BASE - 24 ATM REPORTING

PROJECT REPORT

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FOR THE AWARD OF THE DEGREE OF

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IN
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COIMBATORE-641 006

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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COIMBATORE – 641 006

This is to certify that the project entitled
BASE – 24 ATM REPORTING
has been submitted by

Mr.K.J.Senthil Kumar

in partial fulfillment of the award of the degree of
Master of Science in Applied Science - Software Engineering
Bharathiar University, Coimbatore
during the academic year 2002 – 03

20/3/2003
.....
Guide

.....
Head of the Department

Certified that the candidate was examined by us in the Project Work Viva Voce Examination held on ..5/4/2003..and the University Register Number was..9823780065

.....
Internal Examiner

.....
External Examiner

Acknowledgement

BASE24 ATM REPORTING

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SYNOPSIS

Every second of every day, people are initiating electronic transactions getting cash at ATMs (Automated Teller Machines), using their credit cards.

" **BASE – 24 ATM REPORTING** " is a comprehensive reporting function to the ATM Industry that gives all the ATM terminal transaction information allowing efficient management of ATM's of individual banks.

Transactions such as withdrawal, Deposits, Transfers, Balance Enquiry, Pin Change, Statement Print, Message to institution, Log Only are processed and reports are generated.

BASE-24 is a software that is used to process these transactions, powering the world's online payment systems .BASE - 24 runs on hardware component known as TANDEM .It is a non-stop server manufactured by Compaq .It is one type of OLTP(online transaction processing server).

All these transactions are processed based on the ATM card which the customer swipes into the Automated Teller Machine .A card reader within the ATM processes and reads the data that is digitally-encoded in the card by the institution and sends it to the processor.

This processor takes this information, along with the personal identification number(PIN) that you key in, and verifies the data, performs the transaction requested and transmits the results to the bank.

All transactions occurring for each BASE24 processing at terminals are logged to the Transaction Log File (TLF). It is out of this TLF the various possible reports are identified and generated.

Reports on the basis of Week wise, ATM wise, Branch wise, Bank wise, Transaction wise, Customer wise, Date and Time wise etc... are generated.

CONTENTS

Introduction

INTRODUCTION

1.1 ORGANIZATION PROFILE

FSS (Financial Software systems) is based in chennai, India. FSS has pioneered the marketing and support of Retail and whole sale EFT solutions in India and Srilanka. FSS began its operations as a propriety concern in 1989 and has been constituted as a private lilted company in 1991.

FSS solutions cover a wider range of areas in Banking, System Management and Securities industries. FSS provides turnkey solutions for ATM/POS switching, Anywhere Banking thru Distributed Branch Systems, Debit/Credit Card processing & Management systems, Internet Banking and E-Commerce(EC) Payment Gateways.

Investors

CARLYLE GROUP, USA has invested US$ 2.25 million into FSS for minority share holding.

Local Support

FSS has teams of professionals to provide Project Management, Customization, Implementation and Facilities Management.

FSS has established a development & Support center in Mumbai by installing Tandem(S-Series), NT and UNIX Servers (HP, SUN, SCO) to provide comprehensive local support to the customers of ACI's BASE24, IR's PROGNOSIS and QSI's Solution for ATM, E-Commerce and payment Gateways. The Mumbai center employs over 80 software engineers.

IN house Development

Crad Soft - ATM Card Management System

Debit Card Management Solution (DCMS)

Pay TODAY (Electronic Bill Presentment and Payment)

PROJECTS

HDFC bank, Mumbai

UTI bank, Mumbai

ICICI bank, Mumbai

Bank of Madura, Chennai

Bank of Ceylon, Colombo

Indian bank, Chennai

IBA - Shared payment network system (SPNS), Mumbai

ABN AMBRO bank, Mumbai

Indusind Bank Limited

Global Trust Bank Limited

State Bank of India

Punjab National Bank

Synopsis

1.2 SYSTEM CONFIGURATION

The minimum required configuration of the system in which the software was developed is given below:

Hardware configuration:

System	:	Microsoft windows 95/later
Processor	:	Pentium - III
Clock speed	:	550 MHz
Memory	:	64 MB
Hard Disk	:	8.4 GB
FDD	:	1.44 MB
Monitor	:	EGA/VGA

Software configuration:

Microsoft Visual Basic 6.0

MS-Access 2000 database

1.3 SOFTWARE PLATFORM

Visual Basic 6.0

Visual Basic is a Powerful Programming system for developing sophisticated, graphical applications for Microsoft Windows environment.Its Productivity has been enhanced by addition of a complete set of tools to simplify rapid application development and Internet tackling.

" Visual " refers to the method used to create the graphical user interface (GUI), that uses illustrations, rather than writing numerous lines of code to describe the apperance, function and location of interface elements. " Basic " refers to the BASIC programming language, a widely preferred language by many programmers for its simplicity.

Visual Basic has thus been evolved from the original BASIC language and now contains several hundred statements, functions, and keywords, many of which relate directly to the windows GUI.

With the release of Visaul Basic 6, it is possible to work with ADO (ActiveX Data Objects) which features a simpler object model than DAO or RDO.Data Environment is a new ActiveX designer that enables the user to visually manage database connection and command.A substantial amount of work to enhance Internet capabilities has been done in this version.

MS-ACCESS 2000 Database

Microsoft Access 2002 provides powerful, intuitive ways of sharing XML data regardless of differences in the platform, data format, protocol, schema, or business rules. By using Access' familiar user interface, you can easily create XML data or schema documents from Jet or SQL Server structures and data. You can also use XML data from other applications in your forms, reports and data access pages. For example, suppose your data is scattered across a wide variety of sources - internal SQL servers, Excel spreadsheets, and other data providers like SAP. Since these sources use XML as their data interchange format, you could create a series of aggregation queries in Access to pull this data into views and then design forms and reports by using those views.

Problem Definition & Feasibility Analysis

PROBLEM DEFINITION & FEASIBILITY ANALYSIS

2.1PROBLEM DEFINITION AND FEASIBILITY ANALYSIS

Some of the issues surrounding reporting are as follows:

External/Internal management Issues

- Management wanted a more efficient way to process transactions .
- Management wanted the ability to easily track the details of the customers on the basis of ATM wise, Bank wise, Branch wise, Transaction wise, Customer wise etc....
- Management wanted to reduce time that is spent in accessing a particular information of a customer. eg..Maximum amount of withdrawal for the day .

THE SOLUTION

" BASE – 24 atm reporting " is highly robust reporting software which is a simple to use solution for powerful system administration functionality. It gives you all the lookup information needed right down to the individual transaction level.

It offers to user, the ability to easily access customers transaction details tracking them in one or more categories (time, date, week-wise etc...) and across multiple levels of transactions (Customer wise,Transaction wise etc...) With this the user can easily check the status of each transaction with the press of a button.

Monitoring of transactions is thus made quick and easy.

System Study

SYSTEM STUDY

The main objective of this document is to provide the reader with the System Requirements and Specifications for the software project entitled "BASE – 24 atm reporting". The various hardware and software related issues are addressed in this document together with it constitutes the clear specifications for the proposed software, its purpose of development, installation and operation of the system.

3.1EXISTING SYSTEM

"BASE - 24 atm reporting" is a vital system that needs to be automated, but due to remote access challenges it has historically been difficult to implement.

3.2 REQUIREMENTS FOR THE NEW SYSTEM

The ATM industry continues to grow exponentially due to the constant placement of ATM's around the the world. A pent-up need in conjunction with continued growth has fueled demand for timely, accurate and secure reporting functionality. " BASE - 24 atm reporting " provides a solution for the ATM industry that provides with necessary reports.

The various reports that are to be generated are:

- Weekly Report
- ATM wise Report
- Branch wise Report
- Transaction Code wise Report
- Response Code wise Report
- Reversal Code wise Report
- Customer wise Report
- Date and Time wise Transaction Report
- Peek Hours Daily Report
- Peek Hours Weekly Report

They are briefly described as :

Weekly Report :

This report gives details of all the transactions which takes place over a weeks time in a particular bank.

