**Major Project Report Format**

After completion of the project work, every student will submit a project report which should contain the following:

1. Cover Page (as per given in this file at on page-3)
2. Acknowledgment (as per given in this file at on page-4)
3. Certificate (as per given in this file at on page-5)
4. Abstract (It should be in one page and include the purpose of the study; the methodology used and a summary of the major findings.)333999
5. Table of Contents (as per annexure 4): Detailed description of the project (This should be split in various chapters/sections with each chapter/section describing a project activity in totality). This portion of report should contain all relevant diagrams, tables, flow charts, software programme, print outs, photographs etc., which are properly labelled.
6. Conclusion & Recommendations
7. Appendices

* Appendices are provided to give supplementary information, which if included in the main text may serve as a distraction and cloud the central theme.
* Appendices should be numbered using Arabic numerals, e.g. Appendix 1, Appendix 2.
* Appendices shall carry the title of the work reported and the same title shall be listed in the Contents page also

1. **References (The listing of references should be typed 2 spaces below the heading “REFERENCES” in alphabetical order in single spacing left – justified. It should be numbered consecutively (in square [ ] brackets, throughout the text and should be collected together in the reference list at the end of the report. The references should be numbered in the order they are used in the text. The name of the author/authors should be immediately followed by the year and other details). Typical examples of the references are given below:**

**REFERENCES**

[1]. Ariponnammal, S. and Natarajan, S. (1994) ‘Transport Phonomena of SmSel – X Asx’, Pramana – Journal of Physics Vol.42, No.1, pp.421-425.

In addition, following points should be complied with:-

1. Page numbering
2. Numbering of appendices, figures and tables and their reference in the text.
3. For general layout of report, any standard text book layout may be referred.

**Report Specifications:**

1. Project Report’s Cover Type: Hard-bound
2. Color of Project Report Cover: Black only with golden alphabets [FOR HARD BINDING] / Black and White (FOR SPIRAL BINDING]
3. Number of Copies: To be informed soon
4. Paper Size (orientation): A4 (portrait)
5. Margins: 1” top / bottom / right and 1.5” left
6. Font Type: Times New Roman
7. Font Size: 16 bold for chapter names, 14 bold for headings and 12 for normal text
8. Line Spacing: 1.5 throughout
9. Page Numbering: Bottom center of page in the format – Page 1 of N

**NOTE:** Project report must not contain any description of the following except only a relevant and short mention – technology or platform or OS or tools used or any language details. It must be more focused on project work carried out and its implementation details without including any source code.

**Details of CD:**

CD of the project work is required to be pasted on the back cover of the project report in clear packet, which should include the following folders and contents:

1. **Presentation** (should include a PPT about project in not more than 40-50 slides)
2. **Documentation** (should include a word file of the project report)
3. **SourceCode** (full source code of the project with libraries used)
4. **Program** (final running copy of the project executable)
5. **Support** (any third party tools used or runtime environment setups that are required to run the project)
6. **Help** (user manual on how to run the project)

**NOTE:** CD must be checked for any harmful viruses before submission. Source Code and Program folders can be combined into single folder **Project** if it’s a web project etc.

**TITLE OF YOUR PROJECT**

**A MINOR PROJECT REPORT**

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF

THE DEGREE OF

**BACHELOR OF COMPUTER APPLICATIONS**

**SUBMITTED BY**

Abc Def (2015BTCSCXXXX)

Ghi Jkl (2015BTCSCXXXX)

Mno Pql (2015BTCSCXXXX)

**UNDER SUPERVISION OF**

Prof. Mnop Qrstu

Assistant Professor, Dept of CSE, SOET

April, 2023

****

**SCHOOL OF ENGINEERING & TECHNOLOGY**

**JAGRAN LAKECITY UNIVERSITY, BHOPAL (M.P.)**

**ACKNOWLEDGEMENT**

It is indeed a great pleasure to express my/our thanks and gratitude to all those who helped me/us during this period. This project would not have been materialized without the help from many quarters. I/We sincerely thank to all the persons who ever played a vital role in the successful completion of my/our project.

I/We sincerely thank all the people who co-operate and encourage me throughout the semester and make my project work successful.

I/We am/are thankful to **Dr.**/**Mr. /Mrs./Miss Abc** (Project Supervisor, Department of CSE, SOET) who has constantly remained helpful in suggesting directions and providing me guidance throughout the project.

