

Chapter 2

The Computer

Made up various elements:-

Input, output, virtual reality, physical interaction.

Paper, memory, processing → all are basic.

Interacting with Computer :-

Understand GC; — need to understand computer

What goes in and out?

what can it do?

Devices, paper, pen etc

Memory, Processing, Network

typical computer system.

Screen, monitor, keyboard, mouse / trackpad

Variation

House

① desktop

— PC, TV, VCR, DVD, Hi-Fi

② laptop

cable / satellite TV

③ PDA

— microwave, cooker, washing machine, central heating, security system.

Sockets

PDA, phone, camera.

Smart card, USB, electronic car key.

CTO Saturday
till human.

~~Manufactors~~ Forename

Design merit, demerit focus

Interactivity?

→ two things working together and influencing each other.

long ago → long waiting time

punched card stacks.

line printers output.

Now

→ Rapid feedback.

→ user in control of things being done rather than thinking.

Richer interaction

→ sensor, devices, everywhere.

text entry devices

keyboards → buttons

layout - QWERTY. cable connected, sometimes wireless.

→ standardized layout

alternative keyboard layouts.

Alphabetic

Dvorak

Special keyboards

Chord keyboards

- ↳ only 5 keys
- ↳ short learning time
- ↳ fast.

Phone pad and T9 entry

- ↳ use numeric keys with multiple types as if single key for each letter.

Hand written recognition:

text can be inputted into the computer, using a pen and a digitizing

tablet → natural interaction

technical problem:

- ↳ capturing all useful information
- ↳ segmenting joined up writing into individual letters
- ↳ interpreting individual letters
- ↳ coping with different styles of handwriting

Speech recognition

→ improving rapidly

most successful when

→ single user

→ limited vocabulary systems

problems with

→ external noise interfering

→ imprecision of pronunciation

→ large vocabularies

→ different speakers

Numeric Keypads

→ for entering numbers quickly.

calculator, PC keyboard.

→ for telephones

Positioning, Pointing and Drawing

The mouse → very common, easy to use

two characteristics:-

- ① Planar movement.
- ② buttons.

→ making selection
→ indicating option
→ initiate drawing

→ relative movement
can only be detectable
→ requires physical space
→ no arm fatigue.

two methods detecting motion

* Mechanical → Ball on underside

* Optical → light emitting diode.

Even by foot

→ foot mouse those have not hands.

→ Not a very common way.

→ Foot controls are common elsewhere.

→ Sewing machine speed control.

touchpad

→ touch sensitive

→ used laptop computers.

Good acceleration

→ fast stroke

→ lots of pixels per inch moved
initial movements to the target

→ slow stroke.

→ less pixels per inch

→ for accurate positioning.

Trackball and thumbwheels

Trackball: Rotated inside static housing.

→ relative motion moves cursor.

→ indirect device, fairly accurate.

→ very fast for gaming.

Thumbwheels: → for accurate CAD position.

→ for fast scrolling

of single dial on mouse

Joystick and keyboard nippel

↳ indirect.

↳ button for selection

↳ often used to computer game of the keyboard

↳ for laptop computers

→ miniature joystick in the middle

touch sensitive Screen

* Detect the presence of finger or stylus on the screen.

Advantages

- fast, requires no specialised Pointer,
- good for menu selection.
- Suitable for User in hostile environment
clean and safe from damage.

Disadvantages

- finger can mark screen
- imprecise
- difficult to select small regions.
Perform accurate drawing
- lifting arm can be tiring.

Stylus and light pen

→ small pen like pointer
now rarely used

Both

very direct and obvious to use.
but can obscure screen.

Digitizing tablet → অঙ্কন

→ used special surface
→ very accurate.

Eye gaze

→ control interface by eye
gaze direction.

→ uses lasers beam.

cursor keys

↑ ↓ ← →
Very cheap but slow.
→ used for evaluation.
→ high accuracy requires
headset.

discrete positioning controls

→ in phones, tv controls etc.

→ cursor pad or mini joysticks

→ mainly for menu selection

→ discrete left, right, up, down

Lecture - 04

Memory of Computer

- ↳ Short term (RAM - Random access Memory)
- ↳ Long term (HardDisk)

Short term:- Motherboard \rightarrow long time memory মাত্রাগত

এই, কিন্তু এই সময়সা থেকে Data fetching

ধূঢ়ী lengthy হয়ে গুরি, Seek time

অনেক বেশি হয়ে যায় long term এ, তা আজবা

যেকো application বর্তমান access করতে

চাই অঙ্গুলো RAM র খাবগুতে, এই জো Computer
fast access ও possible হয়ে, RAM তৈরি

য়ে silicon chip দিয়ে, volatile - RAMS

পেলে আব লাভ না করত শুভেচ্ছা, 100ns

দ্রবণী access করাব অন্ত, 64 to 256

GB RAM প্রাপ্তি,

Long term: two disk. Magnetic disks, optical disk.

