

Class IX academic program 2020

Information And Communication Technology

Lecture : ICT-02

Chapter 2 : Computer & The Security of The User

Sheium
BUET CSE. (7)



COMPUTER & THE SECURITY OF THE USER

In this chapter we would study how to make a computer more useful and maintain the usability.



Moreover we would study what precautions to take for the safety as a computer user

ABOUT COMPUTERS

Lets first know about some basics about computers

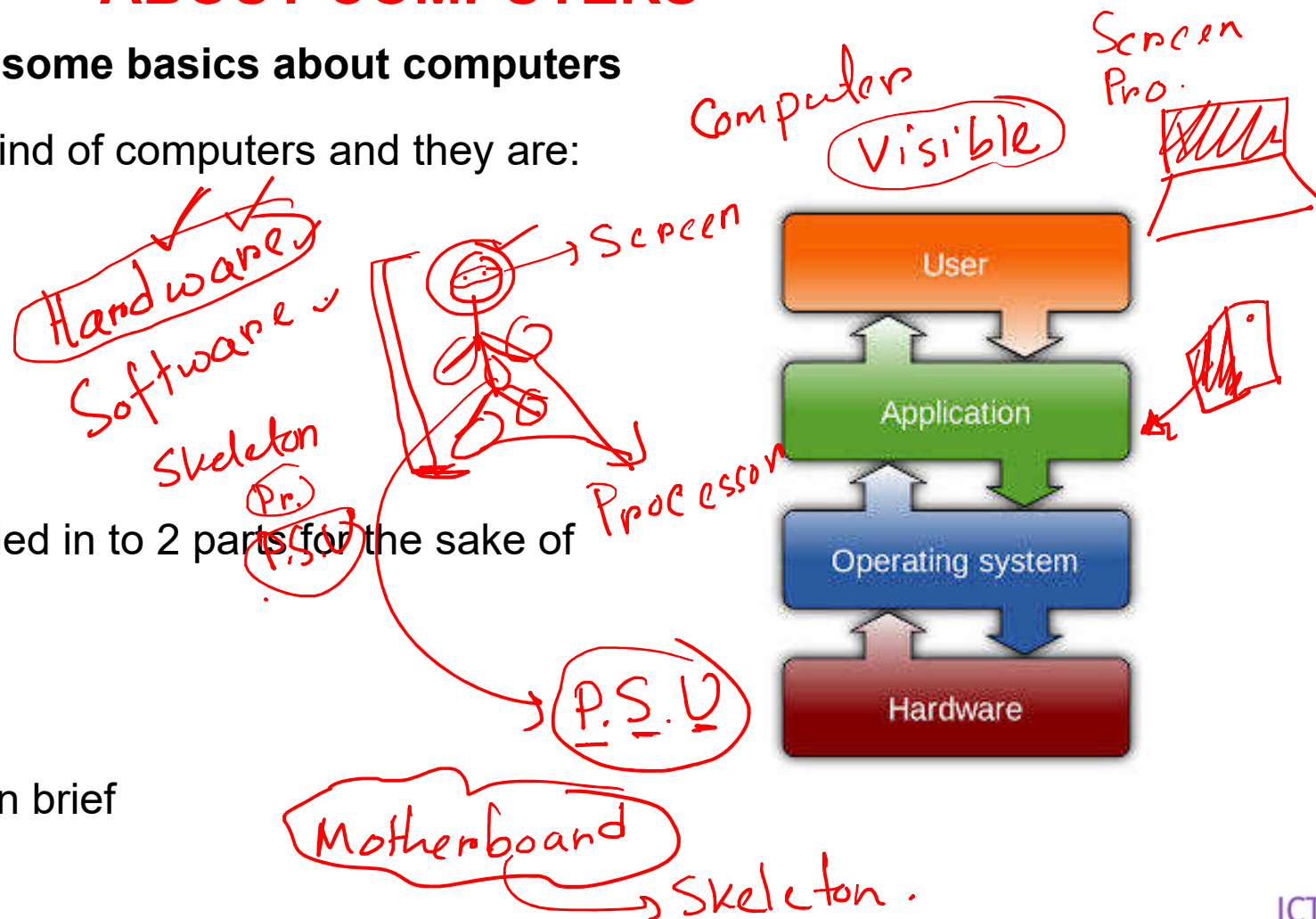
We usually use many kind of computers and they are:

1. Desktop
2. Laptop
3. Smart Phone
4. Tablet Computer

All of them can be divided in to 2 parts for the sake of discussion. Those are :

1. Computer Hardware
2. Computer Software

Lets learn about them in brief



COMPUTER HARDWARE

What we see in the outside and also in the inside of a computing device, all are parts of computer hardware. So Motherboard, Processor, Power Supply Unit, Ram, Rom, Display all fall into this category.

