**CHAPTER 1: INTRODUCTION**

* 1. **Background and Significance**

“HMC” is a desktop application developed using java programming language with swing that is part of java foundation class (JFC) that is used to create windows based system. SQL programming language is used to maintain for database.

As java platform independent language that operates on JVM(java virtual machine) our application is also platform independent ; the user only have to install it JDK for installing java in their machine for running our application.

The main significance of HMC is that it can be used to save, invest, and provide loan and all the basic application that should provide by financial institution for specific committee.

**1.2 Introduction to Development Platform**

**Java** is a general-purpose computer programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation. Java applications are typically compiled to byte code that can run on any Java virtual machine (JVM) regardless of computer architecture. As of 2016, Java is one of the most popular programming languages in use, particularly for client-server web applications, with a reported 9 million developers. Java was originally developed by James Gosling at Sun Microsystems (which has since been acquired by Oracle Corporation) and released in 1995 as a core component of Sun Microsystems' Java platform. The language derives much of its syntax from C and C++, but it has fewer low-level facilities than either of them.

The original and reference implementation Java compilers, virtual machines, and class libraries were originally released by Sun under proprietary licenses. As of May 2007, in compliance with the specifications of the Java Community Process, Sun relicensed most of its Java technologies under the GNU General Public License. Others have also developed alternative implementations of these Sun technologies, such as the GNU Compiler for Java (byte code compiler), GNU Class path (standard libraries), and IcedTea-Web (browser plugin for applets).

The latest version is Java 9, released on September 21, 2017and is one of the two versions currently supported for free by Oracle. Versions earlier than Java 8 are supported by companies on a commercial basis; e.g. by Oracle back to Java 6 as of October 2017 (while they still "highly recommend that you uninstall"[citation needed] pre-Java 8 from at least Windows computers).

Some characteristics of java programming language is as follows:

1. It must be "simple, object-oriented, and familiar".
2. It must be "robust and secure".
3. It must be "architecture-neutral and portable".
4. It must execute with "high performance".
5. It must be "interpreted, threaded, and dynamic".

**Java Swing** is a part of Java Foundation Classes (JFC) that is used to create window-based applications. It is built on the top of AWT (Abstract Windowing Toolkit) API and entirely written in java. Unlike AWT, Java Swing provides platform-independent and lightweight components. The javax.swing package provides classes for java swing API such as JButton, JTextField, JTextArea, JRadioButton, JCheckbox, JMenu, JColorChooser etc.

**SQL (Structure Query Language)** is database language used for retrieval and management of data in the relation database. SQL is a query language that used for creation and modification of database schema and database object access control management.

SQL can execute the query against database. SQL can create the data and also destroy the existing database. SQL can alter the structure of existing table(s). SQL can insert new record(s) into the database as well as delete the entries data. SQL can retrieve and extract existing record(s) from the database. SQL can modify, update existing record(s) from the database. SQL creates a view (virtual table) as same create and define indices and set the permission on the table(s) and views.

**1.3 Objective**

The financial management is generally concerned with procurement, allocation and control of financial resources of a concern. The objectives can HMC can be listed as below:

1. To ensure regular and adequate supply of funds to the concern.
2. To ensure adequate returns to the committee which will depend upon the earning capacity, expectations of the committee.
3. To ensure optimum funds utilization. Once the funds are procured, they should be utilized in maximum possible way at least cost.
4. To ensure safety on investment, i.e. funds should be invested in safe ventures so that adequate rate of return can be achieved.
5. To plan a sound capital structure-There should be sound and fair composition of capital so that a balance is maintained between debt and equity capital.
   1. **Scope of the Project**

A financial management system is the methodology and software that an organization uses to oversee and govern its income, expenses, and assets with the objectives of maximizing profits and ensuring sustainability. The main scope of this project HMC is inside one corporation that treasurer will handle all the financial transaction with the rules and regulation of the organization.

**1.5 Features of Project**

HMC is desktop based financial management software and it have some of the following features like other financial system.

* Keeping all payments and receivables transparent.
* Amortizing prepaid expenses.
* Depreciating assets according to accepted schedules.
* Keeping track of liabilities.
* Coordinating income statements, expense statements, and balance sheets.
* Ensuring data integrity and security.
* Keeping all records up to date.
* Maintaining a complete and accurate audit trail.
* Minimizing overall paperwork.

