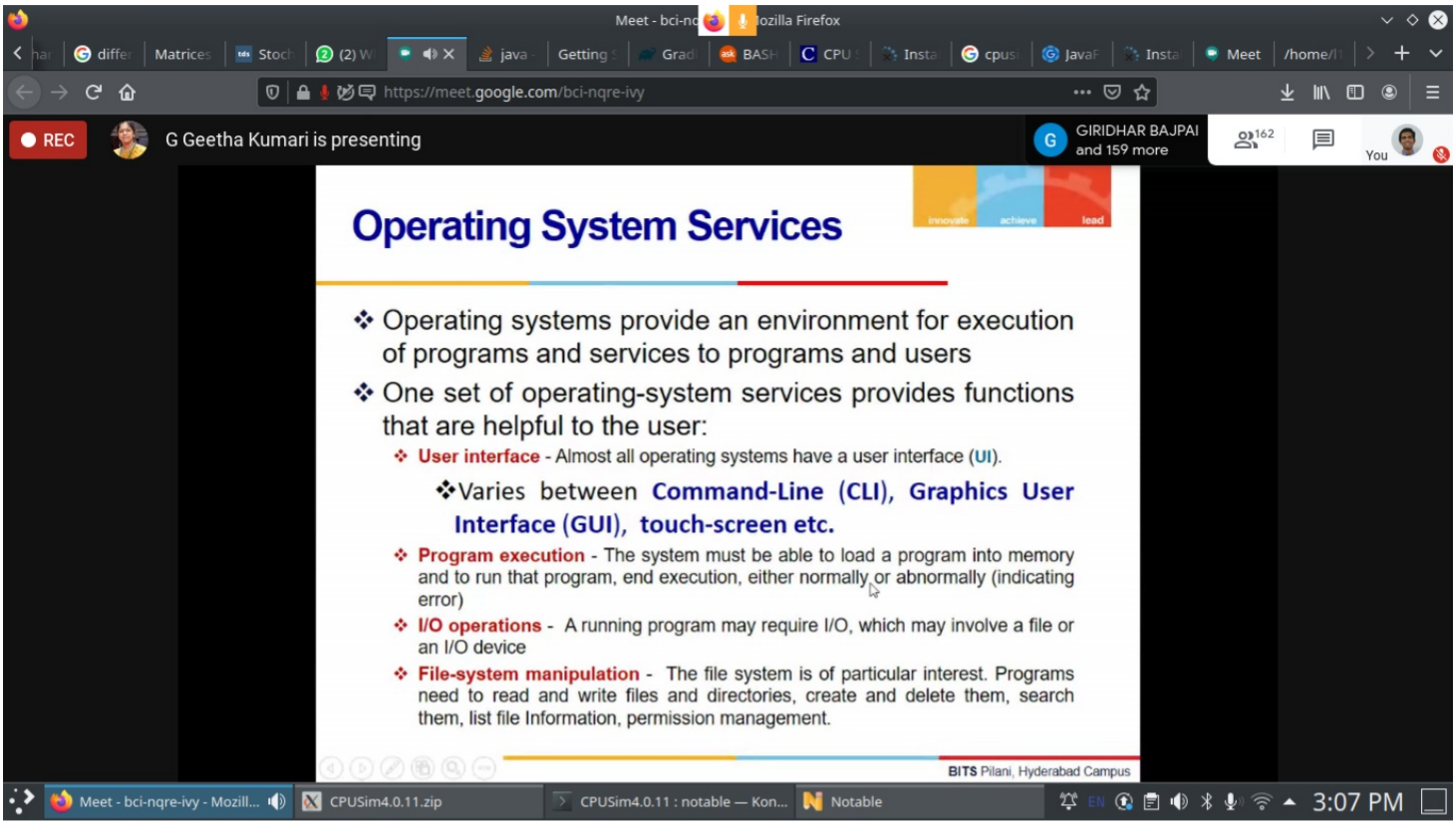
