

CS RECOGNITION OF PRIOR LEARNING (RPL) FORM - 2017

This document is required to be completed for all **Recognition of Prior Learning (RPL)** applications and uploaded as a PDF to the application form.

IMPORTANT NOTICE:

Misleading and false information is viewed as a major breach of ethical behaviour and will seriously jeopardise your migration prospects.

It is your responsibility to indicate when you have drawn on the work of others. Other people's original ideas and methods should be clearly distinguished, and other people's words, illustrations and diagrams should be clearly indicated regardless of whether they are copied exactly, paraphrased, or adapted.

Failure to acknowledge your source by clear citation and referencing constitutes plagiarism. All plagiarism will be assessed as not suitable and reported to the Department of Immigration and Border Protection.

The ACS reserves the right to use software applications to screen your submitted work for matches either to published sources or to other submitted applications. In some cases, you may be asked to submit project reports and other written work submitted with the application for screening by plagiarism detection services.

If at any stage in the assessment process plagiarism is detected, the information may be provided to other Australian Government agencies. The assessment will be terminated and the outcome recorded as unsuitable. A refund of the application fee cannot be provided for cases assessed as containing false information or plagiarism.

Please complete the following 2 sections:

- 1. The Key Areas of Knowledge Section 1
- 2. The Project Report Forms Section 2

RPL applications are for those applicants who do <u>not</u> hold a recognised tertiary ICT qualification and who have a minimum of 6 years of closely related experience.

This document provides the opportunity for applicants to demonstrate the knowledge learnt throughout their professional experience.

Applicant Name	RPL 14 DEVELOPER PROGRAMMER	
Application ID (if known)		
Applicant Date of Birth	10 OCTOBER 2017	

SECTION 1 – KEY AREAS OF KNOWLEDGE

INFORMATION ABOUT THE AREAS OF KNOWLEDGE

Please read the following document to assist you in completing Section 1 of this document -<u>The ACS</u> <u>Core Body of Knowledge for ICT Professionals (CBOK)</u>.



Applicants must detail the relationship between the selected Areas of Knowledge and their learning from their experience and qualifications. This section of the RPL application needs to be specific as to how and where the applicant has acquired the knowledge.

The ICT Key Areas of Knowledge:

Essential Core ICT Knowledge

Topic 1. ICT Professional Knowledge

Sub Topics are -

- a. Ethics
- b. Professional Expectations
- c. Teamwork Concepts and Issues
- d. Communication
- e. Societal Issues

Topic 2. ICT Problem Solving

Sub Topics are -

- a. Modelling Methods
- b. Processes to understand problems
- c. Methods and tools for handling abstraction

General ICT Knowledge

Topic 3. Technology Resources

Sub Topics are -

- a. Hardware and Software Fundamentals
- b. Data and Information Management
- c. Data Communications and Networking

Topic 4. Technology Building

Sub Topics are -

- a. Human Factors
- b. Programming
- c. Information Systems Development and Acquisition

Topic 5. ICT Management

Sub Topics are -

- a. IT Governance and Organisational Issues
- b. IT Project Management
- c. ICT Service Management
- d. Security Management

You are required to select one topic from the Essential Core ICT Knowledge (Topic 1 or Topic 2) and one topic from the General ICT Knowledge (Topic 3, Topic 4 or Topic 5). Please ensure you address at least 2 subtopics from each of the topics chosen. In the following expandable typing areas, explain **how you have acquired your in-depth knowledge** in these topic areas through your professional experience.

Important:

• Identify the Area of Knowledge topic that you have chosen to explain by entering the name of the Area of Knowledge topic in the box.



- Explain, in the expandable typing area, how you have acquired the knowledge and illustrate the depth of that knowledge.
- You should NOT address all sub topics included in the Area of Knowledge in your explanation.
 Address at least TWO of the sub topics. Enter the sub topic name(s) in the box.
- Be clear and concise in your explanation.
- Limit each explanation to no more than one to one and a half pages.