**CHAPTER 2: LITERATURE REVIEW**

**2.1 Review of previous studies**

“A researcher cannot perform significant research without first understanding the literature in the field” (Boote & Beile, 2005, p. 3). So, we collected some of the reviews of previous literature about or related to our project HMC. As we were intended and we have tired develop a complete system for financial management of community that can be very user friendly and easier to use by non-technical person; we have studied literature of similar and some of most popular global projects related to our project.

A financial management system is the methodology and software that an organization uses to oversee and govern its income, expenses, and assets with the objectives of maximizing profits and ensuring sustainability.

An effective financial management system improves short- and long-term business performance by streamlining invoicing and bill collection, eliminating accounting errors, minimizing record-keeping redundancy, ensuring compliance with tax and accounting regulations, helping personnel to quantify budget planning, and offering flexibility and expandability to accommodate change and growth.

**Using accounting system in Nepal**

Accounting has been done manually till the 1980s, when the advent of fast computers and easy-to-use, accurate and reliable software started. After 90s Nepalese accountant also started to use accounting software in Nepal.

An accounting system is a collection of processes, procedures and controls designed to collect, record, classify and summarize financial data for interpretation and management decision-making.

Computerized Accounting Software also involves making use of computers and accounting software to record, store and analyze financial data. A computerized accounting software brings with it many advantages that are unavailable to analog accounting systems.

A typical computerized accounting software will offer a number of different facilities to Nepalese accountant. These include:

* On-screen input and printout of sales invoices
* Automatic updating of customer accounts in the sales ledger
* Recording of suppliers’ invoices
* Automatic updating of suppliers' accounts in the purchases ledger Recording of bank receipts
* Making payments to suppliers and for expenses
* Automatic updating of the general ledger
* Automatic adjustment of stock records
* Integration of a business database with the accounting program
* Automatic calculation of payroll and associated entries

Computerized accounting software from Nepal can provide instant reports for management, for example:

* Aged debtors’ summary – a summary of customer accounts showing overdue amounts
* Trial balance, trading and profit and loss account and balance sheet
* Stock valuation
* Sales analysis
* Budget analysis and variance analysis
* GST/VAT returns
* Payroll analysis

When using a computerized accounting system the on computer, input screens have been designed for ease of use. The main advantage is that each transaction needs only to be inputted once, unlike a manual double entry system where two or three entries are required. The computerized ledger system is fully integrated. This means that when a business transaction is inputted on the computer it is recorded in a number of different accounting records at the same time.

The main advantages of a computerized accounting software from Nepal are listed below:

* **Speed** – data entry onto the computer with its formatted screens and built-in databases of customers and supplier details and stock records can be carried out far more quickly than any manual processing.
* **Automatic document production** – fast and accurate invoices, credit notes, purchase orders, printing statements and payroll documents are all done automatically.
* **Accuracy** – there is less room for errors as only one accounting entry is needed for each transaction rather than two (or three) for a manual system.
* **Up-to-date information** – the accounting records are automatically updated and so account balances (e.g. customer accounts) will always be up-to-date.
* **Availability of information** – the data is instantly available and can be made available to different users in different locations at the same time.
* **Management information** – reports can be produced which will help management monitor and control the business, for example the aged debtors analysis will show which customer accounts are overdue, trial balance, trading and profit and loss account and balance sheet.
* **GST/VAT return** – the automatic creation of figures for the regular GST/VAT returns.
* **Legibility** ­– the onscreen and printed data should always be legible and so will avoid errors caused by poor figures.
* **Efficiency** – better use is made of resources and time; cash flow should improve through better debt collection and inventory control.
* **Staff motivation** – the system will require staff to be trained to use new skills, which can make them feel more motivated. Further to this with many ‘off-the-shelf’ packages like MYOB the training can be outsourced and thus making a particular staff member less critical of business operations.
* **Cost savings** – computerized accounting programs reduce staff time doing accounts and reduce audit expenses as records are neat, up-to-date and accurate.
* **Reduce frustration** – management can be on top of their accounts and thus reduce stress levels associated with what is not known.
* **The ability to deal in multiple currencies easily** – many computerized accounting packages now allow a business to trade in multiple currencies with ease. Problems associated with exchange rate changes are minimized.

Accounting software systems provide numerous benefits in the areas of information management, regulatory compliance, business process automation and real-time reporting. Accounting software in Nepal like e-Finance is one competent cloud based accounting software which fulfills enterprise need for Nepali companies.