ATM wise Report :

This report gives details of all total transactions based on the ATM terminal.

Branch wise Report :

This report gives details of all total transactions that takes place in a particular branch.

Bank Wise Report :

This report gives details of all the total transactions that takes place in a particular bank.

Transaction Wise Report :

It gives transaction details based on transaction type.

Eg : For transaction type 10 00 00 (fast cash withdrawal), all the customer transaction details are listed.

Response Code Report :

It gives transaction details based on response code.

Eg : For the response code 3(Auth process),all the customer transaction details are listed.

Reversal Code Report :

It gives transaction details based on reversal code.

Eg : For the reversal code 01(Time out),all the customer transaction details are listed.

Customer Wise Report :-

It gives transaction details about the transactions done by the customer.

Date and Time wise Transaction Report :-

It gives details about the transactions done by the customer on the basis of date and time.

Peek Hours Daily Report :-

It gives details about the highest transaction done for each day wise time period.

Peek Hours Weekly Report :-

It gives details about the highest transaction done for the given week period.

Technical Requirements

Microsoft Visual Basic 6.0

MS-Access database 2000

3.3. OBJECTIVES OF THE PROPOSED SYSTEM

The Proposed system can provide many benefits to a company, such as :

- Easy to use
- Provides efficient and quick reports
- Saves time
- Avoids manual work
- Managing transactions
- A more accurate data management

Detailed Design – Project Description

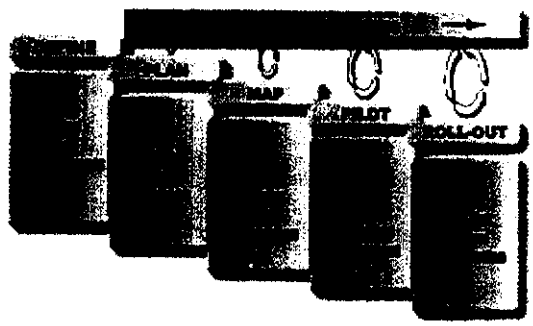
DETAILED DESIGN

4.1PROJECT OVERVIEW

" BASE – 24 atm reporting " is designed to give companies a better management tool to provide efficient and quick reports. It thus serves an efficient process of managing transactions across multiple levels.

4.2 PROJECT MANAGEMENT(REVIEW)

To minimize the risks associated with the implementation of project based management, a structured methodology is built around a comprehensive and complementary suite of Consulting Services which take into account each phase of solution definition and implementation.

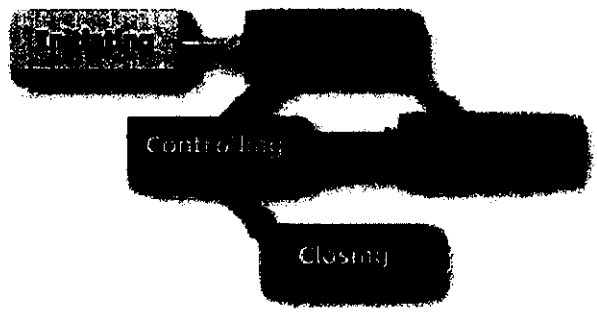


Structured Approach to Project Management

The Process Assessment Methodology has been developed to enable a structured evaluation of project management practices, and provide a framework for identifying and prioritizing improvements.

PURPOSE AND SCOPE

Clearly an organization's project management practices must be defined and implemented to respond to evolving market requirements and support achievement of the business objectives. The Process Assessment Methodology integrates the technical, organisational and cultural aspects of project management.



The Process Assessment methodology (PAM) enables comparison against recognized best practice and the creation of internal or external benchmarks. The Process Assessment is ideally suited to those organizations that want to focus their business improvement activity on the 'key enablers' for delivering business objectives through effective Project Management.

The Process Assessment involves two distinct but complementary phases:

1)Data Gathering and Analysis

2)Prioritized Improvements Definition

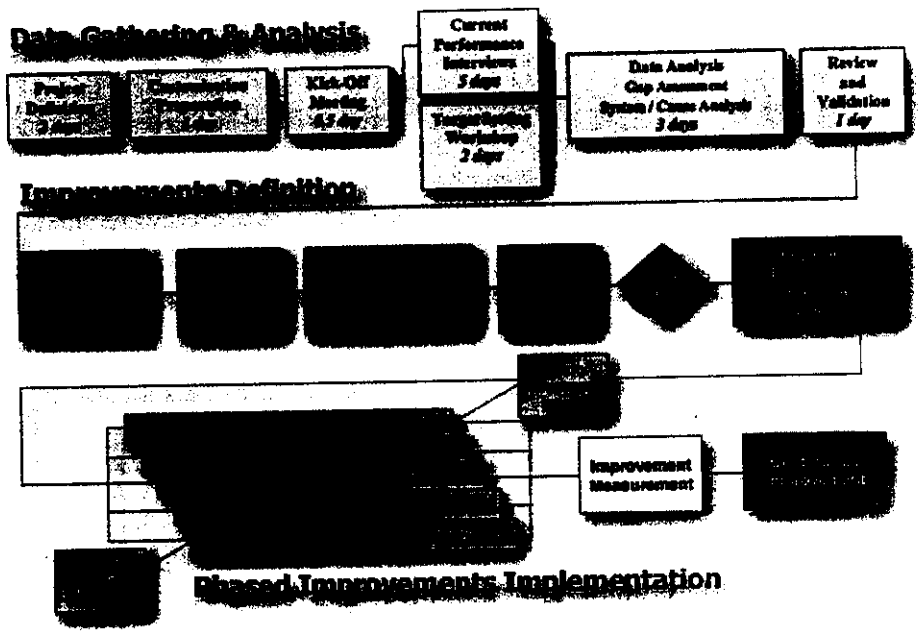
1)DATA GATHERING AND ANALYSIS

A series of structured interviews and workshops can assess the organization's current project management practices against a set of competence criteria which integrate the PMI process groups and the overall supporting environment for project management including:

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management

2)PRIORITIZED IMPROVEMENTS DEFINITION

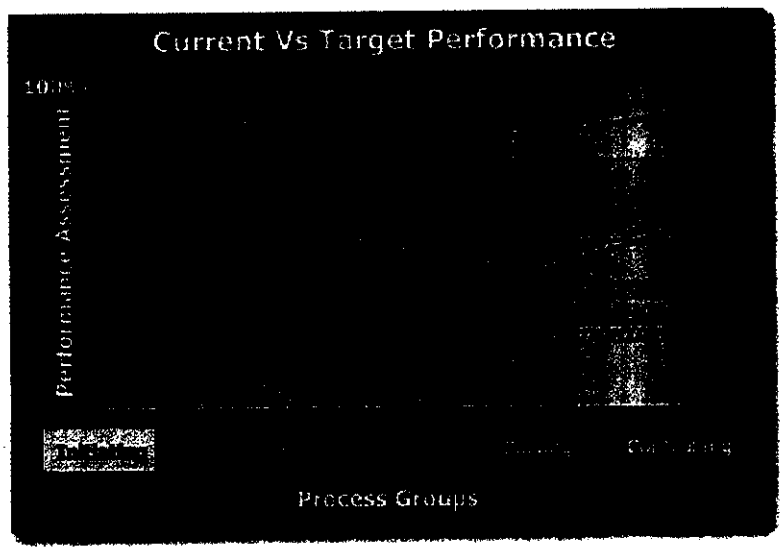
The analysis generates a consolidated view of the project management related issues and aspirations of the organization, and identifies the underlying causes that impact current project performance. Through further review and analysis the interdependencies between the symptoms and their associated causes are determined and potential options for improvement investigated. The most appropriate strategy is identified based on the established priorities of the business.



The findings are represented in graphical format to identify the strengths and weaknesses of the project management environment, and highlight the performance gaps where improvement initiatives should focus.