Essential Core ICT Area of Knowledge:

Topic 1. ICT Professional Knowledge (PK)

PK1. Teamwork Concepts and Issues

PK2. Communication

How have you acquired this knowledge in your working environment? Illustrate your depth of knowledge.

PK1. Teamwork Concepts and Issues

As a thorough professional I consider Teamwork a core part in commencing success of the project. During my professional career I have executed & completed number of project assignments in congregation with team mates. The team consisted of individuals from wideranging subdivisions. I have always synchronized with them seamlessly.

My success in projects is guaranteed by my rules which I follow stringently I follow certain rules that stretch success in my projects

- I faultlessly grasp my own position in the team
- > I believe that team should have same goal. No indiscrimination over goal should exist.
- The results generated after team work are utmost recognized at every level.
- I always try to be in touch with peers having likewise interests & gals.

As a Developer I have learned to be very lithe in order to distinguish other people thoughts and resolve skirmishes pro-actively. I have managed teams of 3 to 16 people & have accomplished resolving all types of conflicts between them. As a skilled expert I also face diverse conflicts & issues but I always act absolutely to solve issue. This legacy of mine has blessed me with eternal success in life.

PK2. Communication

In the Information Technology business the communication is a wholly important factor In winning anticipated goals. When we work on project development we normally need to communicate with client for their individual custom requirement for the particular project. I untiringly trust that functional communication with people can resolve any issue. I have also worked for information gathering for new project reports as per need of the final establishments & corresponding stake holders. I am accountable for concocting documentation, user manuals & for the end user trainings which in turn augments my communication legerdemain.

General ICT Area of Knowledge:

Topic 1. ICT Management (IM)

Sub Topics are -

- a. IT Project Management
- b. Security Management

How have you acquired this knowledge in your working environment? Illustrate your depth of knowledge.



IT Project Management

In order to deal with Information Technology projects the basic pillar is Project Management, this assessment is based on my understanding of many years working on uncountable software development ventures. I always strain on several Project Management Areas which are Project scope, schedule human resource management, communications, risk, procurement & shareholder management etc.

Security Management

How have you acquired this knowledge in your working environment?

I gained knowledge of Security Management during my educations & professional experience by daubing security practices in software as well as on hardware. I have planned in detail Risk Analysis & International standards for Information & Data Security. I am an active member of numerous related forums and blogs. I also meet relative technology people on monthly basis.

Application of learnt familiarity of Security Management in working environment

- Software Security from illegal access by putting login windows.
- Make undisputable that Role based access has strappingly being applied.
- > Store complex data in encrypted form at each level.
- Implement vigorous check on the usage of internet.
- Install adequate Antivirus and firewalls to secure hardware.

My unified knowledge in System Development and Fulfillment

- Understanding of Significant Philosophies of Information Security
- Access Control Mechanism detailed knowhow
- Data Encryption/Decryption
- Masking of relative data
- > Session and Cookies management

SECTION 2 - RPL PROJECT REPORTS

A project report is a coherent written description of a project or engagement that provides you with the opportunity to show how you perform as an ICT Professional. Each report is to relate to a significant project or work episode undertaken by you during your professional career.

The purpose of these reports is to enable you to demonstrate your command and implementation of the Areas of Knowledge described in Section 1 of this application.

Please note: You are required to provide two project reports.

Of the two reports, one must pertain to a project undertaken within the last three years, and the other for a project within the last five years.

Projects over two years long may be used for both reports under either of the following conditions:

- The project has clearly-defined work efforts which took place in parallel, each with their own solution development and design activities and their own deliverables.
- The project had clearly-defined phases that were executed in succession, each with its own solution development and design activities and deliverables. Note that a second project



phase that constructs and implements the solution developed by the first phase does not meet this requirement.