**CHAPTER 3: ANALYSIS OF ISSUE AND SOLUTION**

**3.1 System Overview**

HMC is a desktop-based financial management system. This system can be used by community for their financial management. The system usually supposed to use by treasurer of the committee. Though the system can be used by treasurer, we can make users as per our need. The treasurer is supposed to be admin of the system and is responsible for the following acitons:

* Creating and updating additional users.
* Creating and updating member account.
* Updating member’s monthly savings.
* Issuing loan to the members having threshold amount in account.
* Generating capital report.
* Distributing bonus to members.
* Creating and updating additional notes.
* Making and updating corporation’s investment.

**3.2 General Constraints**

HMC is the java based desktop application so that it might have constraints of not being web application that can be listed as below:

1. We have to deploy in each client machine.
2. Enforce version check in client machine.
3. Updates might be difficult.
4. Can’t access from anywhere.
5. Platform independent but also have to install JVM at first.
6. Support and maintenance might be difficult.
7. Not adaptable in mobile devices.

These are the some constraints of the desktop application over web application but there is no other issues than that of aforementioned.

**3.3 Methods**

The following steps of system analysis and design have been used to analyze the system.

* Planning of the system.
* Study of the system requirement.
* Feasibility analysis
* Technical Feasibility
* Economic Feasibility
* Time Feasibility
* Ethical & Social Feasibility
* System Design
* Data Flow Diagram(DFD)
* Entity Relationship Diagram(ER-Diagram)
* Use-Case Diagram
* System Implementation
* System Testing

**3.4 Feasibility Analysis­**

**3.4.1 Technical Feasibility**

* This project requires installation on client machine and after installation few days training to the Admin/treasurer will be adequate to use this system. So, there will be no any technical difficulties for this system.
* Automation of backup is possible through DBMS software of any Backup software.
* This system is user friendly and convenient to use. So, the user can easily use this system.

**3.4.2 Economic Feasibility**

* From the developers’ point of view, we did not find any economic difficulties in this project. We are studying as developers and we already have development tools. So, it is economically feasibility for us to develop this project.

**3.4.3 Time Feasibility**

* Based on our prior experience, this project is completed in 2 month. So, we concluded that this project has no issue with time feasibility.

**3.4.4 Ethical Feasibility**

* Only trained and authorized person can manage the contents of this system. Any unethical or immortal posting can be easily recognized. So, this project is ethically feasible.
  + 1. **Social Feasibility**
* The aim of this project is to provide complete financial management of a community based organization so it will not have any social issue.

**CHAPTER 4: DESIGN SPECIFICATION AND IMPLEMENTATION**

The deliverables of this project can be outlined as follows:

* Data Flow Diagram of HMC.
* Database design of HMC.
* ER diagram of HMC.
* Development of all HMC.
* Documentation of HMC.

**4.1 Design Overview**

From the detailed study of some available systems we have done discussion between the team members and other students of our college.

System design is a problem solving technique that resembles system components into a complete system which is a complete system. In this phase the input output files, database and other components are designed.

**4.2 System Architecture**

System design is one of the important phases of the System Development Life Cycle (SDLC). System refers to both hardware and software. The system architecture describes the collection of inter-connected hardware nodes on which the software will eventually run. System architecture consists of Hardware node, the connectivity among nodes, and the location of user, inputs and outputs.

We use Two-tier architecture to design our system. Two-tier architecture have the following advantages.

1. Easy to implement and optimize performance.
2. Do not have compatibility or Context switching issues.
3. The cost of deployment is less eg - development and management cost.

|  |
| --- |
|  |

Fig 4.2 system architecture (2-tier architecture)

**4.3 Context Diagram**

The context diagram of HMC is given below:

|  |  |
| --- | --- |
| |  | | --- | |  | |

Fig 4.3 context diagram

**4.3.1 Top Level Data Flow diagram of News++**

**4.3.1.1 Top level DFD for admin**

|  |
| --- |
|  |

Fig 4.3.1 Top level DFD for admin

**4.3.2 Use Case Diagram**

|  |
| --- |
|  |

Fig 4.3.2 Use case diagram of HMC

**4.4 System Design**

**4.4.1 ER Diagram of News++**

The ER-Diagram of our project News++ is given below:

|  |
| --- |
|  |

Fig 4.4.1: ER-Diagram

**4.4.2 Database design of HMC**

**4.4.2.1 Meta data**

|  |  |
| --- | --- |
| **fig:metadata of account status** | **Fig:metadata of capital** |
| **fig:metadata of loan** | **fig:metadata of advertisement** |
| **fig:metadata of loan** |  |

**CHAPTER 5: System Implementation and Testing**

In the system development lifecycle, this is another most important phase. During this process coding is done according to the documents. Testing of the codes has been done for detection.

