CHAPTER2: OPERATION AND MAINTAINANCE OF COMPUTER.

1.1 BRIEF INTRODUCTION ON COMPUTER.

A computer is an electronic device that processes data and performs tasks according to a set of instructions, known as a program. It consists of hardware (physical components like the CPU, memory, and storage) and software (programs and operating systems). Computers can perform a wide variety of tasks, from simple calculations to complex problem-solving, by following instructions input by users or programs. They are integral in fields like communication, research, entertainment, and industry, enabling automation, data management, and advanced computations. Key types of computers include desktops, laptops, servers, and embedded systems

The following are the main parts of the Computer.

i. Central Processing Unit (CPU): Often referred to as the "brain" of the computer, the CPU processes instructions from programs and performs calculations and operations.

ii. Motherboard: The main circuit board that connects all components of the computer, including the CPU, memory, storage, and input/output devices.

iii. Random Access Memory (RAM): Temporary memory that stores data and programs that are currently being used by the CPU for quick access.

iv. Hard Drive (HDD) or Solid-State Drive (SSD): The storage device that holds the computer's data, operating system, and installed programs. SSDs are faster than traditional HDDs.

v. Power Supply Unit (PSU): Supplies electrical power to the computer by converting AC from the wall into the DC needed by the internal components.

The following are the types of computers-:

1. Supercomputers: Extremely powerful computers used for complex tasks like scientific simulations, climate modeling, and high-level research.

2. Mainframe Computers: Large, powerful systems used by businesses and governments for bulk data processing, like in banking and large-scale enterprise applications.

3. Personal Computers (PCs): Designed for individual use, including desktops and laptops, typically used for general tasks like web browsing, office work, and gaming.

4. Workstations: High-performance computers designed for professionals in fields like engineering, graphic design, and 3D rendering, offering greater processing power than standard PCs.
5. Servers: Computers that provide resources, data, and services to other computers (clients) on a network, used for hosting websites, databases, and managing network resources

1.2 PROBLEM IDENTIFICATION AND THE PROPOSED SOLUTION .

Because preventive maintenance at computer laboratory(rooms) is not performed for an exerttly time due to one engineer who operating at more than 50 computers and still he is the lecture.So long time taken to reach at all COMPUTERS at specific time which lead to dissatisfaction and service disruptions while using computers.

Here are five problems which observed by the user while using computer which not mentained for long time at COMPUTER ROOM.

i.Slow performance.

ii. Over heating.

iii. Data loss or corruption.

iv. Virus and malware infections.

v. Frequent crushes(blue screen) or freezing.

vi. Internet and connectivity issues.

Therefore, due to the frequent faults and environmental disturbances on the Preventive and maintainance operations must be operated at required time because

- It ensure reliable and high-quality services for users of computers,
- Reduce the equipment failure.
- Reduce the safety hazard

Because the computer users needs frequently services like studying and programing by computers the operation of Preventive and maintenance of computers is needed at every time .The procedures for operation of preventive and maintenance of computers are as follow:-

1.3 PREVENTIVE AND MAINTAINANCE OF COMPUTER.

Preventive maintenance of a computer refers to the regular and proactive care performed on hardware and software to prevent potential problems, ensure optimal performance, and extend the system's lifespan, including tasks like cleaning components, updating software, running antivirus scans, and backing up data.

The following are the procedures or operation on preventive and maintenance of computers.

1.Safety precautions:

Before starting operations the safety tools like fire extinguisher,first Aid kit,Hard hats,Safety goggles or glasses,Ear protection (earplugs or earmuffs),Steel-toed boots,Reflective vests for visibility.Those tools enable to work safe and preventing danger from unfortunately accident as shown belowHere are 10 procedures for preventive maintenance of a computer:

Figure1. safety and precautions tools during operation.

2. **Regularly Cleaning Hardware:** Dust and debris can affect the performance of internal components. Clean the computer’s fans, vents, and peripherals to prevent overheating and hardware damage.This must be done atleast every 3-6 months.

Figure2. Cleaning of dust from fan and all parts of computer.

3. Updating Operating System and Software: Regularly install updates for your OS and software to fix bugs, improve security, and enhance performance. During updating the computer must be connected to the Internent .

