

Practical 05: Using practical examples, describe green computing. List and explain the steps that you take to contribute to green computing.

Q1. What is Green Computing?

Ans. Green computing, also called green technology, is the environmentally responsible use of computers and related resources. Such practices include the implementation of energy-efficient central processing units (CPUs), servers and peripherals as well as reduced resource consumption and proper disposal of electronic waste (e-waste).

“Green computing” is the name attached to this movement, which represents an environmentally responsible way to reduce power and environmental waste.

The goals of green computing are similar to green chemistry; reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote the recyclability or biodegradability of defunct products and factory waste research continues into key areas such as making the use of computers as energy-efficient as possible, and designing algorithms and systems for efficiency-related computer technologies.



Q2. Some examples of Green Computing.

Ans. 1. Responsible handling of electronic equipment is critical in order to minimize the university's impact on the environment. Companies like Dell, Inc and Mac, Inc are adapting sustainable, environmentally responsible practices and standards which apply for the life of their computers, from design, production and packaging to recycling after the machine's useful life has ended.

2. Outdated Apple equipment is processed through Apple's Trade-In Program, often for purchase credit. Apple either refurbishes the equipment or recycles it in an environmentally safe manner. Other outdated equipment is processed through the university's recycling partner, GreenPC Electronic Recycling. Such equipment is then refurbished and resold to other users.

3. Tape Tape is a popular method of green storage that is widely used. Tape has no moving parts that use up energy, is portable and has a longer shelf-life than other [storage technology](#).



4.Green Drives: Green hard drives are drives that reduce the amount of power they use through a variety of mechanisms, including unloading the heads during idle time to reduce aerodynamic drag. The drives calculate the optimum seek speed to use just the amount of power necessary.

5.A massive array of idle disks ([MAID](#)) system only spins active drives, cutting down on energy use and prolonging shelf-life. This architecture has been around for a while but hasn't widely caught on largely because of performance limitations caused by making disks inactive.

Q3. Steps to contribute towards Green Computing.

Ans. 1. Proclamation of the Green Intentions: It is always best to begin Green IT initiatives by communicating intentions to adopt an environment-friendly IT infrastructure. The push for energy efficiency should be cascaded down to every staff, setting the stage for collaboration between various departments. Once they learn about the initiatives, they will know that everyone needs to be involved.

2. Appointment of a Working Group for Green IT Compliance Assurance: Once the ball is set to roll, you need to have a committee that will monitor and ensure that the company's plans are adhered to by all members of the organization. One of the most important tasks that the appointed Green IT Committee must focus on is the acquisition of energy efficient IT infrastructure. This team should make sure that the IT groundwork meets all the criteria that are set for the protection of the environment

3.Measurement of Current Carbon Footprints Produced by IT Components: Where the company stands in terms of carbon footprint brought about by information technology services, is an important information to be known. Quickly establish a carbon footprint reference point. Check on the power usage in the IT center and compare it with existing power efficiency standards and metrics for industry.

4.Planning More Centralized IT Operations: It is relatively easy for an organization to centralize its information technology (IT) system. With server virtualization, carbon footprints can be significantly reduced.

5.Usage of More Efficient Computer Applications: By using more powerful computer applications, your IT systems can better deal with inefficiencies. Besides, faster software spares the servers from regularly operating at maximum capacity, thereby consuming lesser power. If one can only increase the speed of the computer applications that are used, one can have a corresponding positive effect on the energy use and carbon emissions.

6.Usage of More Efficient Cooling Systems: To reduce your CRAC (Computer Room Air Conditioning) power consumption for green computing, invest in supplemental cooling systems that are placed in between the rows of servers in the data center. Thus, they can

minimize the number of times in a day that the bigger CRAC units are required to work on full power. Apply new Data-Center design technology that minimizes hot-zones.

7.Careful Weightage of Life-cycle of IT Devices and Accessories: Consider the projected life-cycle of existing IT hardware. Can it be recycled? Will it decay in time? If not, then disposing of existing hardware can far outweigh the environmental benefits that you intend to achieve by buying newer more power-efficient computer hardware.

8.Business Performance Enhancement through Green IT Policies: Make sure that the drive for a

green IT fits in your overall business operation. Better yet, ensure that environment-friendly IT and the business goals complement each other. By doing so, you will be able to achieve both green policies and bottom line goals.

9.Work with Everyone Involved in the IT Process Life-cycle: Now that you have taken the steps to ensure that the company uses green IT, you need to get everyone involved in the initiative. The human resources department can support initiatives by regularly posting announcements and notices that touch on the subject of environment-friendly computing.

10.Result Monitoring and Continuous IT Optimization: Lastly, you should always check the results of green IT initiatives. Compare this data with the benchmarks and metrics that are set for the company. A good example is checking total power consumption for each month. If it has significantly dropped, then one can say that we have effectively reduced your organization's carbon footprint.

