Chapter - 5 — CORE BANKING SYSTEM (CBS)

Banking Services

- **Overview**
  - **Core Banking function**
    - Acceptance of deposits
    - Lending of money
  - **Further specific services**
    - Demand Draft
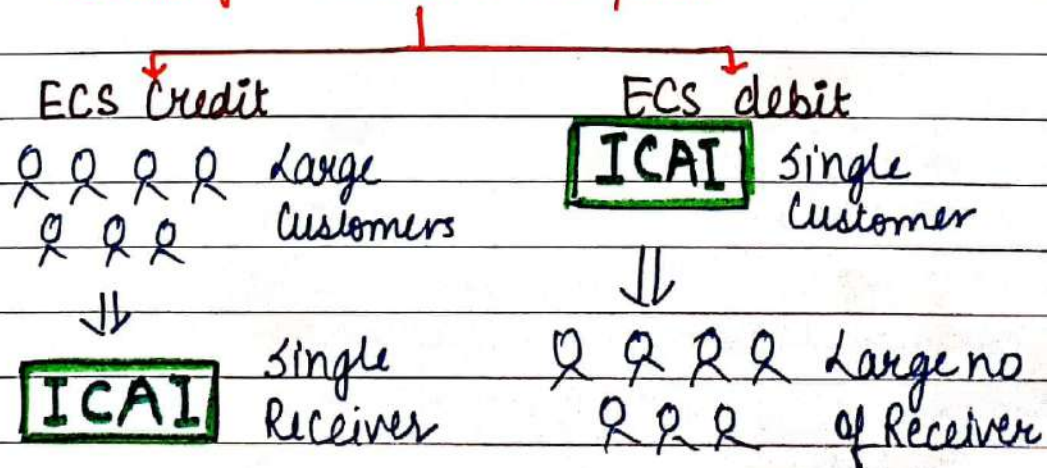   - Bank Guarantee
    - Letter of Credit

- **Features**
  - Custody of large amt of Monetary items like Cash BR, Promisory Notes
  - Dealing with large volumes of transactions
  - Operating World wide
  - Increased probability of frauds [as dealing with money] Therefore, Multiple Authentication checks Imposition [like OTP.]

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Product & Services Rendered By Commercial Banks

i)	Acceptance of Deposits	• Involves deposits by Customers • In various Schemes (forms) like Term deposit, Saving bank deposit etc
(ii)	Granting of Advances	• Involves lending by commercial banks. • In various forms like CC, OD etc
iii)	Remittances	• Transfer of funds from one place to another • Eg. Electronic fund Transfer
iv)	Collections	• Collecting proceeds on behalf of the customer • Eg Income Tax Refund Orders, cheque.
v)	Clearing	• Collecting instruments on behalf of the customer (like clearing cheques) • ECS is used Extensively now for Clearing. It has two forms

ECS Credit

ꊛ ꊛ ꊛ ꊛ Large
ꊛ ꊛ ꊛ Customers

⇩

[ICAI] single Receiver

ECS debit

[ICAI] Single Customer

⇩

ꊛ ꊛ ꊛ ꊛ Large no
ꊛ ꊛ ꊛ of Receiver

vi) Letter of Credit [LOC]
- Undertaking by Bank
- to the payee (Supplier of goods)
- to pay to him (")
- on behalf of the applicant (buyer)
- any amount specified in LOC.

Supplier ——goods——→ Receiver
Supplier ←—LOC——
BANK

(vii) Credit Cards
- Issued by Bank where customer is having their account
- By Central office of Bank [separate division]
- NOT used to withdraw money normally.
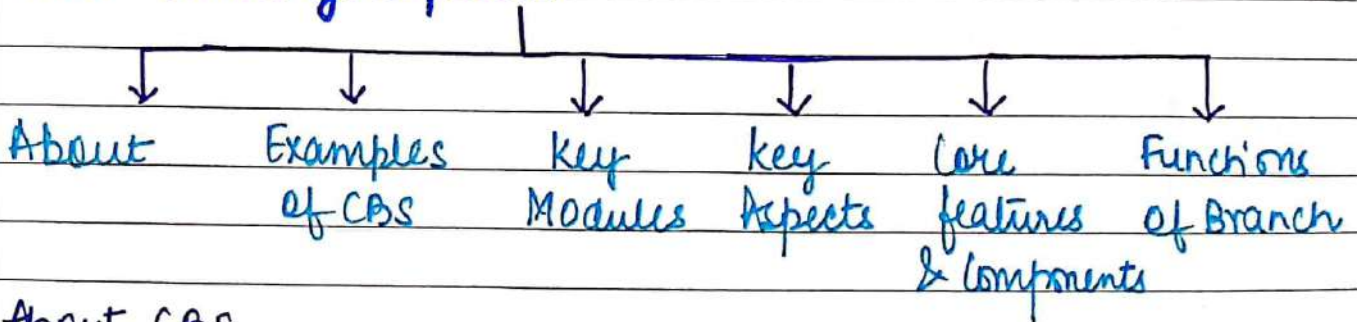
(viii) Debit Cards
- Same as above
- "
- opposite :- Can be used for withdrawal & amount is immediately deducted from Account.