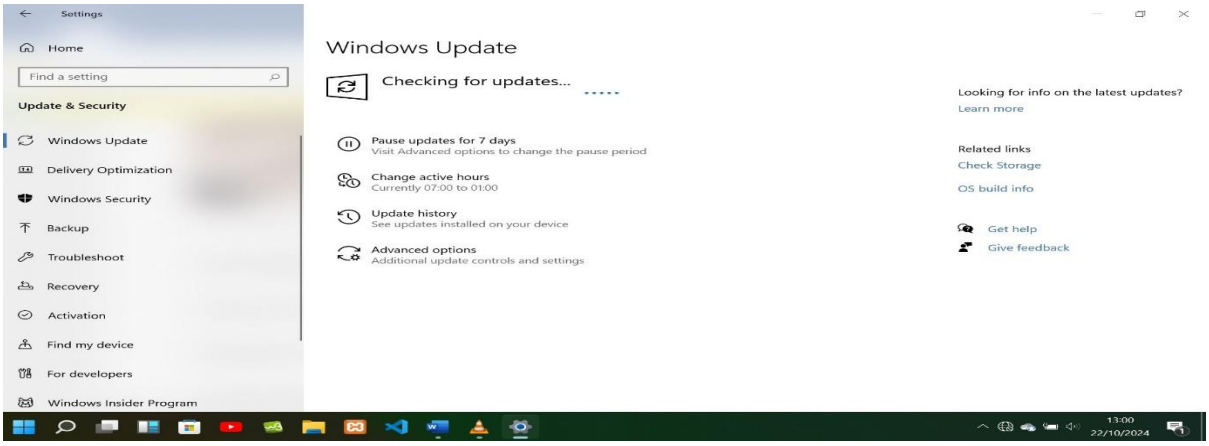

Figure3. Window and software updating.

4. Runing Antivirus and Antimalware Scans: Use updated antivirus software to perform regular system scans and remove any potential threats like viruses and malware.Software used are like **Avast Free Antivirus and AVG antivirus.**

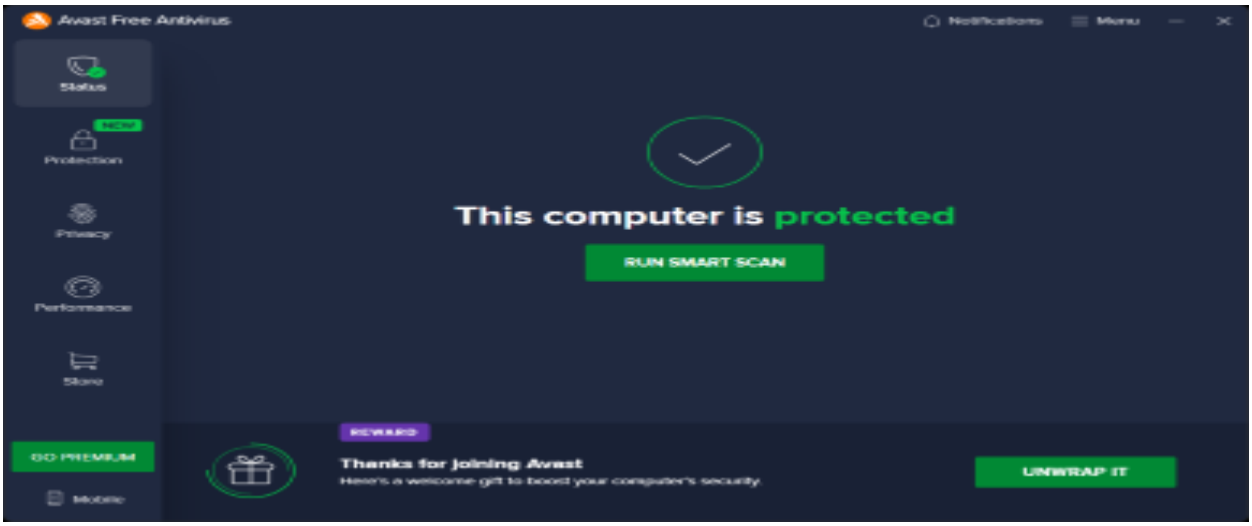

Figure4:Free antvirus software.

5. **Backup Important Data:** Schedule regular backups to external drives or cloud storage to prevent data loss in case of hardware failure or accidental deletion.I was using external driver like USB drive .And then copying and pesting for the files and folders

6. Defragmenting Hard Drives: If you are using an HDD, defragment it periodically to organize fragmented data and improve access speed (Note: This is not necessary for SSDs).

