**DEERWALK INSTITUTE OF TECHNOLOGY**

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**Tribhuvan University**

**Faculty of Humanities and Social Sciences**

**WATER LEVEL TRACKING DASHBOARD**

**A PROJECT REPORT**

**Submitted To:**

**Department of Computer Application**

**DWIT College**

***In partial fulfillment of the requirements for Bachelor’s in Computer Application***

Submitted By:

Bipashree Aryal

[TU Roll No]

**DWIT College**

**DEERWALK INSTITUTE OF TECHNOLOGY**

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**Tribhuvan University**

**Faculty of Humanities and Social Sciences**

**DWIT College**

# SUPERVISOR’S RECOMMENDATION

I hereby recommend that this project be prepared under my supervision by BIPASHREE ARYAL entitled **“WATER LEVEL TRACKING DASHBOARD”** in partial fulfillment of the requirements for the degree of Bachelor’s in Computer Application be processed for the evaluation.

…………………………………………

[Supervisor Name]

[Designation]

DWIT College, Sifal, Kathmandu

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Description automatically generated**

**Tribhuvan University**

**Faculty of Humanities and Social Sciences**

**DWIT College**

# LETTER OF APPROVAL

This is to certify that this project prepared by BIPASHREE ARYAL entitled **“WATER LEVEL TRACKING DASHBOARD”** in partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Information Technology has been well studied. In our opinion it is satisfactory in scope and quality as a project for the required degree.

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| --- | --- |
| ……………………………………   [Supervisor]  Academic Designation  DWIT College | …………………………………………..   [Examiner]  Academic Designation  IOST, Tribhuvan University |
| ……………………………………   [Project Coordinator]  Academic Designation  DWIT College | …………………………………………..   [Campus Chief]  Academic Designation  IOST, Tribhuvan University |

# ABSTRACT

An abstract is like a movie trailer. It offers a preview, highlights key points, and helps the audience decide whether to view the entire work or not. The parts of an Abstract are as follows:

1. Motivation/problem statement: Why do we care about the problem? What practical, scientific, theoretical or artistic gap is your research filling?
2. Methods/procedure/approach: What did you do to get your results? (e.g., analyzed many literatures, designed and developed a software product)
3. Results/findings/product: As a result of completing the above procedure, what did you learn/invent/create? (e.g., after testing your project, or comparing various algorithms, what did you conclude or find or realize?)
4. Conclusion/implications: What are the larger implications of your findings, especially for the problem/gap identified in step 1? (e.g., where and your project can be used or be useful?)

**Keywords**: *[Choose 4-8 words that best define your work separated by semi-colon]*

# ACKNOWLEDGEMENT

The student can write an acknowledgement in order to thank all the people who directly or indirectly helped to complete the project. In scientific writing, acknowledgement is an expression of gratitude for assistance in a work. Receiving credit by way of acknowledgement rather than authorship indicates that the person or organization did not have a direct hand in producing the work in question, but may have contributed funding, suggestions. criticism, or encouragement to the author(s).

[Student Name]

[Roll No.: -]

[Date: - ]

# TABLE OF CONTENTS

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# LIST OF FIGURES

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# LIST OF TABLES

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# LIST OF ABBREVIATIONS

[Please arrange the List of Abbreviations in an alphabetically order.]

# CHAPTER 1: INTRODUCTION

## 1.1. Overview

The introduction section has two main purposes: 1) to give an overview of the main points of your report, and 2) to awaken the reader’s interest. It is recommended to rewrite the introduction one last time when the writing is done, to ensure that it connects well with your conclusion. The introduction should include:

* The background for your choice of theme
* A discussion of problem statement
* Objectives of your project
* Scope of your work or project
* A schematic outline of the remainder of your project report

## 1.2. Problem Statement

A problem statement' is a short description of the issues that need to be addressed by a problem-solving team and should be presented to them (or created by them) before they try to solve a problem. The statement of the problem should briefly address the question: "*What is the problem that the research or project will address?"*  Problem statements often have three elements:

* the problem itself, stated clearly and with enough contextual detail to establish why it is important (i.e., a clear statement that the problem exists; evidence that supports the existence of the problem)
* the method of solving the problem, often stated as a claim.
* the purpose, statement of objective

## 1.3. Objectives

Objective is a claim of one or two sentences in length that outlines the problem addressed by a study. It can be formulated as one or two main statement(s) with (a few) more specific sub-statements or in the form of a hypothesis that will be tested.