(ix) Other Banking Services.
- Back office operations
- Retail Banking
- High Net worth Individual को Services
- Risk Mgt
- Specialised services [Insurance, Broking]

Core Banking System

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Core Banking System
        │
 ┌──────┬──────┬──────┬──────┬──────┐
 ↓      ↓      ↓      ↓      ↓      ↓
About  Examples  Key     Key    Core    Functions
       of CBS   Modules  Aspects features  of Branch
                                & Components
```
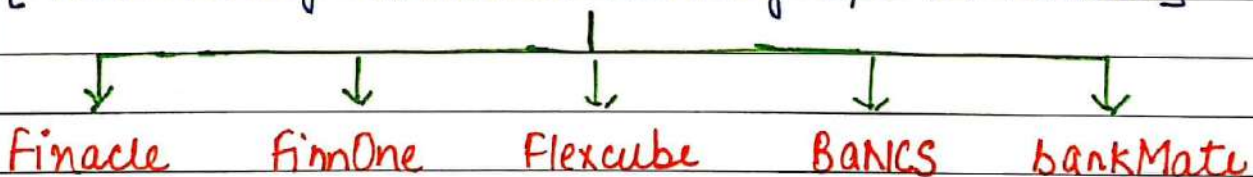
About CBS

- Common IT Solution <u>wherein</u>, a Central Shared database
  ↓ supports
  Entire Banking Application

- It is a Centralized Banking s/w <u>that</u>, has several
                                         components
  to meet the demands of Banking ←───┘
              Industry   Which have been
                               designed

Examples of CBS s/w
[Prominently Available Banking s/w in Market]

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        │
 ┌──────┬──────┬──────┬──────┐
 ↓      ↓      ↓      ↓      ↓
Finacle FinnOne Flexcube BaNCS bankMate
```

Finacle	• Developed by INFOSYS
	• Universal Banking functionality
	• Covers all Modules
	• Covers all Banking Services

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| finn One	• Developed by NUCLEUS • Web based Global Banking Product • Supports Bank & financial Solution providing Co. dealing in Assets, Liab, Core financial accounting etc
Flexcube	• Developed by ORACLE • Comprehensive, Integrated, Inter-operable & Modular solution • Enables banks to manage Customer solutions
BaNCS	• Developed by TCS • Customer Centric Business model • Simplified operations like Loans, deposits, wealth mgt etc
bankMate	• Developed by IBM • full scale Banking Solution • ii Scalable, Integrated Banking System, • Enables comm through any touch point • Suits traditional & Non-traditional Bank Envt.

Key Modules of CBS
All key Modules such as Back Office, branch, data warehouse, ATM Switch, Mobile Banking, Internet Banking, phone Banking & credit card System are interconnected with the central Server.

(ADDED MAY 2020)

Back End	Central Server	Front End
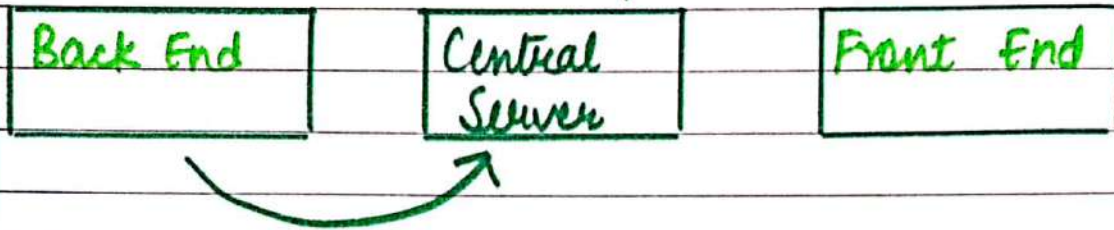
Back End	
i) Back Office	• Portion of company which is not client facing. • It includes settlements, record maintain, regulatory compliance etc
ii) Data Warehouse	• Banking professionals use data warehouse to gather data • It takes care of large quantities of data & makes easier to analyse data
iii) Credit Card System	• Includes customers mgt, Card mgt, account mgt, etc. • Provides online transaction authorization in each transaction
iv) ATM	• ATM allow customers to complete basic transactions without the help of branch representative • It is Quick & serve-serve in nature
Front End	
i) Internet Banking	• Also known as Online Banking • It enables customers of bank to conduct financial transactions through website

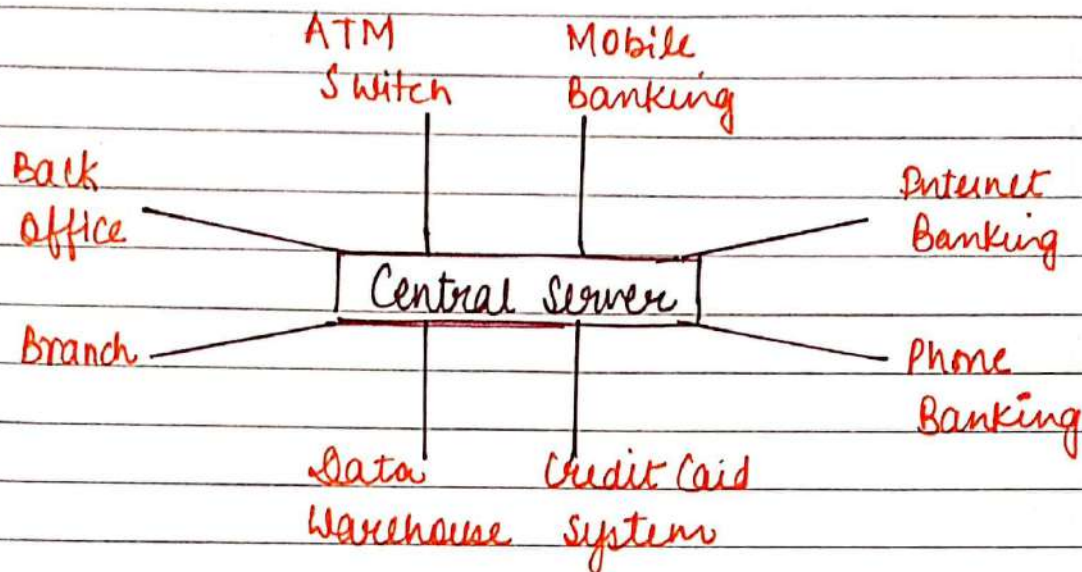|		
ii) Mobile Banking	• Allows the above using a mobile device Eg-Smartphone, tablet • It uses software, usually called App for the purpose	
iii) Phone Banking	• Allows Customers to execute transactions through Contact Centre of a bank over phone. • Registration of Mobile number is perquisite to avail Phone banking	

Central Server

- Banks use Core Banking system whereby bank branch access Application/S|w from Centralized data center ie Servers.
- Therefore, any deposits made in any branch are reflected immediately & customer can withdraw money from any other branch too.