Because SSD can cause wear and tear which is unnecessary cycle Also affects data access speed.

7. **Uninstalling Unnecessary Software:** Remove unused programs that take up space and may slow down the system or introduce vulnerabilities.you can go at apps and features and click app and select uninstall.

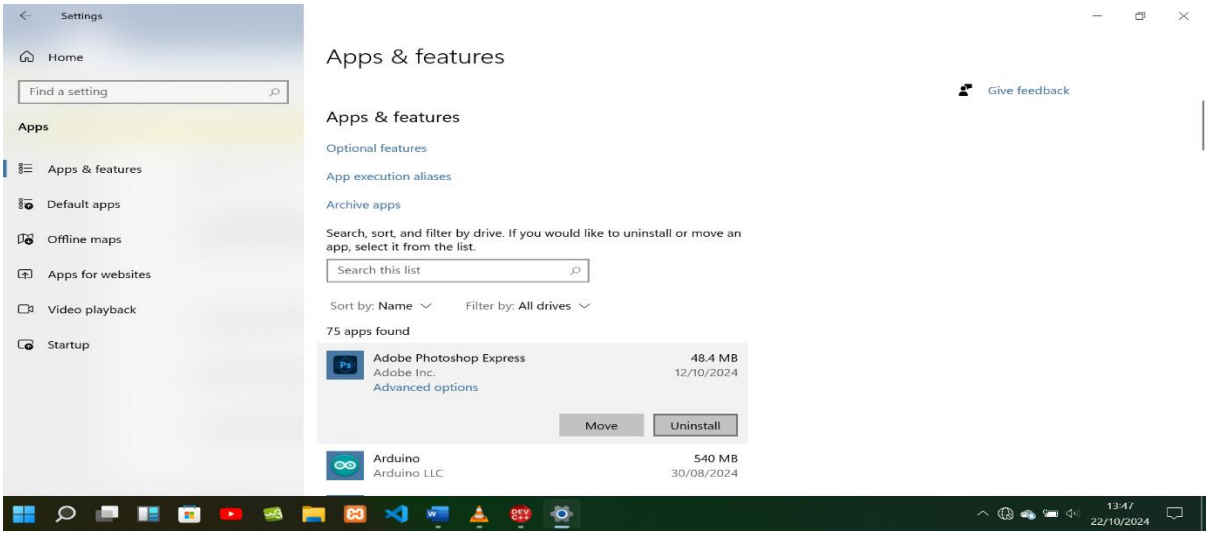

Figure5. showing apps and features and how to uninstall unnecessary apps.

8. Checking and Cleaning System Registry: Use trusted tools to clean up registry errors or unwanted entries that can cause performance issues or system crashes.This can be done manually cleaning the registry .I was clicking win+R,the I was typing regit and then enter .after this I started deleting unwanted things.

