SPL- II
IUTcms(Course Management System)

Team members:
1. Al Muhtasim Srijon -180042107
2. Adiba Hasan - 180042111
3. A.K.M. Nafiz Zaman - 180042115
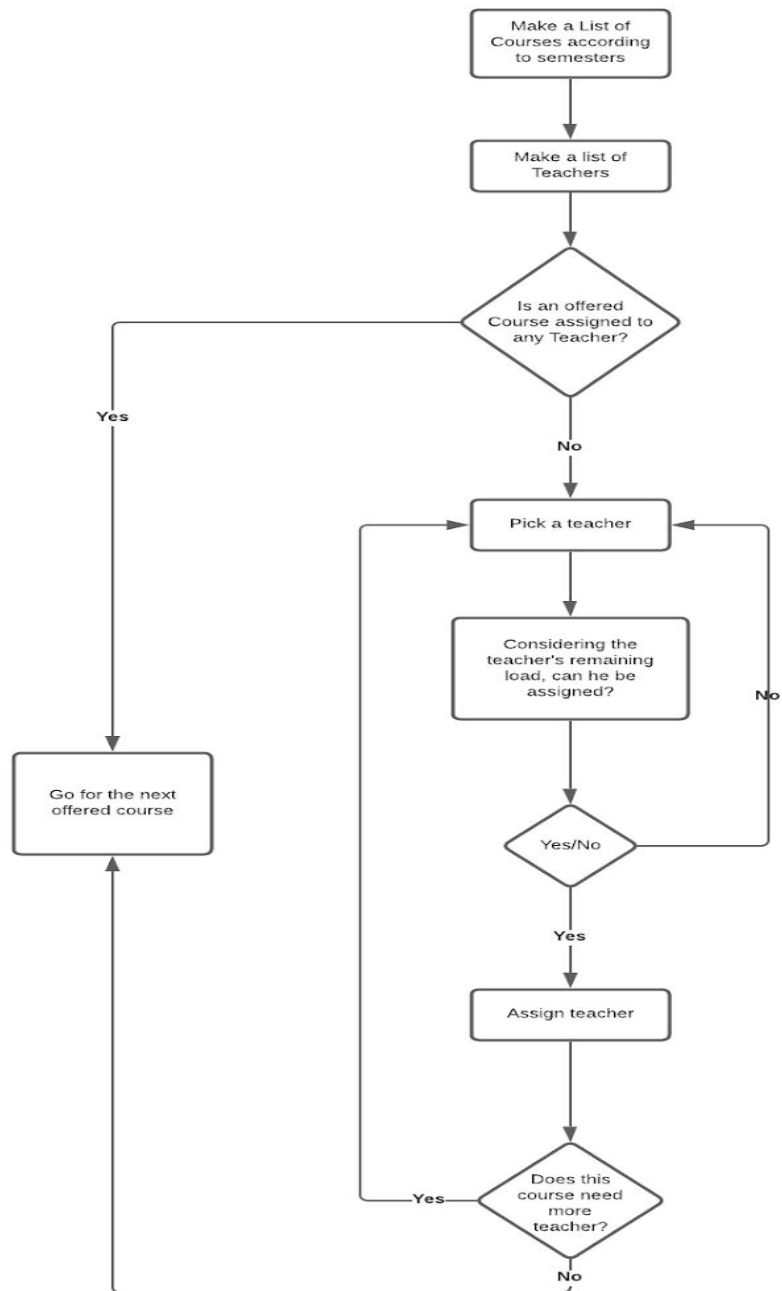
What we aim to achieve

The system, IUTcms aims to facilitate a web based course management system for universities, here focusing on IUT.

It is often found that when a teacher is assigned to carry out the tasks of assigning teachers to different courses, the teacher needs to do the following tedious work of making lists of teachers and courses, assigning teachers to courses keeping in mind how many courses can be assigned to one particular teacher etc. Our project will help do all these tasks, which he/she had to do manually, in a very simplified and encapsulated platform.

Current System

The current system in place for course management in IUT is heavily dependent on the accuracy of a teacher. There is a lot of trial and error involved in determining who can be assigned to a course and how many teachers are more needed.