## 1.4. Scope and Limitation

One of the first tasks of a researcher is to define the scope of a study, i.e., its area (theme, field) and the amount of information to be included. Narrowing the scope of your project work can be time-consuming. Paradoxically, the more you limit the scope, the more interesting it becomes. This is because a narrower scope lets you clarify the problem and study it at greater depth, whereas very broad research questions only allow superficial treatment.

## 1.5. Report Organization

# CHAPTER 2: BACKGROUND STUDY AND LITERATURE REVIEW

## 2.1. Background Study

In the Background Study, the author needs to describe the fundamental theories, general concepts and terminologies related to the project. The Background Study should provide general information about the topic of your research and emphasize the main aims of the study. Please ensure that you only discuss the main and relevant aspects of the studies that have led to your aims. Do not elaborate on them as this should be done in the literature review section.

## 2.2. Literature Review

A literature review usually has an organizational pattern and combines both summary and synthesis. A summary is a recap of the important information of the source, whereas a synthesis is a re-organization, or a reshuffling, of that information. It might give a new interpretation of old material or combine new with old interpretations. Some guidelines for literature review:

* Assess how each source relates to other research within the field. Group sources by theme, topic, or methodology and write the summary of key research.
* Evaluate how the findings of those papers can be relevant for your research.
* Critically evaluate research (analyze and synthesize)

Include:

## Current System

Unless your project is a completely new innovation, many similar software products should exist. You can mention those products and how they are like your project work. What parts of those systems inspire you, i.e., you decided to include in your project work?

## The Problem with Current System

What problems did you find in those similar software products that you plan to solve? Try to provide genuine problems that have been proved by some literature or surveys or studies. Even if you are inventing any problems, provide sufficient and valid reasons to justify them.

]

# CHAPTER 3: SYSTEM ANALYSIS

## 3.1.1. Requirement Analysis

The requirements for a system are the descriptions of what the system should do, the services that it provides and the constraints on its operation. A requirement is:

* What a system must do
* A known limitation or constraint on resources or design
* How well the system must do what it does.

Requirement elicitation is the process by which you derived or obtained or deduced or collected the requirements, for example, by observation, brainstorming, interview, workshop, prototyping etc.  Similarly, requirements analysis encompasses those tasks that go into determining the needs or conditions to meet for your project, taking account of the possibly conflicting requirements of the various stakeholders, analyzing, documenting, validating and managing software or system requirements.

### i. Functional Requirement

Functional requirements describe the functionality of the system that can be modeled with use-cases. Functional requirements usually employ the word “*shall*”, e.g., functional requirements for a VoIP can be:

* The user shall add new participant.
* The system shall show participants’ count.
* The main user shall be able to drop participant.
* The user shall be able to summon the operator.
* The user shall be able to mute the microphone.

The functional requirements need to be illustrated using Use Case diagram/ Use Case descriptions.

### ii. Non-Functional Requirement

Non-functional requirements describe system properties related to:

* system performance, speed (transaction time, screen refresh time, response time), size (project, input, output), ease of use (training time) , the “*ilities*” (e.g., usability, security, maintainability , availability, reliability, scalability)
* a known limitation or constraint on resources or design
* can include documentation, marketing collateral, product localization, legal compliance restrictions

They typically employ the word “*must*”. e.g., non-functional requirements for a VoIP can be:

* The audio and video quality must be high
* The connection and service must be reliable
* The service must be easy to use
* It must be cheap to use the service
* The service must be available in the local language

## 3.1.2. Feasibility Analysis

### i. Technical Feasibility

The technical feasibility is about the hardware and software that are used during the project.

### ii. Operational Feasibility

The operational feasibility addresses how the solution will fit into the existing operation.