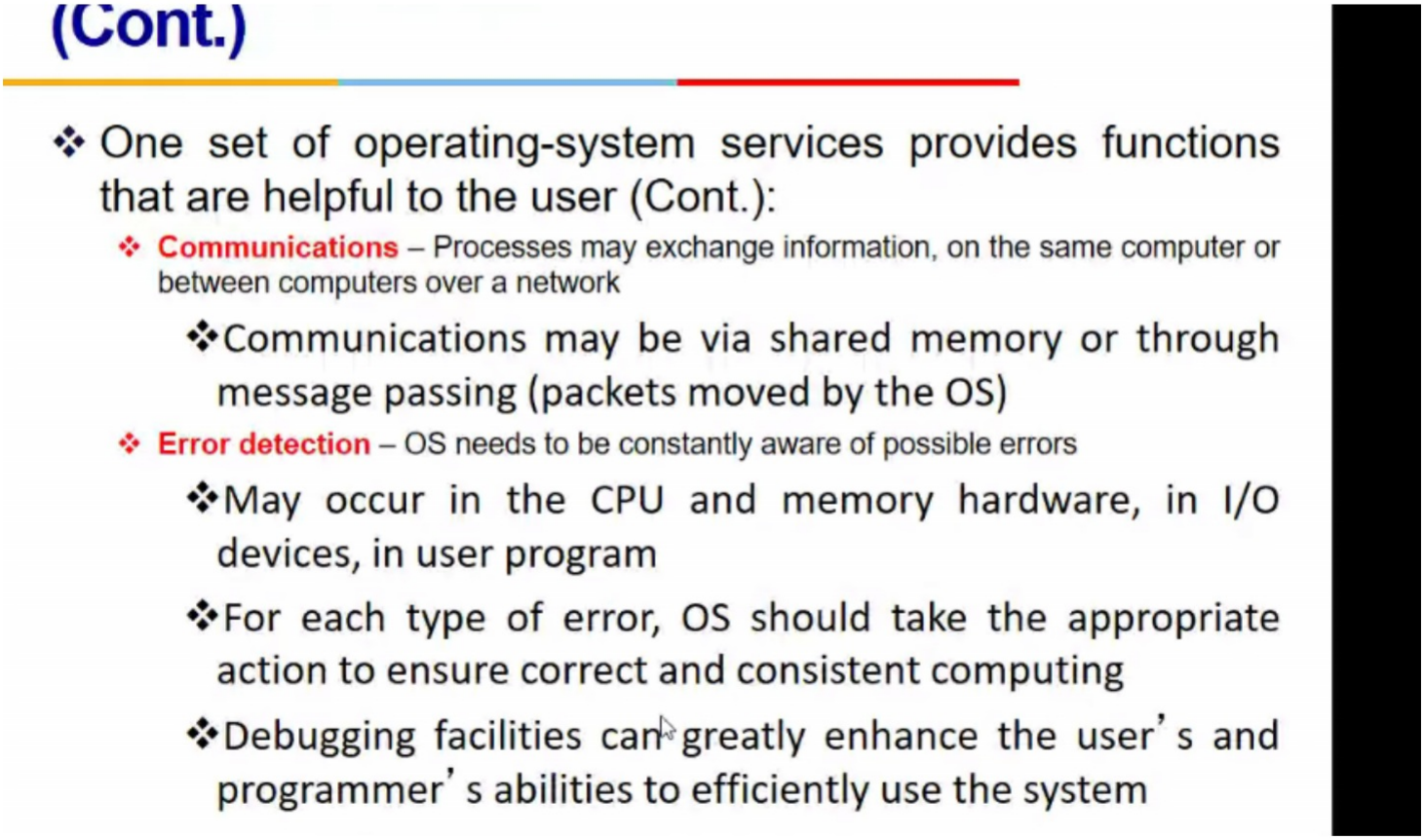
L3 OS