I also thank **Mrs. Sweta Gupta** (Project Coordinator, Department of CSE, SOET) for providing me/us the confidence and helping us/me in the project.

Thank you to **Ms. Akrati Sharma** (Program Leader, Department of BCA, SOET) and **Dr. Dileep Kumar Singh** (Head, School of Engineering and Technology, JLU Bhopal) for providing this platform which helped in the development of my/our technical skills and opportunity to study and work here which added a lot my/our knowledge, experience, confidence, skills and real field awareness.

It is good fortune that I/We had support and well wishes of many. I/We thank all those, whose means have not appeared here but the contributions have not gone unnoticed.

**Signature of Student(s)**

Hijklm Nopq (2015BTCSCXXXX) Hijklm Nopq (2015BTCSCXXXX)

Hijklm Nopq (2015BTCSCXXXX)

**CERTIFICATE**

I/We hereby certify that the work which is being presented in the BCA minor project report entitled **“Title of your Project”,** in the partial fulfillment of the requirements for the award of the **Bachelor of Computer Application** is an authentic record of my/our own work carried out during session **Jan- April 2023** (**4th semester**) under the supervision of **Mr. Abc Def, Assistant Professor, CSE Department**. **SOET, JLU.**

The matter presented in this Project Report has not been submitted by me/us for the award of any other degree/diploma elsewhere.

**Signature of Student(S)**

Hijklm Nopq (2015BTCSCXXXX) Hijklm Nopq (2015BTCSCXXXX)

Hijklm Nopq (2015BTCSCXXXX)

This is to certify that the above statement made by the student(s) is correct to the best of my knowledge.

**Date:**

**Mr./Mrs./Miss. Abc Def**

Project Supervisor

Department of CSE, JLU-SOET

**Ms. Akrati Sharma**

Program Leader

Department of BCA, JLU-SOET

**Dr. Dileep Kumar Singh**

Head

JLU-SOET, Bhopal

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**ABSTRACT**

The proposed student management system can be used by education institutes to maintain the records of students easily. Achieving this objective is difficult using a manual system as the information is scattered, can be redundant and collecting relevant information may be very time consuming. You have to write the abstract in this manner All these problems are solved using this project. In this management system, students can see their information related to academics. An administrator can enroll a student, can update its information and can delete its information. The administrator can add edit and delete marks for the student. All the users can see the marks. Teachers can access this software to mark the attendance of the students. An Administrator can also add new teacher, update their information and can delete the information from the exiting database. The latest feature is that students can see the alumni’s information in just one click whenever they want to. Also students can check all the fee related information through proposed system.

***Keywords:*** Abc, Efg, Hij

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**LIST OF ABBREVIATIONS**

SRS Software Requirement Specification

WWW World Wide Web

HTML Hypertext Markup Language

CSS Cascaded style sheet

SQL Structured Query Language

**CHAPTER-1**

**INTRODUCTION**

**1.1 Problem Definition**

The real estate market is dynamic, influenced by various factors such as location, amenities, market trends, and buyer preferences. Predicting house values accurately is crucial for both sellers and buyers. This project aims to develop a robust house prediction model that leverages current trends and buyer preferences to provide accurate and data-driven property value estimations.

**1.2 Project Overview/Specifications**

The project involves creating a machine learning model capable of predicting house values based on a diverse set of features. These features may include but are not limited to:

- Location

- Size of the property

- Number of bedrooms and bathrooms

- Amenities and features (e.g., garage, swimming pool)

- Neighborhood characteristics

- Market trends and economic indicators

The model will be trained on a comprehensive dataset containing historical property information and corresponding values. The goal is to develop a model that not only accurately predicts house values but also adapts to changing market conditions.

**1.3 Hardware Specification**

Specify the hardware requirements for running the prediction model. This may include details about the CPU, RAM, and GPU if applicable. For example:

- CPU: Intel Core i7 or equivalent

- RAM: 16 GB

- GPU: NVIDIA GeForce GTX 1080 or equivalent

**1.4 Software Specification**

Outline the software requirements for developing and running the prediction model. This may include programming languages, libraries, and frameworks. For example:

- Programming Language: Python

- Machine Learning Libraries: Scikit-learn, TensorFlow, or PyTorch

- Data Analysis and Visualization: Pandas, Matplotlib, Seaborn

- Development Environment: Jupyter Notebook or any preferred IDE

**1.5 Methodology**

**1.5.1 Data Collection**

Detail the process of collecting the dataset for training the model. Specify the sources, types of data, and any preprocessing steps.

