IT Maths Science

Date :

Computer History.

- First man made Computing device - Abacus
- first mechanical ,, ,, - Blaise Pascal
  +, - Adding Machine
- Memory concept - Joseph Jacquard
  Mechanical Loom
- first mechanical computer - Mark I, Howard Aiken
- first electronic digital C - ENIAC, J. Presper Eckert.

Generations.

①	②
Vacuum Tubes	Transistors
Machine Language	Floppy Disk / Tape
Punch card.	Assembly L.

③	④	⑤
IC	VLSI	ULSI
Keyb / Mouse	microprocessors	Artificial intell.
OS	Optical Disk	Internet & Multimedia
High Level L.	GUI	Voice recognition.

Brian

Size

No

- Micro
- Mini (bank branch)
- Main frame
- Super

Prime Storage
- RAM
- ROM - booting up
- Cache - Speed up CPU.

CPU = main memory.

Hard access time, revolution per minute
- Magnetic disk
- Optical CD / DVD, Blue ray
- Solid

Secondary Storage

Input → Main memory → Output

Main memory: RAM

Keyboard
mouse
digitizer
MICR ← Check
OMR ← Answer sheet.
OCR → editable and searchable.

Windows key b - 104

CPU, temporally

MR AIU, temporally

ALU mathematical logical

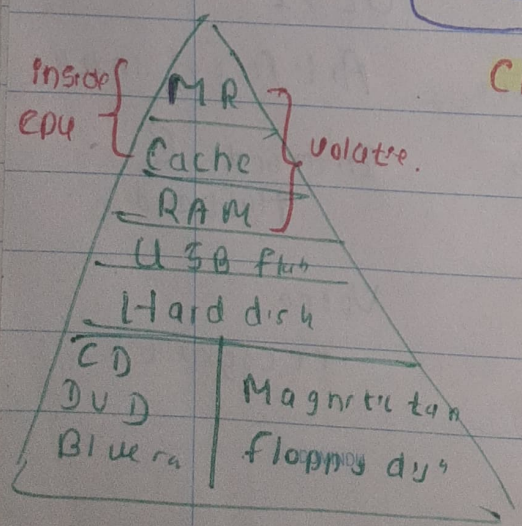
CU Control all devices.

Processor

Output
- Soft Copy
  - Monitor
  - Multimedia
  - Name board
- Sound
- Hard copy

Impact
- Dot matrix
- Daisy wheel
- Line

Non-impact
- Laser
- Ink jet
- Thermal.



CPU - GHz
Clock speed
Word size.

CD - 700 MB
DVD - 4.7 GB - 9.4 GB
Blue ray - 25 GB
USB -

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PS/2 → Keyb / Mouse.
Parallel port: → Printer / Scanner.
Serial port: → Modem / Old mouse.
VGA: Line 2: , HDMI , DVI → Monitor / Multimedia P.
USB: → Key / Mouse , Printer
RJ45 → Network cable.

Word Processing.

- Ab: word - Source Gear
- Kingsoft Officer Writer - Kingsoft
- Libre Office Writer - Document foundation
- Open office Writer - Apache
- LyX - LyV Project
- FrameMaker - Adobe Systems incorporated
- iWork pages - Apple
- Word perfect - Corel.

} Open Source.

Cloud → Google Docs, Office 365 word, Microsoft one drive word.

Phones / Tab → Documents To Go, Google docs, Kingsoft office, Polaries office.

MS W - docx / doc
Libre off. - odt

Short Cut

No:

Ctrl + Z → Undo
Ctrl + Y → Redo
Ctrl + Shift + + → Super Script.
Ctrl + > /] → Grow
Ctrl + < / [→ Shrink.
Ctrl + H → replace.
Ctrl + K → Hyperlink.
Alt + Ctrl + F → footnote.
F7 → Spelling & Grammer.
Shift + F7 → Thesaurus.

Gutter ✓
Mail Merge ✓
Drop Cap ✓
Password ✓

Data Communication.

Sender ——→ receiver

Guided → Twisted Pair. inexpensive, available, flexible, light weight,
EMI, Speed↓, low bandwidth, distance↓
Coaxial
Single failure ↓ entire failure
Fiber Optic
Thin glass/plastic.
Beam of light.
EMI ✗, Expensive.
T.V. antenna / CCTV
Inexpensive, easy to expand
high bandwidth.

Date : ....

Unguided. wire less.
- Radio - Blue tooth, wifi
- Micro - Straight line, side to side.
- Infrared - TV remote

Modes

- Simplx → Only one direction
- Half duplex → Both, but One at time
- full duplex → Both same time.