(Really nothing much to note down)

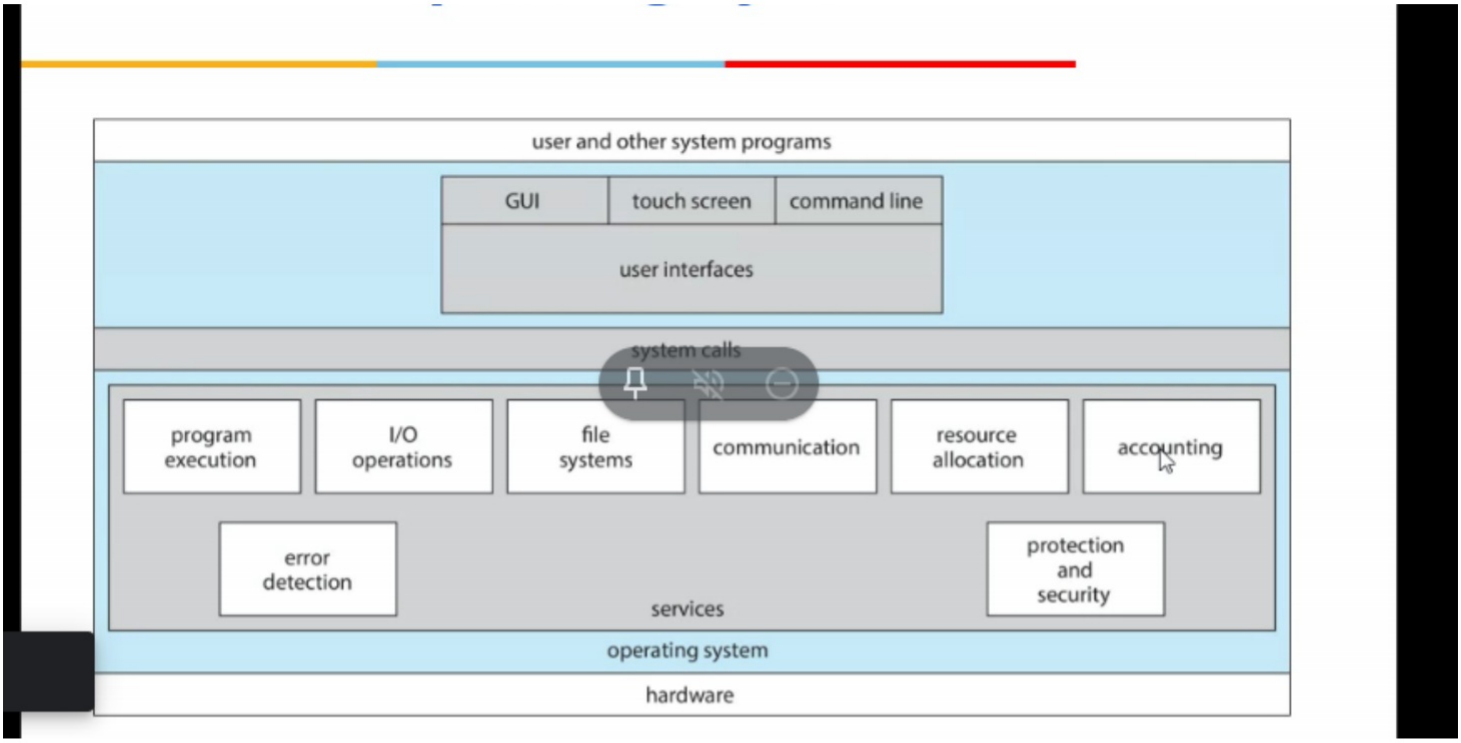
Resource sharing

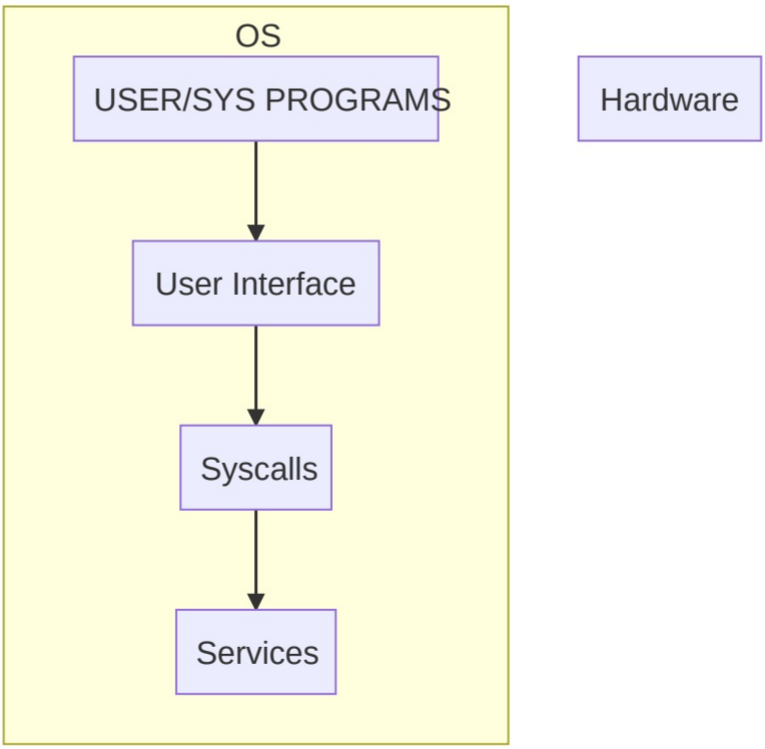
- Responsibility of OS to provide a smooth allocation of resources to allow execution
- Logs have all the details of resources -- maintaining the logs is another responsibility

Protection and security

- Forms another responsibility -- User/Kernel mode

View Of OS





CLI - Command Line interface - direct commands
Some programs also act as CLIs

Shell

Bourne shell -- Default prompt `$`
C-shell -- Default prompt `%`
terminal / shell

terminal	shell
it just is an env for Command Line	environment for CL interpreter, provides programming

GUI

UI isn't a necessity for an OS, some are on CLI
User Operating SYstem Interface -

- Desktop is a metaphor interface
    - Invented at Xerox PARC
    - Windows is GUI with CLI "command" shell
    - Apple MacOSX is "Aqua", with UNIX kernel and available shells
    - Linux / Unix have kernel and several Destkop Environments (Gnome, KDE, X)
- Touchscreen interfaces

System calls

- Programming interface to the services provided by the OS
- Written in C/C++
- Mostly high level API used
    - eg. Win32API for windows
    - POSIX API
    - Java API

