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Coral Reef Cultivation through Online Donations

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***Abstract*— The amount of damage to coral reefs caused by human activities has an enormous impact on human life, then with that there must be conservation of reefs to preserve coral reefs in Indonesia, involve the Department of Fisheries and Maritime must play an important role in providing solutions to these problems. The role of the Institute can be done by conducting the cultivation and supervision of coral reefs. The cultivation can be done by making online donations to coral reefs. That way the community will participate in preserving coral reefs. However, facilities for serving online donations are not yet available, then this research is focused on making the system. The system will serve a donation system through the purchase of coral reefs and implanted by a diver agent at a specified location of coral reefs. This donation system was created using a structured approach in analyzing problems that occur in making the system to be built. The existence of this system will facilitate the community to participate and increase public awareness in cultivating coral reefs.**

Keywords—Coral Reef, Donation, Online., System.

I. INTRODUCTION

Donations are humanitarian activities aimed at the needs of social activities, so that donations become an important part of society. Many activities can be supported by donation activities. In Indonesia, the level of community awareness of donation activities is quite high, as long as these activities are useful activities for the community[1]. With the technology, services can be done online. The word Donation Online is a sentence that is currently developing in society, from the use of technology, donation activities can be done via transfer from various banks.[2]. This is a benchmark for research on coral reef cultivation, which is how to create community participation in conserving coral reefs.

The previous studies supporting the research were the technology of coral reef conservation and rehabilitation [3] which says that the supply of coral reefs in Indonesia has dropped dramatically due to human activity, and there is no government control over coral reefs in Indonesia. In this study describes the technology applied to coral reefs such as artificial coral reefs and transplanting. But in this research, there is no role and involvement of the community in conducting coral reef cultivation. Dynamic System Effect of Seaweed Cultivation and Population on Coral Reef Degradation [4]. In this study produced how the role of seaweed on the coral reefs in Poteran-Madura Island, the existence of seaweed cultivation conducted by fishermen then had a major effect on coral reefs. As a result of pressure from the amount of seaweed cultivation, the clear waters (quality) no longer fit the requirements for the growth of coral reefs. In this case the coral reef is only as a fulfillment of the needs of the community, especially fishermen. However, there is no replanting activity of coral reefs that have been used. Other research is the Socio-Economic Study of Communities in the Utilization of Coral Reefs in Tumbak Village, Southeast Minahasa Regency [5], in this study discusses the excessive use of coral reefs that damage coral reef ecosystems, which are used as a food source and as building material, the damage data is presented through questionnaires but this research does not discuss how to deal with the damage that has occurred.

Therefore, based on previous research, research should focus on coral reef ecosystems, namely by conducting coral reef aquaculture that involves the wider community by applying technological assistance in the form of online donations. It aims not merely to rebuild coral reefs. However, educating the public that coral reefs are very important in aquatic ecosystems. The community is expected to not only participate through online donations, but also participate in preserving coral reef sustainability through insight / knowledge of coral reefs. To support this online donation research, it is necessary to involve the Department of Fisheries and Maritime Affairs with the aim, among others:

1. Apply online donation technology through the purchase of coral reef seeds that will be planted in locations that have been determined by the Fisheries and Maritime Services. In this case the area that has damage to coral reefs.
2. With online donation technology, people will be more concerned with coral reef cultivation.

II. RESEARCH METHOD

To build an online coral reef donation, a research method is needed to solve the flow of problems that occur, especially in the Department of Maritime Affairs and Fisheries. The method used uses a structured approach with descriptive flow. The research method can be seen in Figure 1.

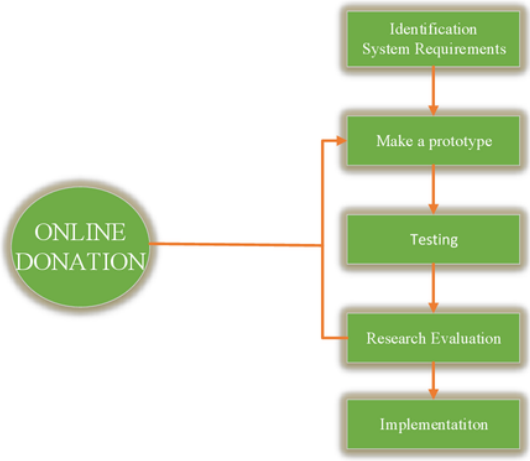


Figure 1. Research Method[6][7]

The purpose of this research is to produce an application in the form of an online donation application. The stages in building this application consist of:

1. Identify system requirements
   This identification includes problems that occur on coral reefs, so that it can be used as a basis in building applications. This identification also involves system problems that are running in the Department of Fisheries and Marine Affairs itself related to coral reef problems and related technologies that support online donation applications.[8].
2. Make Prototype.
   This stage is the stage of building the current system design, then analyzed to produce a system that will be proposed based on the needs that exist in the Department of Fisheries and Maritime Affairs. This prototype consists of functions built into online donations, such as donation methods in the form of payments, nursery locations and coral reef nursery evaluation functions.[9].
3. Testing.
   Testing is done so that the application is functioning as expected, this test avoids errors of procedure, function or mechanism of making the program.
4. Research Evaluation.
   So after testing is done, the evaluation phase needs to be done to improve the application that has been made. The evaluation was also carried out by discussing with the Fisheries and Maritime Affairs Office and also to the community as the main parties directly involved with the system.
5. Implementation.
   When implementation needs to be considered, because when the application will be published online, it must be estimated regarding the capacity of the data needed, the speed in processing data, and the speed in accessing applications. And this online donation application data security system is also needed.

III. RESULT AND DISCUSSION

The purpose of making this application is to provide a clear picture and is expected to help these users to be able to see the function of conservation licensing, preserve coral reefs by means of online donations, and conduct an assessment of coral reef conservation. The involvement of users includes individual communities, agencies and the Office of Fisheries and Maritime Affairs itself.
The design consists of drawing through DFD, ERD, Table Relations, File Structure.

1. DFD(Data Flow Diagram).

a. Conservation Licensing
   This process aims for people who want to carry out aquaculture directly in a predetermined location under the supervision of the Fisheries and Maritime Affairs Office. All procedures in conservation licensing will be carried out online, including in terms of administration especially for the document requirements that must be completed. The procedure for licensing is:

1. Incoming proposal from the agency or community regarding conservation.
2. Letters received by the staff of the letter section that handles incoming proposals.
3. Proposals are recorded and given serial numbers and attached disposition sheets.
4. Proposals that have been recorded in the personnel section of the letter are given to the head of department.
5. The head of the office proposes the proposal in accordance with the subject letter to the field and the sheet is signed by the head of the office.
6. Proposals that enter according to disposition are derived from echelon 3 officials to their lower echelon, namely echelon 4, in this case, the signature of echelon 3.
7. The next composition is echelon 4 to the staff in this case the signature of echelon 4.
8. Recipient of the last disposition, namely staff who will identify to the field.
9. The identification report will provide an analysis that the activity can be continued or not.
10. If the staff does not make an identification report that the activity cannot be continued then it is given to the staff of the letter section after which it is filed and then the staff of the letter section informs the public or the institution cannot be continued.
11. If yes the staff section makes a work plan and budget report and then it is given to the personnel section of the letter after it is archived and then the staff section tells the community or agency that the proposal can be continued

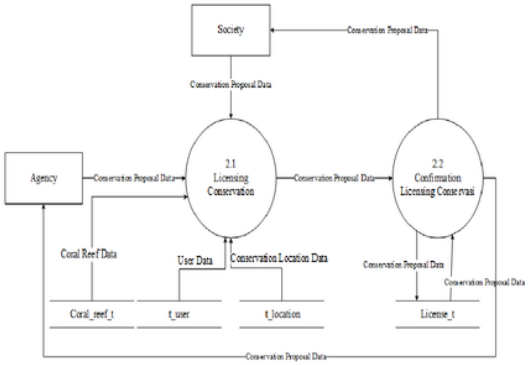


Figure 2. DFD Conservation Lincesing[10].

b. Online Donation
Online donation process can be seen in Figure 3,

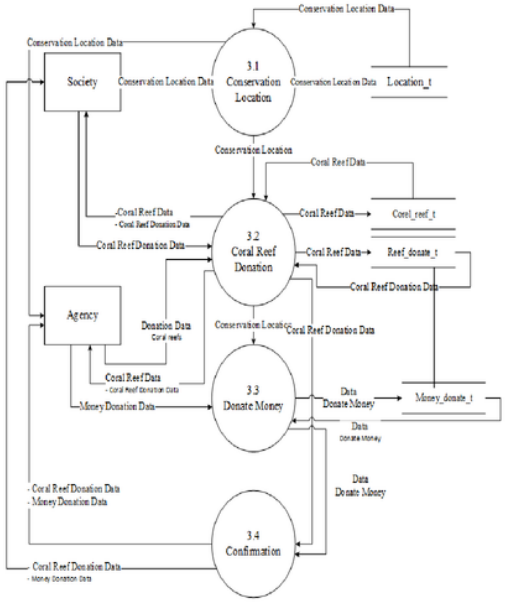


Figure 3. DFD Online Donation.