The output will identify a set of prioritized improvement options with associated actions.This may involve a series of task force projects to address each area of the overall project management environment:

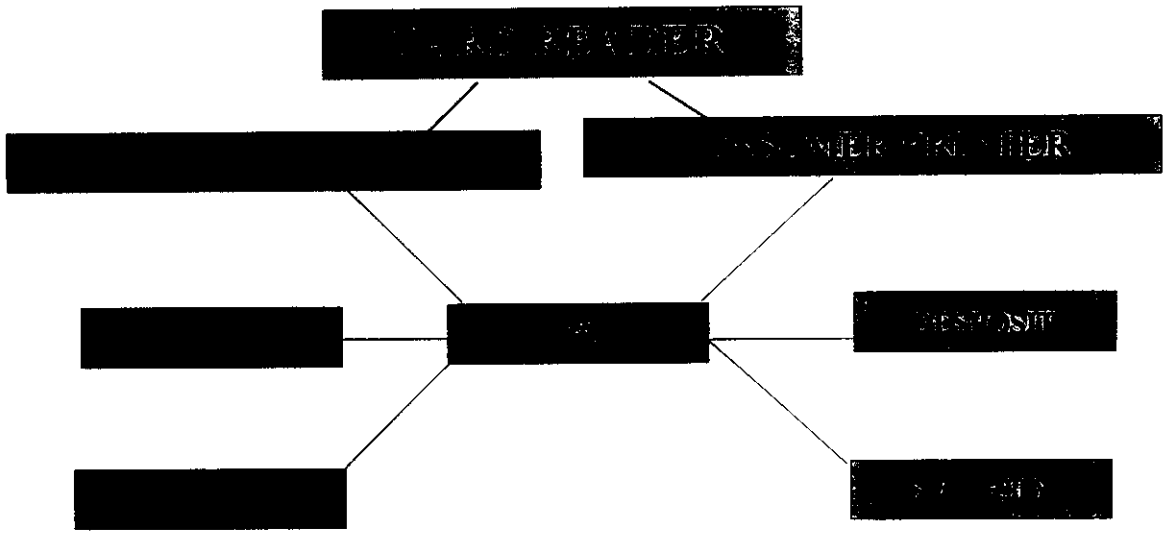
- Process Improvement
- Role Definition
- Organisational Change
- Information Systems
- Education and Training
- Cultural change…



BENEFITS

- Clear vision of current performance characteristics and areas of weakness against industry standards.
- Collective ownership of objectives for project management.
- Prioritized investment options and associated actions for project management improvement initiatives.
- Rapid repeatable mechanism that establishes baseline for measuring progress.

INTERNAL VIEW OF ATM



Card Reader - It reads data from the card and transfers it toCPU.

CPU - It transfers the data to the corresponding process

Dispenser - It delivers the cash to the card holder

Deposit - card holder can deposit their cash

Security - It provides basic confidence and security to the card holder

Service - It dispenses stamps, tickets and provides web services to the card holder

Journal Printer - It is used for institution purposes

Consumer Printer - It is used to print information to the card holder

TYPES OF ATM

There are two types of ATM :-

- Full Dispenser
- Cash Dispenser

Full Dispenser - ATM with deposit and dispenser

Cash Dispenser - ATM with dispenser only

ATM will work under two concepts

- Online
- Off-line

Online ATM - Here decisions on a transaction is decided outside the ATM

Off-line ATM - CPU which is residing in ATM decides on its own

TRANSACTIONS INVOLVED IN ATM

- Withdrawal
- Deposits
- Transfers
- Balance Inquiry
- Pin Change
- Statement Print
- Message to institution
- Log Only

4.3 PROJECT DESCRIPTION

This includes a basic overview in the operations and maintenance of ATM's in banks by FSS using BASE24 in TANDEM.

4.3.1 ATM

WORKING OF ATM

When you insert or swipe your ATM card into ATM what happens ?

A card reader within the ATM processes reads the data that is digitally encoded in your card by the institution to the processor. This processor takes this information, along with the personal identification number(PIN) that you key in, and verifies the data, performs the transaction requested and transmits the results to the institution.

FUNCTIONALITY OF ATM

- It disburses cash
- Transfer of funds between accounts
- Taking deposits
- Providing balance information
- Printing statements
- Dispensing postage stamps and tickets of all types
  (going to be in India in Future)

MANUFACTURER'S of ATM'S

- Diebold
- NCR
- Tata InfoTech
- Aplab
- Bull
- Trilogy

4.3.2 TANDEM

AN OVERVIEW

- It is a hardware component, manufactured by Compaq
- It uses the specification of OLTP(Online Transaction Processing)
- It is one type of OLTP server
- It uses Guardian OS,its version is 6.1
- Latest Model is S74000 (Previous series is DK series)
- It is called as Himalayan non-stop server
- Its database name is Enscribe
- We can write coding using TACL(Tandem advantage command line
- language) and Cobol
- It can run only in two OS - (Guardian and OSS)
- It uses Request - Server Technology

Fault Tolerance

- Each Hardware part has a mirror. If one part goes down instantly another part starts and continues the process.

Throughput

- Response time is minimum.

Hot swapping

- While the transaction is going on we can change any hardware peripherals without shut downing the system.

4.3.3 BASE24 CONCEPTS

AN OVERVIEW

It is an Electronic fund Transfer (EFT) software developed by ACI

It is used by 95% throughout the world

It is 25 years old software

It has been designed as a Modular design.

It has the following modules

- Base
- ATM
- POS
- Teller
- Telebanking

TANDEM ARCHITECTURE

Components involved :

BASE24

- It is one of the application software used in Tandem.
- We can use any application software.

TPF

- It is acronym for Transaction Processing Monitor.
- It is the pathway for TANDEM
- It is a TANDEM product

TMF

- It is acronym for Transaction monitoring facility
- It acts as a disaster recovery component at the hardware level

