**JURNAL TEKNOLOGI DAN OPEN SOURCE**
Vol. 7, No. 2, December 2024, pp. 103~109
e-ISSN: 2622-1659, accredited Four Grade by Kemenristekdikti, Decree No: 36/E/KPT/2019
DOI: 10.36378/jtos.v3xx

# Building A Powerfull File Specification Application For Database System Design

**Mohammad Syamsul Azis[1], Hasan Basri[2]**
[1,2]Information System, Bina Sarana Informatika University, Indonesia

**Article Info**

***Article history:***

Received 07 27, 2023
Revised 10 12, 2023
Accepted 11 01, 2024

***Keywords:***

File
Index Terms
Prototyping
Specification

**ABSTRACT**

The database is a collection of data that is well organized so that the data is easy to store, access and manipulate. Each database can contain all databases, or it can contain any number of database objects, such as files or tables. The purpose of the database was to organize data/organize data so that it is easy to obtain, accurate, and speedy in data retrieval, so that there was no duplication of data and the data is easy to maintain. Database has an important role to build an application. To build an application, valid data is needed so that the data synchronization of the application made with the designed database can be connected so that the data structure and data manipulation that occurs according to needs. The initial stage in making this program is analysis. The analysis was done by designing the program using diagrams. The method used in this research was the prototyping method. The diagrams used are Use Case Diagrams and Activity Diagrams. The result of this research is the application was made according to the needs of the users. In addition to being easy and practical, users found it very helpful because it saved time in making specification files, which were originally quite complicated and took a long time to make, now with this application file specifications could be made easily and quickly.



***Corresponding Author:***

Hasan Basri
Sistem Informasi
Universitas Bina Sarana Informatika
Indonesia
Email: hasan.hhi@bsi.ac.id


## 1. Introduction

A database system is a system that consists of a collection of interconnected data tables and a collection of programs that allow multiple users or other programs to access and manipulate the data tables [1][2]. The database system consists of several components consisting of hardware that is usually included in the database system such as memory from a secondary hard disk. A database can be a collection of well-organized data so that the data is easy to store, access and manipulate [3][4]. Each database can contain all databases, or it can contain any number of database objects, such as files or tables[5][6]. A database management system (DBMS) is physical data processing that is not performed directly by the user, but is managed by software called a DBMS that determines how data is stored, modified, and retrieved. The user allows interacting with the database and can manipulate data in programs written in programming languages. Database users can create custom programs to populate, modify, or retrieve data that is easy to use. These programs are available directly from the DBMS or created using a programming language. The purpose of the database is to arrange /organize data so that it is easy to obtain, accurate, and quickness in data retrieval, so that there is no duplication of data and the data is easy to maintain. The data does not

depend on the application program, so that the maintenance of the application program is easy to do, the data can be shared by several users, the standardization can be applied, the information is always up to date. To meet the information content needs of certain users and applications, provide a natural and understandable information structure, support processing requirements and performance objectives (response time, processing time, and storage space). In this case the database has an important role to build an application. To build an application, valid data is needed so that the data synchronization of the application made with the designed database can be connected so that the data structure and data manipulation that occurs according to needs. This is certainly inseparable from the need for a specification or structure arrangement of the database, tables, fields and records in it. It also makes a database have a file specification, so that the determination of the structure of the database content is full filled according to system requirements .In this research, the authors build an application to be able to design a database based on the specified file specifications so that the database system built is relevant to the required resources both the system and user side. File specifications are needed to provide details in describing the contents and functions of each element that will be used in database creation [7][6]. The file specification is made as a support so that system users know everything related to files or filed names in database [8][9].

