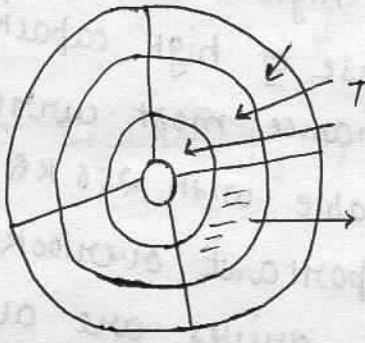
~~4) OSI Layer~~ →

Data storage → Permanent storage requirements are appl^n specific. In addition to quantity of disk storage, the issue of performance and reliabilities must be consider.

Magnetic disk → Disk storage device should be the use to SCSI (std. controller interface). This provide the best performance in a std based environment. many vendors provide high capacity, high performance and high reliable disk device for this controller. The use of high capacity cache storage improves performance most current SCSI → controllers are configurable with 256 KB or more cache. This is an important overlook component of the architecture. New drives are available in the traditional 3.5 size with 1.0 to 1.6 GB capacity. The use of ~~comparision~~ compression s/w can easily double these capacity. with the increasing size of GUI s/w and the introduction of multimedia appl^n the demand for this capacity will increase during 1994. Magnetic disk comes in a no. of different forms.

(1) Floppy disk
(2) Hard disk
(3) Removeable disk

CD-ROM → most optical disk are read only. ~~when yo~~ ~~are purchased them.~~ They are already filled with data. we can read data from a CD-ROM but can not be modified, delete or write new data. The compact disk read on memory was originally designed for music storage and payble. The format was later ad to hold any form of binary data. They are n used in different multimedia application. They are inven in 1972. The CD-ROM disk are 12/12cm ~~CD-ROM~~ with a width of 1 cm.



Write One Read ~~Many~~ many (WORM) → This ~~this~~ disk can be written once and then rea many times.

However we need a special WORM disk drive to ~~read~~ write data onto a WORM disk use cheap disk array to create large economical online storage array. Appln can write data to disk but are not allowed ~~write~~ to make any changes afte data is process. Thus WORM disk storage is ideal for storing large amount of data and fits ~~fits~~ nicely blw online primary storage and offl secondary storage.

~~Rewritable disk~~ →

N/w Interface Card (NIC) → NIC are installed in a computer to allow to comm^n with a N/w. It provide transparent interface b/w the N/w and the computer. The computer gives NIC a msg for another N/w device and the NIC format the msg for transport or the media. The reverse is also do. The NIC receive msg from the N/w and reformat them so that the computer can understand. NIC has their own CPU and RAM. Each NIC has its own MAC address, i.e. assigned to it by the manufacturer. In order for a NIC to operate effectively it must be able to carry out its interface. Task with minimum description to the CPU of the computer in which it is installed. There are ~~for~~ 4 data tranfer methods for NIC to computer -

(1) ~~A~~ ~~BUS~~ Bus mastering ~~DMA~~

(2) DMA

(3) Program I/O ~~for shared memory~~

(4) Shared memory

Mirrored disk →

In data storage disk mirroring in the replication of logical disk, volumes onto separate logic disk volume. On real time to ensure continuous availability, conferencing, accuracy. A mirrored volume is a complete & separate copy of a

logical disk volume. These disks are designed provide high availability by automatically maint identical info^n when an appl^n write to a dis disk mirroring ~~cause~~ causes the info^n to be written for both drive partners.

once this mirroring has been installed, a mirrored disk act just like any other disk connected to the system untill a disk failu occurs. Thus disk mirroring is an importa concept used in c/s environment.

c/s Development methodology →

A methodology is simply a clear definition of "How w thing arround here".

An appl^n development methodology must integr strategy goals of business with practical realities available info^n technology, todays business cycle.

We generally follow system integration l cycle (SILC) in c/s development environment. Le us now discuss several phases of SILC -

(1) System Planning →

(a) Initiate system planning
(b) Gather data
(c) Identification of current situation
(d) Describing existing system.
(e) Defining the requirements
(f) Analyzing data architecture and appl^n
(g) Analyzing the platforms technology
(h) Preparing the implementation plan

(2) Project initiation →

(a) Screen request
(b) Identification of the relationship to longrange system plan
(c) Initiating the project
(d) Preparing the plan for next phase

(3) Architecture Definition →

(a) Collection of relivant data
(b) Expanding the requirements to next level of detail
(c) Conceptualiz~~ation~~ing the alternative soln.
(d) Developing the imposed conceptual architecture
(e) Selecting the specific project and vendor

(4) Analysis →

(a) Collection of the relivant data
(b) Developing a logical model of the new applⁿ system
(c) Defining the general infoⁿ system requirements
(d) Preparing the external system design

(5) Design →

(a) Performing the preliminary design
(b) Performing the detail design
(c) Designing the system test
(d) Designing the user AIDS
(e) Designing the conversion system

(6) Development →

(a) Setting up the development environment
(b) Adding the modules.
(c) Developing the user aids