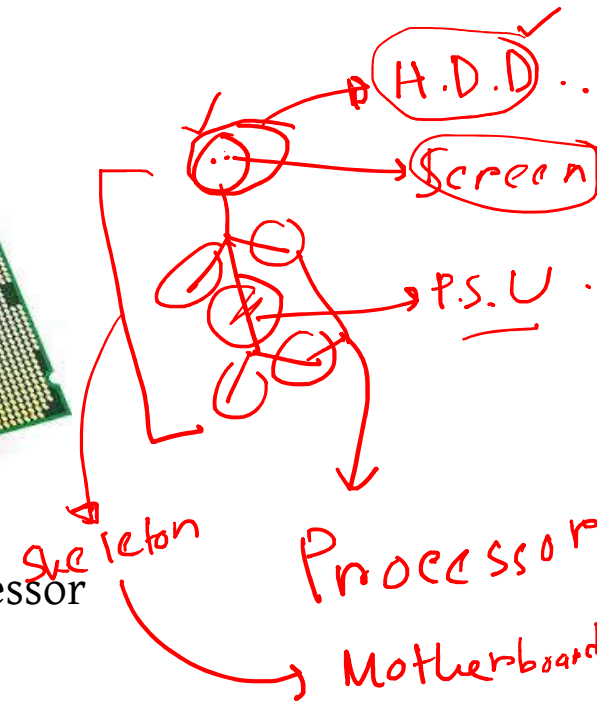
Visible



Apple Mobile Processor



Desktop Processor

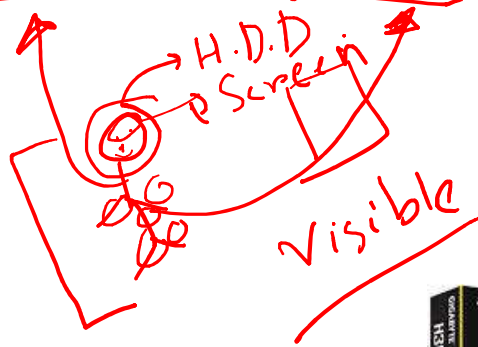


COMPUTER HARDWARE

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Apple Mobile Motherboard



Desktop Motherboard

COMPUTER SOFTWARE

Because computer software doesn't have any physical existence let me explain it using a story :

I am feeling the urge to eat Biryani, but I don't know how to cook it. So I decided to follow a recipe book. I bought all the necessary things from shop to cook Biryani and started cooking in my kitchen. The recipe has many steps and I am following each of them one after another. After following all of the steps the cooking was completed. As I cooked Biryani for the first time it didn't taste good.

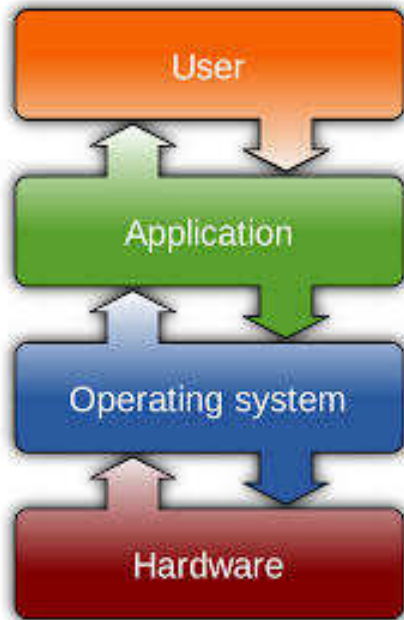
If I didn't had any recipe, would I be able to cook Biryani? *Software → Inst. → Hard.*

Computer has some similarity with this story. Computer hardware is like the kitchen where I can do a lot of things such as watching movies, listening to songs, taking online classes. But I need 2 more things and they are : 1. Data, 2. Instructions

Like our Biryani story data is the necessary item we bought from store and computer instructions are lot like recipe.