Diagram: Central Server connected to — Back Office, Branch, ATM Switch, Mobile Banking, Data Warehouse, Credit Card System, Internet Banking, Phone Banking

Key - Aspects in - bullet into Architecture of CBS

(i) Informat^n flow	• Facilitates Information flow within the Bank • Imposes speed & accuracy of decision making
(ii) Customer Services	• Enables banks to target Customers [Customer Centric] • With the right offers, at right time to increase profitability.
(iii) Regulatory Compliance	• CBS has built-in & regularly updated regulatory platform which ensure compliance

iv) Resource Optimization	• Optimizes utilization of Information & Resource of Banks
	• through
	  – Improved asset Re-usability
	  – faster processing
	  – Increased accuracy

☞ **Core Features of CBS**

- Online Real time processing
- Txns posted immediately
- Database updated simultaneously
- Centralised operations

- Remote integration with customers
- Anytime, Anywhere access to customers
- Business & services are productized

- Automatic processing of Instructions
- Highly dependent System-based Controls
- Increased access by staff
- Daily, half yearly, annual closing.

☞ **Components of CB.S**

- Opening new accounts & Customer on boarding
- Interest Calculation & mgt
- Payments processing [Cash, cheque, NEFT, RTGS, IMPS etc]
- Loans disbursement & mgt

- Processing ┬ Cash deposits
              ├ Loans
              └ All Bank Txns

- CRM activities
- Setting Criteria for Minimum balances, withdrawls allowed, limits so on.

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EOD: End of Day.
BOD: Beg. of Day.

Functions Of Branch

सब काम Software करता है, तो Bank Branch क्या करता है?

Branch :- हम RICE बनाते है [MC: RICE]

R - Reviewing reports for control & Errors correction
I - Internal Authorization
C - Creating Manual documents [Data required for Input into Software]
E - EOD/BOD operations

Technology Components of CBS
(Amended May 21 & then again Amended May 22)

Key technology Component of CBS

```
Database          Application        Cyber
Environment       Environment        Security
```

Database Environment

This consists of the Centrally located database servers that store the data for all the branches of the banks which includes Customer master data, interest rate, account types etc.

Application Environment

This consists of application servers that host the different core banking systems like FlexCube, bankMate etc & is centrally used by different banks.

Cyber Security (added May 2022)

Cyber Security framework is prescribed by RBI for banks to ensure effective information security governance. Some key features of it are-

i) Network Security & Secure Configuration
- Multi-layered boundary defense
- Different LAN segments
- Ensure secure network configuration

- Periodic security review of systems
- Ensure risks are within bank's risk appetite

ii) Application Security
- Implementation of bank spefic Email domains
- Two factor authentication
- Password Mgt policy
- Effective training of employees
- Proper reporting mechanism
- Effective due diligence & Oversight
- Effective change mgt process.

iii) Data Centre & Disaster Recovery Centre
Arrangements for alternative connectivity of the banks with the data center should be established whenever there is a disruption in the primary connectivity.

iv) Online Transaction Monitoring for fraud Risk Mgt
Effective monitoring should be done as a part of managing fraud risk mgt across all delivery channels.
Proper alert system should be enabled to identify any changes in the log settings & the audit logs pertaining to user actions are captured.
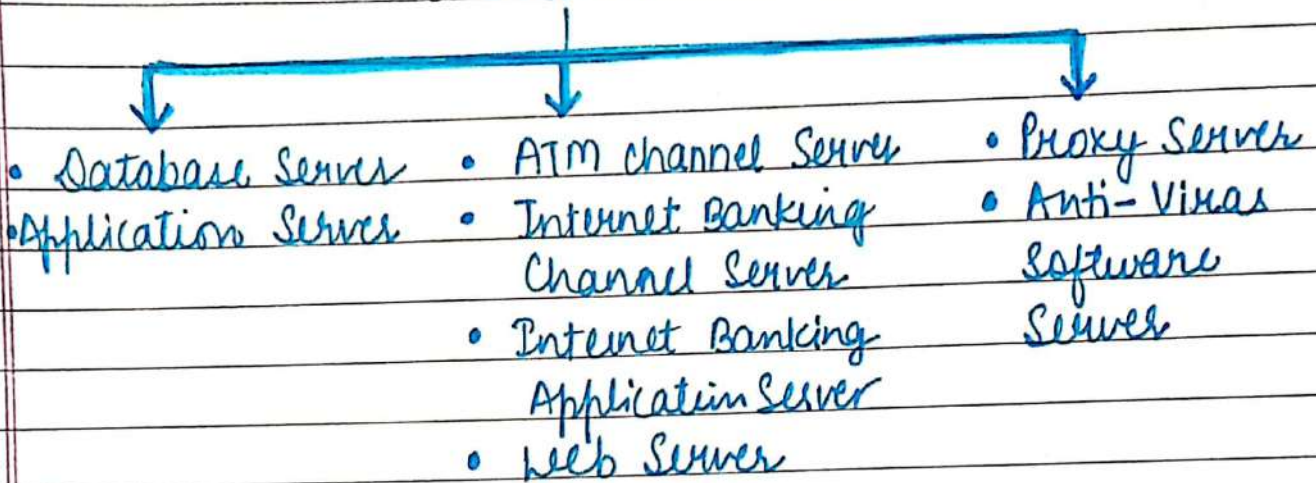
CBS IT Environment
or
Types of Server available in CBS Envt.