NSK

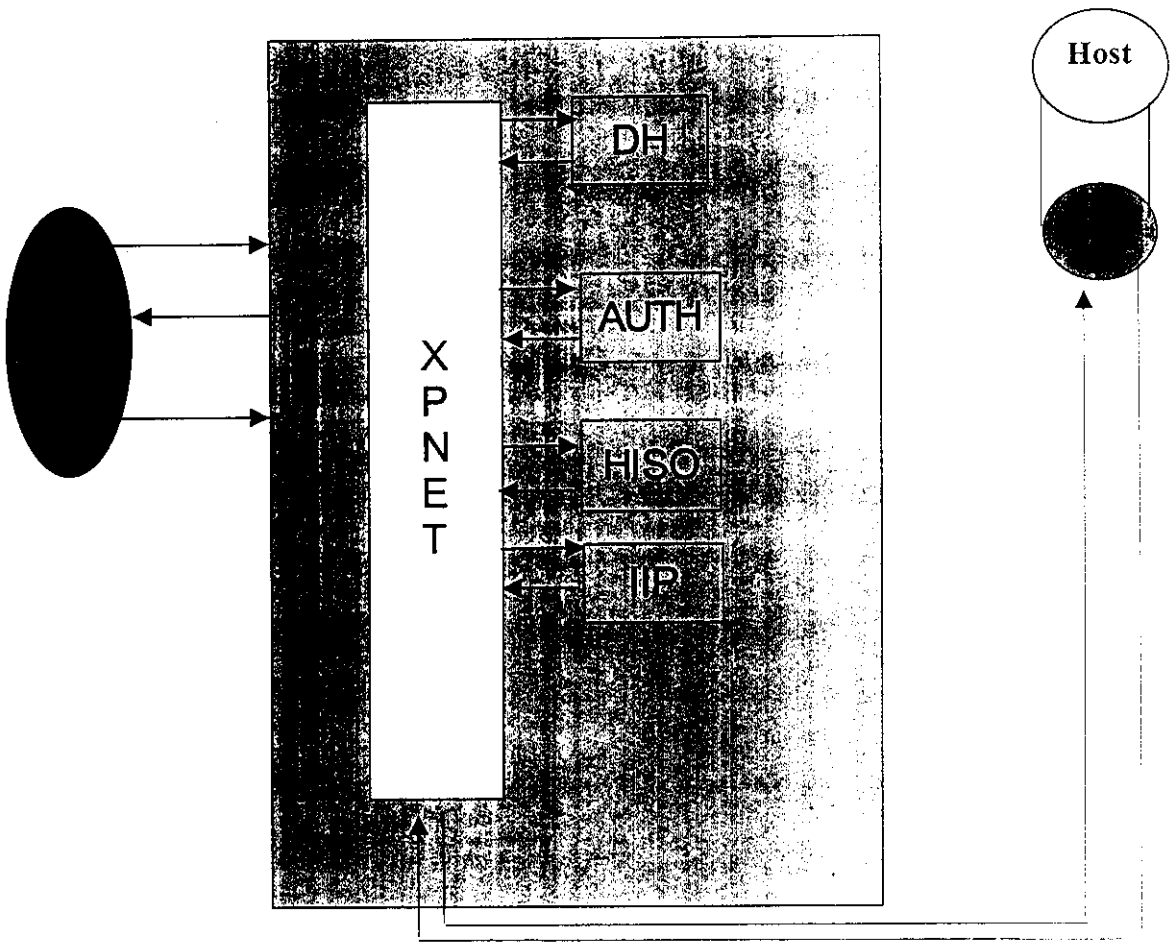
- It is acronym Non Stop Kernel

ADVANTAGES OF TANDEM

We can store huge data like in a main frame.

- RBSI
- Host Interface
- Different Interchange Interface Modules

STRUCTURE OF BASE24 – ATM



FEDC - **F**ront **E**nd **D**elivery Channel

XPNET - Extended **P**rocess **Net**work

DH - **D**evice **H**andler Process

AUTH - **Auth**orization Process

HISO - **H**ost Interface Process in **ISO** Standard

IIP - **I**nterchange **I**nterface **P**rocess

FEDC - It is a device where customer interaction takes places.

The following are the FEDC

- ATM
- POS
- Telephone and many more

XPNET - It is the heart of BASE24 which Monitors all process.

The following are the functions of XPNET

- Maintains routing mechanism
- Handles message traffic
- Provides transaction integrity
- Monitors status of data communication lines
- Interfacing with operating system and many more

DH - It is primary interface between BASE24 and FEDC. There will be specific Device Handlers for specific devices in BASE24.

The following are the functions of Device Handler

- Performs message format conversion from native mode to standard Internal message (STM) mode.
- Decryption of PINS using software.
- Generates reversals
- Updates hopper contents and activity totals in ATM
- Cutover's are performed

AUTH - It is responsible for many transaction processing.

The following are the functions of Authorization

- Authorizing and/or routing transactions to the appropriate interface process
- Logging transactions to the Transaction Log File (TLF).
- Calculating surcharge fees when applicable.
- Performing screens transaction

HISO - It is responsible for interaction with host systems. There are two types of host interface process.

- ANSI standard
- ISO standard

The following are the functions of HISO

- Controls message traffic to and from hosts
- Performs host availability check
- Performs timings check on transactions
- Performs message format conversion
- Accumulates statistics

IIP - It is responsible for communication with interchange. Each Interchange has its own Interchange Interface process because each Interchange has its own message format and message handling requirements.

The following are the functions of IIP

- Controls message traffic to and from Interchange
- Performs interchange availability check
- Performs timing checks on transactions
- Performs alternate routing
- Logs transactions to ILF

FUNCTIONALITY OF BASE24

- Checking Process
- Conversion of Native mode to Host format
- Send it to the Host
- Upon the receipt of the response convert it to Native mode
- Send it to the ATM
- Completion message check
- Maintain keys for Pin verification
- Managing Interchanges

NOTE : BASE24 is nothing but an interface between ATM and Bank Host.

BASE24 - ATM GENERAL INFORMATION

ATM Card

It is made up of plastic.

It contains three tracks (black color)

- Track 1
  - It contains Cardholder Name,PAN
  - It is used when transaction is online
  - Its total capacity is 76 Characters
- Track 2
  - It contains PAN, Expire Date, Member Details (if any)
  - Its total capacity is 37 Characters
  - It is used when transaction is online
- Track 3
  - It is used for special transactions at the ATM level itself
  - **FIID**

It is acronym for **F**inancial **I**nstitution **Id**entification

It's length is four digits alphanumeric

It will be unique for each bank

It plays an important role in each transaction

PAN

It is acronym for **P**rimary **A**ccount **N**umber

It is the ATM Card Number.

It can have a maximum length of 16 digits or 19 digits (Mostly used length is 16 digits)

It is stored in Track 1 and Track 2 of the ATM card

Note :There is a **distinction** between **Account No.** and **Card NO**(Last Four Digit of PAN)

PIN

It is acronym for **P**ersonal **I**dentification Number

It acts as a password to your account

Its length is four digits

Prefix

Its a 11 digits numeric Number

It takes 6 digits from PAN + randomly 5 digits

HSM

It is acronym for **H**ost **S**ecurity **M**odule

It is an external device connected to TANDEM

It follows DES algorithm for PIN encryption and decryption

It is responsible for validating and changing PIN

OFFSET

Encrypted format of PIN

EFT

It is acronym for Electronic Fund Transfer

It is transfer of funds via direct deposit, automated teller machine (ATM), point-of-sale, credit card transactions and money wire service.

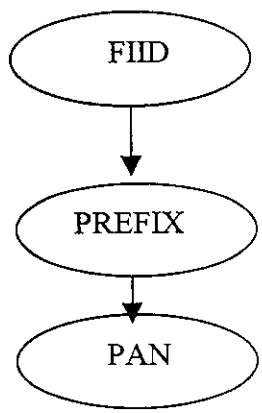
It offers safety, convenience and reliability to payment recipients and cost savings to credit unions and other financial institutions.

EFT systems include

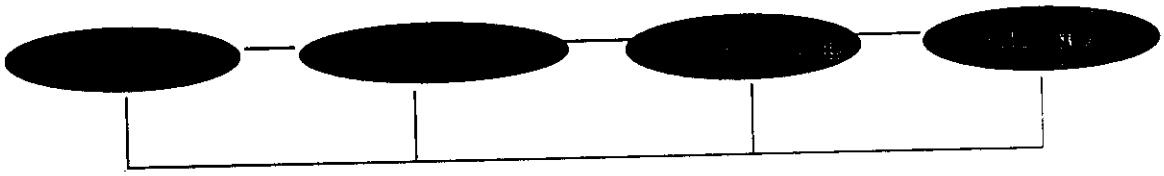
- Automated Clearing House (ACH)
- Automated Merchant Authorization Systems (AMAS)
- Automated Teller Machine (ATM)
- Direct Deposit
- Efficient Consumer Response (ECR)
- Pre-Authorized Payment
- Point of Sale (POS)
- Telephone Bill Paying

Note : All this is provided by BASE24 and so it is called as EFT application software

Hierarchy of Card



PAN DESIGN



Each code is four digit

Message Mode Understood by each process

Process Name

ATM	Native Mode
DH Process	Native Mode,STM
AUTH Process	STM
HISO Process	ISO 8583/STM

Note : STM - Standard Internal Message

4.3.4 BASE24 FILES

CONCEPTS USED IN BASE24 FILES

- Segmented File
- Unsegemented File

SEGMENTED FILE

A file which is used by more than one product of BASE24 is said to be segmented file. It will be structured in such a way that common fields are grouped to one section which will be used more than one product of BASE24 and specific fields are grouped according to the product wise.

File segmentation divides a file record into a series of smaller parts. Each part, or segment, consists of fields related to each other by product use or by feature.