Computer Network

~~Centralized controlling~~
Cheap & fast

Computers + Other peripheral device using communicating media.

- resource sharing (hardware / software ~~file store~~)

Topology

- Star - මැද Hub කැඩුනොත්, ඔක්කොම Fail.
- Tree - Large Net / Segment.
- Bus - Small net ← bus cable
- Mesh. හැම එකටම connect, Cost
- Ring - එකක් කැඩුනොත් → ඔක්කොම කැඩෙනවා.

Types

- LAN - Local
- MAN - metropolitan
- WAN - wide - internet.

Router

Fire Wall

Hub - Half duplex, all devices

Switch - full duplex, relavent device.

Internet

Network of networks

- ISP
- Communication method
- Communication software

NIC - Connect Computer to a network.

Bridge / Gateway.
Similar / different.

EDUCATION IS THE BEST INVESTMENT

Spreadsheet

No:

Microsoft - Excel (xls, xlsx)

Apple - Numbers

Lotus - Lotus 123

GNOME - Gnemeric

Libre
Open } Calc (ods)

Google - Google sheet } cloud.

= / + before formulars.

Ctrl + ↓ Move cursor to last row

↑ Back to first r

→ Move cursor to last column

← Back to first c

Tab = → Shift + Tab = ←

Enter = ↓ Shift + Enter = ↑

Page UP - Whole page up

Page down - Whole page down

Ctrl + page up - Change worksheet to left

Ctrl + page down - " " " right.

Ctrl + Home - A1

Ctrl + End - Move cursor to the last down right cell which is having data.

Date Copy

Maths

- Select — cell
- Click on Copy icon
- Select range from ___ to ___.
- Click on Paste icon.

HTML - Hepertext mark up language.

Web page - HTML document, internet access

Collection - Web site.

To create → Simple text editor
Note pad, Word pad, GEdit, TextEdit
→ Web design software.

Web authoring
- front page
- dream weaver
- kompozer
- Cke.tor
- Bluegriffon

} Open Sou...

CMS.
dynamic
- joomla
- drupal
- World press.

extension - htm / html

heading - already bold

Table headers - bold and centered.

Tags

<p> Paragraph

 Line break

<!... > Comments

Close tag me

<hr> Horizontal ruler

<marquee> Horizontally mouing text.

<b> bold

<i> italic

<u> underline

 emphasis

 Like as Bold

<s> Strike through

<sup> Superscript

<sub> Subscript

Attributes → size, color, face.

UI - Unorderd • Disc

OI - Ordered o circle

DI - definition □ Square.

image → img src = "" "" alt = "" "" >

hyperlink →

body bg color / background

Video → embeded src = "" ""

Date: Internet.

Maths | Scienc

WWW - Collection of electronic d.

URL - Unique address for a file.

- domain name → web site
- URL → web page
- IP address → machine. (0-255 0-255 0-255 0-255) dotted decimal notation.
- DNS — domain name → IP address
- Search engin → When URL unknown.
- Protocol → set of rules, connect 2 devices

Service | Path where the resource is Located. | resource file.

http:// www . nie.lk /page/ cource.html

Protocol. | domain name | Page / Path

- FTP
- HTTP
- TCP/IP
- SMTP
- ICMP

Top Level

gov, edu, org, mil, com, net.

Country

lk, uk, au, us, jp

- Web server — Store web pages
- Mail Server — Store e mail

Web browsers → gives a user access to WWW.

Services

- WWW
- Email
- FTP
- remote
- File sharing
- Search engine
- Cloud

Communication methods

- Email
- Chatting
- Telecon ferenong
- blogs
- forums

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video conferenc.

- Computer devices
- Audio video devices
- internet connection
- Communication software

} requirements

Cloud computing

Concept of using computer networks to facilitate retrieving & storing information from anywhere at any time.

