

INTEGRATED DATABASE DEVELOPMENT FOOD AND NUTRITION TRAINING PROGRAM ON SEAMEO RECFON

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ARTICLE INFO	ABSTRACT
Published: November 28th, 2022 Keywords: <i>integrated database, food and nutrition training, SEAMEO RECFON</i>	<i>The Southeast Asian Ministers of Education Organization Regional Center for Food and Nutrition (SEAMEO RECFON), already has a pretty good system, but there are some problems and the need for up-to-date information on food and nutrition topics and service facilities that support all activities. To support the process of monitoring and evaluating program achievement targets. SEAMEO RECFON requires a database system not only for operations but also for monitoring and evaluation needs. The system must be able to store and manage data on the results of achievements from program activities, document the results of analysis, and other information. In this study, an Integrated Database System has been designed and implemented to achieve the achievement of training programs in the field of food and nutrition, using the System Development Life Cycles (SDLC) method with a prototyping development model that helps in system development. This system can store and collect various types of achievements along with related information such as student data, teacher data, school data, types of training, research programs, and other detailed information that supports the research process. The system also provides a feature for users to be able to report and submit data on participants and guidance schools and new colleagues. The system is implemented in prototype form and tested against functionality, performance, and security. The results expected by the Integrated Database system can help the operations of the Organizational Staff both for operations and an integrated data collection process and facilitate the process of monitoring and evaluating program achievement targets.</i>

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INTRODUCTION

Strategic Plan of SEAMEO Center Indonesia 2020-2024 Ministry of Education and Culture Secretariat General of the SEAMEO Center Indonesia Work Unit (2021). The Southeast Asian Ministers of Education Organization Regional Centre for Food and Nutrition (SEAMEO RECFON) has the mandate to play a role in improving the knowledge and practice of community nutrition in Southeast Asia to realize a society with good nutritional status. SEAMEO RECFON actively carries out educational, research, training, and community empowerment activities so that the need for up-to-date information on food and nutrition topics and services and facilities that support all these activities becomes very important. This important task must be supported by adequate facilities, including the procurement of data processing and communication devices that can support RECFON activities every day, including in terms of dissemination of information and knowledge derived from research results.

Based on the search results in the field, the SEAMEO RECFON Database system has implemented information technology infrastructure without using an enterprise architecture framework and so far has only used manual systems, namely Microsoft Excel and Access. Without

enterprise architecture, several problems occur in the technology infrastructure, including hardware that has decreased performance, software that requires the latest version of upgrading to be used optimally, and networks that often experience problems in intranet and internet connections.

Before this development research has been carried out, several previous studies have been carried out based on the needs of the type of data from each unit with different types of activity programs, where several surveys were carried out by investigating and looking for information on the use of applications in the data storage and the type of data used in each unit to fulfill information data, a problem was found in the storage area and applications used in the SEAMEO RECFON database system so it is necessary to make a new technology architecture plan using the appropriate system, namely Web-based. Upgrade all data owned by SEAMEO RECFON which is useful for supporting information dissemination and storage activities. This is expected to improve engagement with the general public and optimize the database function owned by SEAMEO RECFON in storing information in the field of food and nutrition both at the national and regional levels.

Over time the management of the SEAMEO RECFON database system continues to strive to meet the needs of information technology. Progress and success in the field of information technology in the SEAMEO RECFON Database System have not escaped obstacles and problems in various aspects. Less effective in database management now, databases are still not integrated into one system for each unit so each unit still has a different database. The software used still uses Microsoft Excel and Microsoft Access which is still manual and has not integrated data between units and divisions, which results in double data and no data synchronization in each activity, thus making the need for information technology quite large and complex. It is hoped that the database system to be developed can be used as a reference for the implementation of monitoring and evaluation activities and the SEAMEO Center Indonesia Strategic Plan by default.