8 Servers

- Database Server
- Application Server
- ATM channel Server
- Internet Banking Channel Server
- Internet Banking Application Server
- Web Server
- Proxy Server
- Anti-Virus Software Server

Server	Explanation
① Application Server	• All the txns of the Customer are processed by Center • Application server performs necessary operations & updates the account of Customer
② Database Server	• It contains the entire data of the Bank • Application server would access the database server • Strict discipline is followed regarding the maintenance of database server & the Individual who performs this role is called DATABASE ADMINISTRATOR

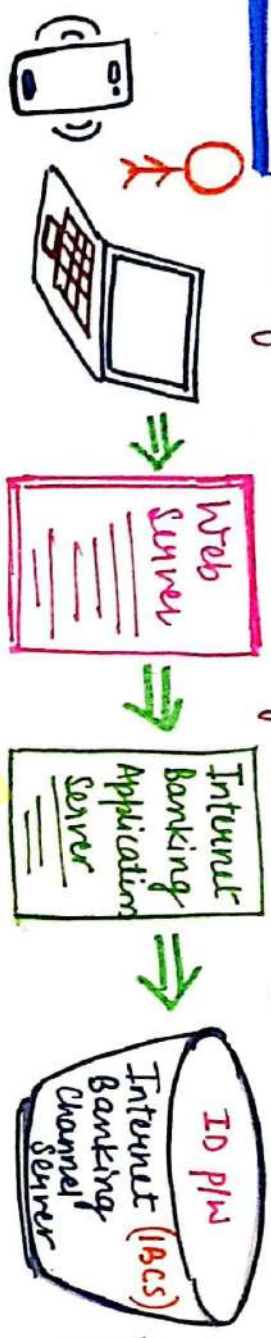|	
③ ATM channel Server	• This server contains the details of ATM account holders. (ATM PIN)
④ IBCS	• This server contains the User name & passwords of all the Internet Banking Customers
⑤ IBAS	• It authenticates the Customers with the login details stored in IBCS.
⑥ Web Server	• Host all the web services which include all the online requests • Websites are hosted & serviced through this server. • It uses HTTP to serve the files that form web pages, to customers in response to their requests.
⑦ Proxy Server	• Allows client to make Indirect Network connections • Although the client requests for a connection with the Database Server but he is Indirected to a diff server.
⑧ Anti-virus S/W server	• Contains the anti-virus software which is deployed for ensuring that when any s/w is used, first it is scanned, to ensure no virus / malware are there.

CIF (Customer Identification File)

- CIF is a digital or virtual file
- Where the customer identity details with valid photo ID & address details are stored
- & are given a unique number which is called CIF no.
- A customer may have many accounts of different nature (like Saving A/c, FD, Current A/c) but all these accounts are managed/mapped to one CIF only
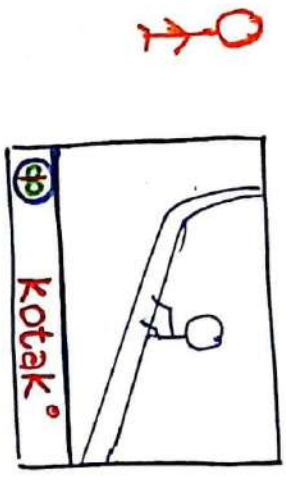
PBF (Positive Balance File)

- Contains details of ATM A/c holders
- When Central database is busy with EOD, BOD activities, the file containing account Balances is sent to ATM channel server.
- This file is called PBF
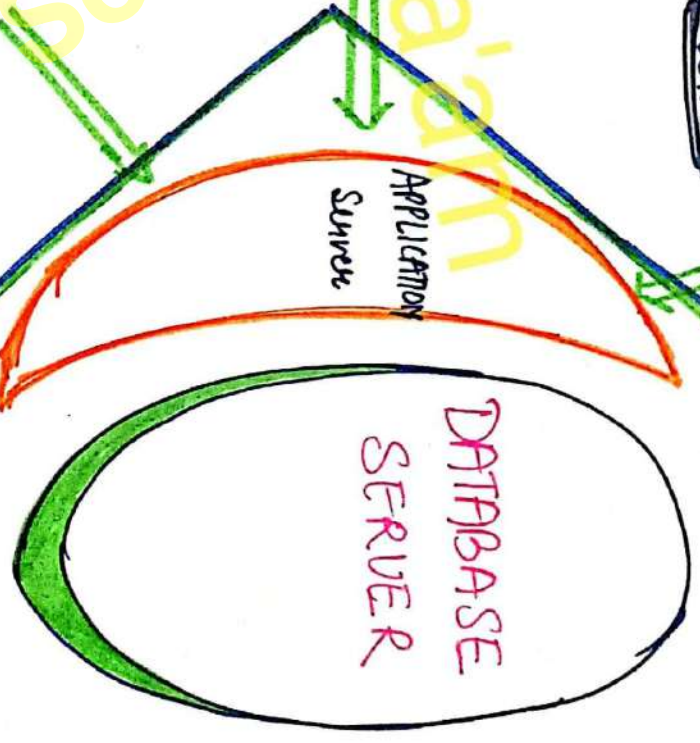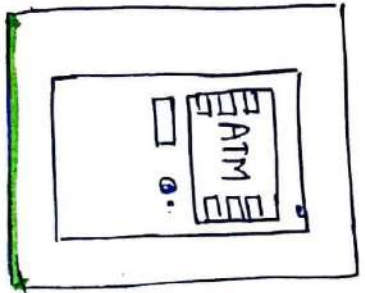- Once the central database server becomes free, the database is updated.

