**Database System Requirements Specification**

**for**

**Library DB Application**

**Version 1.0 approved**

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**“Mysterious Library”**

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**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
| Maftuna Sharabbaeva | 25.02.2018 | For Database of library should be able to contain more data | 1.0 |
| Kamola Samigova | 26.02.2018 | To make Assertions should be done according to requirements of clients and employees |  |
| Mo’minov Anvar | 26.02.2018 | Making system available for mac users too |  |
|  | | | |

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**1. Introduction**

* 1. **Purpose**

*<This subsection should: a) Delineate the purpose of the document; b) Specify the intended audience for the document. Describe the different types of reader that the document is intended for, such as developers, project managers, marketing staff, users, testers, etc.>*

The goal of this document is to show specification of requirements of “Library DB Application” project, which is done according to, collected user requirements. Essential part of this project is intended to provide convenience and good environment for librarian and library members and for database developers, testers, project managers and marketing staff

* 1. **Product Scope**

*<Provide a short description of the software being specified. In particular, this subsection should: a) Identify the software product(s) to be produced by name (e.g., Host DBMS, Report Generator, etc.); b) Explain what the software product(s) will, and, if necessary, will not do; c) Describe the application of the software being specified, including relevant benefits, objectives, and goals.>*

a) Coming software production is Host DBMS, “Library DB Application” desktop application, “Library DB Application” android application as well as “Library DB Application” web site.

b) Host DBMS is to supply essential management system to design beautiful database. “Library DB Application” web site is for librarians and members of library. It is for buying books online, providing information for users about library and its books, online orders and saves data of library members. “Library DB Application” android and desktop applications’ duties are the same as web site but the difference they work on android and windows where web site in online application.

c) The goal of “Library DB Application” is to supply unfailing and efficient management for libraries by several ways.

**1.3 Document Conventions**

**1.4 References**

**2. Overall Description**

**2.1 Product Perspective**

*<Describe the context and origin of the product being specified. For example, state whether this product is a follow-on member of a product family, a replacement for certain existing systems, or a new, self- contained product. If the document defines a component of a larger information system,*

*relate the requirements of the larger system to the functionality of this software and identify*

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*interfaces between the two. A simple block diagram that shows the major components of the*

*overall system, subsystem interconnections, and external interfaces can be helpful.>*

This system is standalone and its functions are listed in section of functions. It can provide essential subsystems, which can satisfy requirements of system.

**2.2 Product Application Areas and Functions**

*<Summarize the major functions the product must perform or must let the user perform. Details will be provided in Section 3, so only a high-level summary (such as a bullet list) is needed here. Organize the functions to make them understandable to any reader of this document. A picture of the major groups of related requirements and how they relate, such as a top level data flow diagram or object class diagram, is often effective.>*

This product is for management of libraries with online information about books, which are available in Library, and people can know who are user. This software is to control book issues, keeping records according to requirements of clients, checking for stored books, making orders for new books, manage library.

**2.3 User Classes and Characteristics**

*<Identify the various user classes that you anticipate will use this product. User classes may be differentiated based on frequency of use, subset of product functions used, technical expertise, security or privilege levels, educational level, or experience. Describe the pertinent characteristics of each user class. Certain requirements may pertain only to certain user classes. Distinguish the most important user classes for this product from those who are less important to satisfy.>*

User can be student or staff of university. Librarian is controller. Users also can be database designers, programmers and system analyzers. During creating system, there are constraints such as librarian is able to issue book to any member, has right to monitor and manipulate database of library, and other simple rights which are taking books from students, sending data about expiry or coming time to return or giving book to students. Actually, members also have constraints such as, member has his/her own account in library which gives all info about member and participation in library, that member has other rights too which are just requesting for book or getting book and feeling responsibility of returning book on time otherwise expiry happens. Here system has most essential users are members and staff and for information system, essential users are database designers, programmers or system analyzers.

**2.4 Design and Implementation Constraints**

**2.4.1 Operating environment**

**2.5 User Documentation**

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**2.6 Assumptions and Dependencies**

**2.7 Apportioning of Requirements**

*<This subsection of the document should identify requirements that may be delayed until future versions of the system.>*

Following requirements may be delays until new version of our system such as our system working with database will be faster twice than this version’s speed, and new system will be able to contain more data. Members of library could also order books in another language for example: library can translate from Italian to Uzbek language and provide it to orders user.