Depending on the nature of your role in each project, the Project Report should cover an appropriate selection of factors. Appropriate factors will be determined based on the type of ICT project selected. Possible factors include:

- System Analysis and Design and Software Engineering methodologies used;
- Contribution to the processes involved in the design and implementation of enterprise-wide computing systems;
- Programming languages, design paradigms and implementation procedures adopted;
- Database and/or file design and management techniques employed;
- Network topologies, including size, distribution and security facilities installed;
- Project Management and quality assurance techniques followed;
- Internet application design, including database interactivity and security measures implemented;
- ICT managerial activities, demonstrating the nature and extent of responsibilities

Project S	ummary:		
	Project Name	Start Date	End Date
Project 1	Nayatel Inventory Management System	mm/yy	mm/yy
Project 2	Point of Sale System	mm/yy	mm/yy

Instructions

The following pages provide a template for your reports.

When writing your reports please provide your own thoughts – do not just copy project documentation.

Please use the first person in your discussion, so it is clear to the assessor what you did versus what others did – say "I did X" rather than "X was done".

Diagrams from the project documentation may be helpful, but the text should be in your own words. Please ensure that diagrams are relevant, readable, and help the assessor to understand what you did as a member of the project team.

If sections of the Project Report template (see below) are not relevant to your participation in the project, then leave the section blank.

Focus on quality rather than quantity. **Each Project Report should be no more than four or five pages in length.**

SPECIAL NOTE:

By submitting this RPL Knowledge and Project Report form as a component of your ACS skills assessment application, you agree with the following statement:

The applicant confirms that the explanation of their knowledge and project reports submitted in this application truthfully and accurately describe the applicant and the applicant's personal involvement in the projects. The applicant is aware that plagiarism by the applicant will automatically invalidate



this application, will jeopardise any future applications from the applicant and will be reported by the Australian Computer Society to the Australian Department of Immigration and Border Protection.



Project 1: Nayatel Inventory Management System

1. Project Summary

1.1. Identification

Client's Company	Legal Name of Entity
Name	
Business Address	Street Address
	Suburb State Postcode Country
Contact Numbers	Tel: Telephone (include country and area code)
Web Address	Web address
Email Address	General email address
Nature of project	
Location of project	
Name of your	
employer	

1.2. Duration

	From	То
Total project duration	mm/yy	mm/yy
Your involvement	mm/yy	mm/yy

1.3. Resources

	Number
Your team size	
Total project team size	

1.4. Personal Involvement

Please list the phases of the project in which you were personally involved

Start	Completion	Phase Description	
mm/yy	mm/yy	Commencement – Requirement analysis & gathering of needs	
mm/yy	mm/yy	Documentation Preparation, Design & Development of Database	
mm/yy	mm/yy	Development of Input Data & Output Data	
mm/yy	mm/yy	Development of Forms for Management	
mm/yy	mm/yy	Software Testing, System Execution, End User Training	



1.5. Describe your role(s) and responsibilities, including the leadership aspects.

The Inventory Management System for Nayatel Pakistan was developed in order to streamline the Information Technology possessions of Nayatel. The company was previously using Ms-Excel to keep the records and due to this the company was in turmoil because this was time consuming & was producing tons of errors at the same time. The new system of Inventory Management uplifted the asset management of Nayatel on superior level. It tracked the performance of every product that was using a web application. This helped the company managers to start accurate re-ordering & present possible demand of the product in near future.

Professional attributes and Know-how applied in the Project:

- > Principle basic criteria congregation from major stakeholders.
- Suggested, programmed & accomplished software excellences at each step of software development process.
- > Spotlessly recorded, translated & coded software programs & applications reflecting to needed requirements.
- Played vigorous part in the classification, development & documentation of software business requirements.
- ➤ Put all energies in defining software development ruses, including scoping, scheduling, & Execution of the project well before deadline.
- Wrote programming scripts to supplement performance of software.
- Did testing on rigorous level to find any bugs.
- Managed development of User manual & kept it for further progress.
- > Did End user training for streamline operations by client in future.

2. Business Opportunity or Problem

2.1. Describe the business opportunity or problem(s) this project addressed.



The Inventory Management System for Nayatel provided information to effectively manage the flow of the material, utilization of manpower & equipment in hand, show internal activities & communication with the clients. The managers were able to make more accurate and timely decisions in order to maintain company operations.