The current, highly flawed system may be defined in the flow diagram in the next page:

```
                        ┌─────────────────┐
                        │  Make a List of │
                        │ Courses according│
                        │   to semesters  │
                        └────────┬────────┘
                                 │
                        ┌────────▼────────┐
                        │  Make a list of │
                        │    Teachers     │
                        └────────┬────────┘
                                 │
                        ╱◇╲
                    ╱ Is an offered ╲
         Yes ◄──────╲ Course assigned to ╱
          │          ╲  any Teacher?  ╱
          │             ╲◇╱
          │               │ No
          │               │
          │        ┌──────▼──────┐
          │        │ Pick a teacher │◄──── No
          │        └──────┬──────┘
          │               │
          │        ┌──────▼──────┐
          │        │ Considering the │
          │        │ teacher's remaining│
          │        │ load, can he be │
          │        │   assigned?    │
          │        └──────┬──────┘
  ┌───────▼──────┐        │
  │ Go for the next│    ╱◇╲
  │ offered course │   ╱ Yes/No ╲──── No
  └───────▲──────┘    ╲◇╱
          │               │ Yes
          │        ┌──────▼──────┐
          │        │ Assign teacher │
          │        └──────┬──────┘
          │               │
          │            ╱◇╲
          │      Yes  ╱ Does this ╲
          │  ◄────────╲ course need ╱
          │           ╲more teacher?╱
          │             ╲◇╱
          │               │ No
          └───────────────┘
```

As can be seen from the above flow diagram, there are multiple loops in the design implying that there is a degree of trial and error involved in this entire system, which makes it far less efficient than it can be. A teacher who has been assigned to course management, say Mr. X, first has to calculate the load of a teacher, say Mr. Y, before assigning the teacher to an offered course. If Y is not available, Mr. X has to ask to calculate the load of another teacher, say Ms. Z, and this process continues until Mr. X finds someone with available course free slots.

If the course needs multiple teachers then the above scenario is repeated again and again. The course load of any particular teacher is calculated multiple times. It is also possible to assign more courses to a teacher than his assigned load. This system is less efficient and error prone.

Proposed System

IUTcms will cut out inefficiencies by allowing the user to view a list of offered courses. When assigning a teacher to a course IUTcms will only show the valid options. The user is free from calculating the load of any teacher.

This system may be represented by the following flow diagram:
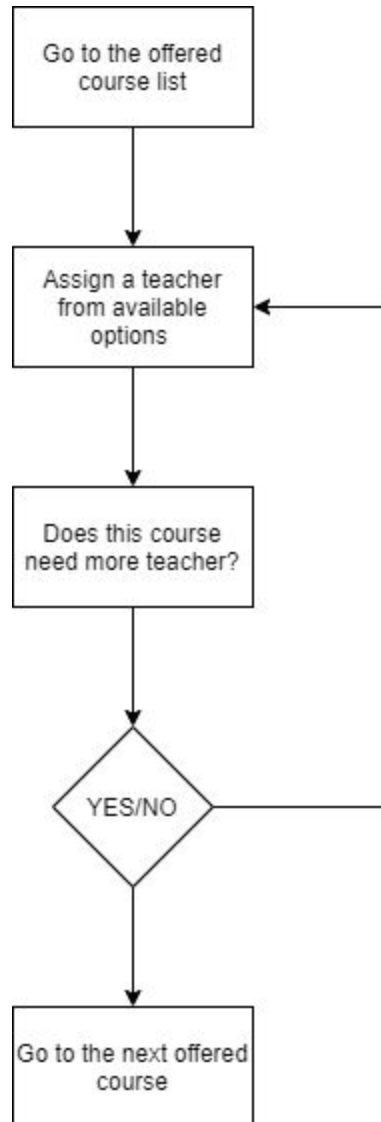
Economical Aspects

Before undertaking any project, the people behind the project consider the economic feasibility of the project, namely a cost-benefit analysis.

The costs of developing such a system are identified as:

Maintenance costs:

There are costs of maintaining the system. To maintain the system one or more developers need to be assigned according to the size of the project.

Time:

IUTcms will require a fairly short period of time to develop since most of the work is programming-based and no non-technical assets have to be acquired. Testing and perfecting the system will be an extensive procedure although less straining on developers.

There are of course economic benefits to be gained from the proposed system:

Convenient system = More users = More revenue from more installations:

The proposed system will convert the manual work of course management to an automated web based system, making it easier for users to do the work of course management. This increases the number of users and with more users comes more revenue through a greater number of installs.

Zero server hosting cost:

The whole system can be supervised using the existing university network. There is no need for server hosting which saves the cost of hosting.