Option 1 Use of Internet Banking (At home)

Web Server → Internet Banking Application Server → Internet Banking Channel Server

ID PIN (IBCS)

Option-2 Visiting Branch

kotak

Option-3 Using ATM

ATM

ATM Channel Server — PBF

APPLICATION Server

DATABASE SERVER

Data Center

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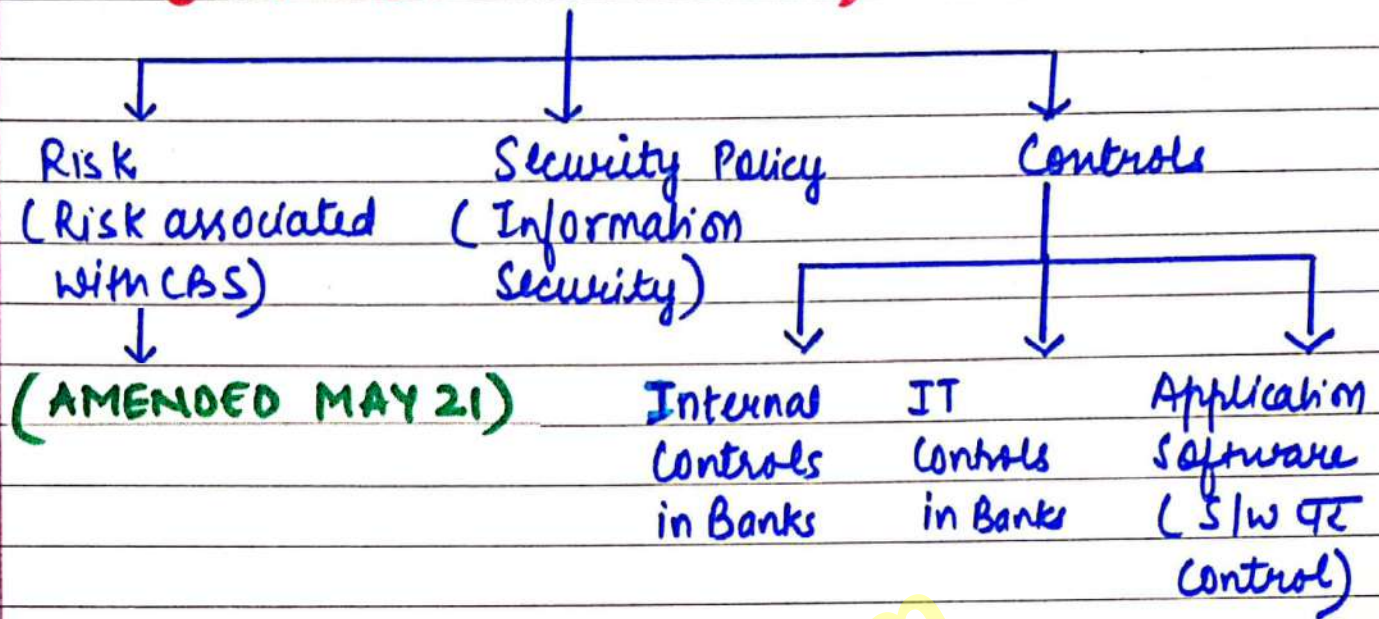
How does CBS work PROPERLY ??

S/W Must be Updated properly & on a regular basis.

CBS should be Controlled at various stages to ensure the banks Automation objectives are achieved.

Various stages are:

Stage	Description
Planning ↓	Planning should be done strategically & in alliance with objectives of Bank.
Approval ↓	decision must be approved by BOD. since investments & huge costs are involved.
Selection ↓	Selecting the best vendor based on our needs
In-house or procurement ↓	There should be appropriate controls on the developing or procuring S/W
Testing ↓	S/W should be tested before the CBS is live
Implementation ↓	Must be implemented as per pre-defined plan.
Maintenance ↓	Must be maintained as per need. Eg programs bugs are fixed.
Support ↓	CBS must be supported to ensure It is working effectively
Updation ↓	CBS must be updated based on requirements like regulatory requirement
Audit	Audit must be done to ensure Controls are working.

CBS Risks, Security Policy & Controls
(AMENDED MAY 2020)

- **Risk**
  (Risk associated with CBS)
  - (AMENDED MAY 21)

- **Security Policy**
  (Information Security)

- **Controls**
  - Internal Controls in Banks
  - IT Controls in Banks
  - Application Software (S/w पर Control)

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Risk Associated with CBS. (AMENDED MAY 21)

Operational Risk	• Risk arrising from direct or indirect loss; inadequate or failed Internal process, people or System
	 • Eg Risk arises from lack of trained key personnel, tampering of records etc
	 • Components of operational Risk are
	    a) Transaction Processing Risk → Occur due to errors in entry of data
	    b) Informat^n Security Risk → Occur due to vulnerabilities associated In banking System
	    c) Legal Risk → arises because of bad/wrong business practices by bank (Eg Advice)
	    d) Compliance Risk → exposure to legal penalties where Org fail to act as per LR
	    e) People Risk → arises from lack of trained key personnel
	     (MC : CLIP)

Credit Risk	• Risk that an asset (or a loan) becomes irrecoverable. or risk of unexpected delay in the repayments
Market Risk	• Risk which may arise in the bank's trading book due to changes in equity prices, interest rates, FOREX rates etc

Strategic Risk	• Also known as Business Risk • Risk that earnings may decline due to changing business environment resulting in failure of strategy.