Note : The maximum segments allowed in BASE24 per record is 32

Files are segmented based on two level

Financial Institution Level Authorization Files

- Card Authorization File (CAF)
- Positive Balance File (PBF)
- Negative Card File (NEG)
- Usage Accumulation File (UAF)

Logical Network Level Configuration Files

- Card Prefix File (CPF)
- Extract Configuration File (ECF)
- Host Configuration File (HCF)
- Institution Definition File (IDF)
- Interchange Configuration File(ICF)

Benefits of Segmented File

Disk Space is used more efficiently

Details of a Segmented File like CAF

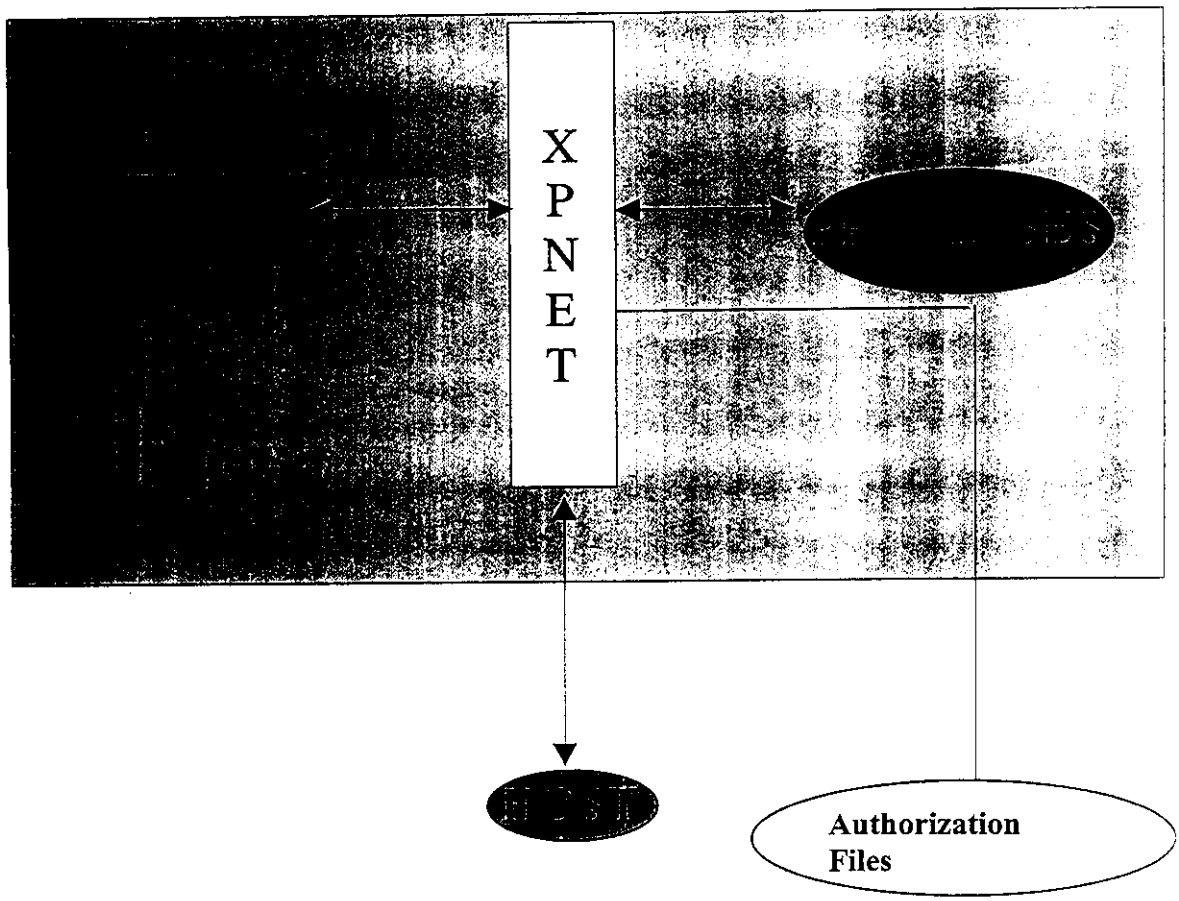
It contains shared information and product-specific information for the following :

- BASE24-atm
- BASE24-pos products
- BASE24-atm Self-Service Banking (SSB)
- BASE24-pos Address Verification add-on products.

CAF also contains function-specific information for preauthorized holds, and variable-length data in the form of account information.

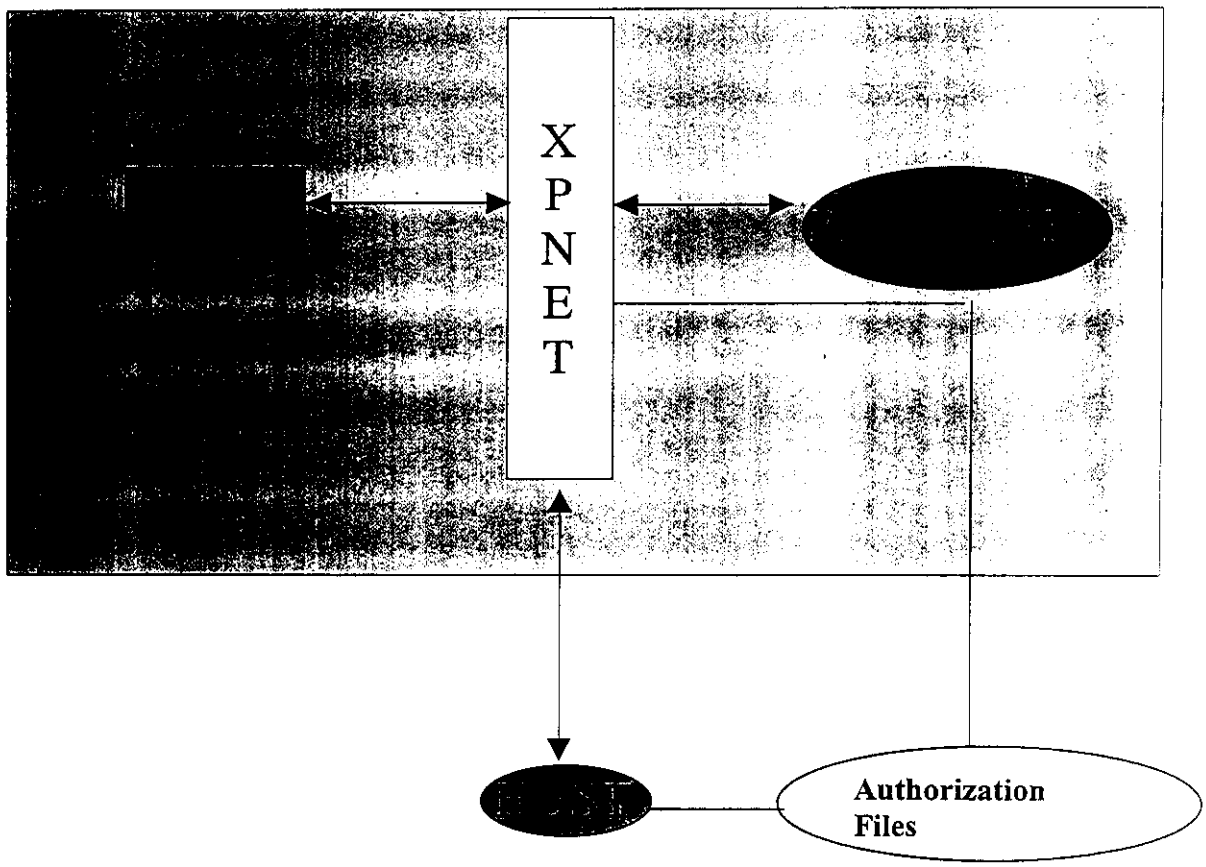
UNSEGMENTED FILE

In an Unsegemented file, all of the fields in the file are always present, whether the fields are used or not. If many of the fields in the record are not used (because they relate to an unused feature), the result is wasted disk space.