**1.5.2 Data Exploration**

Discuss how the dataset will be explored to understand patterns, correlations, and outliers. This may involve statistical analysis and data visualization.

**1.5.3 Model Development**

Explain the machine learning algorithms chosen for the prediction model. Describe the training process, feature selection, and hyperparameter tuning.

**1.5.4 Model Evaluation**

Define the metrics used to evaluate the performance of the model. This may include accuracy, precision, recall, or regression metrics depending on the nature of the problem.

**1.5.5 Conclusion**

Summarize the goals of the project and the expected outcomes. Discuss the potential impact of a successful house prediction model on both sellers and buyers in the real estate market. This is a broad outline, and you can further expand each section with more detailed information as needed for your specific project.

**CHAPTER-2**

**LITERATURE SURVEY**

**2.1 Existing System**

In the realm of house prediction models, various systems and approaches have been explored. Traditional real estate valuation methods often rely on factors such as location, square footage, and historical sales data. However, these methods may struggle to adapt to rapidly changing market trends and fail to capture the nuanced preferences of modern buyers. Additionally, conventional models may not effectively leverage the wealth of data available in the era of big data.

Machine learning (ML) and artificial intelligence (AI) have become increasingly popular in predicting house values. Existing ML models often incorporate features like property size, number of bedrooms and bathrooms, and location. Some models integrate more advanced features, such as sentiment analysis of neighborhood reviews or proximity to amenities. However, these models may lack the flexibility to adapt to emerging buyer preferences and changing market dynamics.

Challenges in existing systems include over-reliance on static features, a potential lack of interpretability, and limited adaptability to diverse and dynamic buyer behaviors. Moreover, some models may not effectively handle outliers or anomalies in the data, impacting the accuracy of predictions.

**2.2 Proposed System**

The proposed house prediction model aims to address the limitations observed in existing systems by leveraging current trends and aligning predictions with buyer preferences. Key aspects of the proposed system include:

- **Dynamic Feature Integration:** The model will incorporate dynamic features that reflect current market trends and buyer preferences. This may include real-time data on neighborhood developments, lifestyle trends, and other factors influencing purchasing decisions.

**- Buyer Behavior Analysis:** The system will employ advanced analytics to understand and predict buyer behavior. This includes analyzing online search patterns, social media sentiment, and other digital footprints to tailor predictions according to evolving buyer choices.

- **Adaptability to Market Changes:** The model will be designed to adapt quickly to changes in the real estate market. Machine learning algorithms will continuously learn and update based on new data, ensuring predictions remain relevant and accurate.

- **Interpretability and Explainability**: To build trust with users, the model will prioritize interpretability and explainability. Users will be able to understand why certain predictions are made, fostering transparency in the decision-making process.

**2.3 Feasibility Study**

The feasibility study assesses the practicality and viability of implementing the proposed house prediction model:

- **Technical Feasibility:** The model's technical requirements align with available hardware and software resources. The chosen machine learning libraries and frameworks are suitable for efficient development and deployment.

- **Operational Feasibility:** The model can seamlessly integrate into existing real estate workflows, providing value to both sellers and buyers. Stakeholders find the system user-friendly and beneficial to decision-making processes.

- **Economic Feasibility:** The development and implementation costs are justified by the potential benefits. The model offers a cost-effective solution for predicting house values, potentially leading to increased sales and customer satisfaction.

- **Legal and Ethical Feasibility:** The model complies with data protection regulations, ensuring the ethical and lawful use of user data. Privacy and security measures are implemented to protect sensitive information.

- **Schedule Feasibility:** The project timeline is realistic, accounting for development, testing, and deployment phases. Potential risks are identified, and contingency plans are in place to mitigate challenges.

**2.4 Conclusion**

The proposed house prediction model seeks to push the boundaries of traditional real estate valuation systems by embracing dynamic features, buyer behavior analysis, and adaptability to market changes. The feasibility study indicates that the model is not only technically feasible but also operationally, economically, and ethically viable. The subsequent stages of the project will focus on the development and implementation of this innovative model to provide accurate and timely predictions for the real estate market.

**CHAPTER-3**

**SYSTEM ANALYSIS & DESIGN**

**3.1 Requirement Specification**

##### Functional Requirements:

- \*\*Data Collection:\*\* Implement a mechanism to gather relevant data, including property details, market trends, and buyer preferences.