## 2. Research Method

In making this application specification file, the researchers uses the Prototyping Method, where the Prototyping Method is a system development method that has a focus on designing prototypes that are useful for making it easier for users to identify the form of the system that will be used [10][11]. The steps of the method are divided into three steps. The first step is called design or commonly known as design, then the second step is application creation, and the third step is the evaluation stage. At the design steps, the program is designed in the form of a mock-up[12]. Mock up is an initial model of a simple design of the program to be made [13][14][15]. The emphasis in this design step is on the function of (the user interface) in the program created. The user interface must be relevant to the needs or demands of the customer, where every function must run properly according to the needs and expectations of the customer. Then proceed to the programming step. At this step the program is made completely in accordance with pre-designed plans.. After the program or application has been created, the next step is evaluation. At the program evaluation step, it is assessed whether the program is be relevant to what is expected. If there are parts that are judged not to be in line with expectations, they will be revised again for changes to be made. This literation of prototyping allows the developer to know what users want when the program is used. In the last section are the results. The result is the final model of the wished program. The scheme of the prototyping method canbe described as figure below:

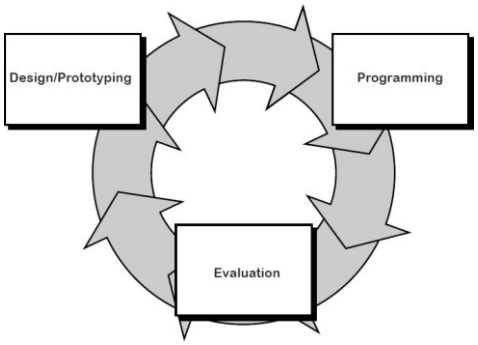


Figure. 1. Modeling Prototype

The prototyping steps consist of Listen to Customer, Build/Revise Mock-Up, Customer Test Drives Mock-Up [16][17].

1) Listen to Customer: The early step where the researchers listen and conduct discussions related to the needs of the existing system needed by the user

2) Build/Revise Mock-Up: The next step is to build a mock- up of the system which can later be used to illustrate the needs desired by the user. The mock-up creation stage uses the UML (Unified Modeling Language) system modeling technique to assist the system design process so as to minimize some errors in making application programs [18][19]. UML (Unified Modelling Language) the diagrams used consist of use case diagrams, activity diagrams [20][21]. Use case diagram is one diagram Used to model a system, use

case diagrams can illustrate an interaction between actors and systems [22][23]. In addition, the Activity diagram is a diagram that describes system user activity from the entire menu on the system [24][25].

3) Customer Test Drives Mock-Up: In this step, testing mock-ups that aim to test the suitability of program speci- fications and system flow before the application program is implemented.

## 3. Result and Discussion

### 3.1. Nice Spesification File

The early step in making this program is analysis. The analysis is done by designing the program using diagrams. The diagrams used are Use Case and Activity Diagrams. In the use case diagram, only one actor acts, namely the user without the admin. Users have the right to select databases, tables, change the function of certain elements in a table, and print a view of the results of the specification file and provide foreign key information on an attribute or column. Figure 2 describes the use case diagram of a nice specification file. While the activity diagram is used to describe the flow of activities from the user in the operation of the program. The description of the activity diagram of this nice specification file can be seen in Figure 3. From the results of the analysis in the research, it is hoped that the program can be built according to the needs of the users. This application does not use a database so it is very light when running, but requires a connector to connect to MySQL to select the database from the user program for which you want to create a specification file. The connector used is DB Connector. This application makes it very easy for users to make file specifications in a matter of minutes and without copying one by one table information in a database contained in PHPMy admin.

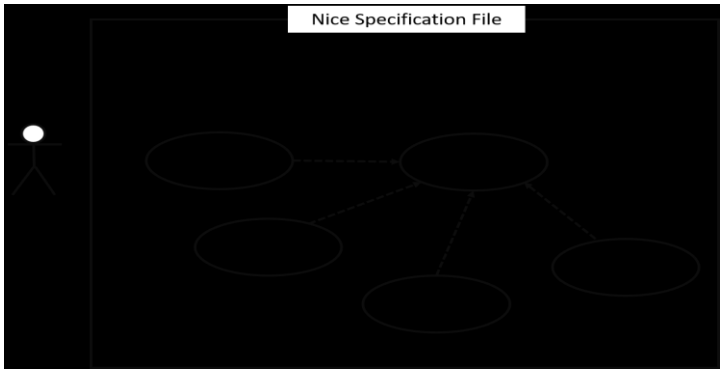


Figure. 2. Use Case Diagram.