Online/Off-line Authorization - Level 3

- Transactions are sent to the host
- BASE24 may perform pre-screening checks
- If host is unavailable, BASE24 can perform stand- in authorization


X
P
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Authorization
Files

TRANSACTION PATH

The following Transaction Path gives a simple message flow in the three authorization levels, namely,

Following abbreviations used (Transaction Path)

XPNET	EXTENDED PROCESS NETWORK
DH	DEVICE HANDLER PROCESS
AUTH	AUTHORIZATION PROCESS
HISO	HOST INTERFACE PROCESS
TDF	TERMINAL DEFINITION FILE
IDF	INSTITUTION DEFINITION FILE
CPF	CARD PREFIX FILE
CAF	CARD HOLDER AUTHORIZATION FILE
PBF	POSITIVE BALANCE FILE
TLF	TRANSACTION LOG FILE
SAF	STORE AND FORWARD FILE
HSM	HOST SECURITY MODULE
HCF	HOST CONFIGURATION FILE
EMF	EXTERNAL MESSAGE FILE

A specific transaction passes a series of BASE24-atm processes and processing entities through which the transaction to be authorized.

A number of processes and processing entities form the BASE24-atm transaction path

ONLINE AUTHORIZATION (LEVEL - 1)

Whenever an ATM is used, the request from the ATM goes to XPNET in native mode. From XPNET it goes to Device Handler in the Native mode.Device Handler checks the TDF whether the FIID is valid (terminal is verified) then the native mode is converted to Standard Internal Message(STM) and then sent to XPNET.

From XPNET the request goes to AUTH. From AUTH it goes to IDF.
From CPF to IDF, IDF record identifies how the transaction request is to be processed.
From CPF the request goes to CAF, here PAN or Member No. is verified.
Then it goes to KEYA file for Pin decryption,then it goes to HSM for further verification and back to KEYA file.

The Authorization process sends the request to the Host Interface process.
From HISO to HCF and EMF files for verification. Here the request is converted to ISO8583 format and then sent to the Host. The response from the Host in ISO mode is sent to HISO. Here HISO converts ISO mode into STM mode and sends it back to AUTH through XPNET.

From AUTH the response is sent to TLF for logging the transaction details. Finding whether it is an approved transaction or not, it will be logged in the TLF.

After logging details in TLF it is sent to DH through XPNET. In DH the response in STM mode is converted in to Native mode and sent to ATM for the transaction. The completed transaction message is sent to DH. Then DH updates TDF about the completed transaction.

OFF-LINE AUTHORIZATION (LEVEL - 2)

In this transaction the host will not be involved. The transaction path is similar to level-1 transaction, but this transaction will not go to HOST. The request from the ATM goes to the Device handler through XPNET in the native mode. Then TDF is verified for FIID. Then it comes to DH and converted to STM to be sent to AUTH through XPNET.

From AUTH it is sent to IDF, CPF,CAF & KEYA files for verification .Since the host is offline AUTH Process will decide about the transaction. From KEYA the request is sent to PBF for verification of balance and then the response is sent to AUTH, then to DH through XPNET. DH converts the STM message to Native mode and sends it back to ATM.

During off-line PBF plays the major role in deciding whether the transaction can be allowed or not,depending upon the balance and card status.

The completion message is sent by the ATM and it is conveyed to DH and then to TDF. When the Host is on-line after sometime then the HOST database is updated about the transaction happened during off-line.

LEVEL - 3 TRANSACTION ONLINE / OFF-LINE

The request from the ATM is sent to the XPNET and then it is sent to DH in the Native mode. From DH it is sent to TDF for verification . In DH the native mode is converted to STM and then sent to AUTH through XPNET . From AUTH the transaction is sent to IDF,CPF,CAF, KEYA File for corresponding verification. Then the request is sent to XPNET and then to HISO. From HISO it is sent to HCF & EMF for corresponding verification. In HISO the request is converted to ISO and then sent to the HOST.

In case when the HOST is offline, the incomplete request from the HISO is sent to AUTH and then to PBF for Balance verification and the transaction is authorized by AUTH and sent to DH, then DH to ATM.

After sometime when the HOST is online then the transaction performed during off-line is sent to the HOST from SAF. Store and Forward file (SAF) is the file which updates the HOST database to make it reflect correct balance after Host becomes on-line.

4.3.6 RERPORTS GENERATION

Some of the reports that are generated are:

- ATM wise Report
- Transaction Code wise Report
- Customer wise Report
- Date and Time wise Transaction Report

They are briefly described as :

ATM WISE REPORT : -

This report gives details of all total transactions based on the ATM.

Input :

- Bank Name
- Terminal Name

Output :

- PAN Number
- A/C Number
- TranCode
- TranAmount
- TranTime
- TranDate
- Rvslflg

PAN Number :

It is the Primary Account Number or the ATM Card Number of the customer.

A/C Number :

It is the account number of the customer who is having an account in the bank.

TranCode :

It is the Transaction Code which describes the type of transaction which takes place in the ATM.

Eg. 10 00 00 is the transaction code for fast cash withdrawal.

TranAmount :

It is the Transaction Amount which describes the amount of money involved in transaction.The total is calculated in the end.

TranTime :

It is the Transaction Time which describes the time at which the transaction took place.

TranDate :

It is the Transaction Date which describes the date in which the transaction took place.

Rvslflg :

It is the Reversal Flag which is set to prevent from Reversals such as Time-out(1)Invalid Response (2) etc...

Based on the above fields the following are calculated:

- Total number of withdrawals.
- Total number of deposits.
- Total number of Balance Enquiry.
- Total number of PinChange.

TRANSACTION CODE WISE REPORT :-

It gives details based on transaction type.

Eg : For transaction type 10 00 00 (fast cash withdrawal), all the customer transaction details are listed.

Input :

- Bank Name
- Transaction Type

Output:

- PAN Number
- A/C Number
- TranAmount
- TranTime
- TranDate
- TermId
- Rvslflg

PAN Number :

It is the Primary Account Number or the ATM Card Number of the customer.

A/C Number :

It is the account number of the customer who is having an account in the bank.

TranCode :

It is the Transaction Code which describes the type of transaction which takes place in the ATM.

Eg. 10 00 00 is the transaction code for fast cash withdrawal.

TranAmount :

It is the Transaction Amount which describes the amount of money involved in transaction.The total is calculated in the end.

TranTime :

It is the Transaction Time which describes the time at which the transaction took place.

TranDate :

It is the Transaction Date which describes the date in which the transaction took place.

TermId :

It is the Terminal Id which describes the terminal in which the transaction takes place.

Rvslflg :

It is the Reversal Flag which is set to prevent from Reversals such as Time-out(1) invalid Response (2) etc...

CUSTOMER WISE REPORT :-

It gives details about the transactions done by the customer.

Input :

- Bank Name
- PAN Number

Output :

- TermId
- TranAmount
- TranTime
- TranDate
- TranCode
- Rvslflg

TermId :

It is the Terminal Id which describes the terminal in which the transaction takes place.

TranAmount :

It is the Transaction Amount which describes the amount of money involved in transaction.The total is calculated in the end.

TranTime :

It is the Transaction Time which describes the time at which the transaction took place.

TranDate :

It is the Transaction Date which describes the date in which the transaction took place.

TranCode :

It is the Transaction Code which describes the type of transaction which takes place in the ATM.

Eg. 10 00 00 is the transaction code for fast cash withdrawal.

Rvslflg :

It is the Reversal Flag which is set to prevent from Reversals such as Time-out(1) Invalid Response (2) etc...

Based on the above fields the following are calculated:

- Total number of withdrawals.
- Total number of deposits.
- Total number of Balance Enquiry.
- Total number of PinChange.

DATE AND TIME WISE TRANSACTION REPORT :-

It gives details about the transactions done by the customer on the basis of date and time.

Input :

- Bank Name
- Date
- Time

Output :

- PAN Number
- A/C Number
- TranAmount

- TermId
- TranCode
- Rvslflg
- CardId

PAN Number :

It is the Primary Account Number or the ATM Card Number of the customer.

A/C Number :

It is the account number of the customer who is having an account in the bank.

TranAmount :

It is the Transaction Amount which describes the amount of money involved in transaction.The total is calculated in the end.

TermId :

It is the Terminal Id which describes the terminal in which the transaction takes place.