### iii. Economic Feasibility

The economic feasibility is the cost of the project. This includes all the costs involved: the amount for materials, pay for extra staff (if included), operating cost, etc.

### iii. Schedule Feasibility

The schedule feasibility is the time estimation that take to execute the project and set deadlines.

## 3.1.3. Data Modeling (ER-Diagram)

**3.1.4. Process Modeling (DFD)**

Notes: Please first decide which approach have followed in your Project:

**- If structured approach:**

-- Data modeling using ER Diagrams

-- Process modeling using DFD

**- If object oriented approach:**

-- Object modeling using Class and Object Diagrams

-- Dynamic modeling using State and Sequence Diagrams

-- Process modeling using Activity Diagrams

# 3.2 SYSTEM DESIGN

## 3.2.1. Architectural Design

**3.2.2. Database Schema Design**

**3.2.3. Interface Design (UI Interface / Interface Structure Design**

## 3.2.4. Physical DFD

**Notes:**

(May be structured or Object Oriented as per the approach followed in analysis chapter)

- If structured approach:

-- Database Design: Transformation of ER to relations and normalizations

-- Forms and Report Design

-- Interface and Dialogue Design

- If object-oriented approach:

-- Refinement of Class, Object, State, Sequence and Activity diagrams

-- Component Diagrams

-- Deployment Diagrams

# CHAPTER 4: IMPLEMENTATION AND TESTING

## 4.1. Implementation

The Implementation section is like the Specification and Design section in that it describes the system, but it does so at a finer level of detail, down to the code level. This section is about the realization of the concepts and ideas developed earlier. It can also describe any problems that may have arisen during implementation and how you dealt with them.

Do not attempt to describe all the code in the system, and do not include large pieces of code in this section. Instead pick out and describe just the pieces of code which, for example:

* are especially critical to the operation of the system;
* you feel might be of particular interest to the reader for some reason;
* illustrate a non-standard or innovative way of implementing an algorithm, data
* structure, etc.

You should also mention any unforeseen problems you encountered when implementing the system and how and to what extent you overcame them. Common problems are:

* difficulties involving existing software, because of, e.g., its complexity, lack of documentation;
* lack of suitable supporting software;
* over-ambitious project aims

A seemingly disproportionate amount of project time can be taken up in dealing with such problems. The Implementation section gives you the opportunity to show where that time has gone.

### 4.1.1. Tools Used

(CASE Tools, Programming Language, Database platforms)

### 4.1.2. Implementation Details of Modules

(Description of classes/procedures/functions/methods/algorithms)

## 4.2. Testing

### 4.2.1. Test Cases for Unit Testing

Represent the test cases for Unit Testing in a tabular form.

### 4.2.2. Test Cases for System Testing

Represent the test cases for System Testing in a tabular form.

* system testing

## 

# CHAPTER 5: CONCLUSION AND FUTURE RECOMMENDATION

## 5.1. Lesson Learnt / Outcome

what have you learn while doing your project and what is the final outcome of your project.

## 5.2. Conclusion

It is important to have a strong conclusion, since this is the last chance you have to make an impression on your reader. The goal of conclusion isn’t to introduce any new ideas, but to sum up everything you’ve written. The components of a good conclusion are:

1. Restate the main idea of your essay, or your thesis statement:
   1. Restate your topic
   2. Restate your thesis statement
2. Summarize (rather synthesize) the three sub-points of your essay:
   1. Include a brief summary of the paper’s main points, but don’t simply repeat things that were in your paper.
3. Leave the reader with an interesting final impression:
   1. Include a provocative insight or quotation from the research or reading you did for your paper.
   2. Propose a course of action, a solution to an issue, or questions for further study.
   3. Point to broader implications.

## 6.2. Future Recommendation

Always address limitations and suggest how they might be overcome in future work.

# REFERENCES

Follow IEEE referencing format, whose referencing details are mentioned below.  In the above text, use number reference in a square bracket, for example, [1], or [3, 4].

***Book in print***

[1] B. Klaus and P. Horn, Robot Vision. Cambridge, MA: MIT Press, 1986.