The figure above is a description of a use case diagram of a nice specification file application that explains the user's access rights with the application it operates. The activity diagram itself explains the flow of the program that is operated by the user. The detailed description of the activity diagram can be seen in the figure below.

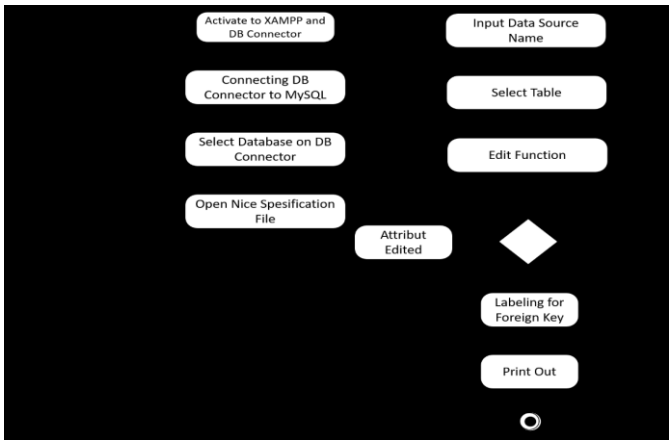


Figure. 3. Activity Diagram

The next process makes a prototype or initial model in a simple form. Before displaying various icons on the actual application .First , it will display a rough sketch display called a mock up or initial model. Making this mock up is based on user needs and the ease of operation of the user when the application is finished and can be implemented. The usefulness of this mock-up certainly makes it easier to make the actual program later. The mock up display on the application specification file can be seen in the figure below:

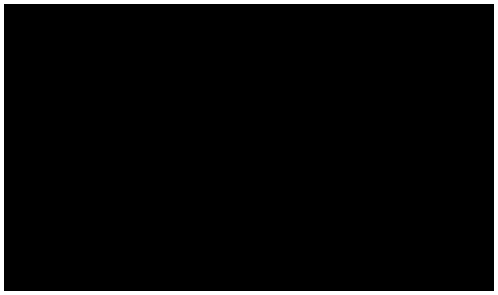

Figure. 4. Mock Up First Form

The Figure above is a mock up display on the first form of the nice specification file application. Where in the first form here ,the user is asked to enter the name of the data source that was previously connected to the database in the DB Connector.Then the mock up of the next form can be seen in the figure below.

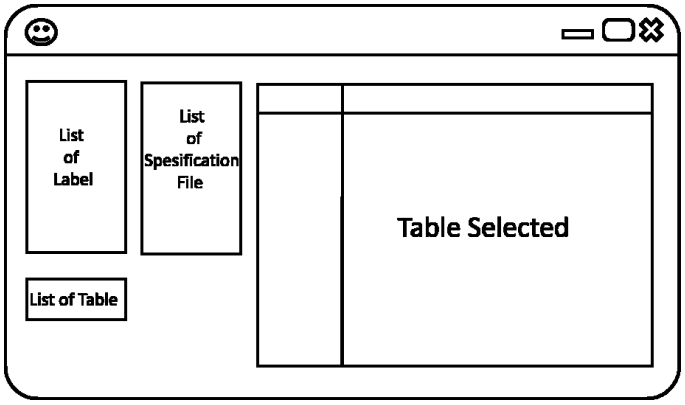


Figure. 5. Mock Up Secondary Form

In the figure above is a mock up display on the second form in the nice specification file application. This second form is the main form of this nice specification file application. Where in this second form the specification file is created. The next step after making the mock up is complete, then proceed with making the program. Programs are made with visual- based coding. The program can be run lightly considering its small file size and light performance. Meanwhile, to connect to PhpMyadmin also only requires one connector and the process is also quite fast. To display the program itself can be seen inthe figure below.