The following are research questions or problem formulations

- 1) What is the process of designing a database of targets for achieving the SEAMEO RECFON Training program?
- 2) What is the process of implementing the monitoring system carried out to obtain data on the target achievements of the SEAMEO RECFON Training program?
- 3) How effective is the database system of program achievement targets in improving the monitoring and evaluation process so that it can be carried out properly, effectively, and efficiently in the Program implemented by SEAMEO RECFON?

The process of designing a database system for the target achievement of the SEAMEO RECFON program is expected to provide many benefits such as the presentation of accurate, fast, and complete information, making it easier for institutions to obtain information, monitoring, data management by the coordinator of the activity program and helping SEAMEO RECFON know the achievement of the implementation of the annual program implemented.

METHOD

The type of research used is R&D (Research and Development) which focuses on developing a database application system that aims to produce products and find out the test results of database development.

The development model used in this study is a development model of the System Development Life Cycles (SDLC) method, namely prototyping. This model is often used if the owner of the system does not master the system he is going to develop, so he needs an overview of the system he will develop. (Mulyani: 2016). This development model was chosen because the process of designing this application requires intense communication between the developer and the system user.

The prototyping development model starts with collecting needs or analyzing user needs, prototyping development, prototyping evaluation, system coding, system testing, system evaluation, and system use (Susanto, 2016)

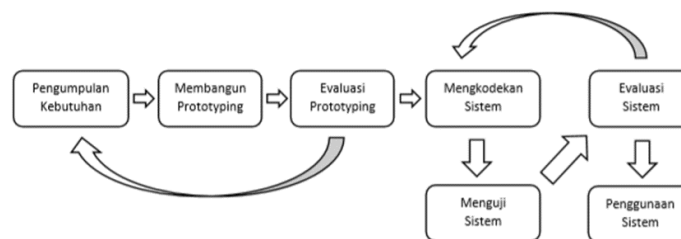


Figure 1. Stages of the Prototyping Development Model

Source: Susanto (2016)

The prototype model aims to allow users to frequently interact with the proposed prototype. D Purnomo (2017) stated that Prototype will propose a basic version that can be developed to be larger according to user needs. G. I. Marthasari et al (2017) and R. S. Pressman (2014) say that the stages in the development of prototyping methods include:

- 1) Communication: At the communication stage, it is carried out by conducting interviews and observations with the owner of the company. In this stage, the needs and problems of the user are collected so that an outline of the entire system to be created is obtained.
- 2) Quick Plan and Modeling Quick Design: At this stage, it focuses on the appearance of the system (interface) as well as the output used by the user.
- 3) Construction of Prototype: The construction of a planning model from the previous stage.
- 4) Deployment Delivery and Feedback: The prototype is then handed over to the user for trial and evaluation. Users will provide feedback on the prototype that has been made. Feedback will be used as a reference for improvements from prototypes to produce a system that suits the needs of users.

Based on the prototyping method, the following stages of research will be carried out in this study:

- a) Collecting data on the system needs using interview and observation methods;

- b) Membuat use case, sequence, activity, class diagram dan ERD;
- c) Create a website display design;
- d) Implementing the design and manufacture of prototypes; and
- e) Handing over prototypes to users and getting feedback. If there are things that must be repaired, then the prototype will be repaired according to user needs.

Stages of Database Creation

Designing Prototyping

Build prototyping by designing a temporary system that focuses on presenting to users based on the analysis of application media needs in the first stage. Prototyping that is built to create ER diagrams, flowcharts, use case diagrams, and design interfaces.

Designing the Database System Concept

The training program target achievement database is a web server-based application that is used to store, and manage samples and information related to school data, teachers, students, training participants, types of training, research, types of research, partnerships, MOU documents, and participation certificates for analysis and research needs. The overall concept is in the following figure.

