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**TITLE OF PROJECT REPORT**

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**BACHELORS**

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Submitted to the Department of Software Engineering of Foundation University Islamabad, in partial fulfilment for the requirements of a Bachelor of Computer Degree in Software Engineering

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Any dedication should be given here. Paragraph Justified.

**ACKNOWLEDGEMENTS**

All acknowledgements are here in justified paragraph.

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It is certified that Project titled **“IESA”,** presented on \_\_17 Dec,2024\_\_\_, has been duly approved by the evaluation committee.

|  |  |
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**ABSTRACT**

The Intelligent Energy Scenario Analysis (IESA) system is an AI-driven software solution designed to analyse, forecast, and optimize energy Related scenarios. The system focuses on both gas and electricity usage, enabling energy planners, IT administrators, and data operators to make informed decisions. IESA integrates historical data visualization, predictive modelling, and scenario-based analysis to address the increasing demand for energy efficiency and sustainable practices. Using advanced algorithms such as WisRule for cognitive association and Linear Regression predictive insights, the system allows users to evaluate multiple energy scenarios by adjusting variables like production capacity, imports, and consumption trends. The results are presented in user-friendly dashboards, enabling clear and actionable insights.

The project concludes that IESA is a DSS (Decision Support system), that provides a scalable and cost-effective solution for energy management, with significant potential for applications at regional and national levels. Findings include precise energy consumption predictions, and tailored recommendations for energy savings. The ability to evaluate multiple scenarios and compare outcomes allows decision-makers to select optimal strategies for energy resource planning.

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**LIST OF ABBREVIATIONS**

# TITLE OF CHAPTER

* 1. **Introduction**

The introduction to this chapter given as an overview.

* 1. **Existing System**

Give your text here [1]. All text must be in double line spaced justified font of size 12 and Times New Roman family.

Paragraphs can be included within a heading. All headings must be numbered.

* 1. **Literature Review**

Literature review goes here?

* 1. **Problem Definition**

Project problem statement goes here

Chapter 2

# TITLE

* 1. **Introduction**

Introduction to this chapter.

* 1. **Components of A Context Aware System**

Figure 2.1 describe a system. Notice the captions and the font. Figure number should be chapter number.fig number.



**Figure 2.1:** Architecture of a Context Aware System

* 1. **Heading**

Notice how to number sub headings

* + 1. **Sub Heading 1**

This is a sub heading.

* + 1. **Sub Heading**

This is a sub heading.

* + 1. **Sub Heading**

This is a sub heading.

* + 1. **Sub Heading**

This is a sub heading.

Chapter 3

# TITLE

2. 1. **Introduction**

This chapter refers to the requirement and specifications of IESA. Specifications include Functional Requirements, Quality Attributes, and Non-Functional Requirements of IESA. The purpose of this chapter is to give a deep understanding of the requirements, specification and functionality of product

* 1. **Functional Requirements**

|  |  |  |
| --- | --- | --- |
| ID | Description | Feature |
| FR01 | The system shall allow user to input historical data in form of csv/xml. | FT01 |
| FR02 | The System shall store input data in database. | FT02 |
| FR03 | The System shall extract data from database clean it and prepare it and load it into system | FT03 |
| FR04 | The system shall analyze historical data and generate patterns for different energy scenarios. | FT04 |
| FR05 | The system shall use WisRule, K mean cluster, Linear Regression and other algorithms to predict future energy related scenarios. | FT05 |
| FR06 | The system shall visualize both historical data, different scenarios and predicted data on dashboard using graphs and charts. | FT06 |
| FR07 | The system shall allow to share and print reports both in hard and soft form. | FT07 |
| FR08 | The system shall provide user with recommendations for future decision based on historical and predicted data. | FT08 |

* 1. **DFD level 0**

**Actors:**

* Energy Planner
* Input Entry Operator

A diagram of a system

Description automatically generated

**Figure 3.3.1: Data flow Diagram level 0**

* 1. A screenshot of a computer

     Description automatically generated**Graphical User Interface**

**Figure 1: IESA main Dashboard**

A screenshot of a computer

Description automatically generated

A graph of blue squares

Description automatically generated with medium confidence**Figure 2: Electricity Dashboard**

Figure 3: **Natural Gas Dashboard**

* 1. **Non-Functional Requirements**

***Table 4.1: Table for Nonfunctional Requirements***

|  |  |  |
| --- | --- | --- |
| ID | NFR | Statement |
| NFR01 | Response Time | The system should generate energy scenario report with in 15 seconds after user input’s data. |
| NFR02 | Performance | The system should be able to handle up to 10 parallel user without and performance degradation. |
| NFR03 | Availability | The system should be available for user’s 24/7 |
| NFR04 | Ease of use | Thes system should allow user to perform most of the functionality within 5 minutes of first use |
| NFR05 | Maintainability | The system should be modular and well documented with easily updateable and maintainable components |

# TITLE

2. 1. **Introduction**

Chapter 5

# TITLE

3. 1. **Introduction**

Chapter 6

# CONCLUSION

1. 1. **Introduction**
      1. **Overview of the Project and Product**
      2. **Contribution and Originality**

How is your system different from others? What is new in it?

* 1. **Conclusion**
     1. **Benefits**

Advantages of your system.

* + 1. **Limitations**
  1. **Future Work**

# BIBLIOGRAPHY

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