***Chapter in book***

[2] L. Stein, “Random patterns,” in Computers and You, J. S. Brake, Ed. New York: Wiley, 1994, pp. 55-70.

***eBook***

[3] L. Bass, P. Clements, and R. Kazman, Software Architecture in Practice, 2nd ed. Reading, MA: Addison Wesley, 2003. [E-book] Available: Safari e-book.

***Journal article***

[4] J. U. Duncombe, "Infrared navigation - Part I: An assessment of feasibility," IEEE Trans. Electron. Devices, vol. ED-11, pp. 34-39, Jan. 1959.

***eJournal (from database)***

[5] H. K. Edwards and V. Sridhar, "Analysis of software requirements engineering exercises in a global virtual team setup," Journal of Global Information Management, vol. 13, no. 2, p. 21+, April-June 2005. [Online]. Available: Academic One File, http://find.galegroup.com. [Accessed May 31, 2005].

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[6] A. Altun, "Understanding hypertext in the context of reading on the web: Language learners' experience," Current Issues in Education, vol. 6, no. 12, July 2003. [Online]. Available: http://cie.ed.asu.edu/volume6/number12/. [Accessed Dec. 2, 2004].

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[7] L. Liu and H. Miao, "A specification-based approach to testing polymorphic attributes," in Formal Methods and Software Engineering: Proceedings of the 6th International Conference on Formal Engineering Methods, ICFEM 2004, Seattle, WA, USA, November 8-12, 2004, J. Davies, W. Schulte, M. Barnett, Eds. Berlin: Springer, 2004. pp. 306-19.

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[8] T. J. van Weert and R. K. Munro, Eds., Informatics and the Digital Society: Social, ethical and cognitive issues: IFIP TC3/WG3.1&3.2 Open Conference on Social, Ethical and Cognitive Issues of Informatics and ICT, July 22-26, 2002, Dortmund, Germany. Boston: Kluwer Academic, 2003.

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[9] J. Riley, "Call for new look at skilled migrants," The Australian, p. 35, May 31, 2005. [Online]. Available: Factiva, http://global.factiva.com. [Accessed May 31, 2005].

***Technical report***

[10] J. H. Davis and J. R. Cogdell, “Calibration program for the 16-foot antenna,” Elect. Eng. Res. Lab., Univ. Texas, Austin, Tech. Memo. NGL-006-69-3, Nov. 15, 1987.

***Patent***

[11] J. P. Wilkinson, “Nonlinear resonant circuit devices,” U.S. Patent 3 624 125, July 16, 1990.

***Standard***

[12] IEEE Criteria for Class IE Electric Systems, IEEE Standard 308, 1969.

***Thesis/Dissertation***

[13] J. O. Williams, “Narrow-band analyzer,” Ph.D. dissertation, Dept. Elect. Eng., Harvard Univ., Cambridge, MA, 1993.

# APPENDIX I [OPTIONAL]

This is optional. The students can include anything that gives additional information on the topic explored in the contents of the text.

Report Format Standards:

A. Page Number

The pages from certificate page to the list of tables/figures/abbreviations/approvals should be numbered in roman starting from i. The pages from chapter 1 onwards should be numbered in numeric starting from 1. The page number should be inserted at bottom, aligned center.

B. Page Size and Margin

The paper size must be a page size corresponding to A4. The margins must be set as

 Top = 1 in (2.54 cm)

 Bottom = 1 in (2.54 cm)

 Left = 1.25 in (3.17 cm)

 Right = 1 in (2.54 cm)

C. Paragraph Style

 All paragraphs must be justified and have a spacing of 1.5.

D. Text Font of Document

 The contents in the document should be in Times New Roman font

 The font size in the paragraphs of document should be 12.

E. Section Headings

 Font size for the headings should be 16 for chapter headings, 14 for section headings, 12 for subsection headings. All the headings should be bold faced.

F. Figures and Tables

 Position of figures and tables should be aligned center. The figure caption should be centered below the figure and table captions should be centered above the table. All the captions should be of bold face with 12 font size.