There are 4 stages that will be carried out by the community or agency, namely:

1. Conservation Location
   Determine There are 4 stages that will be carried out by the community or agency, namely the location of coral reef nurseries based on maps / locations. Maps / locations will be displayed based on the area under the supervision of the Department of Fisheries and Maritime Affairs. In this case the location is a location that really needs coral reef cultivation.
2. Coral Reef Donation
   Communities or agencies can participate by being involved in providing coral reef seeds that are already owned or making purchases from seeds provided by the Fisheries and Maritime Affairs Office.
3. Donate Money.
   The form of donations can also be in the form of a sum of money that can be transferred to the Department of Fisheries and Maritime Affairs, which will later be allocated to procure coral reef seeds [2][1].
4. Confirmation.
   After the coral reef donation process or a donation of money, the community /agency will receive a message in the form of a confirmation from the Fisheries and Maritime The Department, that the process has been successful..

c. Assessment.
This process is a direct evaluation process by the community / agency related to coral reef cultivation conducted by the Fisheries and Maritime Affairs The Deparment. This is done as an effort in evaluating the performance of the Department of Fisheries and Maritime Affairs. The assessment process can be seen in Figure 4.

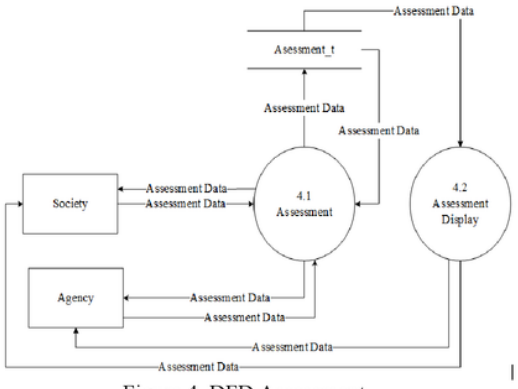


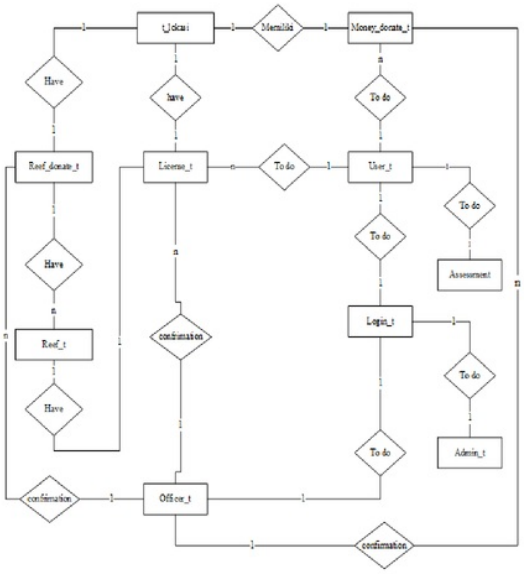
Figure 4. DFD Assessment.

This stage of the process consists of 2 parts :

1. Assesment
   This process is the process by which the community / agency will conduct an assessment in the form of an online questionnaire that must be filled out. The questionnaire consisted of a number of questions related to coral reef cultivation. Questions asked include the process of cultivation itself based on the location of coral reef nurseries.
2. Display Assessment
   Then the results of the assessment of the community / agency can be displayed in the form of a graph stating each category, consisting of very good, good, sufficient, not good, and not good. This is done to facilitate the Fisheries and Maritime Affairs Department in improving the process of coral reef cultivation.

2. *ERD*

Entity Relationship Diagram (ERD) is a model to explain the relationship between data in a database based on data objects that have relations between relations[11]. The ERD can be seen in Figure 5.



Gambar 5. ERD.

In this ERD process, the online donation application consists of several tables built, among others:

a. Table

1. Reef donation table.
2. Reef table
3. Location table.
4. Licensing table
5. Employee table
6. Table of donations of money
7. User table
8. Login table
9. Rating table
10. Admin table.

b. Relation

And for the relationship itself is built by 12 relationships that connect each table in the coral reef online donation application.

3. *Relation Table*

The relation table is the relationship of a table with other tables, each table has different functions and uses from each other. This process is carried out to make it easier for the team of programmer experts to compile the database related to the formation of the application as data storage, and as data used in functions that exist in the application[12]. The relation table can be seen in Figure 6.

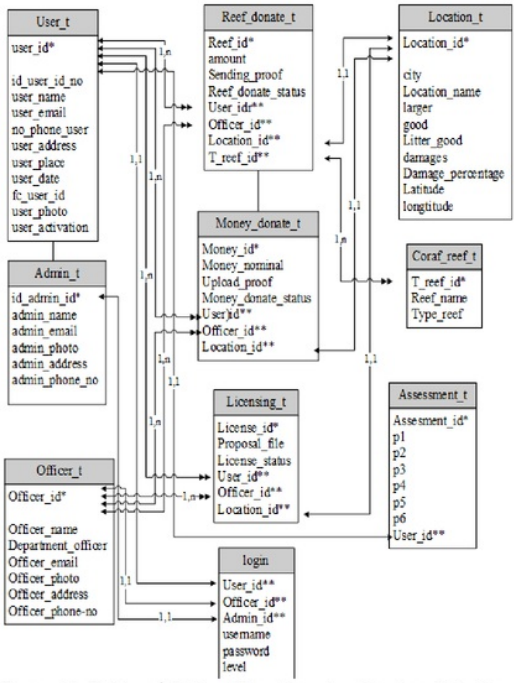


Figure 6. Table of Online Donation Application Relations.

