PT2 PROJECT

Presented by Group Helios

OUR TEAM

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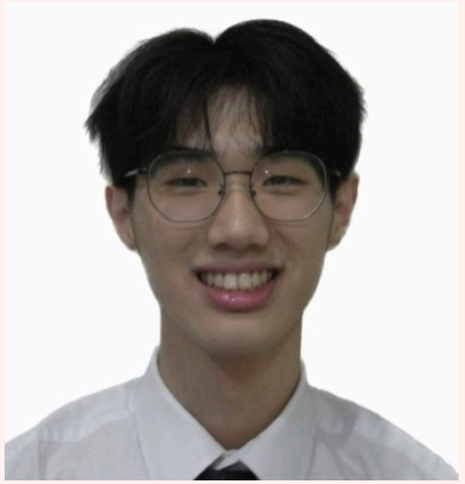


Tan Jian Ming

1.0 INTRODUCTION

- Rapid urbanization and industrialization have led to an energy crisis due to increased energy demand.
- Non-renewable energy sources are depleting, necessitating the need for sustainable solutions.
- Renewable energy sources, particularly solar panels are an effective way to address this issue.
- This project aligns with the 7th Sustainable Development Goal, aiming to provide clean and affordable energy.
- The system will help users of solar panels make informed decisions by forecasting performance and providing analytical data.

2.0 PROBLEM BACKGROUND

1. High upfront cost of installing solar panels is a barrier for many homeowners.

2. Challenges in managing energy optimally and maintaning the solar panels.

3. Lack of understanding about the long-term financial benefits and energy savings.

2.1 PROPOSED SOLUTION

1. Development of a user-friendly system to create tailored installment plans.

2. Tools to measure and monitor energy savings, helping users understand the financial benefits.

3. Automated energy management to prioritize solar energy use and reduce reliance on the grid.

4. Regular maintenance reminders to ensure optimal performance of the solar panels.

3.0 OBJECTIVES

1. Energy Monitoring and Management

- Accurate calculation of energy output to monitor solar panel performance.
- Identification of potential issues for timely repairs and improvements.
- Maximizing return on investment and ensuring long-term reliability.

2. Environment Impact Assessment

- Evaluating the environmental benefits of solar energy production.
- Contribution to climate change mitigation by reducing greenhouse gas emissions.

3. Financial and Return of Investment Analysis

- Providing data on energy savings and financial returns.
- Helping users determine the financial viability of their solar panel investment.

4.0 SCOPES

1. Energy Monitoring and Management

- Providing actionable data on energy production and effiency.
- Involving users in maintaining optimal conditions for their solar panels.

2. Environment Impact Assessment

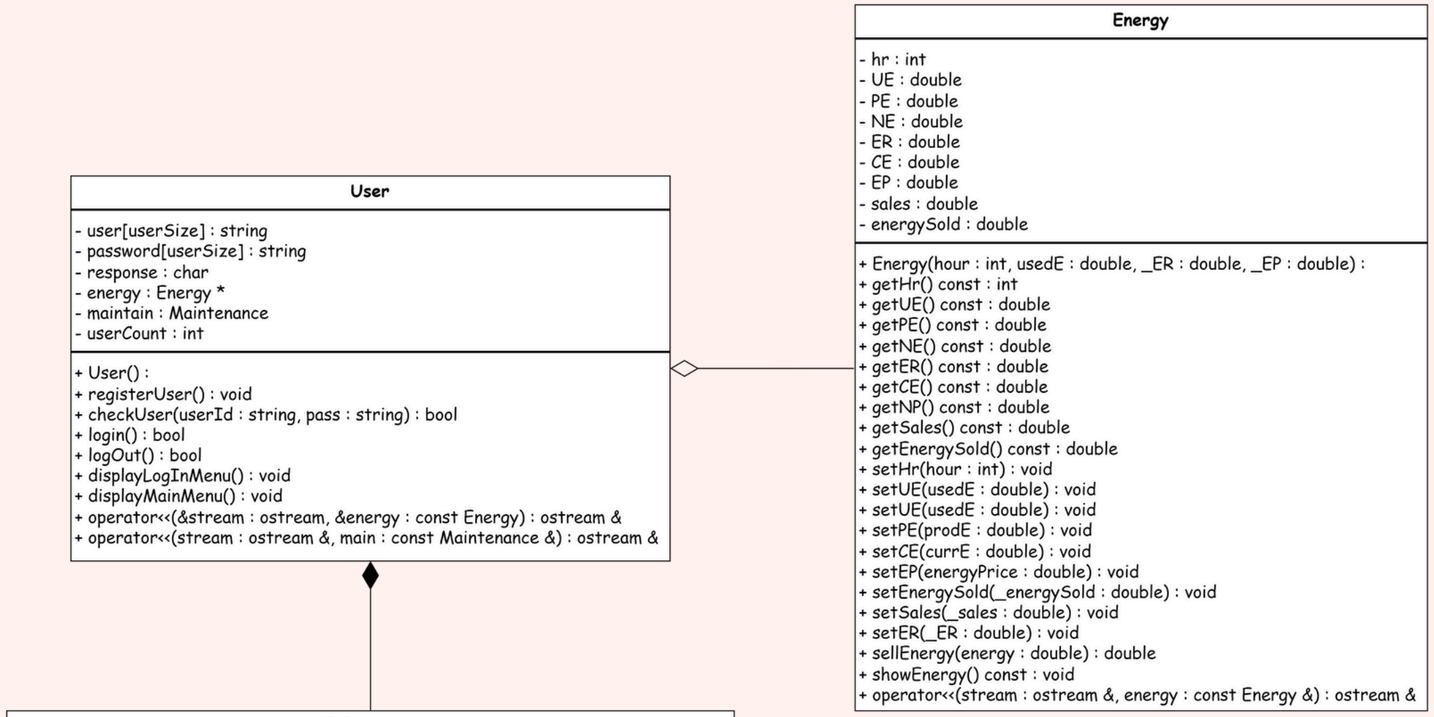
- Analyzing energy production data to quantify environmental impact.
- Reducing carbon footprint through clean and sustainable energy generation.

