Using the Prototype of Table Tennis Software in Managing Table Tennis Tournament

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Abstract—currently, the table tennis game still has many problems. Poor registration process often stirs up controversy due to the limitation placed on the number of participants who can attend the game. The magnitude of the participants due to the large numbers of diverse age groups further complicates timely and accurate scheduling. There are also varieties of age fraud being done as a result of lack of computerization in athlete registration system. This study is aimed at: (1) The production of the design for the table tennis software and (2) Getting a good performance from the table tennis software design. The special research is targeted at a well-performing and well-validated table tennis information system. In this research, the creation of the system is founded upon the software design method in reference to Pressman (2012). The first step is analysis, which consists of user needs analysis, job analysis and technology analysis. The next includes the design of block diagrams, interface design and program flowchart design (flowchart). After that comes the process of translating the modules of the design results -using the programming language, into the form of application or as it is commonly called; coding / implementation. The last stage is testing the system using Black Box Testing system. In this stage, the functionality of each button and the items contained in each form is tested for effectiveness. The result of functional testing with black box testing as a base is; first, it states that all buttons, interface pages and menus can work properly. The app is then further tested for eligibility by the users of the tournament, referee and general users. As a result, the referee's feasibility test scores 90 from a scale of 100 (very feasible), and the user aspect scores 80 out of a 100 (feasible) scale. Generally, referee users and ordinary users attest to the fact that this app is worth using.

Keywords—information system, table tennis, tournament

I. INTRODUCTION

Table tennis is a widely popular sport in the world. Its inclusion as a sport competition in the Olympiad buttresses this point [2]. In addition to that, table tennis has the agenda of holding ITTF cadet challenge championships, ITTF junior circuit, world junior championship, youth Olympic, Paralympic, world championship, and world cup. In Indonesia, championships such as POPNAS, OOSN, PORSENI, POSPENAS, PON, championship age group and national championships between private institutions are routinely implemented. The rapid development of table tennis through these championships has effected an increase in the number of participants, which enables the committee or match organizers, work extra hard especially in terms of the system match schedule creation.

The current table tennis game is still lapped with numerous unresolved issues. Poor registration process is one of these issues and is a resultant effect of limitation in the number of participants who can attend the game. A good game scheduling method is expected to affect positively, the quality of organizing a sports tournament [1]. According to Sonia [5] the problems associated with the game increases the table tennis athletes' tendency to have high levels of anxiety before the match. Creation of match system schedules which had been done manually is very difficult and complicated. Often, human error causes errors in terms of making system schedules match. Development in the world of information technology has been so rapid that production of a scheduling system of table tennis match can be facilitated with its help. According to Wasul [3], the modeling of the game system is very important in order to help the implementation of the game.

To achieve the above, it is necessary to build an information system capable of managing a table tennis match. This also includes athlete data management, participant registration input, automatic schedule creation, and publication of match results. The scheduling of a computer-based table tennis match system is expected to simplify and reduce the possibility of human error while in the process. Scheduling information system in table tennis match can be developed with the concept which enables organizers or organizers of the championship create the game schedule quickly and accurately. It can also be directly published through the internet.

Generally, this research is aimed at getting the result of the designing of information system software in the table tennis match. It has a good performance, can improve the quality of table tennis competition, and have good implementation effectiveness. The specific objectives of this research are: (1) Produce the design of information system software table tennis match, and (2) Getting a functional performance of the design software system information game table tennis match.