- Iaas - store data
- Paas - Server environment.
- Saas - without install

Low software cost - Saas

Performance ↑

maintain issues } Iaas

Better Security

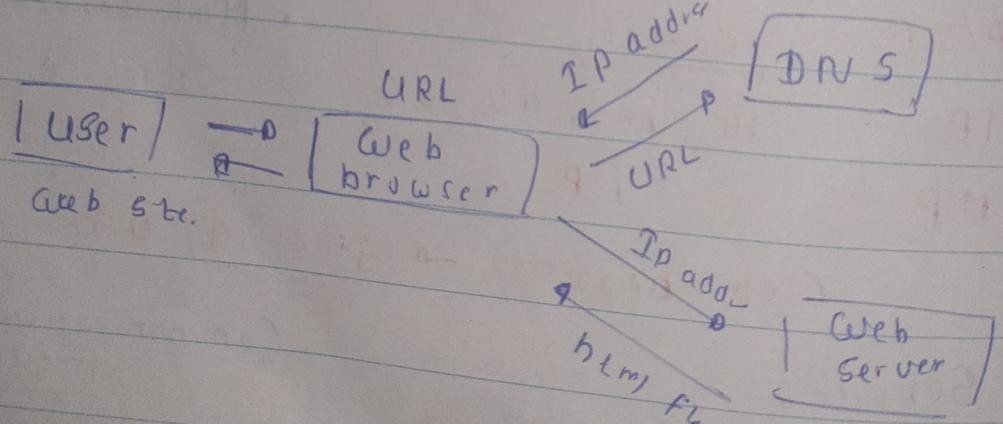
Instant software update. - Saas

require constant internet connt.

depend on 3rd Party

not well work low speed connect

How internet works.



OS

Maths | Science

Date:

Computer.

- Hardware
- Software
- firmware. booting up

Software:
- instructions given to the computer.
- System.
- Application

System:
- OS
- Utility S.
- Language

OS:
- Single user
- Multi user
- Multi tasking
- Real Time

Language: Source code → Object Code.
- Assembly → machine. • Assembler. translator
- Compiler at once
- Interpreter line by line, execute the program

OS functions:
- Providing user interface: CLI, GUI – WIMP
- Manage Hardware → Process, memory, device, file, security, network
  - allocation of CPU time, memory, input output devices.
  - Controllers – Peripheral device
  - Drivers – Software
- Access methods: Seq, Direct, Random

Utility:
- Partitioning – divide in to multiple logical drives. Save in different places. Have more than 1 OS. Meet requirement of OS.
- Formating – Prepare data Storage device.
- de Fragmentation – rearrange clusters
- Clean up – increase capacity

Booting:
- CPU activate BIOS.
- BIOS run POST
- bootstrap reader, MBR file
- OS → RAM

User ⟷ Application Soft ⟷ System ⟷ Hard

E - Presentation.

Microsoft - Power point (ppt, pptx, ppsx)

Apple - Key note.

Corel - Corel presentation

- Libre office impress

- .Org impress

Ctrl + N → N presentation

Ctrl + M → N slides

F5 → Slide show from beginning

Shift + F5 → Slide s. from current slide.

B → Black screen

W → White screen

Ctrl + k → hyperlink

N, Enter, ↓, →, Space, Pg dn → Next Slide.

P, backspace, ← ↑, Pg up → previous slide.

Using Computers to Solve a Problem.

Computer program → instructions, computer ka,

Source code - Original program, by programe

Object code - after

Flow chart

Textual

Control Structures — Pseudo code

Sequence

Selection < If Then / Else

Repetition — Case / Switch

Enter = Input = Get = Read

Output = Print.

Pascal

Comments - {.....} (*.....*)

Identifier - a term to represent Variable, constant, name of a program.

Variable - a memory location in RAM.

Integer → +, - whole

Real → +, -, decimal

Char → Any character

String → Sequence of characters.

Constant - value do not change

Repetition.

No

① for Loop - No. of repetitions known

Begin.

For variable name = give Start value to given Stop value Step increment or decrement

Statement.

Next Variable name

End.

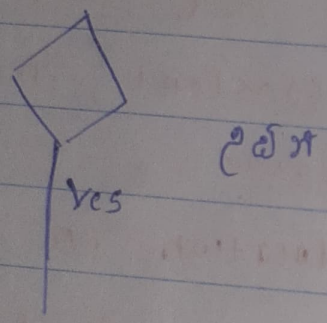
Do Loop - No. of repetition unknown.

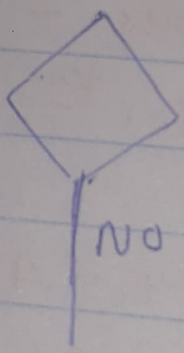
While

End While

Until

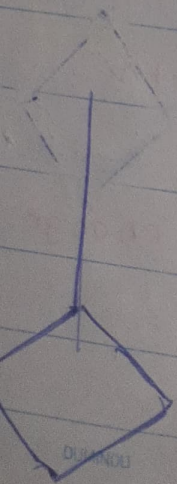
End Until

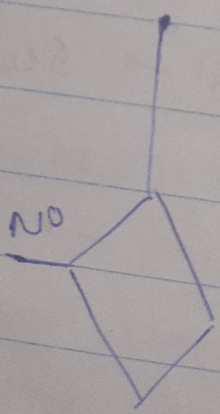




Loop While

Repeat ... Until.