(d) Conducting the system test

(7) Facilities Engineering →

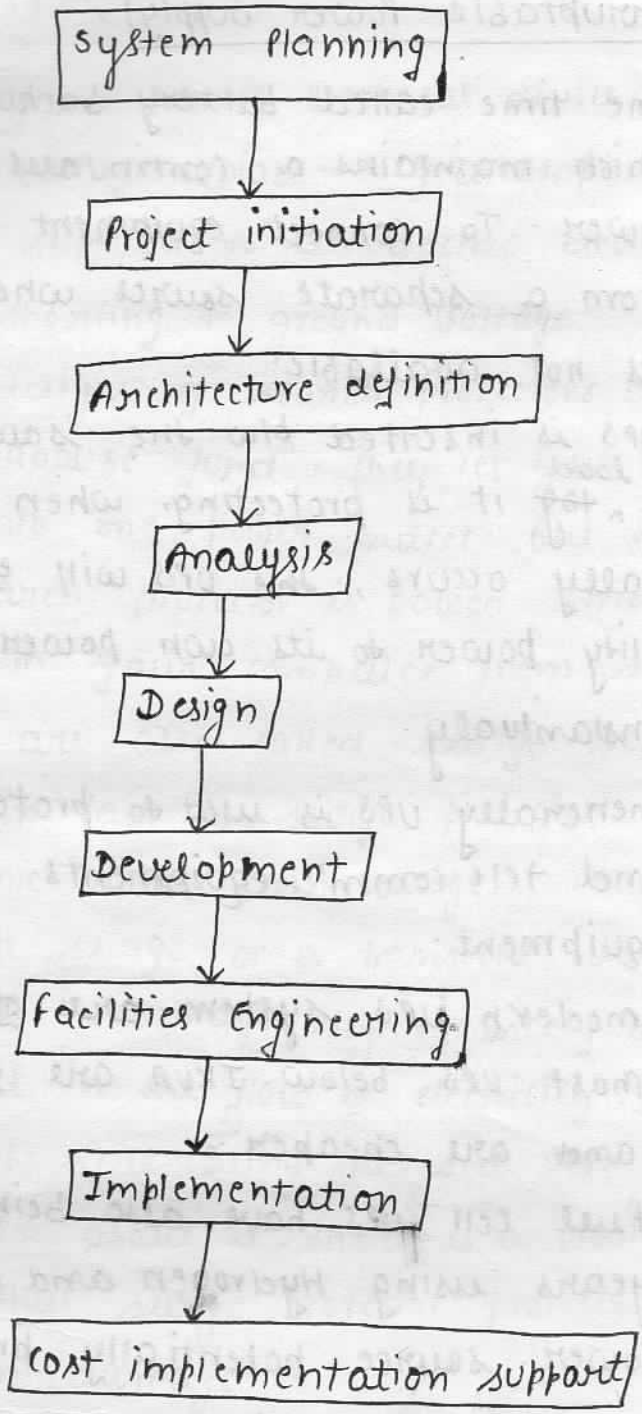
(a) Collecting the relivant data
(b) Conducting the site survey
(c) Documenting the facilities requirements
(d) Designing the data center
(e) Planning the site preparation
(f) Preparing the site
(g) Planning the h/w installation
(h) Installation and the testing of the h/w

(8) Implementation →

(a) Developing the contigency procedure
(b) Developing the maintenance and release procedu
(c) Training the ~~it~~ users of system
(d) Converting the existing data
(e) Installation of the appl^n system
(f) Supporting of the test acceptance
(g) Providing the support of the warranty

(9) Cost implementation support →

(a) Initiate support and maintenance services
(b) Support h/w and comm^n configuration
(c) Support s/w
(d) Peryorm other project completion tasks


System Planning
Project initiation
Architecture definition
Analysis
Design
Development
Facilities Engineering
Implementation
cost implementation support

UPS (Uninterruptable Power Supply) →

It is some time called battery backup. It is a device which maintains a continuous supply of electric power. To connect equipment by supply power from a separate source when utility power is not available.

UPS is inserted b/w the source of pow and the load it is protecting, when power fail or abnormally occurs, the UPS will effectively s from utility power to its own power source almost instantualy.

Generally UPS is used to protect computer system and tele comm^{n} equipments on other electric equipment.

Modern UPS system are offline and online. Most UPS below IKVA are of the stand variety and are cheaper.

Fuel cell UPS have also being develop i recent years using Hydrogen and a fuel cell as a power source potentially providing. ✱

They are several manufacturers which manufacture power protection device ex- Alpha technology, Belkin, cyber power system, leviton SOCOMEC etc.

Surge Protectors →

They are design to protect electrical device to power surge and voltage spiaes. They attempt to regulate the voltage supplied to an electric device by either blocking or shorting to ground voltage.

- Most designs of search protectors are immediately abouse Junct^{n}. They let you plug multiple components into one power outlet. But the other Junct^{n} of search protector is power strip – Protecting the electrons in your computer from search in power these are also called surge supportors.