**5.1 Coding**

We have used java programming language for coding with swing. Java is a programming language and a platform. Java is a high level, robust, secured and object-oriented programming language. Any hardware or software environment in which a program runs, is known as a platform. Since Java has its own runtime environment (JRE) and API, it is called platform.

Java Swing is a part of Java Foundation Classes (JFC) that is used to create window-based applications. It is built on the top of AWT (Abstract Windowing Toolkit) API and entirely written in java.Unlike AWT, Java Swing provides platform-independent and lightweight components.The javax.swing package provides classes for java swing API such as JButton, JTextField, JTextArea, JRadioButton, JCheckbox, JMenu, JColorChooser etc.

**5.2 Testing**

The team tested the system using dummy data. The system is fully tested so the system will be successfully used. The system has been tested thoroughly using the following testing techniques.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.N** | **Description** | **Requirements** | **Actual output** | **Test Status** |
| 1. | Rights of Administrator  /Treasurer | Creating and updating additional users. | Treasurer is capable of creating and updating additional users. | Passed |
| Creating and updating member account. | Treasurer is capable of creating and updating member account. |
| Updating member’s monthly savings. | Treasurer is capable of Updating member’s monthly savings. |
| Issuing loan to the members having threshold amount in account. | Treasurer is capable of Issuing loan to the members having threshold amount in account. |
| Generating capital report.  Distributing bonus to members. | Treasurer is capable of Generating capital report. |
| Creating and updating additional notes.  Making and updating corporation’s investment | Treasurer is capable of Creating and updating additional notes.  Treasurer is capable of Making and updating corporation’s investment |

**Table 5.2: Testing information**

**5.3 Installation**

The purpose of the implementation is to build a properly working system and present it to the user.It is transferring the system from the development side to the client side.

For installation of java swing desktop application, we have to make .jar file and transfer it into the client machine. For running .jar file the JVM must be installed and path must be defined in the client machine.

**5.4 Training**

After the installation of the system is done, training will be provided to the administrators about how to use the system. Administrators are trained how to manage the whole system.

**5.5 Documentation**

Project documentation is used to define the way we manage projects and the governance surrounding them. During all the phase of System Development Life Cycle (SDLC), each and every document is developed such as analysis, designs etc. and has been properly documented. The example of the documentation of our system is the project report.

**CHAPTER 6: Project Schedule**

**6.1 Activities**

|  |  |
| --- | --- |
| **Activities** | **No. of days** |
| Identify problem | 2 |
| Analyzing existing system | 2 |
| Analyzing proposed system | 3 |
| Analyzing requirements | 3 |
| Designing ER diagram | 1 |
| Designing DFD | 2 |
| Designing Use Case diagram | 1 |
| Designing System | 30 |
| Creating Database | 2 |
| Coding | 25 |
| Testing and Debugging | 5 |
| Finalizing Document | 5 |
| Preparing presentation | 2 |
| **Total** | **65** |

**Fig 6.1: Activities vs. no of days**

**6.2 Gantt chart:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Phase** | **Job Description** | **Oct 2017** | **Nov**  **2017** | **Dec**  **2017** | **Jan**  **2018** |
| **4th week** | **1st-4th week** | **1st-4th week** | **1st-2nd week** |
| Analysis | Requirement Analysis |  |  |  |  |
| Functional Analysis |  |  |  |  |
| Process Modeling |  |  |  |  |
| Data Modeling |  |  |  |  |
| Design | Interface Design |  |  |  |  |
| Database Design |  |  |  |  |
| Implementation | Coding, Testing and Debugging |  |  |  |  |
| Documentation |  |  |  |  |
| Presentation |  |  |  |  |

**Fig 6.2: Gantt chart**

**CHAPTER 7: CONCLUSION**

In this project, we were focused on developing a system for particular organizational institute to manage their financial transaction. This system can be used in every small to middle level organization for their financial management. As, this system is capable of storing and calculating almost all calculation that the treasurer of the organization have to make. This system can manage the savings and loan of the members in the convenient way. This system is also capable of generating financial status and report of the each member’s. Observation of financial growth of the organization can help organization to make strategic decisions.

During the project we learned to work in team. This project helps us how to coordinate with the group to make the system.

**7.1 Limitation of the Proposed System**

* This is desktop application and cannot be accessed on web.
* Individual members will not get user id and view their financial statement themselves.
* There is no graphical representation of the financial status of user.
* There is no SMS system to notify members about any event or financial status

**CHAPTER 8: REFERENCES**

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