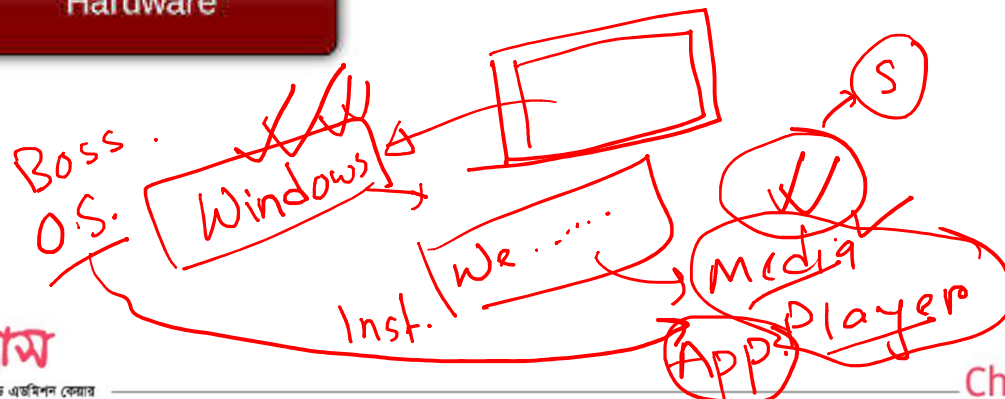
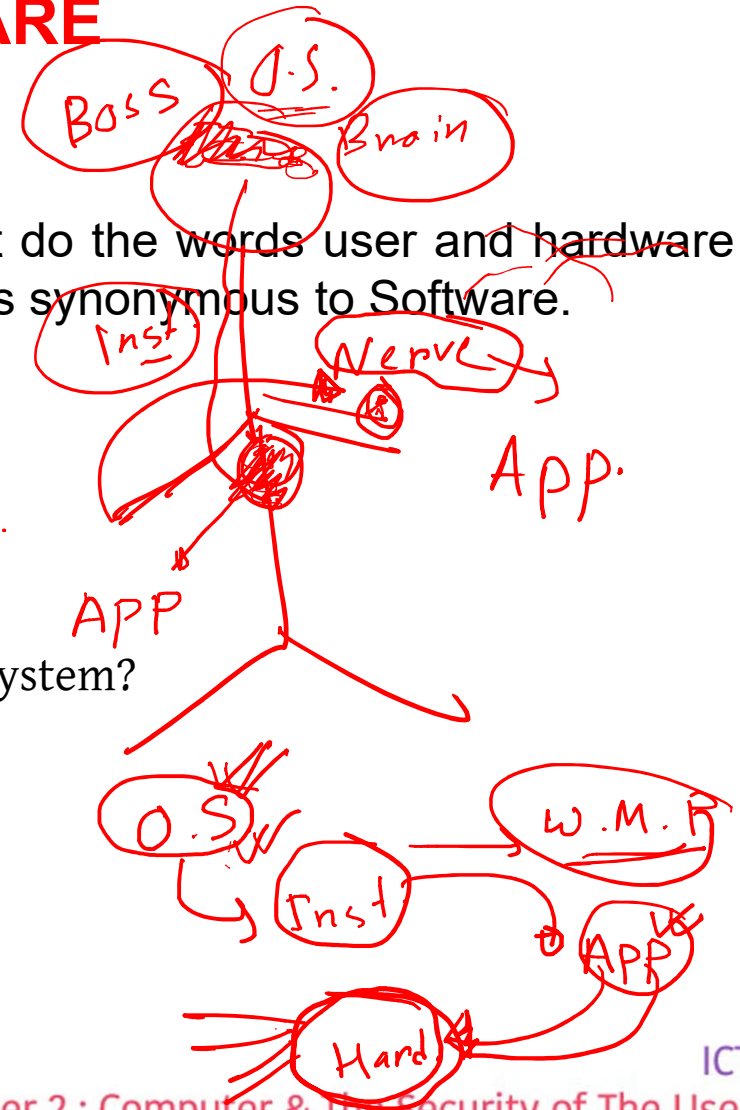
We can store music in our computer. Like that we can also store those instructions. So basically the instructions that is used to perform a specific task by a computer is called a software.

COMPUTER SOFTWARE



In this figure we know what do the words user and hardware mean. Application is used as synonymous to Software.

But then what is operating system?



OPERATING SYSTEM

Operating System is one kind of specialized software which is different from application software in certain ways. So let's go back to our Biryani story once again.

We cook several items in kitchen at a time but computer can do many more tasks simultaneously. Currently my computer is running 5 big large application and 82 background processes. But I have only one processor in my computer. Then how come it is running $82+5 = 87$ different sets of instructions?

Because computer can perform billions of operation in a matter of second, it can switch between tasks hundreds or thousands of time in a second. That is why we get the illusion of multi-tasking of processor and can listen to music and read e-book at the same time.

But not every software requires equal cpu time. Again one software can damage another software's data as they are using same RAM as their memories. So if these things occurs no program can run without any sort of trouble. The system would crash. To solve these problems we use Operating System.

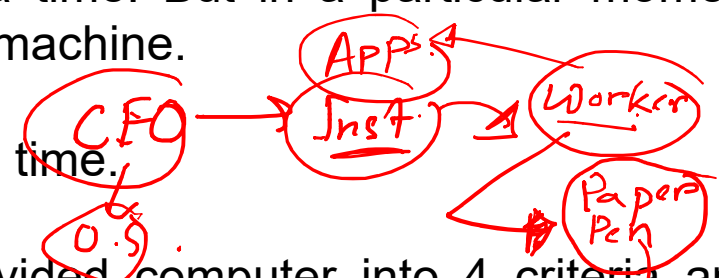
OPERATING SYSTEM

Operating System is a different kind of software that decides how the system would work or operate and it helps other application software to perform their tasks properly.

Operating System is like a CEO of a company, where every other softwares work below OS. One computer can hold multiple operating system at a time. But in a particular moment usually one operating system works to control the whole machine.

On the contrary application software can run multiple at a time.

One thing we should understand clearly is that we divided computer into 4 criteria and properties of computer into 2 criteria in the start of this lecture. This was done for the sake of discussion. It's not like computer can only be seen in this 4 form and we can't divide computer in other ways. For explaining certain things we divide a particular thing into many sub category. Just like Software was discussed using operating system and application software sub category.



