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**1.1 Scope:**

This project is only about the most basic things a library does, like searching for a book, lending  a book, and returning a book within a certain amount of time.

• It can be used in more than one library. It can be used in more than one library. • Users can find the book they want in a single second.

• Users can look at their profiles to see if they still owe money on their IDs. • A librarian can also search for a user's name to see their profile.

**1.0 REFRENCE DOCUMENTS:**

⮚ Kaur, K. (2007). Ms Iso 9001:2000 Implementation in Malaysian Academic Libraries. Building  an Infirmation Society for All. Zainab, A. N. Petaling Jaya, University Malaya: 491 ⮚ Pinder, C. & Melling, M. Eds. (1996). 'Providing Customer-Oriented Services in Academic  Libraries,' London: Library Association Publishing.

⮚ Riggs, D. E. (1994). 'TQM : Quality Improvement in New Clothes,' Disunting Oleh O'neil, R.  M. Total Quality Management in Libraries: A Sourcebook. Englewood: Libraries Unlimited Inc. ⮚ The Quality Assurancy Agency for Higher Education (2011). Qaa Assuring Standards and  Improving Quality of Uk Higher Education. Accessed From:

http://www.qaa.ac.uk/pages/default.aspx

⮚ Pinder, C. & Melling, M. Eds. (1996). 'Providing Customer-Oriented Services in Academic  Libraries,' London: Library Association Publishing.

⮚ Pors, N. O. & Johannsen, C. G. (2002). "Job Satisfaction and Motivational Strategies among  Library Directors," New Library World, 103(1177), 199-208.

⮚ ilkinson, R. & Yussof, I. (2005). "Public and Private Provision of Higher Education in Malaysia:  A Comparative Analysis," Higher Education, 50(3), 361-386.

**2.0 QUALITY GOALS:**

⮚ Urgent books will be classified in three business days.

⮚ Ensure that no client will wait more than five minutes to be serviced.

⮚ Ensure that annually x percent of undergraduate students receive training in information  skills

⮚ To enhance the User Education program by x% annually

⮚ At least x percent of reference-related enquiries are addressed.

⮚ Enhance client service

⮚ Enhancing safety culture and risk consciousness

In each phase, there are certain quality objectives that must be met which are as follows:

|  |  |
| --- | --- |
| **Phase** | **Goals** |
| Requirement gathering | The customer and engineering management  should both approve of SRS as being defect free. |
| Architecture | During the SAD's rigorous technical  assessment, there should be no flaws in the  architectural depiction. |
| Development | There should be no more than ten flaws in an  application for every kilologobyte of code. |
| Testing | There should be zero faults in the  documentation of all tested work products; |

|  |  |
| --- | --- |
|  | the number of closed defects should be at  least 80% of the previous build, and the  number of new defects should be no more  than 20% of the previous build; |

**3.0 PURPOSE:**

The Library Management System was made so that people don't have to spend as much time  keeping records by hand on physical or tangible materials. It gives the users different options  and makes the system safe and free of mistakes. It cuts down on work and does the same  things as the manual system, but it does them faster and wastes less time. This project was made so that tasks can be done quickly and easily, which can't be done with  manual systems. The features of this Project will save the user time by making it easy for them  to find the books they want.

**4.0 REVIEWS AND AUDIT:**

**Work-product Reviews:**

The following is the overall strategy for the review:

**4.1 Formal Reviews:**

1. The SQA team will examine the document list created by the Software Product Engineers one  week previous to the document being released to the customer (team members on a project  team).

2. It is the responsibility of the SQA team to make sure that all document updates have been  completed and also that the document is issued on time. The document will be forwarded to  the software project management team for amendment if there are any issues. **4.2 Informal Reviews:**

**A. Design Walk-throughs**

Peer and management assessments of the design will be encouraged via SQA's design walk throughs. As a Software Project Manager, you are responsible for ensuring that all of the  reviews are conducted in a verifiable manner and that all of the outcomes are recorded for  future reference. SQA will make certain that all of the things on the to-do list are completed. **B. Code Demonstrations**

Code walk-throughs will be undertaken by SQA to guarantee that a peer review is performed on  the underlying code base. As part of the SQA team, they are responsible for ensuring that all  aspects of the process have been handled.