- \*\*Feature Extraction:\*\* Develop a process to extract key features from the collected data, such as property size, location, amenities, and current market conditions.

- \*\*Machine Learning Model:\*\* Design and implement a machine learning model that can predict house values based on the extracted features.

- \*\*Dynamic Feature Integration:\*\* Enable the model to dynamically integrate and adapt to current trends and buyer choices.

- \*\*User Interface:\*\* Create an intuitive user interface for buyers and sellers to input and retrieve information, making informed decisions.

##### Non-functional Requirements:

- \*\*Scalability:\*\* Ensure the system can handle a growing volume of data and users.

- \*\*Reliability:\*\* Build a robust system with minimal downtime to provide reliable predictions.

- \*\*Security:\*\* Implement measures to secure sensitive data, adhering to privacy and regulatory standards.

- \*\*Usability:\*\* Design an easy-to-use interface for both technical and non-technical users.

- \*\*Performance:\*\* Optimize the model for fast and efficient predictions, considering response times and resource utilization.

#### 3.2 Flowcharts / DFDs / ERDs

\*Flowchart:\*

```plaintext

Start

|

V

Data Collection --> Feature Extraction --> Model Training --> Prediction --> Display Results

|

V

End

```

\*DFD (Data Flow Diagram):\*

- Level 0: System overview with processes such as Data Collection, Feature Extraction, Model Training, and Prediction.

- Level 1: Detailed processes within each main process, illustrating data flow between them.

\*ERD (Entity-Relationship Diagram):\*

- Entities: User, Property, Market Trends

- Relationships: User interacts with the Property, Property influenced by Market Trends

#### 3.3 Design and Test Steps / Criteria

##### Design Steps:

1. \*\*Database Design:\*\* Create a structured database to store user data, property details, and market trend information.

2. \*\*User Interface Design:\*\* Design an intuitive interface for users to input data and receive predictions.

3. \*\*Machine Learning Model Design:\*\* Choose appropriate algorithms and design the model structure, ensuring it can adapt to dynamic features.

4. \*\*Integration of Dynamic Features:\*\* Develop mechanisms to continuously update the model with real-time market trends and buyer preferences.

##### Test Criteria:

1. \*\*Accuracy:\*\* Evaluate the accuracy of the prediction model using historical data and known outcomes.

2. \*\*User Interface Testing:\*\* Ensure the user interface is user-friendly and responsive.

3. \*\*Scalability Testing:\*\* Assess the system's performance under varying loads and data volumes.

4. \*\*Security Testing:\*\* Verify that sensitive information is adequately protected.

5. \*\*Adaptability Testing:\*\* Confirm the model adapts to new trends and buyer choices effectively.

#### 3.3 Algorithms and Pseudo Code

##### 3.3.1 Feature Extraction Algorithm:

```python

def extract\_features(property\_data, market\_trends):

# Extract relevant features from property\_data and market\_trends

features = []

features.append(property\_data['size'])

features.append(property\_data['location'])

features.extend(market\_trends['current\_trends'])

return features

```

##### 3.3.2 Machine Learning Model Training Pseudo Code:

```python

from sklearn.model\_selection import train\_test\_split

from sklearn.ensemble import RandomForestRegressor

def train\_model(training\_data):

# Split data into features and target

X = training\_data.drop('house\_value', axis=1)

y = training\_data['house\_value']

# Split data into training and testing sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Train a Random Forest Regressor model

model = RandomForestRegressor(n\_estimators=100, random\_state=42)

model.fit(X\_train, y\_train)

return model

```

#### 3.4 Testing Process

##### Unit Testing:

- Test individual components such as data collection, feature extraction, and model training with mock data.

##### Integration Testing:

- Verify the interaction between components, ensuring data flows seamlessly.

##### System Testing:

- Evaluate the overall system, including user interactions, data processing, and model predictions.

##### Performance Testing:

- Assess system performance under various loads to ensure scalability.

##### Security Testing:

- Validate the security measures in place to protect user and property data.

##### User Acceptance Testing (UAT):

- Obtain feedback from potential users to validate the system's usability and effectiveness in making accurate predictions.

### Conclusion

The system analysis and design phase lays the foundation for developing a robust house prediction model. By specifying requirements, designing effective workflows, and outlining testing criteria, the project is poised to move into the implementation phase with a clear roadmap for success.