IT Risk	Once the business is Captured & operated in automated Envt ie CBS, following IT Risk occurs
	
	  – Ownership of Data
	  – Authorization Process
	  – Authentication Procedures
	  – Several s/w Interfaces across diverse networks
	  – Maintaining Response time
	  – User Identity mgt
	  – Access Controls
	  – Incident handling procedures
	  – Change Mgt.

Information Security

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                    Information Security
                           │
          ┌────────────────┴────────────────┐
          ▼                                  ▼
काम / Inclusion / Sub-process        Risk & Control
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काम (Sub-process)

Operation	Explanation
1) IS - policies, procedures & practices (P³)	Documentation • IS की P³ Exist होनी चाहिए • + Approval & Implementation
ii) User Security Administration	• Complete administration of users right from Creation to disabling of users
iii) Application Security	• Security is Implemented at various levels of application
iv) Database Security	• ～～～ for Database.
v) Operating System Security	° ～～～ for Operating System
VI) Network Security	• Security is Implemented at various layers of Network
vii) Physical security	• ～～～ physically also

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Risks & Controls Of Information Security

Risk	Control
i) Unauthorised Modification/ Deletion of Information	• Passwords to access Information should be Imposed • & Passwords is adequately protected.
ii) Lack of Mgt direction	• Securities Policies are established & mgt monitors compliance with policies
iii) Potential loss of Confidentiality, availability & Integrity of Information	• Physical access restriction are implemented & administered
iv) Easier to guess User Id & p/w	• User name/Id & p/w should be strong which contains characters like alphabet, special character etc • & Should be changed frequently

Internal Controls in Banks
(Risks can be mitigated by implementing IC)

- Maker-checker Process
- Job-Rotation
- Fixation of Powers
- Compliance with LR
- Periodical Balancing of Books of Accounts
- Immediate Communication of Important documents Lost.
- Fraud prone items like currency, valuables, etc in custody of atleast 2 officials of Branch
- Effective internal audit should be carried

IT Controls in Banks
(Risks can be mitigated by implementing (Internal) IT Control)

- System maintain log-in, log-out details
- If the transaction is in in-operative account, processing in done only with Supervisor password
- Amt withdrawn is within drawing limit
- Access is given for stipulated hours & days
- RBAC
- Exception situation shall be reported immediately
- User time-out is prescribed
- Once, the EOD is over, Ledgers can't be opened without Supervisory level password.
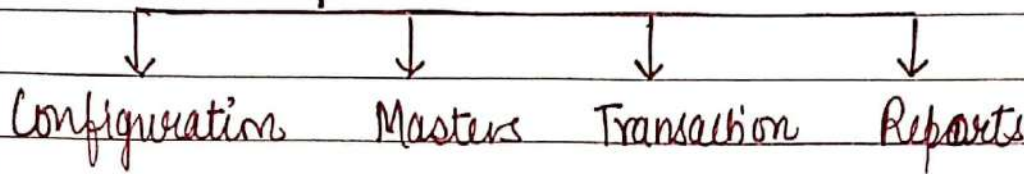
Application Software

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                    |
         ┌──────────┴──────────┐
         ↓                     ↓
  Risks & controls     Four Gateways through which
                       controlling is done
```

Risks & controls

Risk	Control
(i) Inappropriate assignment of rate codes or modification as well	• Adequate approvals for change or assigment
(ii) Inappropriate reversal of charges resulting in loss of revenue	• System shall not permit reversal of charges in excess of original amount.
(iii) Inappropriate setup of accounts resulting in violation of business rules	• System parameters shall be set up as per Bank's rules
(iv) Inappropriate classification & provision of NPA's resulting in financial misstatement	• NPA classification - as per RBI Guidelines

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Four Gateways

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            ┌──────┬──────┬──────┐
            ↓      ↓      ↓      ↓
```
Configuration   Masters   Transaction   Reports

Configuration – Way a System S/w is set up.	**Transaction** – Actual processes of Requests.
Example	Example
• Defining access rules	• Deposit Txn – opening A/c, deposit, withdrawl etc
• Creation of User types (CBS User)	• Advances Txn – do.
• Creation of Customer type	
• User access & priviledges	• ECS Txn – Entry upload, authorize, approve
• Password management	
Master – setting of Master Data which are not changed frequently	• General Ledger – Expense accounting Intt compulation
Example	**Reports** – Information presented in a formalised way
• Customer Master – Details like Address, Mb no., Customer type	
• Deposit Master – type of Deposit, period.	Examples of Reports
• Employee Master – Employee Name, Id, Salaries Structure	• Summary of all txns of a day
	• Activity logging
• Income Tax Master – Tax Rate like TDS	• Reports of Exceptions
	• MIS Reports.

* CASA :- Current Account & Savings Account.
* PDC :- Pre-Disbursement Certificate.

Core Business Processes flow & Relevant Risks & Controls.