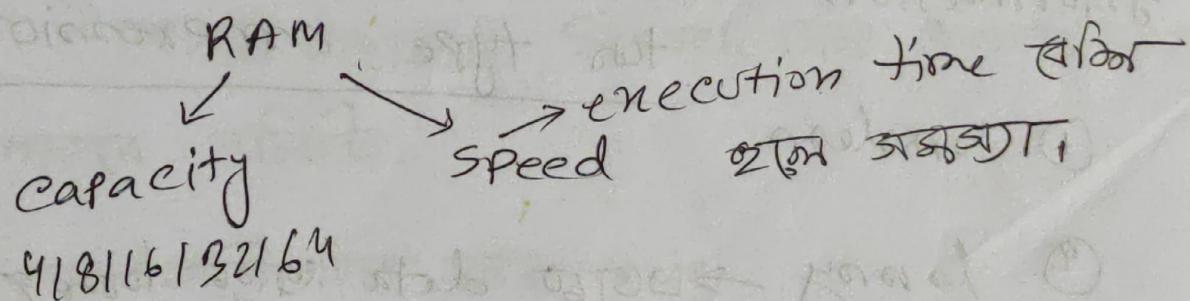
→ floppy

Magnetic disks:- access time 10ms.

→ use lasers

Optical disks: robust. more modern.

PDA's → ram কে primary storage প্রয়োজন।
VDE কর্তৃত আছে,



Frequency একাই :- 2000 MHz, 1.300 MHz.

Virtual memory :- RAM বাড়ানো, RAM ধরিয়ে নেও,

Harddisk দের একটি part কে Virtual Memory

ইমাতুর VDE করি, RAM অন্তর্ভুক্ত বাড়াতে access time কেও হাত, তাই তার Virtual memory

VDE কর্তৃত ছে, [Question আছে]

কোকের ক্ষমতা অস্থান কর্তৃত virtual memory,

Computer কে feed কিম্বা নামগুরে নথিল জো কতৃ করবে
না, as virtual memory আছে Harddisk ও পক্ষিত
Slow হবে, manage রচয়ি নিয়ে, এবং জমজ্ঞ কর্মণীল
ক্ষমতা দেওয়া উপর কম্পিউটেশন
and, the, you, I, are, am. → computer দ্বারা
ক্ষমতা frame দ্বারা কোন frame আছে বুঝেওয়ে,
information same ঘূর্ণতে space করে ধারণ,
two type compression

① lossless

② lossy → ক্ষমতা data ক্ষেত্রে কমে করে সাথে তা
charge হবে ক্ষেত্রে পাইবে,

Storage format - text

ASCII-7

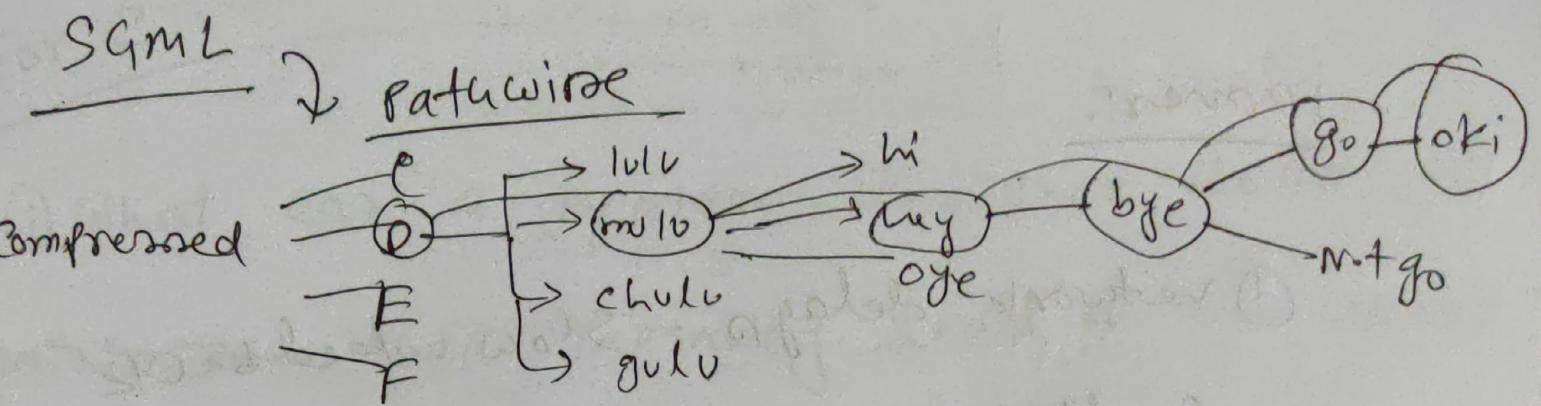
Unicode - BD (৩ কোটি টাঙ্গি),

UTF-8

RTF (rich text format)

SGML (Rich Text Format)

XML (extended markup language)



Find oki.

Method of access

System for giving එය උතුව.

→ යොමු කළ මාධ්‍ය සඳහා Search ඇත, වෙතෙනිදියුණු

දිගු දිගු පාත්‍ර මීටරි.

like: බැ movie තේ ඔ නැත්කා කළු මාත්‍ර movie

result: Avatar 2.

Network Computing → data cloud ගාස්තු කළා, ගාස්තු ගාස්තු නේ මෙහි නොමැතියා send කරාය යුතු නොමැති යුතුයේ රුපුත්‍ර, security නේ යුතු, ආදා එන්ක රාජිත්‍රී, තෘප්‍රය පිශ්‍යම history පාත්‍රයා,

jammers

- ① network delays - slow feedback
 - conflicts - many people update data
- ② unpredictable.

Questions → see last level.

- ① What can a system designer do to minimize the memory load of the user?
 - ② suggest idea for an interface which use the sound effectively. page 25
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- ① Recognition rather than recall (menu vs command)
 - ② external information through visualization.
 - ③ hierarchical structure
 - ④ default values. +880, +910
 - ⑤ generic rules and action (drag objects)
 - ⑥ concrete (10/11/2022)
 - ⑦ Auto suggestion
FU, FUN.