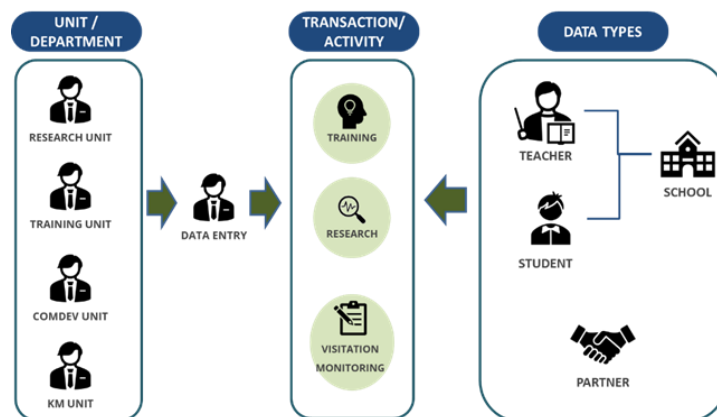


Figure 2. Database System Concept Design

The following is the narrative of the Information System flow, namely:

- 1) Entities involved: Administrators, Students, and Teachers
- 2) The narrative:
 - a) Administrators can Create, Update, and Delete master data, namely Schools, Partners, Students, and Teachers;
 - b) The administrator creates a new training, registers students as participants, and also assigns grades to trainees;
 - c) Administrators can also Create, Update, and Delete activity data, namely Research, and Visits;

- d) The report is divided into training reports, trainees, research, and visits, the Administrator can print the results of the report;
- e) Administrators can Create, Update, and Delete student, teacher, and backend user data;
- f) Students or Teachers can register through the registration page and log in to the application;
- g) Students can register for the selected training and also update their profile; and
- h) Teachers can update their profile on the teacher's master page.

Flowchart/System Application Logic Design

Used to design logic that exists in a program. Here is the design of the Menu Interface that will be implemented in a program.