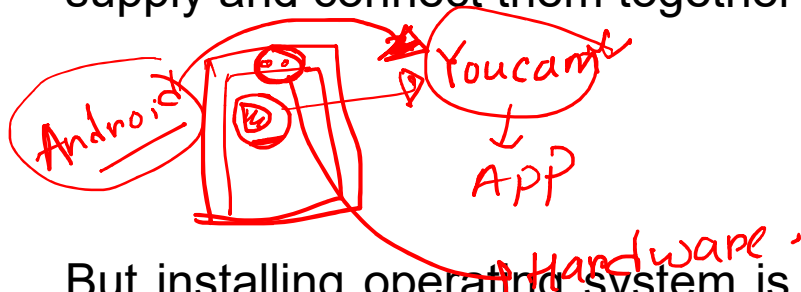
O.S. → Inst. Software → Hardware.

SUMMARY

So far what we have understood that, when we buy desktop or smartphone from market we buy a set of hardware and sometimes it can have operating system installed or it might not have.

Such as we can buy Nokia 6 with Android Jelly Bean operating system.

Again we can buy all individual component separately like motherboard, processor, power supply and connect them together and then install operating system.



But installing operating system is a complex task and out of our syllabus. So we are not going to discuss this. But we would learn how to install normal application software in the upcoming sections.

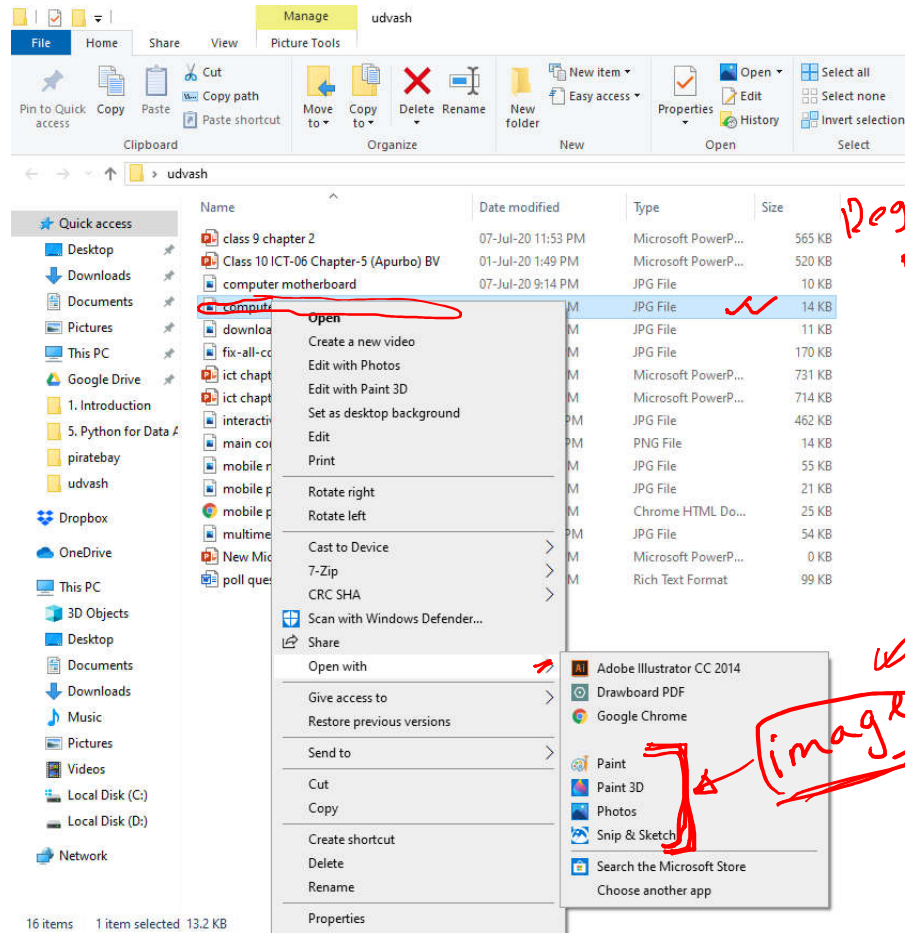
PRACTICAL TASKS

- Software Installation Page : 21-23
- Software Uninstallation Page : 23-24
- Software Deletion Page : 24-27

Before installing a software we need to be careful about some aspects which are clearly mentioned in book such as whether the software would support your computer, whether the software has an auto run or read me file in it. We have to keep these aspects in our head while installing a software.

And before learning how to delete a software we need to know a little bit about registry editor which was discussed in brief in the upcoming slides.