The benefits of this research are: (1) providing a vehicle to the public to know how the running of a table tennis match from registration to final in an efficient, inexpensive and accurate design works (2) providing a wide opportunity to the community to learn and understand the system of table tennis in a light, simple way and (3) positively impacting on the improvement in quality of match implementation, reducing the impact of cheating and age theft, expanding the implementation of table tennis information via the internet.
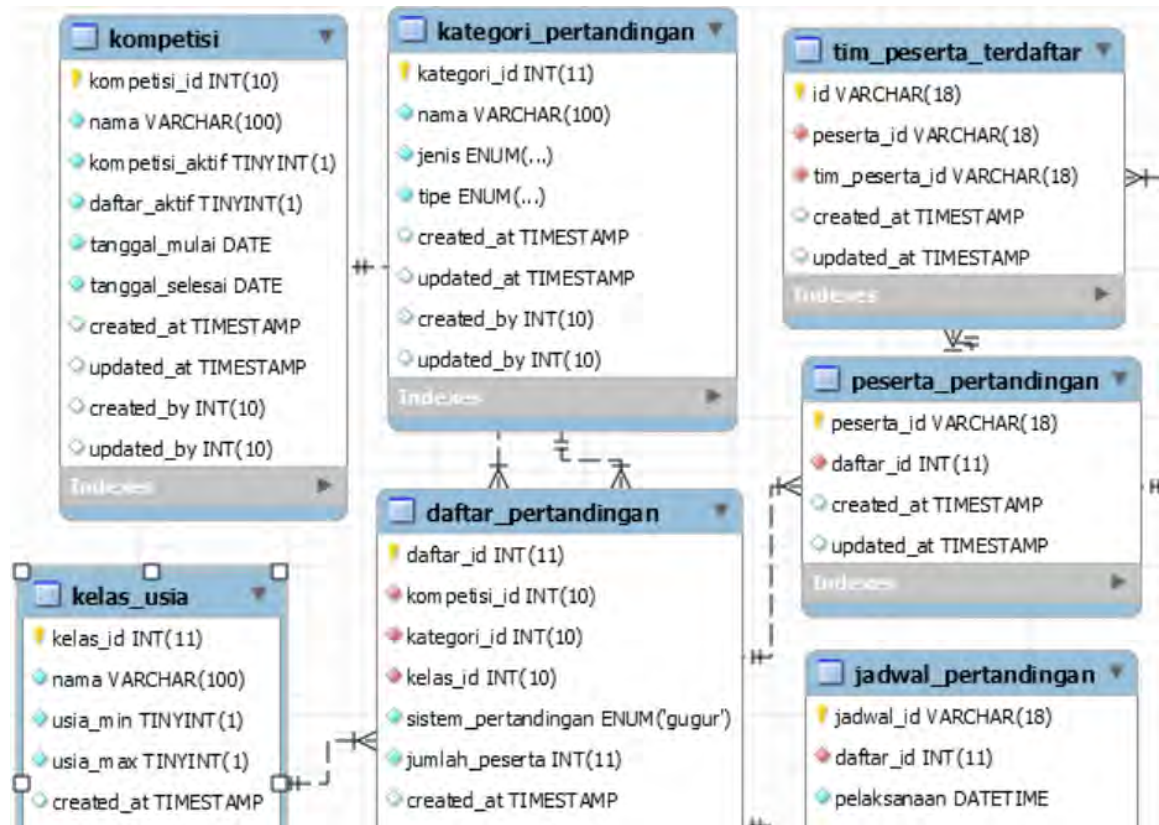
Fig. 1.   Database design using erd

II. METHOD

The specified type of research used in this study is 'research and development' with reference to Pressman [4]. The steps of this research consists of descriptions and needs analysis, design, manufacture or implementation, testing and validation, improvement, weeding, trial usage or implementation, revision and finishing. In this article is only the results of the design is discussed.

The first stage of design is creating the system needs analysis. The result is a list of needs. Among others are the rules of organizing table tennis matches, table tennis implementing components, and athlete / club data. Appropriate computer equipments, language and programming tools and game referees are also required. The next stage is designing the system. Development of applications, database design, interface design and programming flow should be done with excellently. The next stage is implementation. Once the system is built, functional testing is carried out by the user by the user.

III. RESULTS AND DISCUSSION

The results of the design are described in the following: System requirements analysis are (1) PHP web programming software is used for the display design and simultaneously programmed with HTML language, (2) MySQL software is used to create database, (3) Table Tennis Regulations, (4) HelpNDoc is utilized as the software in designing help files, (5) Web hosting and web server (6) Computer device used: Intel core processor 2 duo centrino 2.20 GHz, 320 GB hard

drive, keyboard, mouse (7) Xampp as MySQL database link with PHP (8) References in relation with software, databases, web-based programming and mysql.

System design is inclusive of database, program flow, database relation diagram and display design. The designed database (see Fig. 1) consist of 9 tables which were generated from the data dictionary, namely: the athlete table, the match system table, the user table, the category table, the verification table, the club table, the table of match participants, the schedule table and the user activity table.