This Inventory Management system

- ➤ Offered the user to enter data through very modest & interactive web page. It was simplest possible way of lodging the desired information.
- Offered checks at each step data entry, new creation of option or updating data. There was no chance of entering irrelevant or invalid data because of the designed algorithm of the system.
- Offered space for the admin to update already logged data but at the same time admin was not allowed to change primary data in order to keep data validity for longer periods.
- ➤ Was user friendly as it gave user the option to monitor records he has entered previously. There very plenty of options provided at this stage to manipulate the data accordingly.
- Offered links at every page in order to leap towards options for the project at any time without any hindrance.
- Offered faster & reliable data storage & retrieval as it was stored in a single database in a very systematic manner.
- Was helpful in decision making process as it offered faster processing of information.
- ➤ Had fewer options so as to provide maximum efficiency, accuracy & transparency.

3. Solution

3.1. Discuss your contribution to the solution, project or engagement.

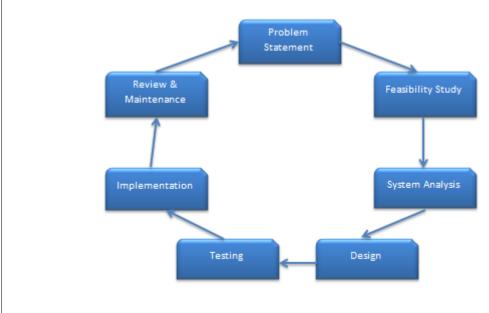


As Principal lead developer I was accountable for the all-encompassing attainment of the project. I developed all the key parts of the application independently. I developed all the required input & output forms rendering to the customer requirement.

My Professional Aims & Contribution as Lead Developer were

- To explore & observe current system & consult stake-holders & inspect the record's.
- Arbitrating with colleagues such a system analysts & designers
- To harvest comprehensive stipulations & writing the programs code accordingly
- ➤ To achieve project strategies, goals & make sure deadlines are met for each segment of development.
- Perform testing
- Installing software on the clients system
- > To create training manuals for the users
- ➤ End user training & complete rundown on problem solving practices

I proposed the Software Development Lifecycle as below. This was a critical approach towards a systematic development of Software solution



Software Development Lifecycle

3.2. Describe any design or problem solving methods you used on this project.



As a Developers team leader it was my major responsibility to study the manual system that was to be replaced entirely as a whole. I along with my team planned that how this Inventory Management System for Nayatel will require hardware, software, network & other prime resources to convert data transaction into information products i.e. reports & displays. In this project the Software details were as following

Platform: .NET 3.5OS: Win 7 Pro

Language: ASP.NET using C#Back End: SQL Server 2000

System layout was the initial step towards the development of this Software solution and it required a thorough professional planning. I oversaw the System Design i.e.

Input Data

- Data Control & Correction
- > Data Recording & subsequent Verification

Output Design

- > External & Interactive outputs
- Turn around & Internal outputs
- Operations outputs

Database Design

One of the factors is developing a well accomplished application & design of the subsequent database tables. I followed standardization concept in understanding the database design scenario. I produced the foundation of data i.e. Tables of the project. Tables were designed for Product brand, Category, Transaction & Transaction list. An example of my designed table for Product Brand Page is shown below

Field Name	Datatype	Size	Key	Allow nulls
Brand_code	Varchar	6	Primary Key	
Brand_name	Varchar	250		Checked
Created_on	Dateline			Checked
Created_by	Char	10		Checked
Modified_on	Datetime			Checked
Modified_by	Char	10		Checked
Ip_address	Varchar	15		Checked

I also presented the Striking Features of the Software before the stake holders

- > Lessen intricacy through automation
- Comprehensible environment to operate
- ➤ Well-matched to all platforms
- > Improve management departments competence
- > Exchange data amongst different departments
- Improve management reporting, maintaining capabilities
- Enhance user gratification & productivity



 $\textbf{3.3. List the major deliverables of the project that you were \textit{responsible for or contributed to.}\\$