REGISTRY EDITOR

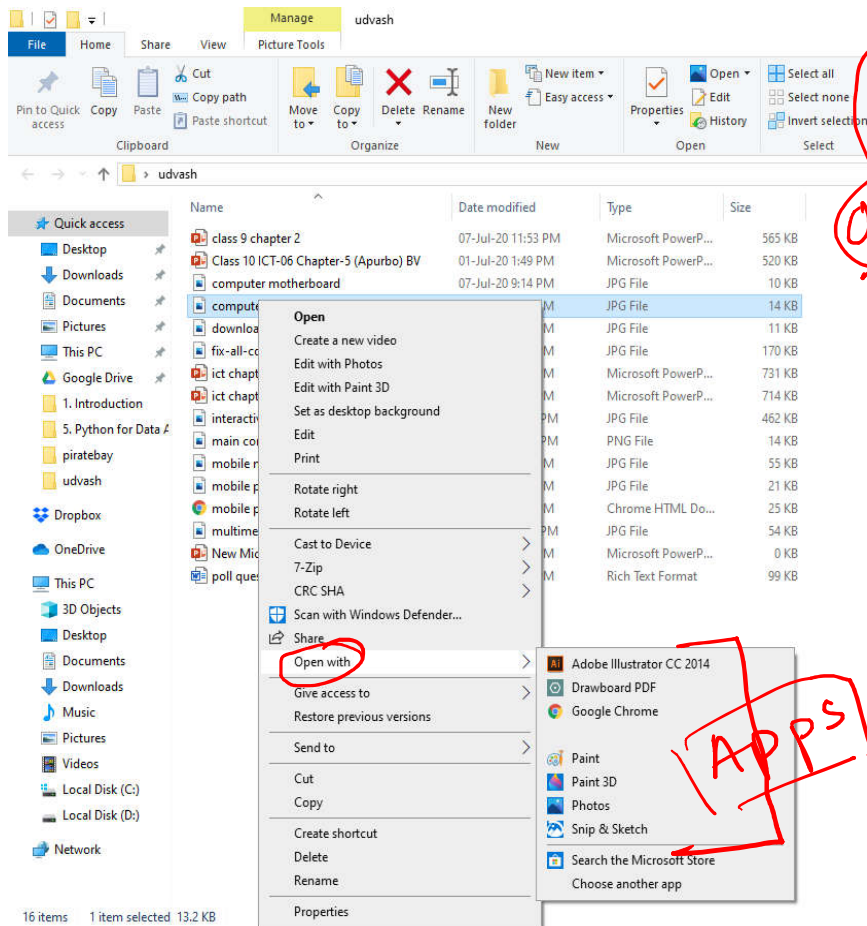


When I right click on an image file in my computer and click the open with option I get some options to choose from. Here operating system is asking me to select a software using which it would show me the picture.

But how does operating system know which software I have in my computer currently and not only that how it knows that those software can show image files?

So this kind of complicated information are stored by operating system for the sake of user's and operating system's usability when we install a software in a computer.

REGISTRY EDITOR



This information are stored in a manner like we store important information in register books. That is why it said registry editor.

When we uninstall a software some information are still kept in registry editor. So a software can be deleted only when computer have no memory of it at all. That's why in our text book it is said that a software would be deleted when we delete its information from registry editor.

That's why after uninstalling software we have to delete its registry entry footprints.

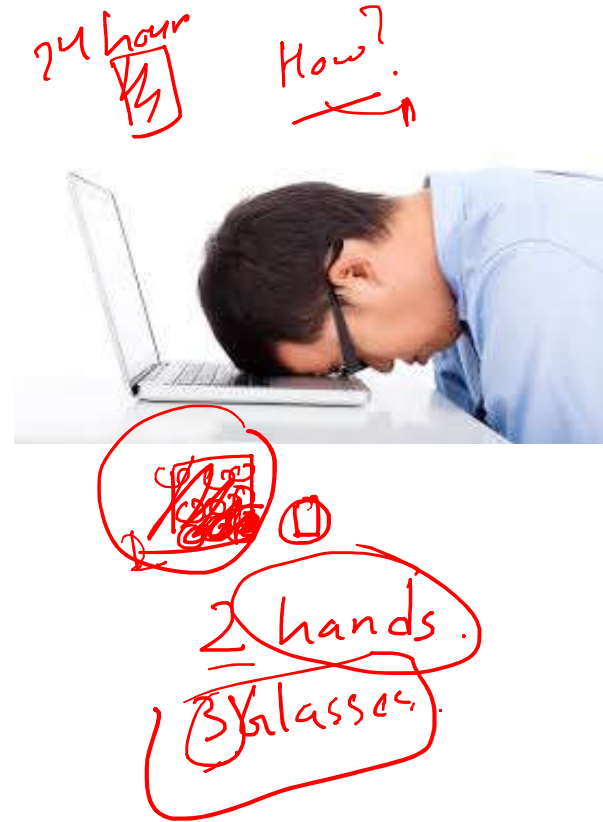
WHY MY COMPUTER IS SO SLOW?

Computer can be slow for various reasons. Many of them are mentioned in the book. Lets try to understand them.

1. Extensive Resource Utilization . If we want to perform lots of task using our computer simultaneously then processor has to work harder to keep all things running. Moreover RAM has to exchange its data from Hard-Drive more frequently. That's why in that particular time the computer is doing many jobs but any specific one of them are not being performed seamlessly for existing work loads. Same thing happens when we use a software that is very heavy with respect to hardware configuration.