**3. Specific Requirements**

**3.1 External Interfaces**

**3.1.1 User interfaces**

**3.1.2 Hardware interfaces**

**3.1.3 Software interfaces**

**3.1.4 Communications interfaces**

**3.2 Logical Database Requirements**

*d) Data entities and their relationships; e) Integrity constraints;*

d) Data entities are: Library, Books\_Of\_Library, Member\_Of\_Library, Publisher\_Of\_Book, Librarian, ReturningTime, Issue, Trader, Ordering\_Of\_Books, Storing\_Old\_Books. Data entities’ relationships are Holds (Parent entity set is Library, child entity set is Books\_Of\_Library, Published (Parent entity set is Publisher\_Of\_Book, child entity set is Books\_Of\_Library), Controls (Parent entity set is Librarian, child entity set is Books\_Of\_Library, Is\_Done (Parent entity set is Ordering\_Of\_Books, child entity set is Books\_Of\_Library), Borrowed (Parent entity set is Member\_Of\_Library, child entity set is Books\_Of\_Library), Issues(Parent entity set is Member\_Of\_Library, child entity set is Issue), Is\_Reminded

(Parent entity set is Member\_Of\_Library, child entity set is ReturningTime), Monitors (Parent entity set is Librarian, child entity set is Member\_Of\_Library), Controls\_Time\_Return (Parent entity set is Librarian,

child entity set is ReturningTime), Provides (Parent entity set is Trader, child entity set is Ordering\_Of\_Books.

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e) Integrity constraints; in our application, domain of values will correspond to all attributes such as integer types, date/time types and character types. Our system will test when a new data comes to database. Our system guarantees about referential integrity too. Assertions such as library should contain at least 100 books

or library must have at least two employees. We have such kind of important assertions. Our system also concerns about authorization such as librarian can read data and delete data. Library member can read data but cannot modify and update anything.

**3.2.1 Entities type definition table**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No** | **Entity (1)** | **Explanation (2)** | **Identity (3)** | **Attributes (4)** | **Note (5)** | **Sample Values (6)** | **Relationship with (7)** |
| 1. | Library  ­­­­­­ | Storing data of library | strong |  |  |  | Books\_Of\_Library |
|  |  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| 2. | Books\_Of\_Library | Storing data of books of library | strong | Name\_Of\_Book | simple | “Anvar va Ra’no” | Member\_Of\_Library |
|  | ISBN | simple, primary | “978-98-95055-02-5” | Publisher\_Of\_Book |
| Amount\_Of\_Books | simple | ‘50’, ‘1’ | Librarian |
| Price\_Of\_Bought | simple | ‘$29’, ‘12000 so’m’ | Ordering\_Of\_Books |
| Author\_Of\_Book | simple | “Hamid Olimjon” |  |
| ID\_Of\_Book | simple | ‘1227’ |  |
| 3. | Member\_Of\_Library | Storing data of members | strong | Status | simple | “Special Needs” | Issue |
|  | Date | simple | “25.02.2018” | ReturningTime |
| ID\_Of\_Member | simple | “12356888” | Librarian |
| Time\_Of\_Return | simple | “2.03.2018” |  |
| Name | simple | “Maftuna Sharabbaeva” |  |
| Time\_Of\_Expiry | simple | “3.03.2018” |  |
| Address | simple | “Xasanov St. Tashkent city” |  |
| 4. | Publisher\_Of\_Book | Storing data of publishers | Strong | ID\_Of\_Publisher | Simple, primary | “MOLEC” |  |
|  | Name | simple | “Walter J. Black” |  |
| Address | simple | “Ziyolilar St., Tashkent city” |  |
|  |  |  |  |
| Contact | multivalued | “230-25-35”, “+99894 523 25 35” |  |
| 5. | Librarian | Storing data of librarians | Strong | ID | Simple, primary | “HR documents-HR-01” | ReturningTime |
|  | Name | Simple | “Zilmura Murodavoza” |  |
| Address | Simple | “Yangiyul dist., Tashkent region” |  |
| Contacts | multivalued | “2503623”, “+998932352536” |  |
| 6. | ReturningTime | Storing data of time of returning | weak | ID\_Of\_Member | Simple, primary | “58985654” |  |
|  | Time\_Of\_Expiry | Simple | “05.03.2018” |  |
| BookName | Simple | “Kumush” |  |
| Taken\_date | Simple | “26.02.2018” |  |
| Date\_Of\_returning | Simple | “04.03.2018” |  |
| 7. | Issue | Storing data of issues | weak | ID\_Of\_Member | Simple, primary | “11112222” |  |
|  | Issue\_date | Simple | “26.02.2018” |  |
| Time\_Of\_Expiry | Simple | “04.03.2018” |  |
| Name\_Of\_Book | Simple | “Tohir va Zuhra” |  |
| 8. | Trader | Storing data of shippers | Strong | ID\_Of\_Trader | Simple | “167-25” |  |
|  | Name\_Of\_Trader | Simple | “Muhsid Buhruzov” | Ordering\_Of\_Books |
|  | Contact\_Of\_Trader | Simple | “+99892563232” |  |
|  | Business | composite |  |  |
|  | No\_Od\_Order |  | “235”, “588” |  |
|  | Date\_Of\_Shipping |  | “25.02.2018” |  |
| 9. | Ordering\_Of\_Books | Storing data of orderings | Strong | Number\_Of\_Ordering |  | “28”, “102” |  |
|  | Date\_Of\_Geting | Simple | “01.05.2018” |  |
| Address\_Of\_Shipping | Simple | “Buyuk Ipak Yoli St. Tashkent city” |  |
| Last\_Day\_Of\_getting | Simple | “05.05.2018” |  |
| Fee | Simple | “$29” |  |
| Quantity | Simple | “25”, “30” |  |
| 10. | Storing\_Old\_Books | Storing data of old books | Strong | Number | Simple | “1”, “3” |  |
|  |  |  |  | Address | Simple | “Ziyolilar St. Tashkent city” |  |