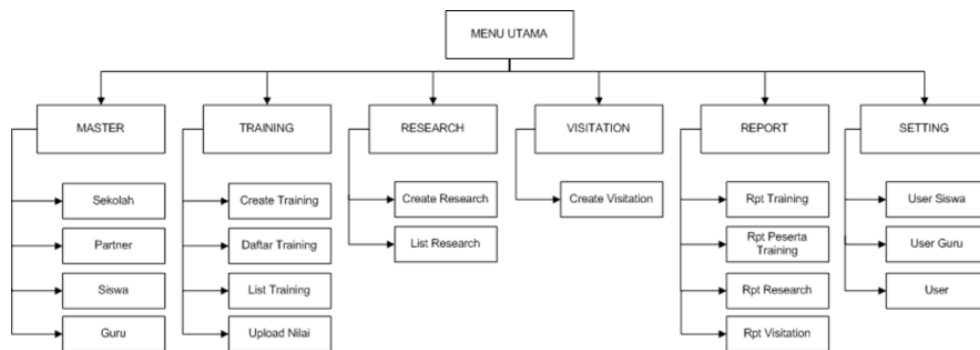


Figure 1. Flowchart/System Application Logic Design

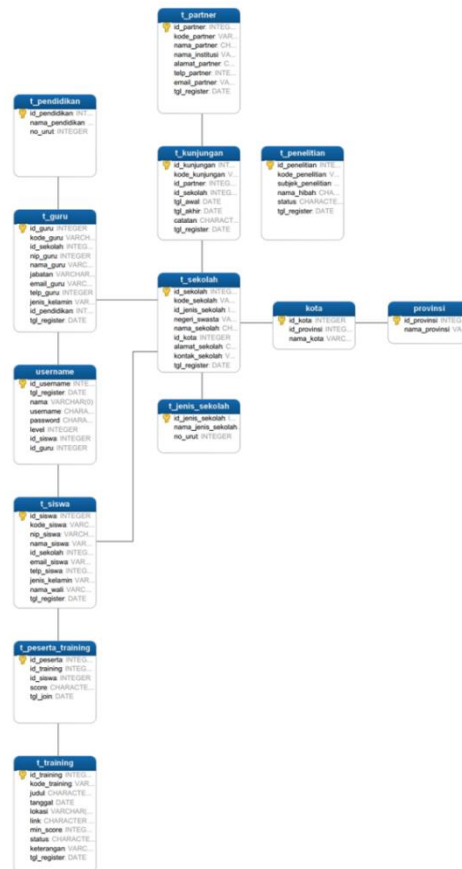


Figure 3. Relationships Between Tables in a Database

Stages of Research

In this study, data analysis was carried out in conjunction with the data collection process. Heriyanto (2018) states that the flow of analysis follows a thematic analysis model includes:

Researchers use several methods/methods to collect data.

- 1) Interviews: Interviews are conducted with interviewees who have an important role in the organization and have special capacity and knowledge about the topics covered to know the current conditions and desired expectations.
- 2) Document Analysis: Document analysis is carried out on official organization documents in the form of the SEAMEO RECFON Strategic Plan 2015-2019, the 2020-2024 Strategic Plan, the Organization's Annual Report, the ICT & Network Division Annual Report, and the organization's activity report. In addition to official documents, literature studies are also carried out by studying similar and previously conducted research.
- 3) Field Observation: By making observations in the SEAMEO RECFON organization, it will be known which activities are running and needed in real terms.

RESULT AND DISCUSSION

Analysis of System Design and Testing Results

Running System Analysis

The stale data system running in each unit on SEAMEO RECFON in the data store is still not optimal. Storage still uses MS. Excel and MS. Access programs and the data units stored by Masuh have not been integrated, resulting in a lot of double recording of data, such as data from teachers, schools, and students who attended the training. For partner data, it is also still not connected between data from each unit. So the Monev team reporting still has problems in obtaining data.

Developed Database System Analysis

This web server-based database system is to help the administrative staff of each unit and the monitoring and evaluation team of program activities to manage and obtain data. In this system, there is a difference from the current system, namely data storage is integrated.

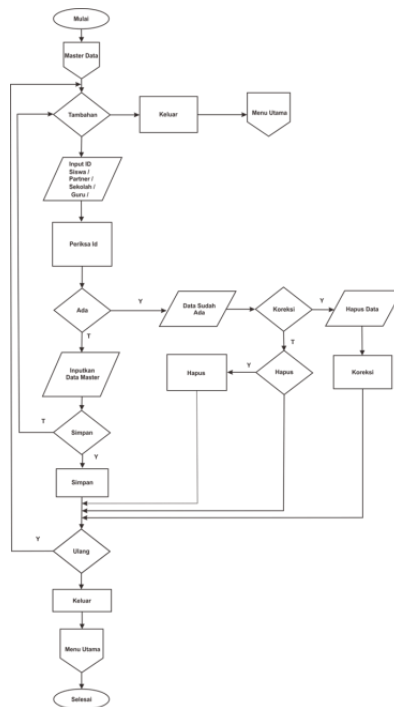
Admins from each unit can collect data on students, teachers, schools, and the type of training they participate in and can get accurate data in the form of graphs and can be taken in the form of Ms. Excel and PDF, the Monev team also gets maximum data and analysis results.