2. Increase of Background Processes : We install lots of software in the lifetime of a computer. Though we not use many software all the time, some tasks related to them are being run in the background for various reason. It can be for finding necessary update from internet or the safety of the computer. That's why when total number of software increases in a computer these background processes also increase. That's why if you are not using a software in near future you should not keep it on your computer.

Video VLC



WHY MY COMPUTER IS SO SLOW?

Computer can be slow for various reasons. Many of them are mentioned in the book. Lets try to understand them.

3. Virus : *bad software.* There are some virus and malwares that unnecessarily give instructions to processor to execute which doesn't help user at all but they consume processor time hence processor gets less time to perform useful tasks for user. That's why we have to be cautious when transferring file from one computer to another so that virus can not come into our computers.

4. Not Updating softwares : Anti-Virus softwares need update to know about latest virus so that it can detect its existence in our computer. If we don't update them, then we won't be able to keep our computer virus free.

5. Disk Fragmentation : *Update* We will try to learn about this in a later part of this lecture *Math*

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WHAT IS COMPUTER VIRUS?



Software Softonic.
Virus → Software -

Slow
Private
BOO TK.

We now know what software is. So let's use this terminology to understand more about computer virus.

We install many software in our computer for performing specific tasks. User does it when he or she feels the necessity.

Virus is a kind of software that performs the opposite of the things specified previously. They take their place in the computer without direct permission of the user and do various tasks that are harmful for user such as data theft, slowing the computer etc.

Virus can be classified by the kind of bad work they do to the system. Some of the sub categories are malware, ransomware etc. We are not going to cover this details today.

DISK FRAGMENTATION

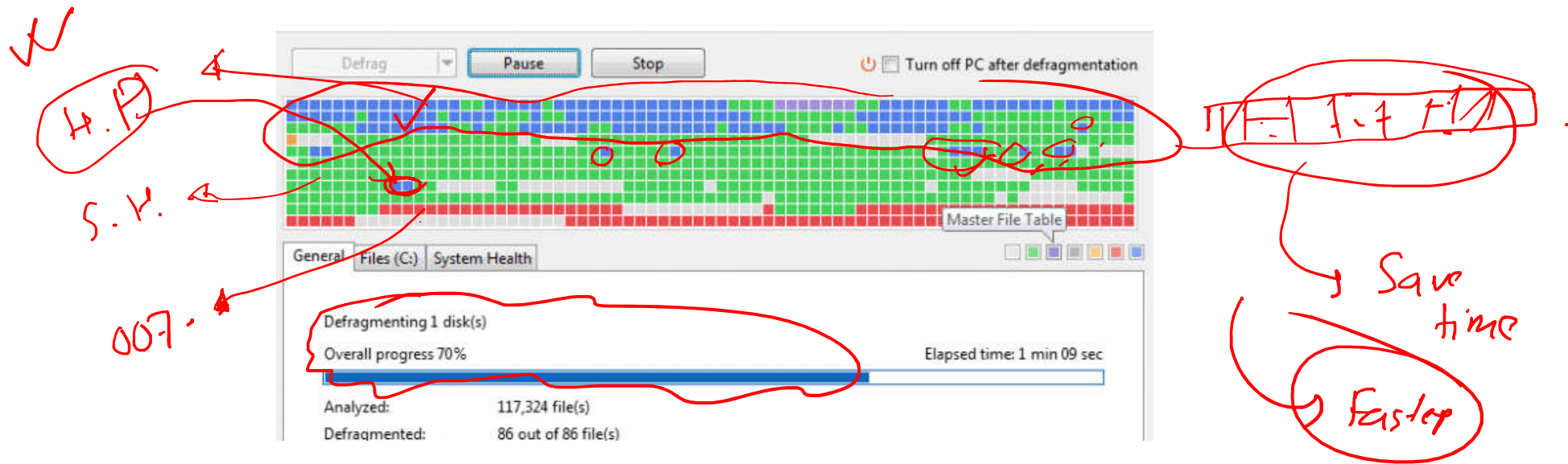
Disk means permanent memory device such as hard-disk, memory card, rom etc.

And fragmentation means being divided into parts.

Does that mean disk is going to break into smaller disks?????