**C. Baseline Quality Checks.**

For each document or code that has been baselined, the SQA team will conduct a review. This  guarantees:

⮚ In order to ensure that the programme is ready to go to market, the modules and code  have been tested and inspected.

⮚ In addition, changes have been made to the software module design document. ⮚ There have been validation tests conducted.

⮚ Functionality has been recorded.

⮚ The subsystem components may be verified and validated using the available tools and  procedures.

**5.0 SQA plan:**

⮚ **DETERMINE THE SQA PLAN'S FUNCTION AS WELL AS ITS  RESPONSIBILITIES.**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO** | **Member** | **Role** | **Responsibility** |
| 1 | SADIA AZAM | SQA leader | SQA operations are  overseen by this  person (i.e.  coordinating reviews  and walkthroughs) |
| 2 | SADIA  AZAM | SQA auditor | SQA leader should be  notified of the  results of software  tasks by this person. |

⮚ **WORK PRODUCT LIST FOR REVIEW:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.NO** | **Phases of**  **management** | **Work**  **product** | **Permission** | **Permission  to use** |
| 1 | Estimation | Report on  estimation  and metric  data | Read | SADIA  AZAM |
| 3 | Control and  monitoring | Metrics of  project  effort were  gathered. | Read | MANAHIL  ZAHEER |
| 4 | Organization | Plan for  human  resources  and training. | Read | All  members  of the SQA  team |
| 5 | Planning | Test  planning  document | Read | All  members  of the SQA  team |
| 6 | Issue  management | Issue  management  report | Read | All  members |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | of the SQA  team |
| 7 | Test report | Test report  document | Read | All  members  of the SQA  team |

⮚ **TIMELINE FOR PERFORMING SQA TASK:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | **SQA tasks** | **Personal**  **authority** | **Description** | **Output** |
| 25-May  2022 | Assess the  project's  planning,  tracking, and  oversight  methods. | SADIA  AZAM | ∙ A study of the  specifications  of the  software  ∙ Review of  estimates, the  master  schedule, and  the project  plan | SQA  planning  report |
| 1-June  2022 | Reexamine  the  evaluation of  requirements | SADIA  AZAM | Check out the  progress of the  software  requirements. | Process  audit  report |
| 5-June  2022 | Review and  evaluate test  design | SADIA  AZAM | Review the test  design document | SQA report |
| 22-June  2022 | Review  Release | SADIA  AZAM | Process Audit: Final  release | SQA  process  Audit  report |
| 2-August  2022 | Review  project  closing | SADIA  AZAM | A third-party  assessment  following delivery to  the consumer | SQA  process  Audit  report |

**6.0 Test:**

The purpose of system testing was to identify any faults in our project. On the basis of these  observations, it will be determined whether or not the software operates as predicted. Our  Project underwent two stages of testing.

1. Unit Evaluation

2. Integration evaluation

**6.1.1 Unit testing:**

When a module has been successfully developed and evaluated, unit testing is conducted. To  test a single module, we must supply a comprehensive environment, which includes, in addition  to the module, the following:

⮚ The processes of other modules that are called by the module under test. ⮚ Non-local data structures accessed by module.

⮚ A technique to invoke the module under test's functions with the proper arguments. **Login module:**

This form is utilized by the system administrator to log in. If both the username and password  are right, the administrative page will load; if one is incorrect, the page will redirect back to the  login page and request the username and password again.

**Student account addition:**

In this section, the administrator can verify student details from student sign up information  and then only add student to the main library database. This section contains add and delete  buttons; if the user clicks the add button, the data will be added to the student database, and if  he clicks the delete button, the data will be deleted.

**Test of the admin login module**:

Test of the admin login page. This form is used for instructor login. If both the username and  password are correct, admin login page will load, otherwise, the page will redirect back to the  login page and request the username and password again.

**Book Addition module:**

Admin may enter book details and add them to the main book table, as well as see book  requests.

**Search book module:**

If the title, author and genre are provided correctly and that book that is available in database  then the search query will yield results which will be demonstrated in ‘Found Results’ box.

**Fine check and user profile module:**

In this module the fine should be correctly calculated. And can easily do the transaction with  the option available for credit card transaction.