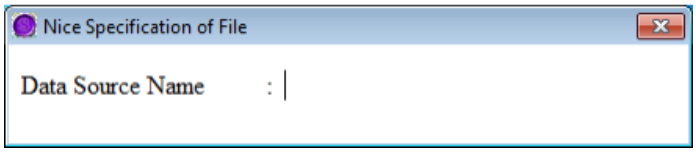


Figure. 6. First Form Display

The figure above shows the first form in the nice specifica- tion file application. In this form the user is asked to enter the name of the data source that was previously created in the DB Connector. Where the name of the data source is adjusted to the database that is already connected to the connection. After entering the name of the data source, the user only needs to enter to continue to the next display, namely the second form. If the data source name is entered incorrectly, the program will automatically refuse to the next form and give an error message and be asked to re-enter the correct and appropriate data source name.

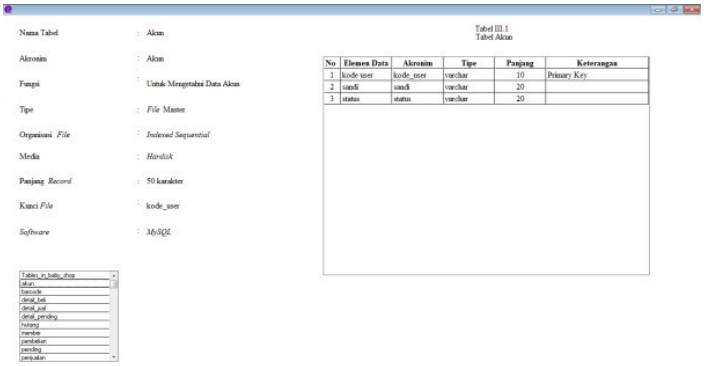


Figure. 7. Second Form Display

The figure above is the second form in the nice specification file application. This second form is the core form of this application. Where the user manages the table that he wants to make his file specification. The users can select the desired table to be used as a file specification by clicking on one of the tables contained in the table list. And here, users can add foreign key descriptions for attributes that they want to be foreign keys. Meanwhile, the primary key information has been automatically generated, so users don't need to set it up again. While the results of the file specifications after the print out can be seen in the figure below:

Tabel III.1
Tabel Akun

| No | Elemen Data | Akronim | Tipe | Panjang | Keterangan |
|---|---|---|---|---|---|
| 1 | kode user | kode_user | varchar | 10 | *Primary Key* |
| 2 | sandi | sandi | varchar | 20 | |
| 3 | status | status | varchar | 20 | |

Figure. 8. Print Out Results.

Then the last step of this research is evaluation. From the evaluation results on 5 potential users stated that it was easy and practical to use this application. So this application is relevant to the needs of users. In addition to being easy and practical, users find it very helpful because it saves time in making specification files. What was originally quite complicated and took a long time to make, now with this application file specifications can be made easily and quickly.

## 4. Conclusion

From the results of research conducted by the author, it can be concluded: KMS (Knowledge Management System) provides benefits in finding the solution of a problem in the organization so that the solution can be share on the application of KMS in the design, Methods ACWA (Applied Cognitive Work Analyze) provides an overview of the needs of the users in understanding of the use of KMS based website designed, Use case provides an overview of workflow system.

## References


[1] Y. D. Wijaya and M. W. Astuti, "Sistem Informasi Penjualan Tiket Wisata Berbasis Web Menggunakan Metode Waterfall," *Semin. Nas. Teknol. Inf. dan Komun.*, p. 274, 2019.

[2] E. Setyawati, H. Sarwani, H. Wijoyo, and N. Soeharmoko, *RELATIONAL DATABASE MANAGEMENT SYSTEM ( RDBMS )*, 1st ed. Purwokerto: CV. Pena Persada, 2020.