The athletes table contains information and data on athletes who are members of a table tennis club. The match system table contains information on choices fall, competition, half competition. The user table comprise of information on system users in all levels; from super admin, admin, special users or regular users. The category table comprises of the grouping of match participants by age. The verification table contains information on potential participants of the match or event to be proposed. The club table contains information on club data and its members. The participants table contains information on all participants who have verified final matches. The user activity table contains information on user activities performed, such as when signed in to the system, accessed any menu, and more. The basic process of this system is displayed in an outline from the designed Data Flow Diagram, consisting of DFD from level 0 to level 3. Below is an example of Data Flow Diagram Level 0. In Data Flow Diagram level 0, (see Fig. 2) two external entities which are public and admin are displayed.
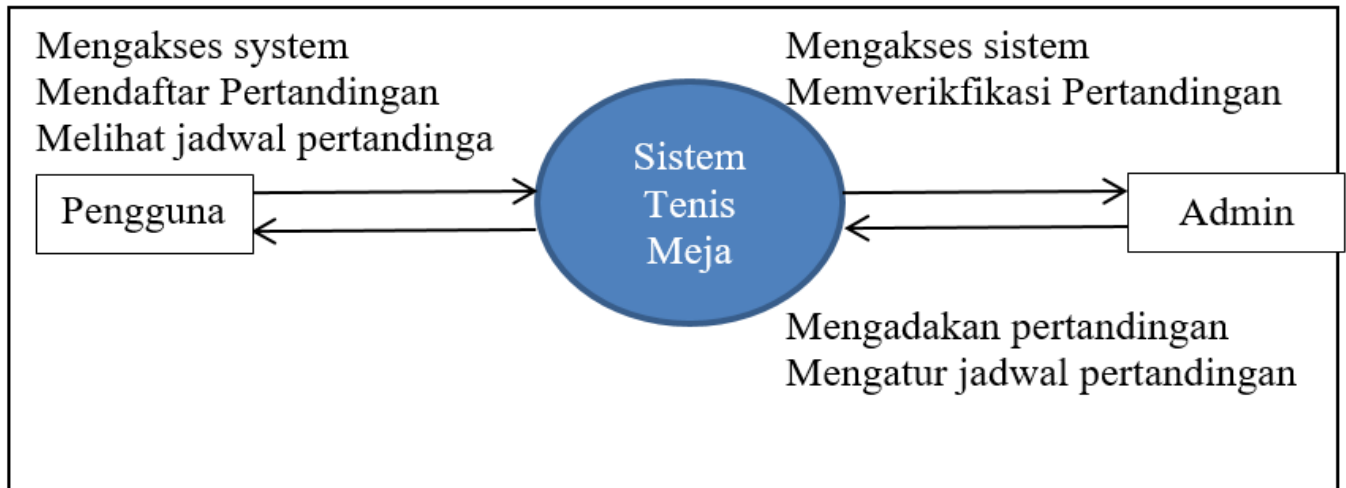
Fig. 2. Data Flow Diagram Design Level 0

In the design view, two examples of the application design are displayed; the display login menu and the main menu view. The login menu (see Fig. 3) comprises of the login button, the exit button, the background image, and the status bar. The main menu consists of Master Data menu, Game play menu, Registered Team menu, Dashboard menu, System Settings, description box, status bar and buttons related to table tennis.
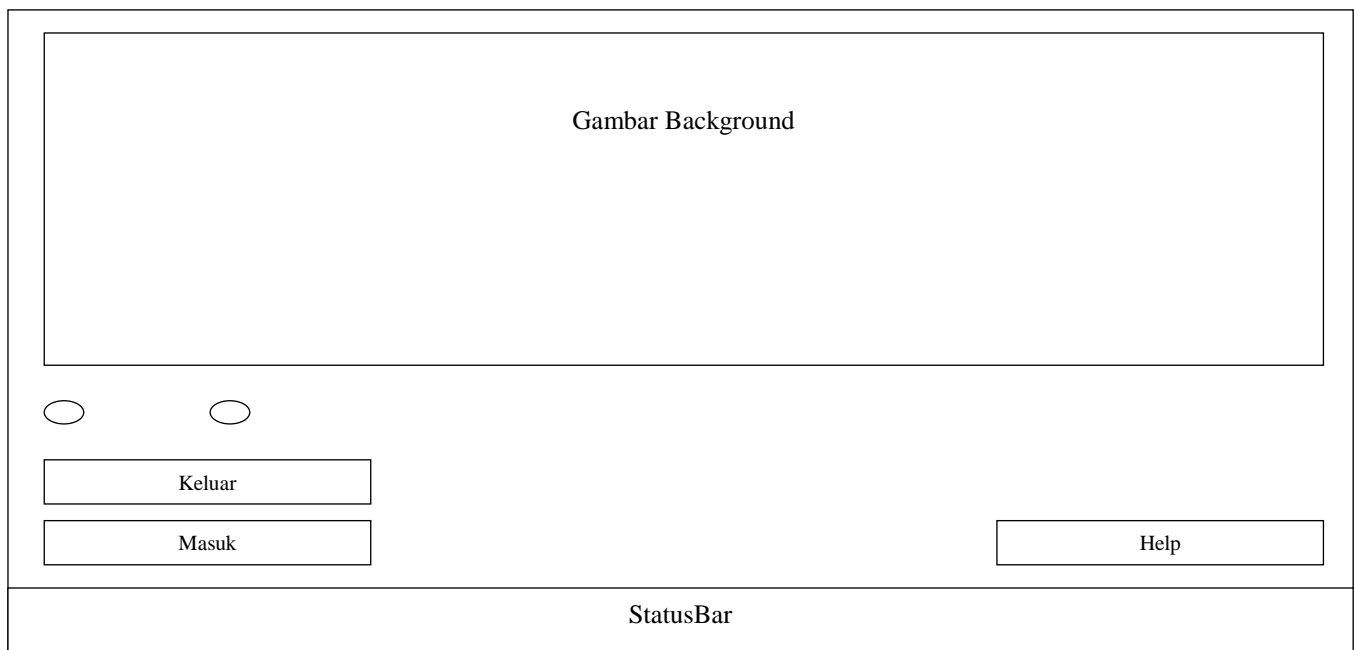