**6.1.2 Integration testing**

In this sort of testing, multiple module integrations are examined by providing input. The primary goal is to test the module interfaces to guarantee that no problems occur when one  module calls another.

**6.1.3 Test Completion Criteria**

In each phase of development, tests will be undertaken and their thoroughness will be  evaluated according to the following criteria:

**Unit testing is completed when:**

∙ At least sixty percent of the code lines (including all key areas) have been tested;  ∙ All major and minor issues discovered have been reported and resolved. **Regression Testing is completed when:**

∙ At least 90 percent of modules' functions, including all updated modules, have been  tested.

∙ At least two test/fix cycles have been performed.

∙ All problems/defects have been recorded and resolved.

**Integration Testing is completed when:**

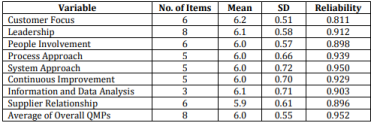
∙ 100 percent of module interfaces have been tested.

**Acceptance Testing is completed when:**

∙ The client is pleased that the product meets the agreed-upon criteria for product needs. **6.2 TESTS:**

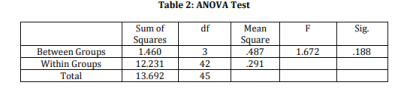
**Objective 1:** Examine the nature of the adoption of quality management methods, both  individually and collectively.

In this study, the first objective was tested using the mean values of all items. Overall, the  application of quality management standards in academic libraries appears to be at a level of  6.0. Table 1 demonstrates the results. It indicates that the libraries of Pakistan institutions have  adopted ISO 9001:2000-adapted quality management system fundamentals. The libraries of  these institutions think they play a significant role in establishing and preserving the overall  quality of the university. By awarding the highest possible score (6.2) to the customer focus  variable, these libraries are conscious of the fact that pleased students or users are the most  important factor in determining university success. To get quality services, these libraries  consider that leadership and information data and analysis are the most important supporting  components, as indicated by their average score of 6.1. In other words, librarians play a crucial  role in fostering an atmosphere that facilitates the delivery of quality services. In addition, the  availability of adequate and up-to-date infrastructure is regarded as a prerequisite for  facilitating easily the desired service.

**Table 1**

**Objective 2:** How the variance in staffing levels will impact the nature of the overall quality  management techniques is the second objective.

The one-way analysis of variance (ANOVA) was performed to determine whether or not there  was a correlation between the number of library employees and quality management  procedures. We separated the number of staff members into four groups: fewer than 10,  between 10 and 30, between 31 and 50, and more than 50. No significant differences existed  between the two groups (number of staffs and quality management practices). According to  Table 2, the analysis revealed F value of 1.672 (p =.188). This indicates that the quantity of  personnel does not prevent these libraries from implementing quality management measures.  It implies that the Pakistan government policy, as outlined in Public Management Act No.  2/1996: Guideline to Apply MS ISO 9000 to Public Service, has been successfully applied in  these libraries. This policy has raised awareness of the need of qualified service delivery,  particularly in the context of constructing qualified higher education institutions.



To meet objective 1, mean values were computed. The second objective was evaluated using  one-way analysis of variance (ANOVA). This statistical method was developed in the 1920s by  R.A. Fisher, and its fundamental component is the sum of squares. In the one-way ANOVA, the  data (number of employees) were separated into groups based on a single classification factor  (Average of Overall QMP Level). It is utilized to examine the link between several independent  variables and a single dependent variable.