TranCode :

It is the Transaction Code which describes the type of transaction which takes place in the ATM.

Eg. 10 00 00 is the transaction code for fast cash withdrawal.

Rvslflg :

It is the Reversal Flag which is set to prevent from Reversals such as Time-out(1) Invalid Response (2) etc...

CardId :

It is the first six digits of the ATM card number which indicates the bank where the transactions takes place.

Based on the above fields the following are calculated:

- Total number of withdrawals.
- Total number of deposits.
- Total number of Balance Enquiry.
- Total number of PinChange

Central Bank of India, Debit Card System Page no : 1

Issuing Branch : C001 CBI C/H ON CBI ATM

report4.txt

SlNo.	Date	Time	Seq Number	Card Number	Acct.No.	RespBr	Tr.Amount
1	02-11-18	09:56:20	000000002494	5044370001016405	0100216436	C001	0.00
1	02-11-18	09:56:20	000000002494	5044370001016405	0100216436	C001	0.00
1	02-11-18	09:56:20	000000002494	5044370001016405	0100216436	C001	0.00
1	02-11-18	09:56:20	000000002494	5044370001016405	0100216436	C001	0.00
1	02-11-18	09:56:20	000000002494	5044370001016405	0100216436	C001	0.00
1	02-11-18	09:56:20	000000002494	5044370001016405	0100216436	C001	0.00

The above report is a model based on an ATM of Central Bank Of India.

System Testing and Implementation

SYSTEM TESTING AND IMPLEMENTATION

5.1 TESTING

Testing was performed to prove that there are no errors in any program.Code-testing was done which examined the logic of the program.Specification testing was done to determine how the program operates under specific conditions.These two testing stratages are neither ideal nor sufficient.

Hence two levels of testing were done.They were

- Unit testing
- System testing

In unit testing,testing was used to test the programs making up the system , time scheduling.System testing was aimed at finding any discrepancies between the system and its original objectives.

Thus the project was successful after correcting all the errors which occurred during testing.

5.2 CONVERSION

Conversion is the process of changing from old system to the new system.The method of parallel system is being adopted.Since it is the secure method of converting an old to new system , since both systems run in parallel.Users are continuing to operate the old system in the accustomed manner but have also started using the new system

5.3 POST IMPLEMENTATION REVIEW

After the system was implemented , a review was conducted by the users to determine whether the system was meeting the expectations and objectives.The review was important to gather information for the maintenance of the system.Since no system is really ever complete,it will be maintained,as changes are required.Because of internal developments,such as new users or activities and external developments.

The post implementation review provides the first source of information for time scheduling in a software project management.

Advantages

ADVANTAGES

The automation of the time reporting function can provide many benefits to a company, such as:

- Increase in revenue
- Reduction of labor effort managing reports
- Elimination of duplicate data entry
- Accurate reporting
- Ability to quickly provide detailed reports of any kind.

Quick and Easy Reporting - Quickly view the report associated with a company/division/project or task over anytime period.

Conclusion

CONCLUSION

" BASE – 24 atm reporting " is thus a highly robust reporting software which is a simple to use solution for powerful system administration functionality. It gives you all the lookup information needed right down to the individual transaction level.

Every project requires careful planning. Careful planning helps to ensure that the objectives of the project are approached with a clear strategy that is aligned with the requirements of business. It also ensures that the risks are identified and plans are developed to mitigate them and that the overall project plan and its timeline are formally agreed upon and understood. The key areas of effective project planning. :

- The scope of the implementation is defined.
- The business requirements are aligned with the overall implementation strategy.
- Critical success factors are agreed for all project phases.
- Roles and responsibilities are established and agreed.
- Assumptions and acceptance criteria are defined.
- Inputs to the next implementation phases are identified and responsibility assigned.

These key elements are integrated and documented in an overall implementation plan that clearly defines the path to successful implementation.

Thus,this project has been developed to satisfy all the needs of the organization with regard to time scheduling in a software project management.

Scope for further development

SCOPE FOR FURTHER DEVELOPMENT

Since no system is really ever complete,this project is no exception. It can be further developed to include more operations and analyses as changes are required by the end user in the system.The system code is so well designed , so that it will be the basis for further enhancement and also new operations can be easily included in the system.

References

REFERENCES

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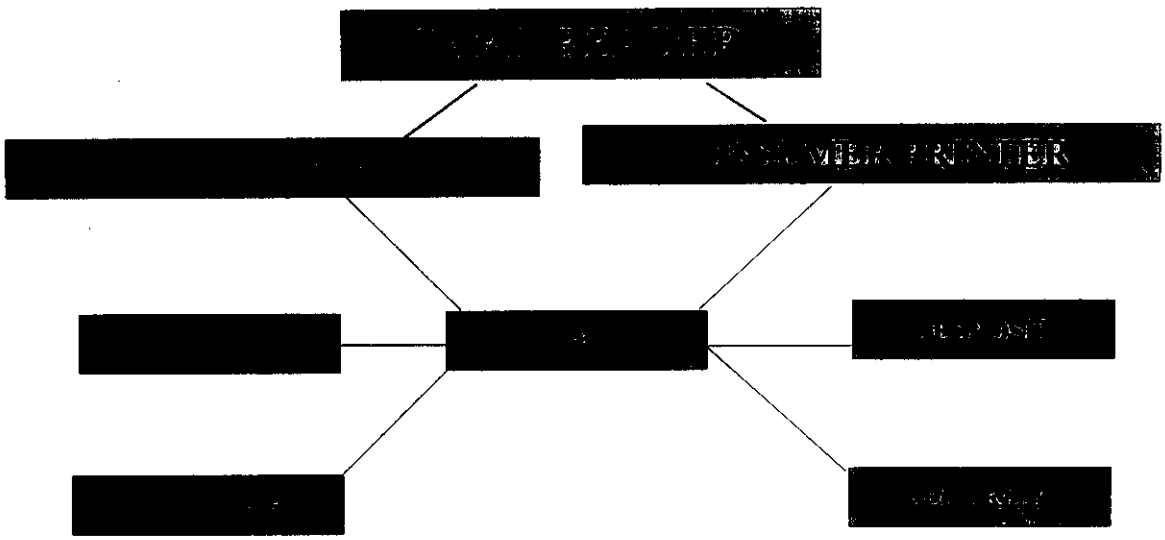
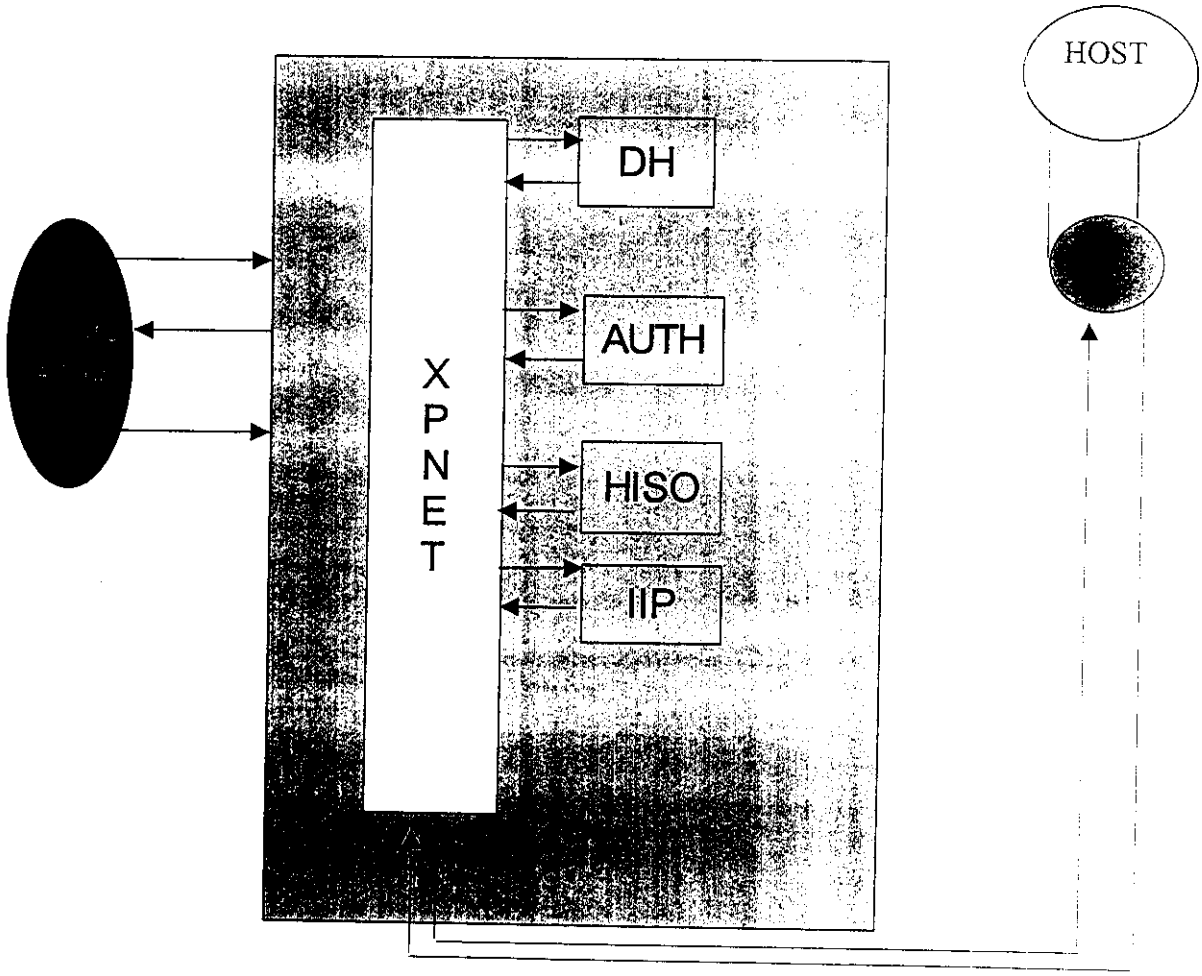
Appendix