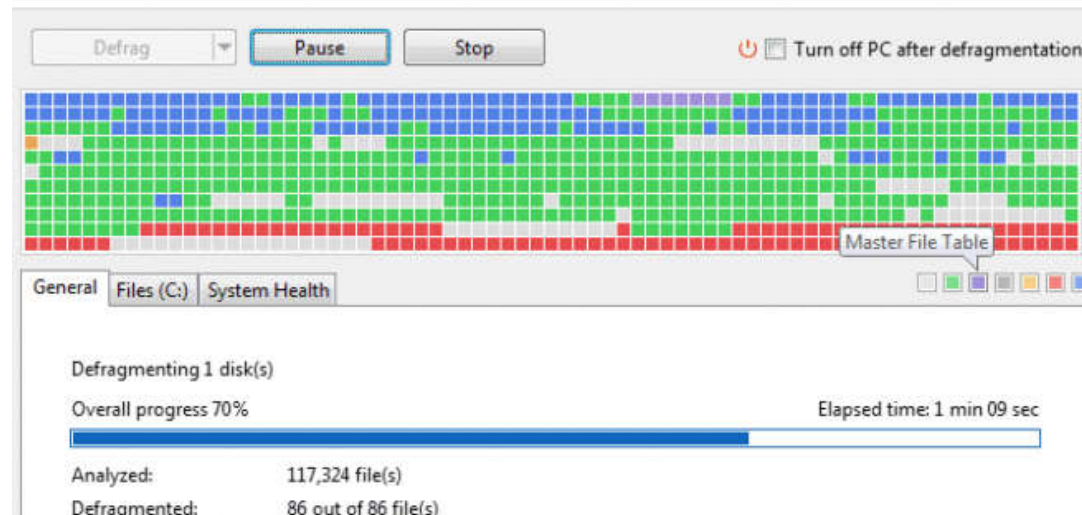
Nothing like that actually. Disk has lots of small places to keep information. That places get divided into many region which creates some problem. I am going to make this more clear.

DISK FRAGMENTATION



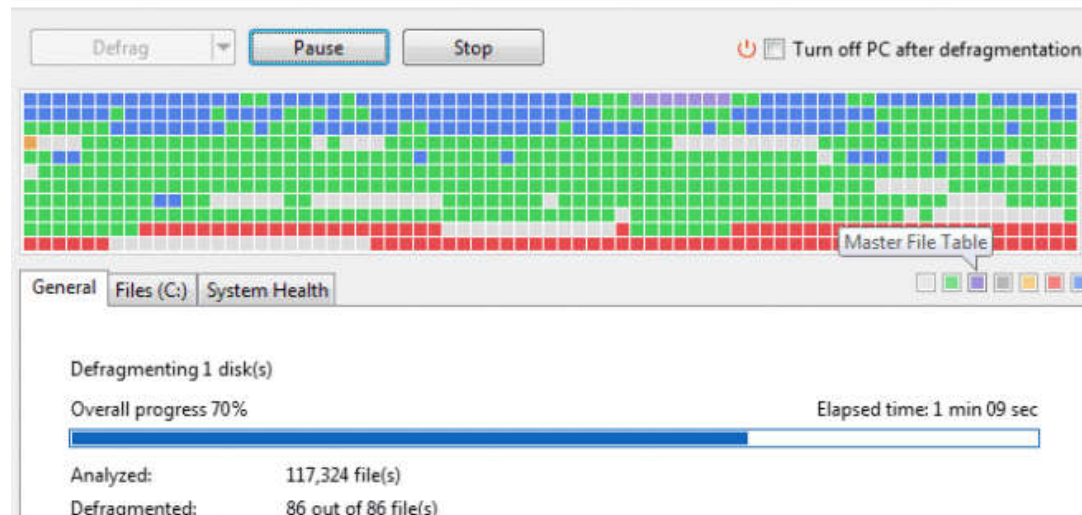
The image above is from a disk defragmenter software. It helps to remove fragmentation problem. We can see many colored cell in the picture. Usually we save file using one or more cell. Operating system tries to keep those cell adjacent. For an example if a video file needs 10 cell to be stored, then operating system would try to pick a place where consecutive 10 cells are vacant and can be used to store the video file

DISK FRAGMENTATION



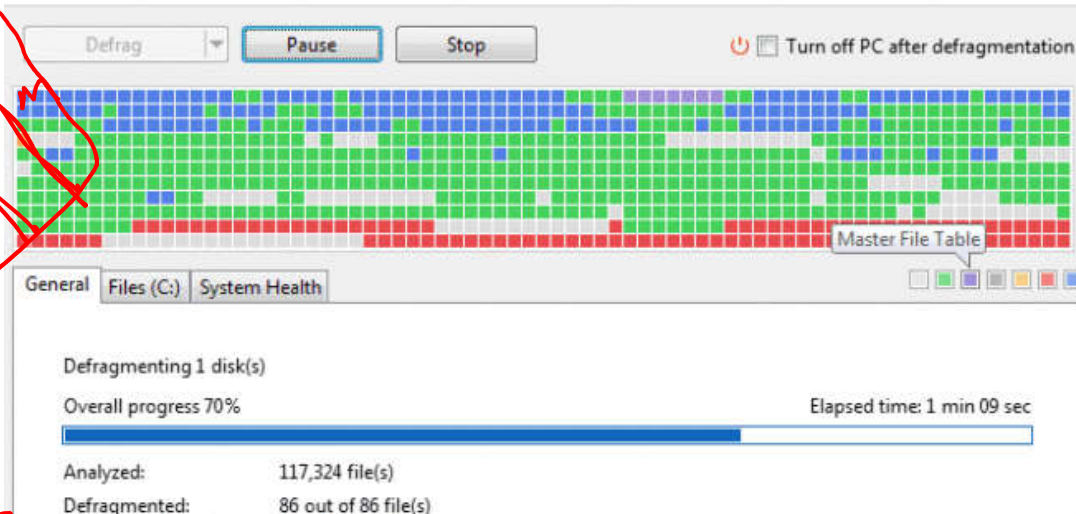
But you might wonder why OS works so hard to keep parts of the file adjacent. Think for a moment that you would use this video file with a media player to watch the video. In order to show the video we need to bring the parts of the video to the ram. But if the file is divided and stored in many places we have to pick every parts throughout the hard-drive and then copy those into RAM. It will consume huge amount of time just to copy it into RAM.