[3] C. Batara and E. Deptios, "Prosiding Seminar Nasional 2018 MANAJEMEN PEMBERIAN PAKAN PADA PEMBESARAN IKAN Prosiding Seminar Nasional 2018 Seminar Nasional Sinergitas Multidisiplin Ilmu Pengetahuan dan Teknologi ( SMIPT )," *Pros. Semin. Nasional, Sinergitas Multidisiplin Ilmu Penghetahuan dan Teknol.*, vol. 1, no. April, pp. 9–10, 2018.

[4] N. A. Karawang, "Manajemen Persediaan Bahan Baku Berbasis Pada Pt. Tuffindo Nittoku Autoneum Karawang," *J. Ilm. M-Progress*, vol. 10, no. 1, pp. 90–99, 2020, doi: 10.35968/m-pu.v10i1.370.

[5] Hermasnyah, "SISTEM INFORMASI PENGOLAHAN DATA PERJALANAN BERBASIS DEKSTOP," *J. Penelit. Dosen Fikom*, vol. 10, no. 1, 2019.

[6] M. D. Irawan and S. A. Simargolang, "Implementasi E-Arsip Pada Program Studi Teknik Informatika," vol. 2, no. 1, 2018.

[7] W. S. Dharmawan and Ardiyansyah, "Pengembangan Sistem Informasi Event Dan Diskon Dengan Menggunakan Metode V-Shaped," *JURTI(Jurnal Teknol. Informasi)*, vol. 6, no. 1, pp. 71–76, 2022.

[8] V. Maarif, H. M. Nur, and T. A. Septianisa, "Sistem Pendukung Keputusan Pemilihan Skincare Yang Sesuai Dengan Jenis Kulit Wajah Menggunakan Logika Fuzzy," *EVOLUSI J. Sains dan Manaj.*, vol. 7, no. 2, pp. 73–80, 2019, doi: 10.31294/evolusi.v7i2.6755.

[9] U. Usanto, A. Dharmalau, and S. Alfatikha, "Sistem Penunjang Keputusan Penentuan Promosi Jabatan Dengan Metode Penilaian 360 Feedback Berbasis Website," *Jris J. Rekayasa Inf. Swadharma*, vol. 2, no. 2, pp. 16–25, 2022, doi: 10.56486/jris.vol2no2.177.

[10] C. Adiwiharja and M. Tabrani, "Transportation Service Report Information System Using Prototype Method," *J. Teknol. dan Open Source*, vol. 6, no. 1, pp. 1–10, 2023, doi: 10.36378/jtos.v6i1.2682.

[11] G. Christofer, H. Sujaini, and M. A. Irwansyah, "Rancang Bangun Aplikasi Early Warning dengan Pemanfaatan Pengukuran Suhu Ruangan Berbasiskan Arduino Mega 2560," *J. Sist. dan Teknol. Inf.*, vol. 3, no. 3, pp. 246–250, 2015.

[12] P. Savitri *et al.*, "PROTOTIPE SISTEM PERSONAL ASSISTANT UNTUK KETUA PROGRAM STUDI BERDASARKAN ANALISA TERHADAP PROSES PERSIAPAN AKREDITASI," *Jamika*, vol. 8, no. 2, 2018.

[13] Y. A. Rahman, E. D. Wahyuni, and D. S. Pradana, "Rancang Bangun Prototype Sistem Informasi Manajemen Program Studi Informatika Menggunakan Pendekatan User Centered Design," *J. Repos.*, vol. 2, no. 4, pp. 503–510, 2020, doi: 10.22219/repositor.v2i4.433.

[14] T. D. Saputro and F. R. Al-ayyubi, "Analisa Peracangan Prototype Arsip Surat di Dinas Lingkungan Hidup Kota Madiun," *J. PILAR Teknol. J. Ilm. Ilmu Ilmu Tek.*, vol. 6, no. 1, pp. 36–41, 2021, doi: 10.33319/piltek.v6i1.69.