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    ┌──────┬──────┬──────┼──────────┬──────────┐
    ↓      ↓      ↓      ↓          ↓          ↓
  CASA   Credit  Loans &  Treasury  Mortgages
         Card    Advances
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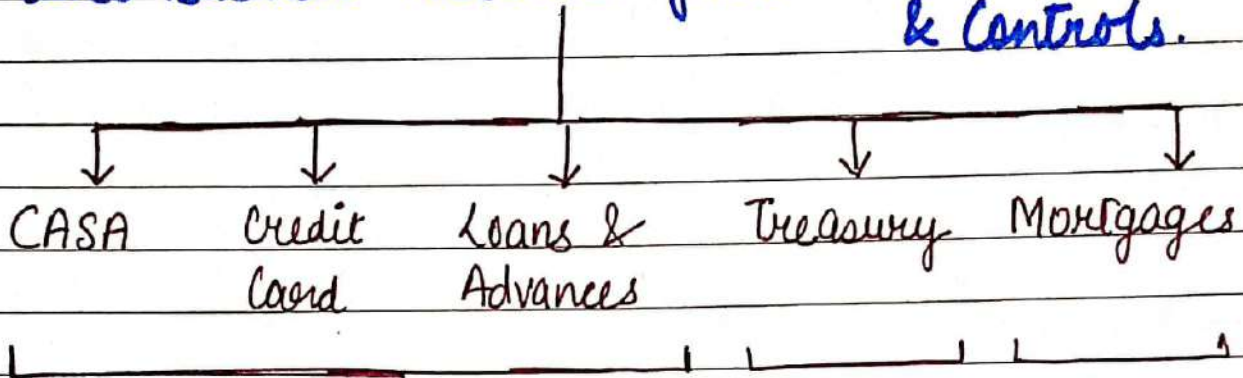
Common points [CASA, Credit Card, Loans & Advances]

(i) Credit Line set up is not authorized & not as per Bank's policy	• Check Financial Ratios, Net worth, Credit amount etc • Check Customer is given Credit Line Setup in accordance with Bank's policy
(ii) CLS in CBS is not authorized	• Access Rights to authorize the Credit limit • It shall be restricted to authorized personnel.
(iii) Customer Master in CBS not in accordance with PDC	• (ii) • (ii)
(iv) Inaccurate Interest	• It should be automatically Calculated via CBS.

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Treasury

Inaccurate Trade is processed	• Review Controls to ensure the Accuracy & Authorization of trades.
Unauthorized Confirmations are processed	• Complete & accurate confirmations to be obtained from "counter-party"
Insufficient securities for settlement	• Effective Controls on Securities & margin
Insufficient funds for settlement	• Controls at NEFT/RTGS settlements to ensure the funds timely

Mortgage

Incorrect Customer & Loan details are Captured.	• Second time review with a Letter in writing before process of application
Incorrect Loan amount disbursed	• " • Plus Signed the Letter
Interest amount is Incorrect	• Auto-calculated through CBS
Unauthorised changes made to Loan Master data	• Apply RBAC.

Reporting System

- Basel is a city in Switzerland
- It is the headquarter of "BUREAU OF INTERNATIONAL SETTLEMENT"
- It is an International Regulatory framework for BANKS across the Entire globe.

Risk Prediction for BASEL III :-

- Basel III is a Set of Reform measures (Developed By Basel Committee)
  on
  BANKING SUPERVISION
  To
  Strengthen the Regulation & Risk mgt
  OF
  BANKING SECTOR

- These measures aim to improve the banking sector's ability to "absorb shocks" arising from financial & economic stress & determining CAPITAL ADEQUACY BASED ON RISK ASSESSMENT. (liquidity)

BANKING REGULATION ACT

- BRA, 1949 is legislation in India that regulates all Banking firms in India

- ie, It provides a framework using which commercial Banking in India is supervised & regulated

- The Act Gives the RBI, the power to –
  - Licence banks
  - have regulation over shareholding & voting Rights of shareholders
  - Supervise the appointment of BOARD's & mgt
  - Regulate the Operations of Banks
  - Controls
  - Mergers & liquidation
  - Impose Penalties.

- RBI has been proactive in providing periodic guidelines to banking Sector on how IT is deployed.

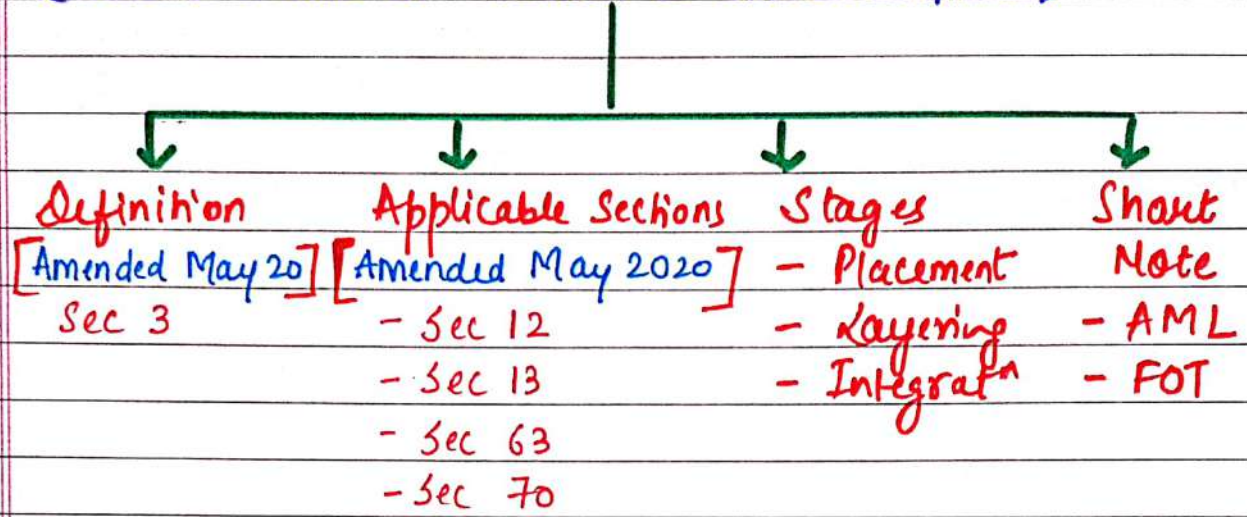- RBI also provides guidelines on aspects of NEFT/ RTGS etc.