**7.0 PROBLEM REPORTING AND CORRECTIVE ACTION:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No** | | **Error** | **Correction** | **Corrective**  **Action** | **Preventive**  **Action** |
| **1.** | **The chance that data  may be messed up.** | | Before logging  into LMS, the  user is required  to double check  both their email  address and  password. | At the time of  logging into the  system, the user  will be required  to provide a  special ID that  has been  assigned to  them by the  support staff. | Because of  the potential  for this risk,  the user  should be  instructed to  keep his or  her unique  identification  number to  themselves  at all times. |
| **2.** | **Security threat** | | In the event that  there is a  security risk,  users should get  in touch with the  administrative  staff and request  that their  accounts be  deactivated until  the problem is  resolved. | The LMS limits  the number of  times a user  may log in  successfully.  LMS should  immediately  cancel the user's  account after the  number of times  they have tried  to log in has  reached its  maximum and  should not  permit the user  to input the  password. | A user should  be prompted  to use two  step  verification  when they  are setting up  their account  for the first  time. When  the user  wishes to log  into the  system, he or  she will  receive the  code by  email or  phone  number that  they are  required to  provide  before  logging in.  This is done  so that the  user may |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | successfully  log in. |
| **3.** | **Difficulty in data**  **retrieval** | In the event that  the user is  unable to get the  data, the user  should get in  touch with the  administrator. | When there is an  overwhelming  quantity of data,  the traffic on the  internet might  become  stopped,  rendering it  unable to carry  out its  functionalities. In  order to remedy  this  predicament,  LMS should  increase its  capability for  catering to the  needs of its  consumers. | Everyone  should be  denied  access to  LMS until  they have  shown  themselves  to be a  legitimate  user. Instead  of requiring  website  visitors to log  into the  system,  information  about LMS  should be  offered on  that  organization's  Website. |

**8.0 TOOLS, TECHNIQUES AND METHADOLOGY:**

**8.1 Tools:**

The entirety of the Project is comprised of the front end and the back end.

**Front end:**

The front end is created with HTML, PHP, CSS, and Java script.

⮚ HTML, or Hyper Text Markup Language, is the primary markup language used to create  web pages and other information that can be displayed by a web browser. ⮚ CSS- Cascading Style Sheets (CSS) is a style sheet language used to describe the  appearance and formatting of a markup-based document.

⮚ JavaScript (JS) is a computer programming language that is dynamic. It is most  frequently integrated into web browsers, whose implementations let client-side scripts  to interact with the user, control the browser, communicate asynchronously, and  modify the displayed document content.

⮚ PHP is a server-side scripting language created for web development that is also used  for general-purpose programming.

Software used: Dreamweaver, wamp server, Visio, Creatly.

**Back end:**

The back end is created with mysql, which is also used to create the databases.

MySQL ("My S-Q-L", formally, but sometimes known as "My Sequel") is (as of July 2013) the  second most popular open-source relational database management system in the world  (RDBMS).

**8.2 METHODOLOGY:**

We have adopted ISO 900 standard because it makes the operation run better and faster and  helps to improve customer relations and satisfaction. It also Aids in making more money and  helps cut down on waste and make people more productive. Moreover, it is a common tool for  making things the same.

The evaluation is based on the survey technique. The designed questionnaire includes eight  quality management practice components.

Closed-ended and multiple-choice questions were utilized for each concept. Based on a seven point Likert scale response, three to eight statements were selected for the components. Value  1 represents a very low score, whereas value 7 suggests a very high score. The samples were  collected at Fatimah Jinnah Women's University. We sent out 106 surveys, of which 52  recipients answered by sending back the form. Only 46 of these respondents are legitimate and  useful for further study, based on these numbers.

Using prior material, a questionnaire with eight conceptualized components was created. They are as follows:

**(1) Customer Focus**: It is characterized by a commitment to satisfy customers, integration of  customer satisfaction, understanding of customer requirements and expectations, utilization of  customer input, monitoring customer satisfaction, reaction to customer complaints, and  engagement with customers;

**(2) Leadership:** Leadership is conceived by comprehending demands, having a clear vision,  establishing goals, persuading others, and reducing inquisitiveness.

**(3) Staff Participation:** it is conceptualized as staff participation, continual training,  empowerment, sharing, and a suitable atmosphere;

**(4) Process Approach:** the output of an organization that consists of a series of interacting  processes; a collection of activities that employ resources (people, equipment, etc.) to change  inputs into outputs.

**(5) System approach:** recognizing, comprehending, and controlling interdependent processes  in a systemic manner. This strategy will help the company achieve its goals more effectively and  efficiently;

**(6) Continuous Improvement:** it is the continuing improvement that encompasses everyone  (top management, supervisors, and employees) and everything (process, technique, tools, data,  and system). Thus, the total success of the organization will remain a persistent target;

**(7) Information and Data Analysis:** The information and analysis constructs are conceived in  terms of the availability of data, the timeliness of data, and the application of data.

**(8) Supplier partnership**: it is envisioned through the supplier-organization interaction, supplier  selection criteria, information sharing, and supplier development.