System Needs Analysis

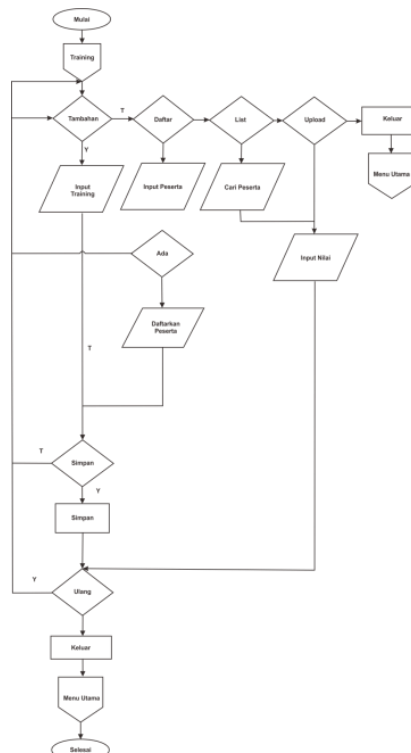
- 1) Software requirements analysis: As for the specifications of the Application used:
 - a) Programming Languages: PHP 5.4, Javascript, HTML, & CSS; Framework Code Igniter; and LTE Admin Template 2
 - b) Database: MySQL
- 2) Functional needs analysis:
 - a) Administrators can Create, Update, and Delete master data, namely Schools, Partners, Students, and Teachers;
 - b) The administrator creates a new training, registers students as participants, and also assigns grades to trainees;
 - c) Administrators can also Create, Update, and Delete activity data, namely Research, and MoU;
 - d) The report is divided into training reports, training participants, research, and MoU, the Administrator can print the results of the report;
 - e) Administrators can Create, Update, and Delete student, teacher, and backend user data;
 - f) Students or Teachers can register through the registration page and log in to the application;
 - g) Students can register for the selected training and also update their profile;
 - h) Teachers can update their profile on the teacher's master page

3) Activity Diagram

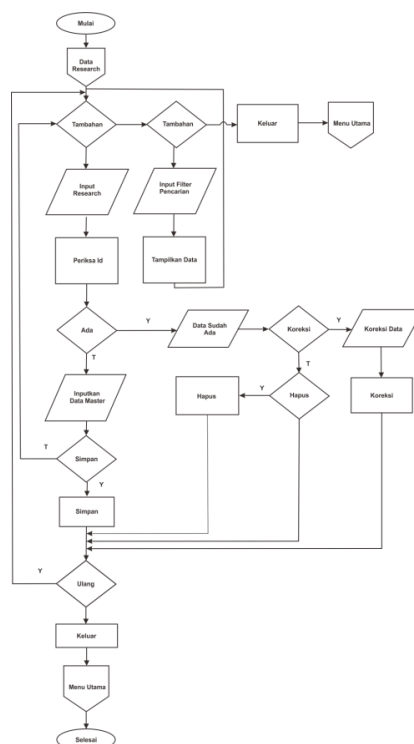
a) Activity Menu Master



b) Flowchart Menu “Training”



c) Flowchart Menu “Research” & “Partnership”



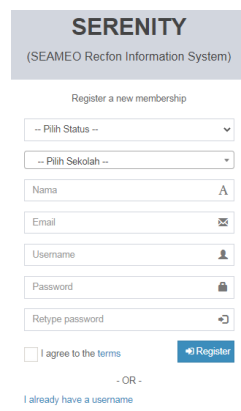
System Implementation

Login View

Figure 1. Login form display

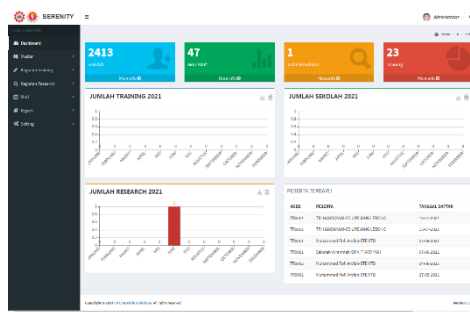
Before displaying the main page, the system will display the login page as a requirement to enter the main page.

Register Menu



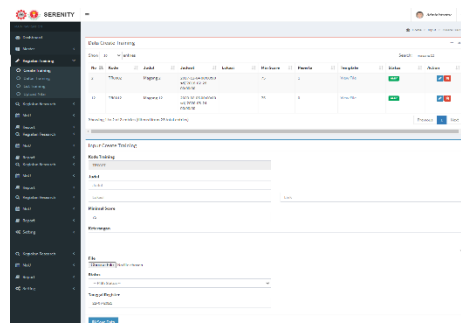
REGISTER – Every user (student, teacher) is required to register data along with a username and password on the register page, before being able to log in to update the profile and registration for training.