NEGOTIABLE INSTRUMENTS ACT

- Under NI Act, Cheques includes ELECTRONIC IMAGE OF TRUNCATED CHEQUE

- Truncated Cheque = Mirror image but even this is inappropriate. The Expression "Mirror image" may be substituted by the expression "Electronic graphic which looks like"

RBI REGULATIONS

- RBI was established on April 1, 1935

- Key functions of RBI
  - Monetary Authority / Policy
  - Regulator & Supervisor of financial system
  - Issuer of currency etc

MONEY LAUNDERING
(PREVENTION OF MONEY LAUNDERING ACT)

Definition	Applicable Sections	Stages	Short Note
[Amended May 20]	[Amended May 2020]	- Placement	
Sec 3	- Sec 12	- Layering	- AML
	- Sec 13	- Integratⁿ	- FOT
	- Sec 63		
	- Sec 70		

DEFINITION (Section 3)

Whosoever directly or indirectly attempts to indulge or knowingly assists or knowingly is a part or is actually involved in any process or activity,

↓

Connected with the 17 proceeds of crime including its concealment, possession, acquisition or use & projecting/claiming it as untained property shall be guilty of offence of money laundering

Sec-12 (AMENDED)
"Reporting Entity to maintain records"

i) Every reporting entity shall maintain a record of all transactions & furnish to the director (within prescribed time) for 5 yrs from Date of Txn

ii) Every reporting entity shall maintain information (furnished under any law) & shall keep it confidential

iii) Every reporting entity shall maintain evidencing Identity of its clients for 5 yrs from the date of Relationship (b/w client & reporting entity) has ended

iv) (G via notification can exempt from above Obligation

Sec 13 (ADDED MAY 2020)
"Powers of DIR to impose fine"

(1) i) Director may make inquiry or cause such inquiry to be made

ii) He may direct the Reporting entity to get its records audited by accountant (Panelist CG)

iii) The expenses of such enquiry shall borne by CG

(2) If Director finds that employees of Reporting-entity has failed to comply with obligations then

- issue warning in writing
- direct to comply such prescribed Instructions
- direct to send reports as required & prescribed
- make Order, imposing monetary policy
  (10,000 या अधिक s आगे .... 1,00,000 तक)

(3) Director shall forward copy of Order passed to
- every banking co
- financial institution or Intermediary
- person who is a party to the proceedings.

Section 63 (ADDED MAY 2020)
"Punishment for false information or failure to give information"

i) any person willfully giving false information & causing an arrest or search to be made under this act shall be liable for imprisonment (0-2yr) or with fine (0-50,000) or both

ii) any person

- being legally bound to say truth, refuses to answer any question
- refuses to sign a statement in the course of any proceedings under this act (legally require to sign)
- to whom summon is issued to give evidence, provide books of accounts, documents at a certain time & place, omits to do the same.

Shall pay a penalty (₹500 - ₹10,000) for such failure

iii) person referred above shall be given OOBH

iv) a person who intentionally disobeys any direction under sec 50 shall also be liable to be proceeeded u/s 174 of IPC.

Section 70 (ADDED MAY 2020)
" Offences by Companies"   (person = company)

i) Company के case में, अगर किसी Rule, provision,
direction का पालन नही होता तो -
Every person who was (at the time of
contravention was committed) incharge of
or was responsible for conduct of business
shall be liable to be proceeded against
& punished accordingly.

('Until that person proves that contravention
took place without his knowledge or that
he excercised due diligence to prevent such
contravention.

ii) अगर Company contravention in/of any provision
किसी director, Manager, Secretary, other officer
की consent से होता है तो वही person shall be
liable to be proceeded against & punished
accordingly.

Stages of Money Laundering

Placement

- It is the first stage in the process of ML
- The first stage involves placement of proceeds derived from illegal activities
- It refers to movement of proceeds, from the scene of crime to a place or a form which is less suspicious & more convenient for the criminal.

⬇

Layering

- It involves separation of proceeds from illegal source using complex transactions designed to obscure the audit trail & hide the proceeds
- It involves sending the money through various financial transactions to change its form & make it difficult to follow.

⬇

Integration

- It involves conversion of illegal proceeds into apparently legitimate business earnings through normal financial/commercial operations
- Integration creates the illusion of a legitimate source for criminally derived funds & involves techniques & various creativity.

Short Note

Anti-Money laundering (AML) using Technology

- Banks face the challange of addressing the threat of ML on multiple fronts as banks can be used as the primary means for transfer of money across globe.
- Negative publicity, loss of Goodwill, LR penalties are all possible consequences of a bank's failure to manage the risk of ML
- Therefore, with strict regulations, using fraud & risk mgt softwares, bank should try to prevent & detect the frauds.

Financing of Terrorism (FOT)

- Money to fund the terrorist activities moves through the global financial system through personal as well as business accounts.
- It can be
  - In the accounts of illegitimate charities
  - laundered through Buying & Selling commodities
  - laundered through Purchasing insurance Policies
- Money frequently starts out clean in the donation form before moving to terrorist accounts
- Mgt should do regular monitoring on Pro-active basis & shall take necessary action including reporting to regulatory authorities.