3. Financial and Return of Investment Analysis

- Detailed information on energy output and financial savings.
- Tracking the time required to recoup initial investment and ongoing benefits.

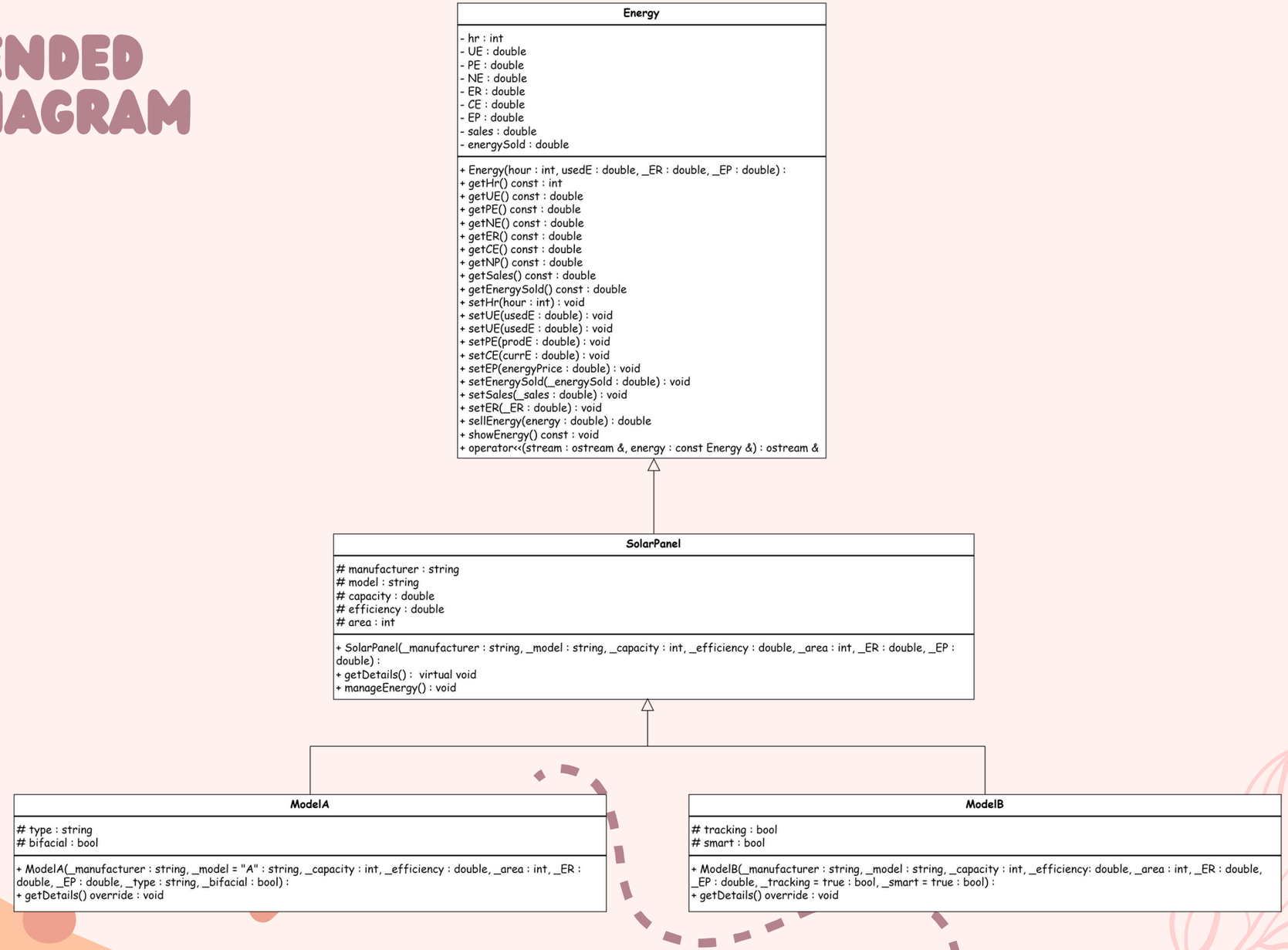
5.0 CLASS DESIGN

5.1 CLASS DIAGRAM (ASSOCIATION, AGGREGATION AND COMPOSITION



5.0 CLASS DESIGN

5.2 EXTENDED CLASS DIAGRAM



KEY FEATURES

1. USER REGISTRATION
2. USER LOGIN
3. SOLAR PANEL INFORMATION
4. ENERGY MANAGEMENT
5. ENERGY MONITORING
6. INSTALLMENT CALCULATOR
7. MAINTENANCE MANAGER
8. USER LOGOUT

6.0 BENEFIT AND SUMMARY OF THE PROPOSED SYSTEM

1. Comprehensive Energy Monitoring

- **Real-Time Data Tracking :** Our system provides real-time tracking of energy production, comsumption and efficiency.
- **User Engagement :** Users can actively monitor and manage ther energy usage, ensuring optimal performance of thier solar panels.
- **Maintenance Alerts :** The system notifies users of any maintenance needs, preventing downtime and maintaining effiency

2. Environment Impact Assessment

- **Carbon Footprint Reduction :** By utilizing solar energy, users contribute to lowering greenhouse gas emissions.
- **Sustainability :** The system supports sustainable energy practices by providing detailed analysis of energy production and its environmental benefits.
- **Awareness and Action :** Users are informed of their positive impact on the environment, promoting eco-friendly practices.

3. Financial and ROI Analysis

- **Cost Savings:** Users can see significant savings on energy bills by reducing reliance on the grid and selling excess energy.