Zero software cost:

The whole project can be completed using free and open source solutions which results in zero additional software charge.

Technical aspects

The essential technical requirements of the system are:

1. Servers - to host the database
2. Computers - to develop and maintain the app
3. Database management system solutions - to create and maintain the database
4. Developers' skills in handling servers and databases

The user of the system is expected to operate on a Windows operating system , and most of the targeted demographic already use such devices.

As such, due to the existence of essentially free solutions, the system is very feasible to implement judging from the technical point of view. These solutions also provide good documentation making it easy for developers to learn these skills over a short period of time.

Operational Feasibility

When determining whether a project should be implemented, it is necessary to determine whether the system performs what it was designed to do efficiently.

As stated previously, the current system in place is very inefficient and highly manual. IUTcms makes the entire process of course management hassle-free.

- **Convenience:**

  The system will be much more convenient to use than other means of manually doing the course management.

- **Easier data analysis:**

  There is an option for generating automated reports which will make the analysis of course management easier.

- **Error free system:**

 The system will prevent any case of over assigning and zero assigning.

What We Have Achieved

We have completed the project with key features such as-

1. Managing courses easily and efficiently i.e. adding and offering courses
2. Getting all the information about courses at a glance
3. Assigning faculties based on availability
4. Calculating loads both teacher-wise and semester-wise.
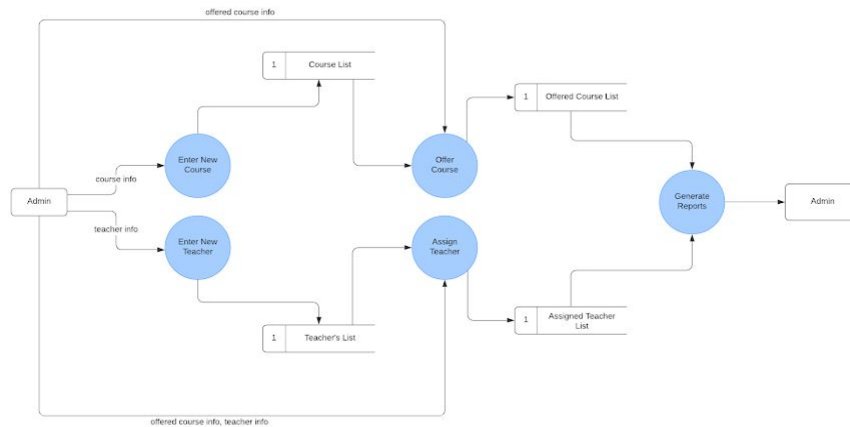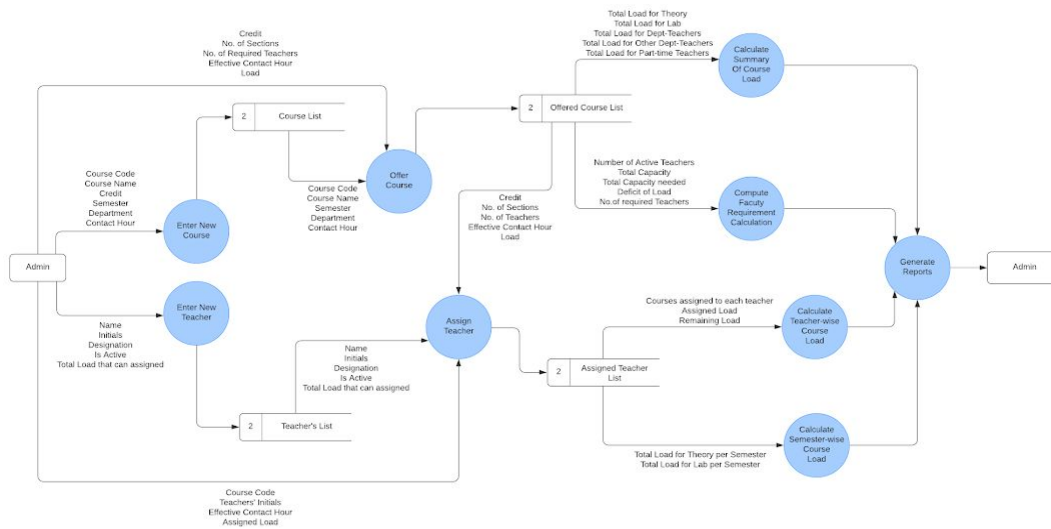5. Pdf generation.