Since I was the team leader so I contributed by firstly generating the Data Flow Diagram for Inventory Management System for Nayatel. Data flow diagrams are a graphic tool; they are the model of the proposed system. Following are the DFD of this software

are the model of the proposed system. Following are the DFD of this software **Data Flow Diagram Level 1** Possession Master **Data Flow Diagram Level 2** Master



I also designed & coded the File Upload Control. It lets users to upload files. The ASP.NET included two controls that gave option to the website users to upload files over the server. Once uploaded the data then the application examines it or ignore it or save it to the back end database.

```
Protected void btnUpload_Click(Object sender, System.EventArgs e)

{_
String path = @"C:\temp\"
+ FileUpload1.FileName;
FileUpload1.PostedFile.SaveAs(path);
}

When I created the content page it just had the following mark up.
<%@Page Language="C#"MasterPageFile="~/MsterPage.master"
AutoEventWireup="true CodeFile="Default.aspx.cs"Inherits="Default"
Title="Unitled Page"%>

<asp:Content ID="Content1"
ContentPlaceHolderId="ContentPlaceholder1"Runat="Server">
</asp:Content>
```

4. Results

C# Example

4.1. Was your solution implemented? If so, describe the role, if any, you had in the implementation.



I played key role in creating form authentication attributes. The Form Authentication used HTML forms in order to collect the user information & then took needed actions on these gathered values of HTML.

Web.config:Contains a key-value pair

Web.config

<?xmlversion="1.0"encoding="utf-8"?>

<configuration>

<appSettings>

<add Key ="ConnectionString1"value="server=localhost; uid=sa; pwd=;</pre>

database=northwind"/>

<add key="COnnectionString2"value="server=localhost; uid=sa; pwd=; database=pubs"/>

</appSettings>

</configuration>

As I was leading the team so I tested the software limitations at all levels.

Two most advanced types of testing methods were used

White Box Testing

Using this procedure following tests were made on system

- All sovereign paths within the module were exercised once. In our system it was guaranteed that case was selected & executed & checked all structures. The bugs that were usual in some part of the code were fixed accordingly.
- > All logical conclusions were double checked for the truth & falsity of the values

Black Box Testing

It helped in detection of different class of errors as compared to white box testing

- a) Interface & Performance errors
- b) Recital in data structure
- c) Initializing & close errors

Implementation of Inventory Management System for Nayatel

The following activities were involved in implementing this project

- End user training & education
- > Training on the application software

User Training

I provided end user training for the client. All the modules were entered into a menu & later on was attached with the master page. I trained the end user staff in my physical presence. I made them at home with the various attributes of the Inventory System.

4.2. Assess the overall success or failure of the project.

The project was an astonishing success & was applied within a very short span of time. Inventory Management System for Nayatel was well venerated by the client since it was tremendously user friendly & possessing record was just a click away.



4.3. Lessons Learned

In retrospect, what you might have done differently on this project?

This project was a gigantic thought-provoking job for me because of the intense expectations of client. During this project I studied .NET Framework & ASP.NET to its fullest & got some idea that how a typical application should work in a seamless way. I also closely worked with End user to understand their expectation. I played my part by also developing reports for Executives of company in order to keep them updated at all stages of the software development.



Project 2: Point of Sale System

5. Project Summary

5.1. Identification

Client's Company	Legal Name of Entity
Name	
Business Address	Street Address
	Suburb State Postcode Country
Contact Numbers	Tel: Telephone (include country and area code)
Web Address	Web address
Email Address	General email address
Nature of project	
Location of project	
Name of your	
employer	

5.2. Duration

	From	То
Total project duration	01/11	05/11
Your involvement	01/11	04/11

5.3. Resources

	Number
Your team size	1
Total project team size	1

5.4. Personal Involvement

Please list the phases of the project in which you were personally involved

Start	Completion	Phase Description	
mm/yy	mm/yy	Commencement – Requirement analysis & gathering of needs	
mm/yy	mm/yy	Documentation Preparation, Design & Development of Database	
mm/yy	mm/yy	Development of Input Data & Output Data	
mm/yy	mm/yy	Development of Forms for Management	
mm/yy	mm/yy	Software Testing, System Implementation, End User Training	



5.5. Describe your role(s) and responsibilities in the project.

The prime intention of Point of Sale System was developed for a local Hardware Wholesale dealer in order to overcome the problem of manually keeping sales record, customer's information, import document details (Bill of lading) & services. The system designed & implemented provided excellent Point of Sales function along with security of data at every level & also provided robust & reliable backup facilities.