SYSTEM DIAGRAMS



INTERNAL STRUCTURE OF ATM



BASE – 24 ATM STRUCTURE

DATABASE STRUCTURES

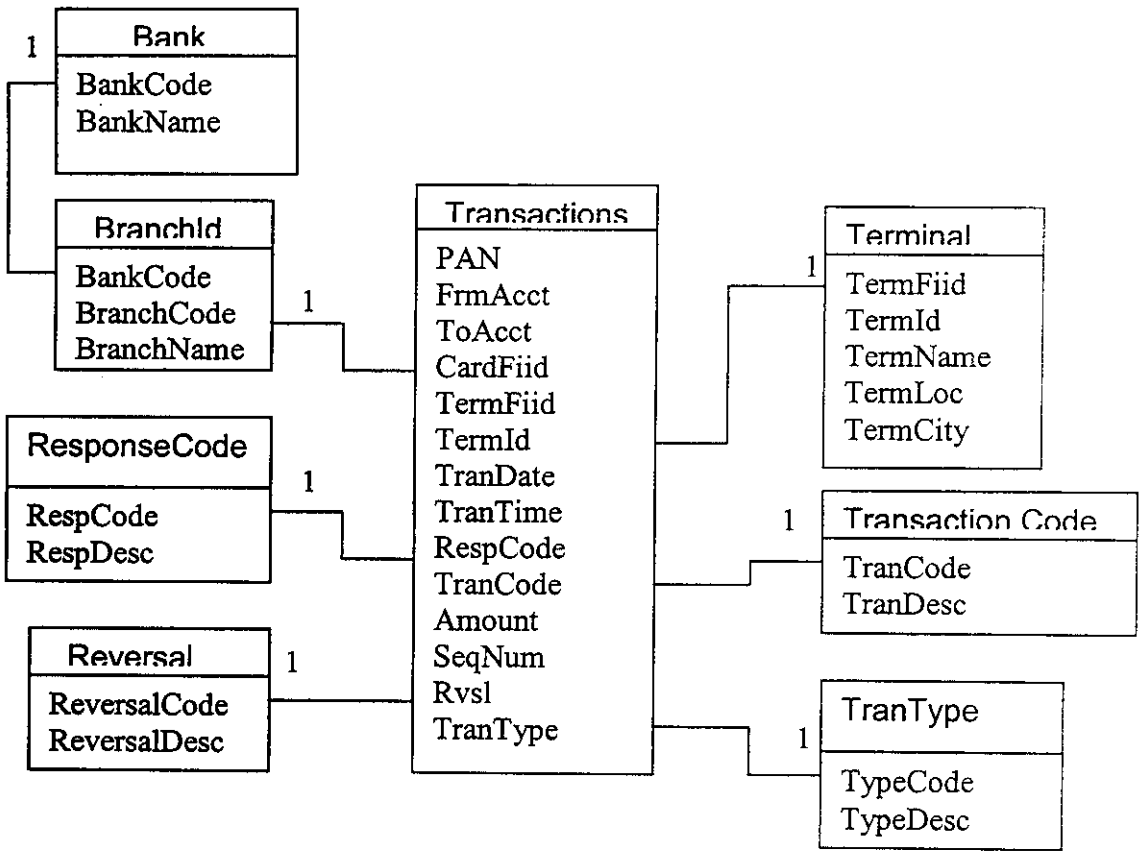


Table Name: Branch
Table Description: Contains the information about the branch

Field Name	Field Description	Field Size	Data Type
Fiid	Financial Institution Identification Code	4	Alphanumeric
FiidName	Name of the Financial Institution	20	Alphanumeric

Table Name: Terminal
Table Description: Contains the details of the terminal

Field Name	Field Description	Field Size	Data Type
TermFiid	Terminal Institution Identification Code	4	Alphanumeric
TerminalId	Terminal Identification Number	16	Alphanumeric
TerminalName	Name of the Terminal	30	Alphanumeric
TermLoc	Terminal Location	16	Alphanumeric
TermCity	Terminal City	10	Alphanumeric

Table Name: TransactionCode
Table Description: Contains the details about the various transaction codes

Field Name	Field Description	Field Size	Data Type
TranCode	Transaction Code	6	Alphanumeric
TranDesc	Transaction Description	50	Alphanumeric

Table Name: Reversal
Table Description: Contains the details about the reversal reason code for the transaction.

Field Name	Field Description	Field Size	Data Type
ReversalCode	Reversal Reason Code	2	Numeric
ReversalDesc	Description of the Reversal Reason Code	50	Alphanumeric

Table Name: ResponseCode
Table Description: Contains the details about the response code for the transaction

Field Name	Field Description	Field Size	Data Type
RespCode	Response Code	3	Alphanumeric
RespDesc	Response Code Description	60	Alphanumeric

Table Name: Transactions
Table Description: Contains the details about the various transactions

Field Name	Field Description	Field Size	Data Type
PAN	Primary Account Number	19	Alphanumeric
FrmAcct	From Account Number	19	Alphanumeric
ToAcct	To Account Number	19	Alphanumeric
CardFiid	Cardholder Financial Institution Id	4	Alphanumeric
TermFiid	Terminal Financial Institution Id	4	Alphanumeric
TermId	Terminal Identification Number	16	Alphanumeric
TranDate	Transaction Date	6	Alphanumeric
TranTime	Transaction Time	8	Alphanumeric
RespCode	Response Code	3	Alphanumeric
TranCode	Transaction Code	6	Alphanumeric
Amount	Transaction Amount	8	Numeric
SeqNum	Sequence Number	12	Alphanumeric
RvslRsn	Reversal Reason Code	2	Numeric
TranType	Transaction Type	2	Alphanumeric

Table Name: TranType
Table Description: Contains the details about the various transactions

Field Name	Field Description	Field Size	Data Type
TypeCode	Transaction Type Code	2	Alphanumeric
TypeDesc	Transaction Type Description	5	Alphanumeric