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**3.2.2 Relationships type definition table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Relationship (1)** | **Design Characteristics (2)** | **Design Values (3)** | **Note (4)** | **Sample Values (5)** |
| 1. | Holds | Meaning | Library holds some books |  |  |
|  | Type | None-identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Library(1,N) |  |  |
|  | Child Entity Set and Participation (min,max) | Books\_Of\_Library(1,1) |  |  |
|  | Desciptive Attributes | - |  |  |
| 2. | Published | Meaning | Publisher published book |  |  |
|  | Type | Non-identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Publisher\_Of\_Book(1,1) |  |  |
|  | Child Entity Set and Participation (min,max) | Books\_Of\_Library(1,1) |  |  |
|  | Desciptive Attributes | - |  |  |
| 3. | Controls | Meaning | Librarian controls books of library |  |  |
|  | Type | Non-identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Librarian(1,N) |  |  |
|  | Child Entity Set and Participation (min,max) | Books\_Of\_Library(1,1) |  |  |
|  | Desciptive Attributes | - |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 4. | Is\_Done | Meaning | Order is done on Books |  |  |
|  | Type | Non-identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Ordering\_Of\_Books(1, N) |  |  |
|  | Child Entity Set and Participation (min,max) | Books\_Of\_Library(1, M) |  |  |
|  | Descriptive Attributes | - |  |  |
| 5. | Borrowed | Meaning | Member of library borrowed some books |  |  |
|  | Type | Non-identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Member\_Of\_Library(1, N) |  |  |
|  | Child Entity Set and Participation (min,max) | Books\_Of\_Library(1,M) |  |  |
|  | Descriptive Attributes | - |  |  |
| 6. | Issues | Meaning | Member issues Issue |  |  |
|  | Type | Identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Member\_Of\_Library(1,N) |  |  |
|  | Child Entity Set and Participation (min,max) | Issue(1,1) |  |  |
|  | Descriptive Attributes | - |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7. | Is\_Reminded | Meaning | Member of library is reminded about returning time is almost near |  |  |
|  | Type | Identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Member\_Of\_Library(1,M) |  |  |
|  | Child Entity Set and Participation (min,max) | ReturningTime(1,1) |  |  |
|  | Desciptive Attributes | - |  |  |
| 8. | Monitors | Meaning | Librarian monitors members of Library |  |  |
|  | Type | Non-identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Librarian(1,M) |  |  |
|  | Child Entity Set and Participation (min,max) | Member\_Of\_Library(1,1) |  |  |
|  | Desciptive Attributes | - |  |  |
| 9. | Controls\_Time\_Return | Meaning | Librarian controls time of returning books by members |  |  |
|  | Type | Identifying |  |  |
|  | Parent Entity Set and Participation (min,max) | Librarian(1,M) |  |  |
|  | Child Entity Set and Participation (min,max) | ReturningTime(1,1) |  |  |
|  | Desciptive Attributes | - |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 10. | Provides | Meaning | Trader provides some orders of books |  |  |
|  | Type | Non-identifying |  |  |
| Parent Entity Set and Participation (min,max) | Trader(1,1) |  |  |
| Child Entity Set and Participation (min,max) | Ordering\_Of\_Books(1,N) |  |  |
| Desciptive Attributes | - |  |  |

**3.3 Functional Database Requirements**

**4. Other Requirements**

**4.1 Performance Requirements**

**4.2 Design Constraints**

**4.3 Software System Attributes**

**4.3.1 Safety requirements**

**4.3.2 Security requirements**

**4.3.3 Software quality attributes**

**Business rules**

**Appendix A: Glossary**

**Appendix B: To Be Determined List**