I used all my technical knowledge, understanding to develop top notch & state of the art software solution & played a major role at every step of software development. I did the required Testing & operational settings were accomplished at the final stage of the project development. I executed the following tasks from start till end:

- Accomplished programming project needs by interacting with the stake holder
- Wrote requirement document for prior presentation to the respected authorities
- ➤ I followed Standard Operating Procedure in order to ensure proper Programming standards
- ➤ Interviewed stake holders regarding essential components & current processes
- Planed programming by approving program objectives & specifications
- Defined standards for strategies & procedural activities
- Planned the whole Point of Sale System
- Got required results at each phase of project
- Verified & validated program procedures at each progressing phase by performing multiple tests
- Well needed results were obtained by using smart design methods
- I provided end user training as well for the client

6. Business Opportunity or Problem

6.1. Describe the business opportunity or problem(s) this project addressed.



The Point of Sale System was designed & developed to handle the manually keeping sales record, customer information, hardware parts inventory, vendor company details & maintain the records of related to the business. There was lack of harmonization among numerous related processes of the business which was needed to be accounted. The staff was using gigantic registers to manually maintain sales & other data. Loss of data was there due to the old style of manual data entry procedure. The aim of the project was

- > To completely replace manual sales, invoicing system into digital world
- To give fast services to the customers who used to stand in que
- > To have strategic tactics towards data storage & its secure retrieval
- > To have high correctness of all looked-for operatives
- > To have immediate stock statement of any product
- > To increase reliability of the whole system
- > To reduce redundancy
- > To manage client details & respective billing process
- > To have instant retrieval of information

7. Solution

7.1. Discuss your contribution to the solution, project or engagement.



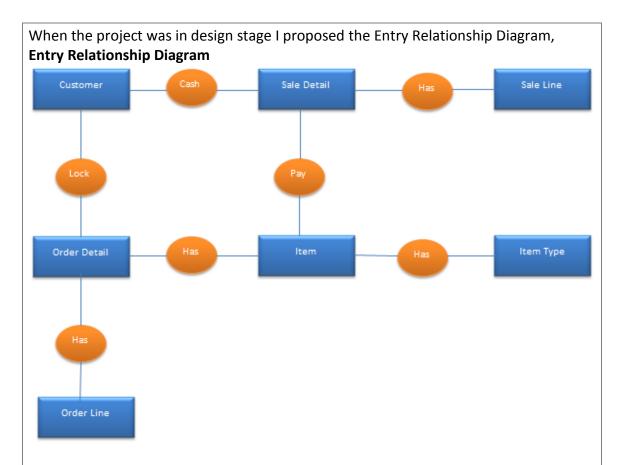
Since I was assigned as chief programmer so I was answerable for the entire System Development process and final implementation along with end user training. I used Microsoft Visual Basic 2010 & Microsoft Access Database for the development of this Point of Sales System. I also provided feasibility documents of the system, The feasibility study included

- Economic Feasibility
- Operational Feasibility
- Technical Feasibility

My responsibilities for this Point of Sale System project were to

- Research & define vital components
- Investigate current processes, business systems, procedures & recognize gaps
- > Sanction, schedule, & accomplish perfections & upgrades
- Interrelate with network administrators, system analysts & software engineers to underwrite in determining problems with software
- Develop user manuals & guidelines
- Demeanor research on evolving application development software, languages & standards in support of procurement & development efforts
- ➤ Mediate for efficient execution of software product
- Write reports & keep the management & customer update regarding the status of the programming process
- Install software for end user & train them accordingly
- 7.2. Describe any design or problem solving methods you used on this project.





