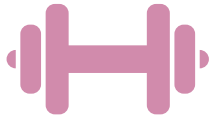
Medical Functions

Iron and fiber intake recommendations

Growth and kidney health checks



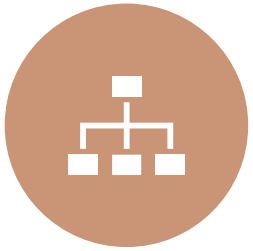
Basal Metabolic Rate (BMR) and carbohydrate requirements



Menstruation advice and muscle strength evaluation

Medical Functions

The project was implemented in Python, utilizing standard libraries and adhering to modular design principles.



Each function is independent and follows a clear, logical structure to enhance readability and maintainability.

Implementation Details

Use Cases

Educational Purposes

The mathematical tools can aid students in solving complex problems, learning programming, and understanding algorithms.

Healthcare Applications

The medical functions provide an accessible resource for tracking health metrics and offering preliminary health advice.

Example Functionality

BMI Calculation: Determines the BMI category based on weight and height, offering actionable insights for healthcare users.

Matrix Multiplication: Facilitates mathematical computations for users in data science and academic research.

Example Code

codes.py > ...

```python
import mathemedica as mm

matrix1 = [[1, 2, 3, 4],
           [5, 6, 7, 8],
           [9, 10, 11, 12]]
matrix2 = [[1, 2],
           [3, 4],
           [5, 6],
           [7, 8]]

result = mm.times_matrices(matrix1,matrix2)

print("Result Matrix is:")
for row in result: print(row)

```

PROBLEMS 38 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH E

```
PS D:\project> & C:/Users/ahmdf/AppData/Local/Programs/Python/P
Result Matrix is:
[50, 60]
[114, 140]
[178, 220]
PS D:\project>
```

codes.py > ...

```python
import mathemedica as mm

weight = 70  # kg
height = 175  # cm
age = 25  # years
gender = "male"
activity_level = "moderate"

# Calculate BMR
bmr, bmr_rating = mm.check_BMR(weight, height, age, gender)

# Calculate carbohydrates
carbs = mm.calculate_carbohydrates(bmr, activity_level)

print(f"  Weight: {weight} kg, Height: {height} cm, Age: {age}
print(f"  Activity Level: {activity_level}")
print(f"  BMR: {bmr:.2f}, Rating: {bmr_rating}")
print(f"  Daily Carbohydrates Needed: {carbs:.2f} grams")

```

PROBLEMS 38 OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR SPELL CHECKER

```
  Weight: 70 kg, Height: 175 cm, Age: 25 years, Gender: male
  Activity Level: moderate
  BMR: 1724.05, Rating: Average BMR
  Daily Carbohydrates Needed: 334.04 grams
PS D:\project>
```

End Points

The MatheMedica library is a robust and versatile tool, bridging the gap between mathematical computations and medical analysis.

It represents a significant step in integrating diverse functionalities within a single software package, offering utility and efficiency to its users.

Thank You