This relation table follows from the description of the ERD. The number of tables in ERD represents the number of tables illustrated through the reaction table. Each table consists of fields that are adjusted to the process that is currently running in the Department of Fisheries and Resources, only the difference is that the process is described through a computerized process. The results of the computerization process will produce a web-based online donation application.

4. *File Structure*

To facilitate the programmer in doing database documentation, the file structure was made. The file structure given to the tables that have been formed through the ERD process and the Relationship Table.

The following file structure can be seen in the following tables.

TABLE I. USER.

Field	Type	Information
user_id	int(11)	Primery Key in the user table
user_id_no	int(20)	id number on the user account
user_name	varchar(50)	The name of the account owner
user_gender	varchar(25)	The gender of the account owner
user_email	varchar(50)	Email from the account owner
user_phone_no	varchar(15)	Account owner's phone number
user_address	varchar(100)	Account owner address
user_place	varchar(50)	The place of birth of the account owner
user_date	date	The date of birth of the account owner
user_id_fc	varchar(255)	Copy of ID card from the account owner
user_photo	varchar(255)	Photos used by the account owner
user_activation	varchar(50)	Activation in the user table

To see the login table can be seen in table 2.

TABLE 2. LOGIN.

Field	Type	Information
user_id	int (11)	Guest key in the login table.
officer_id	int (11)	Guest key in the login table.
admin_id	int (11)	Guest key in the login table.
username	varchar (20)	Account owner username
password	varchar (20)	Account owner Password
level	varchar (20)	Account owner Level

To see the login table can be seen in table 3.

TABLE 3. LICENSING.

Field	Type	Information
licensing_id	int(11)	Permission primary key in the permissions table
user_id	varchar(11)	Foreign key in the permissions table, Primary key in the user table
location_id	varchar(11)	Foreign key in the licensing table, Primary key in the location table
proposal_file	varchar(255)	Proposal file in the licensing table
license_status	varchar(25)	Licensing Status
coral_id_t	int(11)	The foreign key id of a coral reef in the coral reef donation table, the primary key in the coral reef table

To see the login table can be seen in table 4.

TABLE 4. CORAL REEF DONATION

Field	Type	Information
reef_id	int(11)	Primary key or primary key in the Coral Reef table
reef_id_t	int(11)	The foreign key id of a coral reef in the coral reef donation table, the primary key in the coral reef table
reef_name	varchar(25)	The name of the coral reef in the reef table
reef_type	varchar(25)	Types of coral on the reef table
amount	varchar(25)	Amount of coral reef donation in the reef table
location_id	varchar(11)	Foreign key Conservation Location table

To see the login table can be seen in table 5.

TABLE 5. DONASI UANG

Field	Type	Information
money_id	int(11)	Primary Key in the money donation table
money_nominal	varchar(20)	The amount of money in the money donation table
upload_proof	varchar(255)	Proof of upload on money donation table
location_id	varchar(20)	Foreign key in the money donation table, Primary key in the location table
user_id	varchar(20)	Foreign key in the money donation table, Primary key in the user table
money_donation_status	varchar(20)	The status of money donations in the money donation table

To see the login table can be seen in table 6.

TABLE 6.LOCATION

Field	Type	Information
location_id	int(11)	Primary key id location in the location table
city	varchar(50)	Regency / City in the location table
location_name	varchar(50)	Location name in the location table
large	float	Area on the location table
good	float	Good location conditions on the location table
little good	float	Little good location conditions in the location table
damage	float	Damaged location conditions in the location table
damage percentage	float	Percentage of damage to coral reef locations in the location table
latitude	float	Latitude in the location table
longtitude	float	Longtitude in the location table

To see the login table can be seen in table 7.

TABLE 7..CORAL REEF

Field	Type	Information
reef_id_t	int (11)	Primary key of coral reefs in the coral reef table
reef_name	varchar(50)	The name of a coral reef
type_reef	varchar(50)	Types of coral reefs

To see the login table can be seen in table 8.

TABLE 8..RATING

Field	Type	Information
assessment_id	int(11)	Primary to assessment in the assessment table
officer_id	int(11)	Foreign key on the assessment table, Primary Key on the employee table
P1	varchar(15)	Assessment Questions 1
P2	varchar(15)	Assessment Questions 2
P3	varchar(15)	Assessment Questions 3
P4	varchar(15)	Assessment Questions 4
P5	varchar(15)	Assessment Questions 5
type	varchar(15)	Question Type

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