Example

Example of a Syscall

`sys_write`

- Every system call is identifiable by a unique value

Example of an API

```
ssize_t read(int fd, void *buf, size_t count)
```

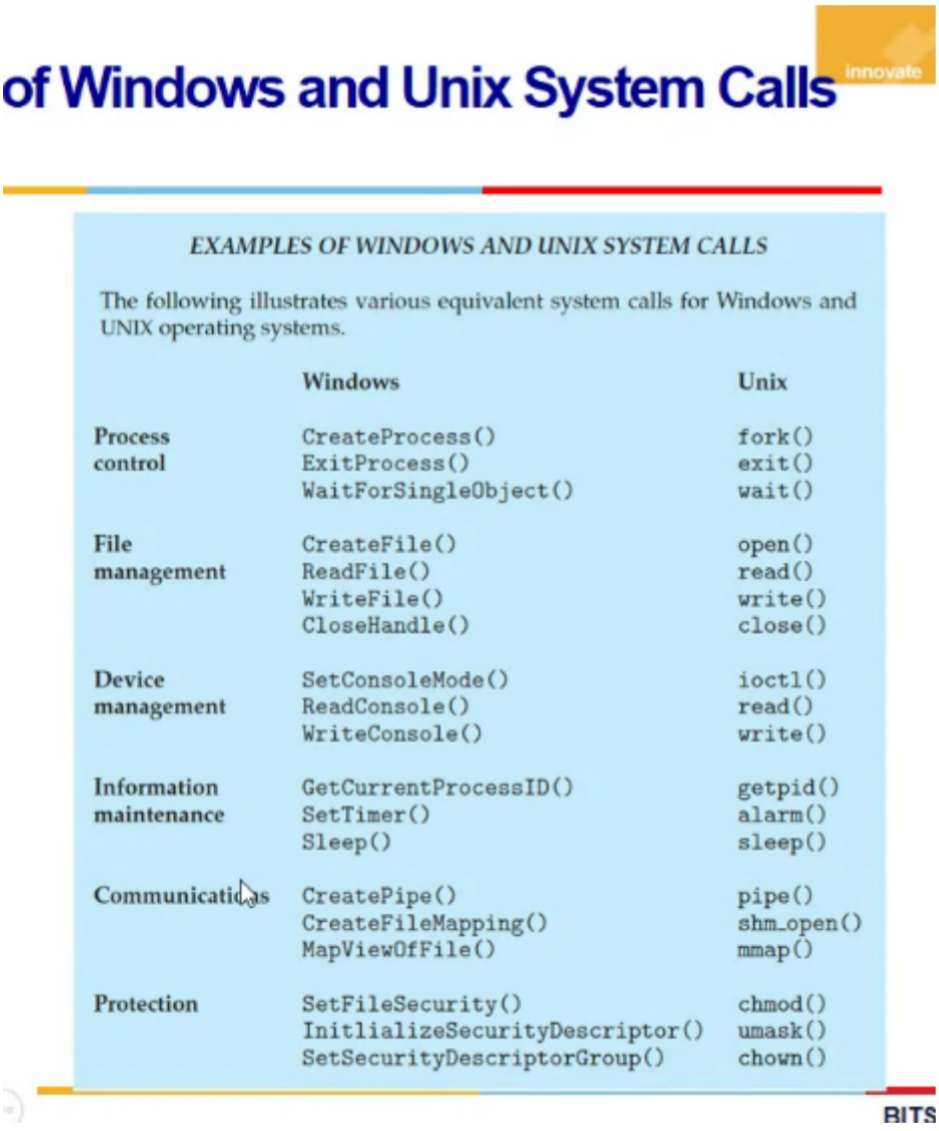
- the man page helps
- API hides most of the OS interface

Types of Syscall

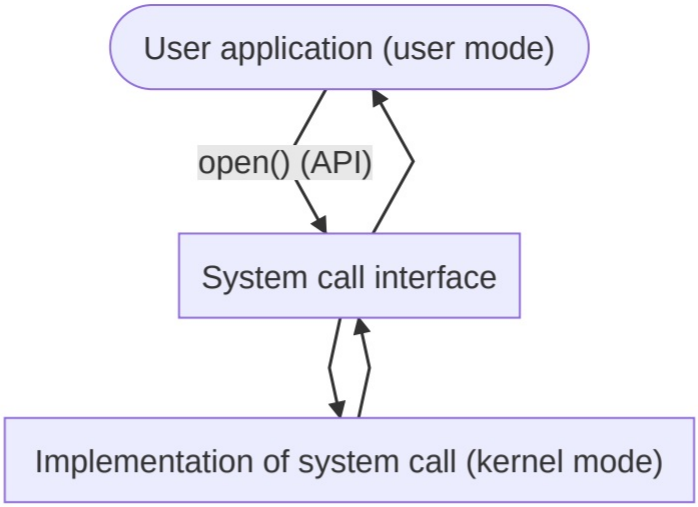
- read slides -_-

1. Process control
2. File Management
3. Device Management
    - Requesting / Releasing device (eg. int 13h)
4. Protection and Security
5. Information maintenance
    - Get date time
6. Communication
    - message passing and shit

Reference:



Flow diagram



System Call Parameter Passing

NOTE: System calls are executed in kernel mode, not the user mode.

- Three popular techniques
  1. Registers (simplest, and since CPUs have fast access)
     - Sometimes more params than registers
  2. Pass in a block or table
     - parameters are stored, block address in register
  3. Stack (Linux , Solaris)
     - params Pushed into stack
     - popped off the stack by the OS

Quiz

1. b)
2. a) tcsh - cshell
3. b) number
4. c) main memory, but she said the params are actually in a) registers (when they are ACTUALLY in main memory no?)
   Clarity:
   it's a pass-by-value, so the parameters are in fact in registers
5. b)
6. c)