DISK FRAGMENTATION



When a file is very large in size we can not accommodate it in a single block of memory cells. Then we have to split that file into many parts and store it into many places. In the figure assume that green cells represent a single large file. I am telling you to assume because actually it means different in the software but let's assume what I am saying just for now. When computer would need more than one parts at a time we have to copy those regions from disk to ram. As some regions are far from one another it would take a lot of time.

DISK FRAGMENTATION



That's why we need to solve this fragmentation problem using a disk defragmenter software. So that the cells that are used together are placed together in hard-disk. Hope that you now know what disk fragmentation means and what is a disk defragmentor.

In next class we would try to learn a little bit about computer security and computer troubleshooting.

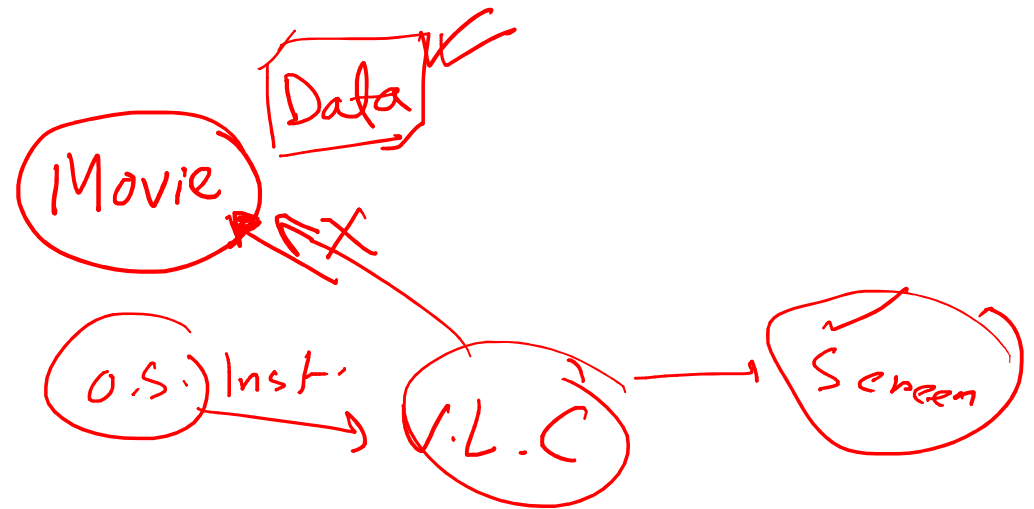
POLL QUESTION-01

- Microsoft Office is a –
- ☒ (a) Computer software
 - ☒ (b) Computer hardware
 - ☐ (c) Both
 - ☐ (d) None

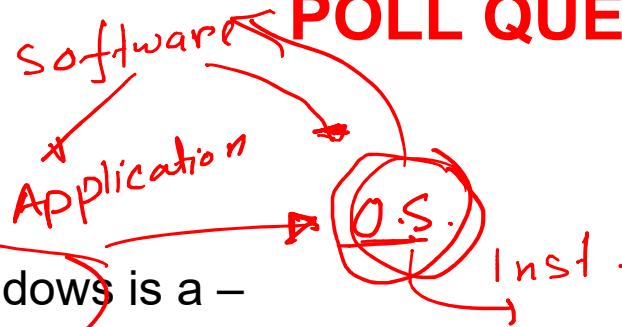
POLL QUESTION-02

What do computer need to perform a specific task –

- (a) Data
- (b) Instructions
- (c) Hardware
- (d) All of above



POLL QUESTION-03



Microsoft Windows is a –

- (a) ~~Operating System~~
- (b) ~~Application~~
- (c) Software
- (d) ~~Both a and b~~ c

POLL QUESTION-04

I bought a computer from IDB Bhaban recently. After unpacking it I pressed the power button and I saw windows has started and I can now use my computer to install all kinds of software.

I actually bought –

- (a) A computer hardware set
- (b) A operating system
- (c) Both
- (d) None

POLL QUESTION-05

Which software might help us to increase the speed of our computer-

(a) Microsoft office

(b) Zoom

☒ (c) Disk Defragmenter

(d) VLC Media Player

লেগে থাকো সৎভাবে,
স্বপ্নজয় তোমারই হবে।