Fig. 3. Form Login Design

Login Form, a part of the display is used to determine the category of users who use or run the program information system. In login form, there are two choices of user categories, namely admin and public. Users who choose the admin category are required to press administrator button after which a form will appear, then entry of user login and password is demanded before entry into the main form (see Fig. 4). Admin has full access rights which can display, add, change and delete the data presented. While in the public category, users can directly login.

Dashboard	Tim Terdaftar	Master Data		Pengaturan Sistem

Pendaftaran Pertandingan

Pendaftaran Peserta Pertandingan

Verifikasi Pertandingan

Verifikasi Peserta Pertandingan

Admin

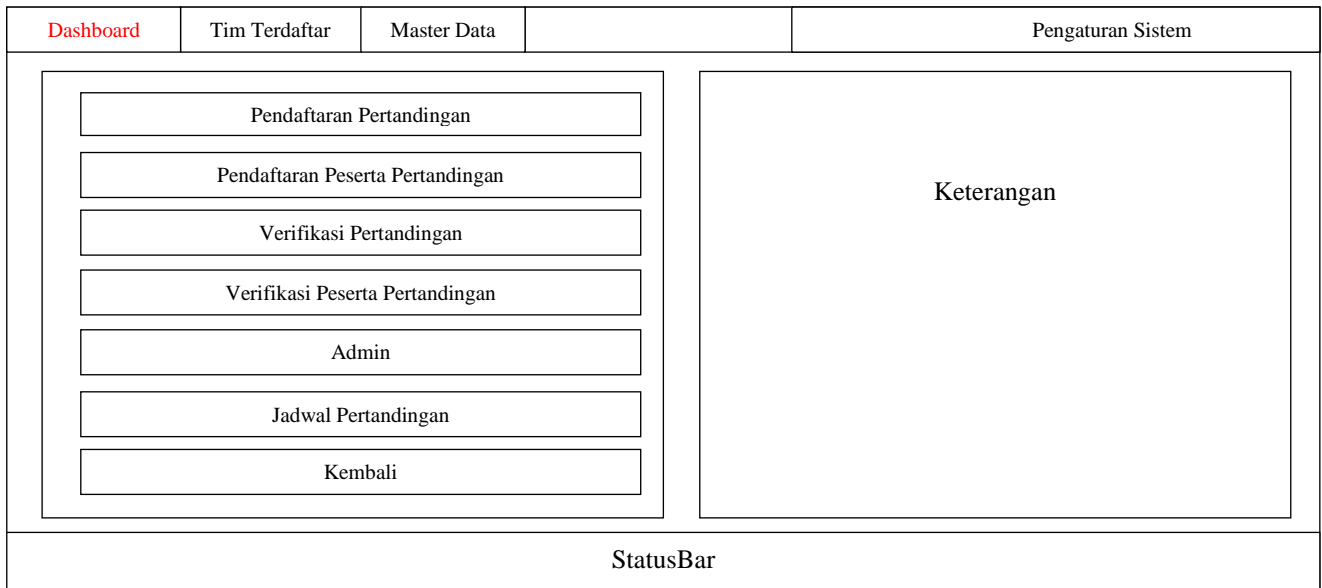Jadwal Pertandingan

Kembali

Keterangan

StatusBar

Fig. 4.   Main Form Design

The next step is implementation of the program. At this stage, database design is built into MySQL 4.0, interface design is built in Delphi, program codes are written according to DAD, ERD, and Flowchart programs. Each design is assembled into a unified system, interconnected with each other. The next step is installation to the windows