Thus main task of surge protector is to protect electronic device from surge.

A power surge or a transient voltage is an increase in voltage significantely above the designate level in the flow of electricity. In normal household and office wiring the std volt is 120V. If voltage rise about it there is a problem called surge. and thus surge protector protects your computer from damage.

Top selling surge protectors are -

(1) HTS 1000 MK II
(2) MPB 1100
(3) MTS 3500

H/ω / N/ω - Acquisition and PC-level Processing Units →

While there has been growing use over the last several years of word 'architecture' in the context of s/ω development, it is not always clear what the phrase "architectural development" really means. When we

talk about a successful c/s environment we, not on consider the s/w but also the h/w involved and choice. Thus it should be clear that c/s archite addresses common h/w/ system s/w platform component configuration and the n/w that lin them.

when we talk about the physical architect we will concentrate on h/w components.

when choosing h/w, a no of factors must considered

- Platform
- Power
- Hosting

Thus h/w devices are used which are enabled GUI interfaces and an also fast technical and topologies are also being used for networking.

Let us have a look on some h/w devices wh are being used in c/s environment

Macintosh →

mac or macintosh is a line of personal compute Apple has designed, developed and manufactured and marketed it. The original name for macinto was macintosh Apple. This is first commertially successful PC to use a GUI and a mouse instead cmd line interface.

In contrast to PCs, macintosh is based upon vertical integration model (means a description of t style of ownership or control). As PCs seen of diffe platforms e.g., windows, LUNIX etc. mac is itself vertically integrated computer. Vertical integrati means that different co's are united through a hierarchy ad produce different products but satisfy common need.

original macintosh computers used the motorola 68K family of microprocessor.

current macintoshes are the Intelcore, Intelcore2 and Inter Xeon 5100 series microprocessor. All models of it are preinstated with the native version of latest mac OS, (Latest version 10.4.8) commonly know as "Tiger".

Apple is also about to release mac OS XV.10.5 condemned "Leopard".

Some latest produca line of it are - mac mini, imac, macPro, mac Book, mac Book Pro, X serve (Pro stands for Profound).

It is secure also. Recent developments has lead to a mac Java community, which means developing Java code on mac.

PEN based Computing:

Although no single portable computer is best for every appln, chances are there is so soon will be a light weight hand held unit that can fully serve any set of maintenanca needs better, faster and at less cost.

Powerful handled pen based computers that have approaches in the past few years can provide a field technician peforming on site inspection and maintenanu.

In c/s environment these pen based handled computers have proved to be an important inversion. Pen based computers - a pen label to a PDA (Personal Digital Assistant), has been now widely used.

These PDA now provide acces to the databases also.

Typically mobile computing appln's address the lac computing power on hand-held devices by em c/s architecture. The client which runs on hand -held device, manages user interface, gathers data and transmits it to the server and displays data received from the server.

The rapid growth of devices has significar reduced pen h/w costs also and has increased marked for c/s pen based soln's. Pen XVC uses pe data instead of mouse data with the citrix V channel, thus significally improving the quanti data collected without having to increase the ban or processing power of server. Thus, a pen compu can be defined as a computer that utilizes an electronic pen (called as a stylus) rather than a keyboard for I/p. Pen computers generally requi special operating systems that support handw recognition so that users can write on the scre or on a tablet instead of typing on a keyboard. Thus a c/s computing these proved to be very useful.

Database Administration and System Administration:

DBA is a person who is responsible for the environ aspect of a DB. In general the role of DB admini has changed according to the technology of DBMS well as the need of the ~~corners~~ ~~foreigness~~ corn of the DB.

The duty of the DBA vary and depend on job description, corporate and inf^{n} technology poli

and technical features and capabilities of the DBMS being administrated on other aspect of system administration the major aspect is "do it write the first time." In this concept the main choice of h/w and s/w is important, we now prefer open system architecture all the h/w and s/w which are compitable and portable. All the s/w use are installed by the trained staff. The proper consideration of security is also important. DBA is responsible for the development of a secure, reliable n/w. Some important issue are as follows -

(1) Availability
(2) Reliability
(3) Security
(4) Performance

Availability,

If we talk from the point of view of DB. Availability means the authorized users can access and changed data as needed to support the business. The IT industry has responded to the availability challenged with h/w and n/w redundancy and increase online administrative capabilities.

Reliability,

All the appl^{n}s should be such that the reliability should be maintain. Reliability ~~should~~ requires appl^n should be protected from overwriting each other and requires shared memory to be access only by

authorized user security. we know that ACID property in considered in DB Appl^ns. (3) Security means that ability to access and change data conforms to policies of the business and deligation, decisi of its managers all the tables in the DB are key of the kingdom. so it is important to protect them from ~~intruders~~ other client.

(4) Performance → It means that the DB does not co unreasonable online response tim and it does not cause unattended program to run for an unworkable period of time. In complex c/s and 3 teer system, the DB is jo one of many elements that determine the performance of online users.