Activity Flow Diagram:
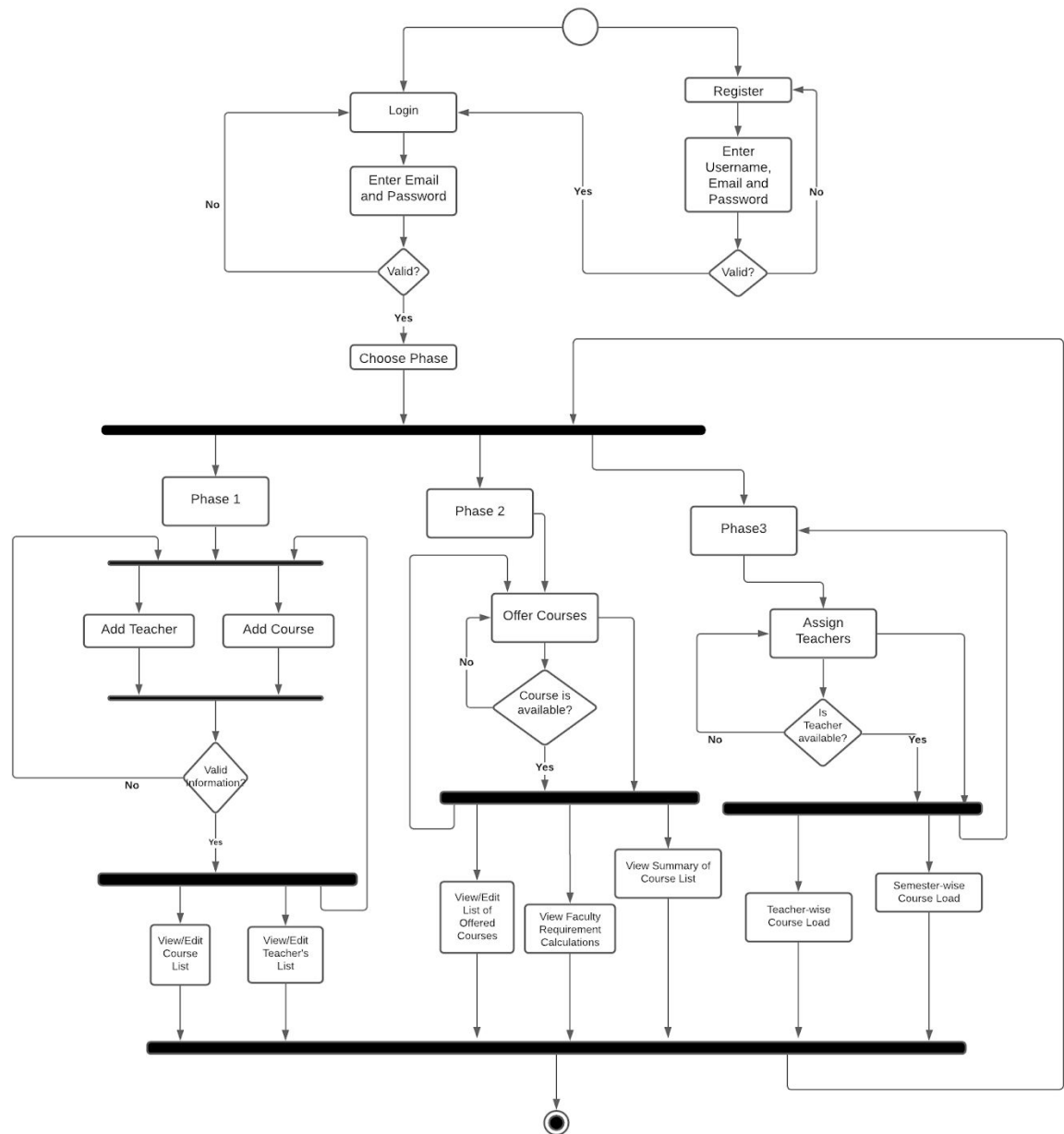
Data Flow Diagram

Level 0 (Context diagram)

Level 1 (Overview Diagram)

Level 2 (Detailed diagram)

Future Scopes

We plan to add another function for other teachers so that they can get their personal routine directly from IUTcms.

Conclusion

The primary goal of this project is to bring comfort and accuracy to the existing course management system. Usually course management is done manually which results in errors sometimes. This new system will be free from any kind of error and it will be tested heavily and data will be gathered to determine the success of this project.