Main Menu Page (Dashboard)



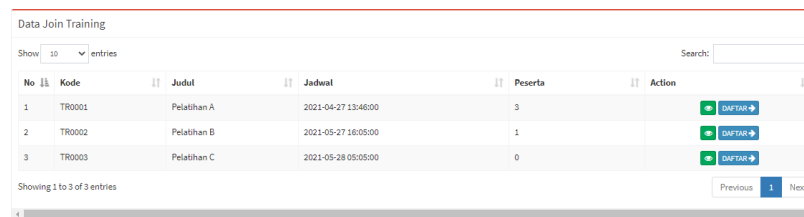
On the dashboard page, we can view a summary in the form of charts and tables for activities in the current year that have been inputted into the database

Training Menu Page



On the Training menu, users can Create, Update, and Delete Training according to the available fields. This page also determines the active status of the training.

Register Training Page

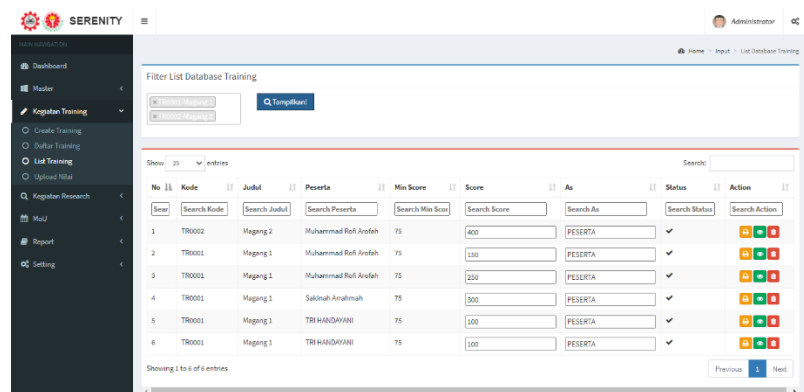


No	Kode	Judul	Jadwal	Peserta	Action
1	TR0001	Pelatihan A	2021-04-27 13:46:00	3	Daftar
2	TR0002	Pelatihan B	2021-05-27 16:05:00	1	Daftar
3	TR0003	Pelatihan C	2021-05-28 05:05:00	0	Daftar

Showing 1 to 3 of 3 entries

On the training list menu page, we can View Details, and also register as training participants

Training List Menu Page



No	Kode	Judul	Peserta	Min Score	Score	As	Status	Action
1	TR0002	Magang 2	Muhammad Rofi Arifah	75	400	PESERTA	✓	Peserta
2	TR0001	Magang 1	Muhammad Rofi Arifah	75	150	PESERTA	✓	Peserta
3	TR0001	Magang 1	Muhammad Rofi Arifah	75	250	PESERTA	✓	Peserta
4	TR0001	Magang 1	Sakirah Anshamah	75	300	PESERTA	✓	Peserta
5	TR0001	Magang 1	TRI KANDAYANI	75	100	PESERTA	✓	Peserta
6	TR0001	Magang 1	TRI KANDAYANI	75	100	PESERTA	✓	Peserta

Showing 1 to 6 of 6 entries

On the List Training Filter list training menu with multiple lists, will display the details of the participants and also the score and status. We can also fill in the scores of the participants.