system in order to run the prototype version program. The final step is setting of the content to neatly fit into categories therefore making it easier for users to find their needed content . Below is an example of the implementation of table tennis app (see Fig. 5 and Fig. 6).
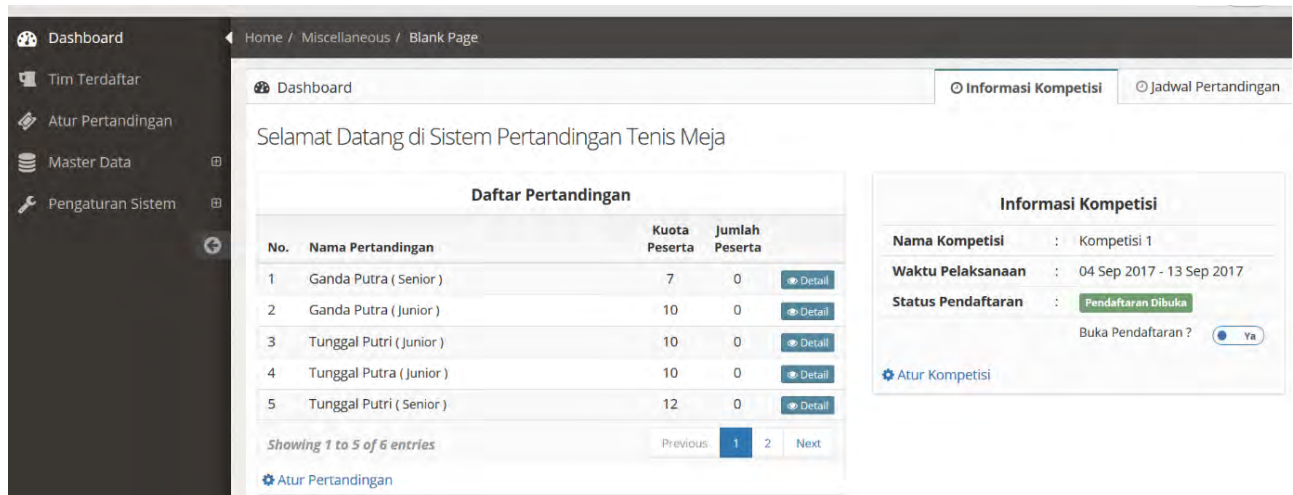

Fig. 5.   User Input Data Form

Finally, functional testing of apps and feasibility testing is carried out by media experts. Based on data, functional testing states that all menus, buttons and display are working properly. The results of functional testing using black box testing state that all buttons, interface pages, and menus are working properly. The app is then tested for eligibility by users of the game referee and general users. As a result, the referee's feasibility test scores 90 from a scale of 100 (very feasible) and the user's test scores 80 from a scale of 100 (feasible). Referee users and ordinary users claim that this app is worth using. The completion of the feasibility test instrument can be viewed in detail in the appendix of this summary.
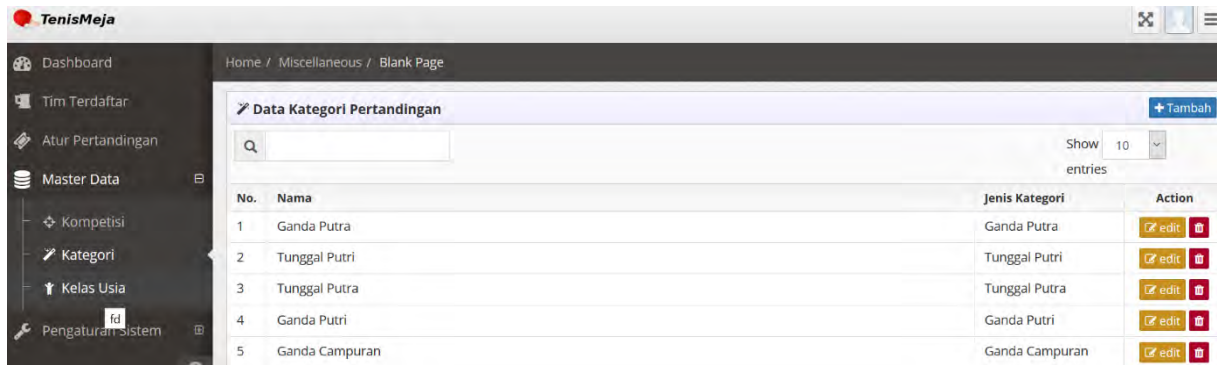
Fig. 6.   Input data form in match category

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