[15] M. M. I. Harahap, H. D. Septama, and M. Komarudin, "Pengembangan Sistem Agenda Pimpinan Universitas Lampung Menggunakan Framework Laravel," *J. Inform. dan Tek. Elektro Terap.*, vol. 10, no. 3, 2022, doi: 10.23960/jitet.v10i3.2650.

[16] H. Basri, R. G. Saputra, S. Alfarizi, A. R. Mulyawan, D. Gunawan, and N. Ichsan, "Perancangan Sistem Informasi Booking Tiket Berbasis Website Menggunakan Prototype," *Inf. Syst. Educ. Prof. J. Inf. Syst.*, vol. 7, no. 1, p. 73, 2022, doi: 10.51211/isbi.v7i1.1932.

[17] D. Gunawan, S. Alfarizi, N. Ichsan, H. Basri, and A. R. Mulyawan, "Implementasi Metode Prototype Dalam Perancangan Sistem Informasi Upah Pasang Material Konstruksi," *Bina Insa. Ict J.*, vol. 9, no. 1, p. 73, 2022, doi: 10.51211/biict.v9i1.1790.

[18] A. Voutama, "Sistem Antrian Cucian Mobil Berbasis Website Menggunakan Konsep CRM dan Penerapan UML," *Komputika J. Sist. Komput.*, vol. 11, no. 1, pp. 102–111, 2022, doi: 10.34010/komputika.v11i1.4677.

[19] W. Aliman, "PERANCANGAN PERANGKAT LUNAK UNTUK MENGGAMBAR DIAGRAM BERBASIS ANDROID," *Ilm. Indones.*, vol. 14, no. 1, pp. 1–13, 2021.

[20] S. Al-Fedaghi, "Validation: Conceptual versus Activity Diagram Approaches," *Int. J. Adv. Comput. Sci. Appl.*, vol. 12, no. 6, pp. 287–297, 2021, doi: 10.14569/IJACSA.2021.0120632.

[21] A. Aini, B. Harahap, and L. M. Ganiem, "Barriers To Reciprocity Communication Between Superiors And Subordinates When Working From Home," *Int. J. Educ. Res. Soc. Sci.*, pp. 629–636, 2021, [Online]. Available: https://ijersc.org.

[22] R. Sari, F. Hamidy, and Suaidah, "Sistem Informasi Akuntansi Perhitungan Harga Pokok Produksi Pada Konveksi Sjm Bandar Lampung," *J. Teknol. dan Sist. Inf.*, vol. 2, no. 1, pp. 65–73, 2021, [Online]. Available: http://jim.teknokrat.ac.id/index.php/JTSI.

[23] Y. Anggraini, D. Pasha, D. Damayanti, and A. Setiawan, "Sistem Informasi Penjualan Sepeda Berbasis Web Menggunakan Framework Codeigniter," *J. Teknol. dan Sist. Inf.*, vol. 1, no. 2, pp. 64–70, 2020, doi: 10.33365/jtsi.v1i2.236.

[24] N. Nugroho, Y. Rahmanto, D. Alita, J. Z. Pagar Alam, and L. Ratu, "Software Development Sistem Informasi Kursus Mengemudi (Kasus: Kursus Mengemudi Widi Mandiri)," *J. Sains Komput. Inform. (J-SAKTI*, vol. 5, no. 1, pp. 328–336, 2021.

[25] S. Handayani, "Perancangan Sistem Informasi Penjualan Berbasis E-Commerce Studi KaHandayani, S. (2018). Perancangan Sistem Informasi Penjualan Berbasis E-Commerce Studi Kasus Toko Kun Jakarta. ILKOM Jurnal Ilmiah, 10(2), 182–189. https://doi.org/10.33096/ilkom.v10i2.310," *Ilk. J. Ilm.*, vol. 10, no. 2, pp. 182–189, 2018.