Value Upload Menu page



Upload Nilai

STEP 1

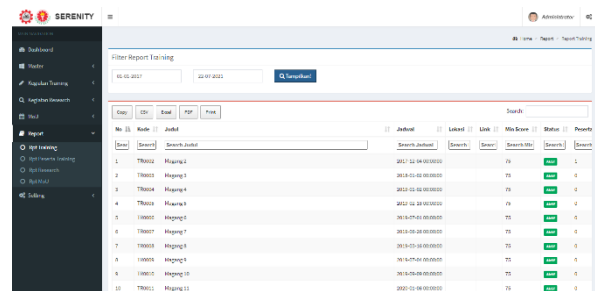
TR0001-Pelatihan A [Download Format](#) *Format: Judul, no_peserta, upload nilai, file baru tsb *

STEP 2

[Choose File](#) No file chosen [Preview](#)

On the Upload Value Step 1 menu page to select the training title and download first the value format, then upload to step 2 and preview the list of values we have uploaded

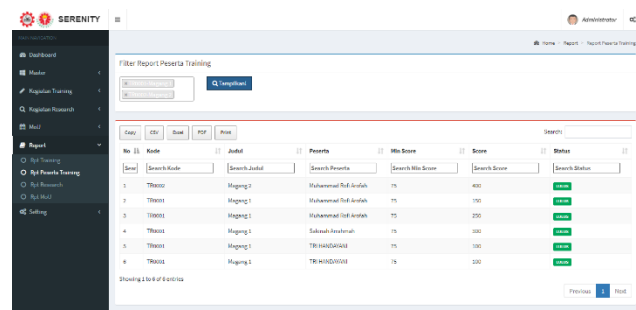
Plant Report Training



No	Kode	Judul	Jarak	Labrak	Link	Mhs Score	Status	Priority
1	TR0001	Wagang 1	2001-01-01 00:00:00	75	75	75	75	0
2	TR0002	Wagang 2	2001-01-01 00:00:00	75	75	75	75	0
3	TR0003	Wagang 3	2001-01-01 00:00:00	75	75	75	75	0
4	TR0004	Wagang 4	2001-01-01 00:00:00	75	75	75	75	0
5	TR0005	Wagang 5	2001-01-01 00:00:00	75	75	75	75	0
6	TR0006	Wagang 6	2001-01-01 00:00:00	75	75	75	75	0
7	TR0007	Wagang 7	2001-01-01 00:00:00	75	75	75	75	0
8	TR0008	Wagang 8	2001-01-01 00:00:00	75	75	75	75	0
9	TR0009	Wagang 9	2001-01-01 00:00:00	75	75	75	75	0
10	TR0010	Wagang 10	2001-01-01 00:00:00	75	75	75	75	0

The Report Training page serves to display a summary of training activities in a certain period

Training Participant Report



No	Kode	Judul	Peserta	Mhs Score	Score	Status
1	TR0001	Wagang 1	Muhammad Ridwan	75	400	75
2	TR0002	Wagang 2	Muhammad Ridwan	75	100	75
3	TR0003	Wagang 3	Muhammad Ridwan	75	250	75
4	TR0004	Wagang 4	Sekolah Indonesia	75	100	75
5	TR0005	Wagang 5	TR HANSAH	75	100	75
6	TR0006	Wagang 6	TR HANSAH	75	100	75

Participant Report menu page Serves to display the value of participants in the selected training

CONCLUSION

Each unit, especially the SEAMEO RECFON Training unit in managing data, still uses conventional methods which still use Microsoft Access and Microsoft Excel. Designing and developing this information system using the System Development Life Cycles (SDLC) method, namely prototyping and to develop the system using several stages, namely analysis of the running system, database design, interface display design and program testing. The Hypertext Preprocessor (PHP) programming language is used, database design uses a MySQL database, and Apache as the web server.

The implementation of the integrated database of training programs in the field of food and nutrition in seameo recfon is to utilize internet technology that develops when staff can carry out data processing processes in the office or when performing tasks outside the office area and can be used for monitoring and evaluating activities effectively.

Based on the results of the study, researchers suggested that there is a need to notify which data has been inputted and which has not been inputted and additional systems so that they can be integrated with the data in Dapodik.

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