for - to - Do

```
Begin
for num = 1 to 10
    Print num
Next num
End.
```

```
Program Test;
Var num: integer;
Begin
    for num := 1 to 10 do
        Write (num)
End
```

for - down to - Do

```
Begin
for num = 10 to 1 Step -1
    Print num
Next num
End
```

```
Program test;
Var num: integer;
Begin
    for num := 10 downto 1
    do
        Write (num)
End.
```

While - do

```
Begin
num = 1
While num ≤ 10
    Print num
    num = num + 1
End While
End.
```

```
Program test;
Var num: integer;
Begin
    num := 1;
    While num <= 10 do
    begin
        Write (num);
        num := num + 1
    end;
End.
```

No:

Repeat Until

```
Begin
num = 1
repeat
  Print num
num = num + 1
Until num > 10
End
```

```
Program test;
Var num : Integer;
Begin
  num := 1;
  repeat
    write (num);
    num := num + 1
  Until num > 10
End.
```

Array → data structure that holds multiple variables of the same data type.

Number Systems

Base value = Number of characters.

ASCII	7	128
EBCDIC	8	256
BCD	4	16 Only decimal numbers.
UNICODE	16	65536

A-65 a-97

A-C1 a-81

MSD වම්පස

LSD දකුණ

decimal ඉලක්කම් නිවැරදි නම් / වැරදි නම්

Normal number ඉලක්කම්

MB ———— 2^{20}

GB ———— 2^{30}

TB ———— 2^{40}

PB ———— 2^{50}

2^{12} bytes = 4KB

4PB = 2? KB

= 2^{40+2} KB

= 2^{42} KB

bit ... + 3

10^9 bytes = 1,000,000,000 bytes
(GB) (MB) (KB)

= 1 GB

Waterfall
Iterative incremental
Prototyping
Spiral
Models

data
↓
information

→ Information Systems. Various components interrelated

Input → Process → Output. Specific task.

Sub → set of elements, system itself

CBIS
Security can ensure.
Small physical are
Trained stuffs
Electricity
Errors
MIS
opposite

SDLC

- identification of requirement — Observations, Interviews, Questionaries, Prototype
- designing — identify components
  — desinging interface/database
- Coding — identify architecture
- Testing → unit, integration, system, acceptance
- deployment
  direct, pilot, parallel, phase
- maintenance → correct errors, new requirements, technology

Economical
Technical
Operational } feasibility

20

20

E-mail.

Tool, Send m
via network

- E with internet
- E acc
- E software
  - Eudora
  - MS outlook
  - Express
  - Pegasus

User_Id @ domain_no
↗ No Spaces
. Service provider
permission

To - receiver
CC - Carbon copy
BCC - Blind carbon copy

To create.

- Internet Mail Acc - Free Gmail, Yahoo, Hotmail
- ISP - SLT

Threats in Computer System.

Malware → to disrupt, damage, unauthorized access.

Anti virus
- Virus - replicate, host program
- Worms - not replicate, quick.
- Trojan - not replicate වෙන්නේ වෙන software එකක් but damage.

Pop up blockers
- Spy ware - ඔයාගේ establish වෙලා outside එකට leak කරනවා ඉන්න
- Adware - අනවශ්‍ය advertisement වගේ screen එකේ

Hijacker - user ව mislead කරනවා

Spam - unsolicited just mail

Phising - user ව deceive කරලා bank acc information දාගන්න

Bots - through msg & conversations

Physical security.
- Hardware.
- UPS
- Lightning arrestor
- Surge protector

Logical
- virus - anti virus.
- hacking - fire wall. illegal access
- data information - use of passwords
  keep backups.
- data communication - data encryption mathematical

- Violating Privacy - confidential data, 3rd, without perm
- Software piracy - illegal copying, distribu

Digital SD technique

Social issues

Plagiarism
· Citing
· Quoting
· Referencing

· digital divide - gap
digital bridge - forming connection.
· de-skilling.

Maths Scienc

Cyber crime - irresponsible use of social media

Sri Lanka CERT
ICTA
Sri Lanka Standards Bureau
} responsible agencies

E waste

mercury → damage brain cells, nervous system, DNA, Allergies,

· RST - repetitive Stress injury - pain, involving soft tissue
· Carpel Tunnel Syndrom
fingers, palm, wrist
· Computer vision Syndrome
eye 95-70 cm / 18-28 inches.
· Spin and neck pain.