- **Investment Tracking:** The system helps users track the return on investment, showing how quickly the initial costs are recovered.
- **Economic Insights:** Detailed financial analysis aids in making informed decisions about energy usage and future investments.

CONCLUSION

IN THIS PROJECT, WE DEVELOPED A COMPREHENSIVE SOLAR PANEL SYSTEM DESIGNED TO MAKE SOLAR ENERGY MORE ACCESSIBLE AND EFFICIENT FOR HOMEOWNERS. OUR SYSTEM INCLUDES FEATURES SUCH AS INSTALLMENT PLANS, REAL-TIME ENERGY MONITORING, AND AUTOMATED MAINTENANCE ALERTS. THESE INNOVATIONS AIM TO LOWER THE FINANCIAL BARRIERS TO SOLAR ENERGY ADOPTION AND ENSURE USERS CAN MAXIMIZE THEIR ENERGY SAVINGS AND ENVIRONMENTAL BENEFITS.

CHALLENGES FACED

THROUGHOUT THE PROJECT, WE ENCOUNTERED SEVERAL CHALLENGES. ONE MAJOR CHALLENGE WAS DESIGNING A USER-FRIENDLY INTERFACE THAT EFFECTIVELY COMMUNICATES COMPLEX ENERGY DATA. ENSURING THE ACCURACY OF ENERGY PREDICTIONS AND INTEGRATING THE SYSTEM WITH EXISTING SOLAR PANEL SETUPS ALSO POSED DIFFICULTIES. ADDITIONALLY, EDUCATING USERS ON THE LONG-TERM FINANCIAL BENEFITS OF SOLAR ENERGY REQUIRED CLEAR AND PERSUASIVE COMMUNICATION.

LESSON LEARNED

FROM THIS EXPERIENCE, WE LEARNED THE IMPORTANCE OF USER-CENTRIC DESIGN AND THE NEED FOR CLEAR, ACCESSIBLE INFORMATION. WE DISCOVERED THAT INTEGRATING TECHNOLOGY WITH RENEWABLE ENERGY SOLUTIONS CAN SIGNIFICANTLY ENHANCE THEIR EFFECTIVENESS AND ADOPTION. FURTHERMORE, THE PROJECT EMPHASIZED THE VALUE OF CONTINUOUS LEARNING AND ADAPTATION IN OVERCOMING TECHNICAL AND DESIGN CHALLENGES.

THANK YOU