Along with this I also anticipated the Practical Components of the Point of Sale System project which later became part of the software. Following were the functionalities of the system.

Features Available to Admin

- > Can register POS users
- Login to the system & change password
- Delete or modify any records
- View reports
- ➤ View & modify the information
- Re-set the database as per requirement

Features Available to Staff

- > Login to the system through the initial screen of the system
- > Change the personal login password after logging into the system
- > Search the various products rendering to the client requirements

I also took energetic part in designing system. The design aspect was divided into two separate phases i.e. System Design & Detailed Design. System Design captivated on what components were needed & Detailed Design focused on requirement of the internal logic.

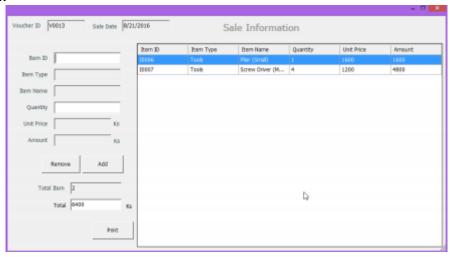
7.3. List the major deliverables of the project that you were responsible for or contributed to.



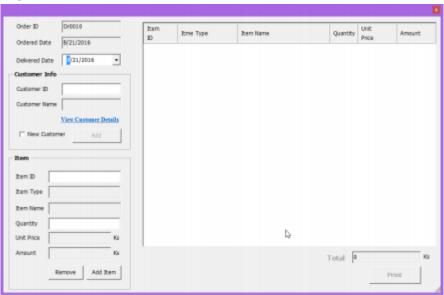
As Project lead programmer I studied, designed, developed & implemented the complete solution on turnkey basis. I with great zeal contributed at all stages & worked as a key individual between requirements and prior executions. I did a lot of meetings with client in order to know their exact demands & expectation. I also kept client & my company executives well aware of the software development phases.

I designed almost all the FORMS. Some examples are as following

Sale Form



Add Order Form





Below is the coding example I did in this project for the Login Form

Private Sub Btn_Logic_Click(By Val sender As System.Object,ByVal e As System.EventArgs) Handles Btn_Logic.Click

Dim ds As DataSet

Ds = SelectData("SELECT*FORM Login WHERE Username ="""&txtBox_UserName.Text&""")

If ds.Tables(0).Row.Count<>0 Then

If txtBox_PassW.Text = ds.Tables(0).Rows(0).Item(1) Then

Main_Form.Show()

Me.Hide()

End If

End Sub

Private Sub checkbox_ShowPassW_CheckedChanged Handles

checkbox ShowPassW.CheckedChanged

If checkbox_ShowPassW.Checked=False Then

txtBox_PassW.UseSystemPasswordChar=True

Elself checkbox ShowPassW.Checked=True Then

TxtBox PassW.UseSystemPasswordChar=False

End If

End Sub

End Class

8. Results

8.1. Was your solution implemented? If so, describe the role, if any, you had in the implementation.

Before suitable and final execution, the software was verified meticulously for any fatal or even trivial errors. The codes were tested at plentiful stages throughout software testing. Unit, system & user acceptance testing were also done accordingly & records of these activities were kept both in paper & digital form. The stake holder was provided with the quality of the product under test, with respect to the context in which it was obligatory to function.

8.2. Assess the overall success or failure of the project.

The project was a considerate success. It played a vivacious role in uplifting my technical knowledge. It also helped in playing a bench mark character in my career growth. It was executed right after some serious trials at both manufacturer & customer end. The strict professional approach of mine played key role in the overall success of the project.

8.3. Lessons Learned

In retrospect, what you might have done differently on this project?



This project was a massive test for me because of the hard-hitting expectations of client. During this project I studied and explored Microsoft Visual Basic & Microsoft Access Database very well. This helped me to get unrestricted knowledge of this software. I also very closely worked with End user to understand the expectation of end user.