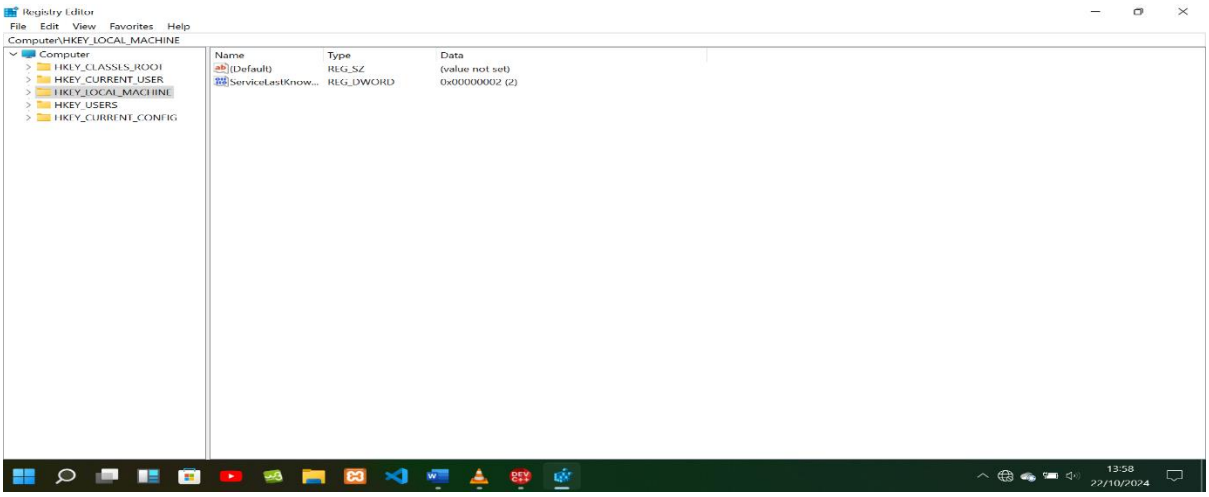

Figure6.Checking and clean system registry.

9. **Monitoring Disk Space and Storage:** Ensure that your system has enough free disk space by regularly deleting unnecessary files or moving them to external storage.This because the enough space can leads to increase the speed of microprocessor(CPU).Some time you can devide the storage into two parts as shown below on the diagram.

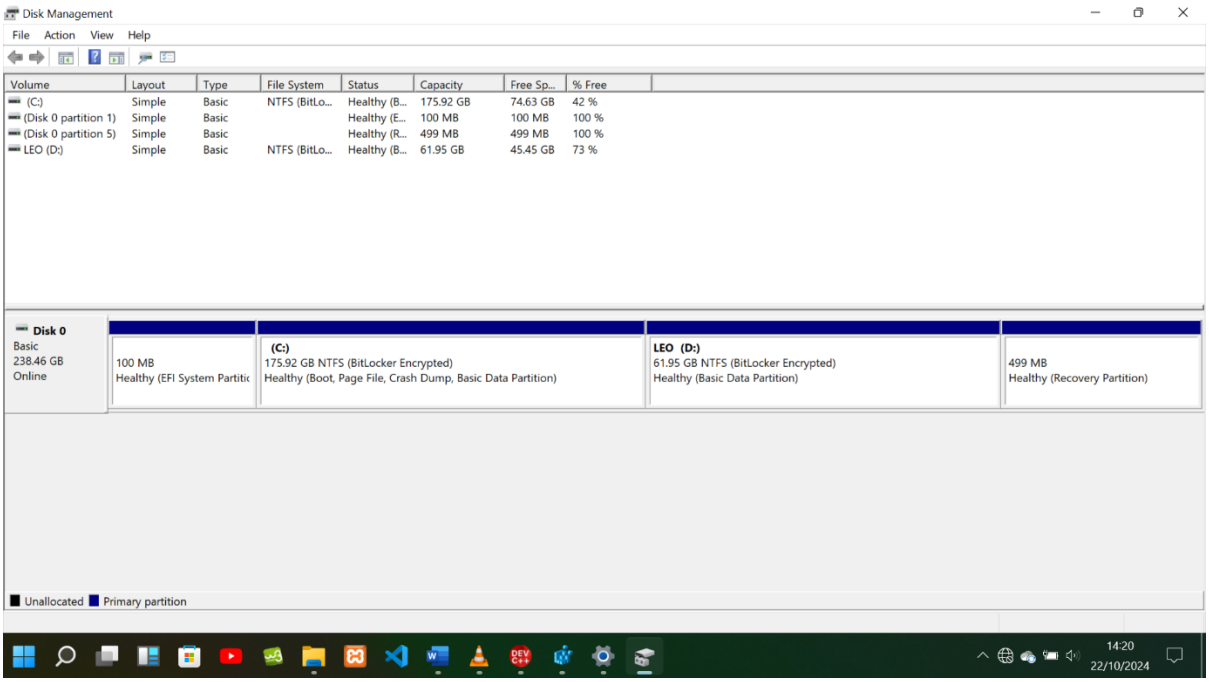

Figure7. Showing the disk management with 2 partitions.

10. Checking and Updating Drivers: Keeping hardware drivers up to date to ensure optimal compatibility and performance with your system and applications.

11. Test and Replace Failing Hardware: Regularly check the health of hardware components, such as the hard drive or RAM, and replace any parts showing signs of failure to prevent system

APPENDIX

Figure8.Central Processing Unit(CPU)

Figure9.Random Access Memory(RAM)

Figure10.Cleaning of dust on keyboard.

Figure11.Connection of Monitor and CPU.