**8.3 V and V:**

Verification and Validation assess "whether products of a specific development or maintenance  activity adhere to that activity's criteria and if the final software product fits its intended  purpose and user needs". Our research shows that library software quality strategy requires  regular audits to ensure correct data. In a specialized domain, data sources and database  managers will always make mistakes or have misconceptions. Timeliness and accuracy of  reporting must be improved. Data managers need input to enhance quality.

In the context of ISO 9000 and manufacturing in general, "verification" is understood to mean  checking to see if a design has captured all of the requirements before building something,  whereas "validation" refers to the physical testing of a prototype or first article to then prove  that the design is adequate.

Each of these steps is an important part of the design process because it does two different  things. Verification is a thought-out process that makes sure that no requirements are left out  of the design. Validation, on the other hand, is a hands-on process that makes sure that the  product, as it is built, will meet the requirements. Together, they make sure that the product  designed will meet the needs of the customer and one of the main goals of ISO 9001 is  improving Customer Satisfaction is to meet the needs of the customer.

**9.0 CONFIGURATION MANAGEMENT:**

A method known as configuration management (CM) is used to keep computer systems,  servers, and software in a desirable and consistent condition. The purpose of having a system  that can track and compare changes made throughout a system during the development  process and also identify who made these modifications is to have a system in place that may  often be referred to as software change management or IT automation.

The goal is to simplify project management, reduce the number of errors that occur, raise the  amount of traceability available, and improve the overall quality of the product.

**9.1 Change management**

In change management, we maintain track of customer and developer change requests. In  addition to this, it analyses the impacts and costs of any adjustments. Additionally, it  determines if the adjustment is indeed essential or not. If this is the case, when is it necessary?

We have identified the user requirement to have some change in library management system  which are:

∙ The system should be able to access information such as who took a certain book or what  books were checked out by a given library user. For example, the system should be able  to determine who took a book.

∙ A member should only be allowed to retain a book for a maximum of thirty days before it  must be returned.

∙ Notifications should be generated by the system both when the reserved books become  accessible again and when they are not returned by the due date, if possible. As Library management system is a large project. So it has multiple modules and developers.  The developer of user management module will request the developer of fee management  module to accommodate the change of removing fake users so that both the modules will be  integrated correctly.

These changes are not effecting the other modules and is economical so it will be implemented.  **9.2 Version management:**

We have use version management techniques to keep track of the many versions of software  components or configuration items, as well as the systems that utilize them. We ensure that  the updates made to various versions by different developers do not conflict.

WE have launched three versions which are:

**Version 1:**

Initially our management system was on MS ACESS. In MS ACESS we have done the following  things:

∙ We have created tables.

∙ Insert record.

∙ Modify the record.

∙ Used queries.

∙ Delete record where required.

∙ Make relation among tables.

∙ Make relational schema.

∙ Display the records.

**Version 2:**

In version 2 SQL server is used in which:

∙ Tables and columns are created.

∙ We can modify the tables.

∙ We can insert record.

∙ We can update the record.

∙ We can Display the results of the values.

∙ We can View the list of tables

∙ We can drop a column.

**Version 3:**

In version 3 we have make a website for our management system the website do the following  tasks:

∙ User or the admin can create an account and can login into the system.  ∙ You can view user profile.

∙ The admin can change the books, and we can add books from new publishers. If there is a  new version of any book, we can add it.

∙ Search the book.

∙ Return book

∙ Add books to favorite.

∙ View fine.

**9.3 System building:**

We have compiled and linked system components, external libraries, and configuration files to  make an executable system. In order for the build process to proceed, the system building tools  and the version management system must interact.

After including the changed requirements, our system will be at level 3.1. This version is not  launched yet, as some testing and coding work is ongoing.

**9.4 Release management:**

A system release is a customer-distributed version of a software system. Typically, there are  two sorts of releases for mass-market software: major releases, which include significant new  features, and minor releases, which address reported defects and consumer issues. For  bespoke software or software product lines, versions of the system may need to be developed  for each client, and a single customer may operate many system releases concurrently.

It will ensure that if the customer has version 1 and current launched version is 3 then he can  directly install version 3.1 without installing versions 2 , 2.1, 2.2 etc.