

Tabish Parkar

Formative Assessment

1: Technical Systems

And Support

(HTSS100-1)

1.1. Before taking a computer apart, be sure to remove any jewellery. Look out for sharp corners and edges. Back up your data before shutting down and unplug the PC. After unplugging press and hold the power button down for a few seconds. Make sure to always be wearing an ESD strap. Find a clean and bright workspace free from dust or debris that could potentially contaminate the internal components of the PC. Organise your workspace by noting down your connections or taking pictures of them so you can easily connect them later along with labelling your cables. Most modern PCs have removable side panels secured by screws or latches. Carefully remove these panels while keeping track of any loose screws. Avoid touching sensitive electronic components directly, instead, hold them by their edges or use an anti-static mat if available. Prepare to keep all screws in a cup so that none of them are misplaced. Make sure to use compressed air to blow out dust from fans, heatsinks and hard to reach places inside a PC. Lastly inspect for damage or corrosion on any of the parts.

1.2. Screwdriver set - A set of screwdrivers with various sizes and types to remove screws from the PC case and components.

Compressed air cans/electric duster - These tools are used to blow away dust from areas that are unreachable inside the PC case.

Anti-static wrist strap or mat - An anti-static wrist strap helps discharge static electricity from your body which prevents damage to sensitive electronic components. An anti-static mat also provides a grounded surface to work on.

Cleaning materials - Soft microfiber cloths, cotton swabs, and isopropyl alcohol which can be used to clean surfaces like monitors, keyboards, mice along with other components if needed.

Flashlight - A flashlight can help illuminate dark corners inside the PC case during inspection or cleaning processes.

Documentation tool: Pen and paper or a digital device for taking notes or photos of cable connections before disassembling the PC for an easier way to reconnect cables.

Labels or tape - Use labels or tape to mark cables with their corresponding ports or components to make reassembling the PC less tedious.

Tweezers – If you cannot reach a screw with your hands, tweezers will come in handy to reach the screw that is tucked away in a tight place or if you drop a screw by accident.

2.1. Compatibility - The motherboard and CPU should be compatible with each other in terms of socket type, chipset and supported generation.

Socket Type - The CPU socket on the motherboard must match the socket type of the CPU.

Chipset Compatibility – Make sure that the motherboard chipset is compatible with the CPU model she has chosen. Different chipsets offer different features such as overclocking support or additional connectivity options.

RAM Support - Check if the motherboard supports the desired RAM type and its maximum supported frequency.

Expansion Slots or Ports – Ponder about which expansion cards or peripherals Jessie plans to use. Ensure that there are enough PCIe slots and sufficient connectivity options available on the motherboard.

Form Factor - Determine which form factor suits her requirements based on available space and what PC size she wants.

Power Delivery - Verify that her chosen processor's power requirements can be met by her selected power supply unit, ensuring compatibility between them.

2.2. Check Socket Compatibility - Check if both components have matching socket types to ensure they can physically connect.

Research the Motherboard's Compatibility List - Check the motherboard manufacturer's website or documentation to confirm if her specific CPU model is listed as compatible. This ensures that the processor is supported and all its features can be utilized.

Consider Power Delivery Capability - Check if the motherboard supports the power requirements of Jessie's CPU. The motherboard should be able to supply the proper amount of power for optimal performance without any overheating issues.

Overclocking Support - If Jessie needs to overclock her CPU, make sure if both the processor and motherboard support overclocking features.

BIOS Update Requirement - Some motherboards may require a BIOS update before supporting newer CPUs from specific generations or models. Check whether an update is needed for proper functionality.

3.1. Make sure to Clean the cooling system - Over time, dust can accumulate in the cooling system of your PC which reduces its efficiency. Open your computer chassis and use compressed air or a soft brush to carefully clean out any dust from fans, heat sinks and vents. This will help increase airflow and reduce overheating exponentially.

Upgrading your cooling components - If cleaning the dust doesn't resolve the issue you may need to upgrade your cooling system. Think about adding additional case fans to improve airflow or upgrading to more efficient CPU and GPU coolers. Liquid cooling systems can also be an effective solution especially for long gaming sessions.

Optimize game settings: Sometimes excessive heat is generated due to demanding graphics settings in games that push your hardware beyond its limits. Lowering graphics settings can reduce the strain on your PC's components and subsequently lower operating temperatures overall.

3.2. The most efficient way to upgrade to a better cooling system in this case would be upgrade to a liquid cooling system, specifically an all-in-one liquid cooling system.

Radiator - The AIO liquid cooler consists of a radiator that is typically mounted on the top or back of the computer case. It acts as a heat exchanger by releasing heat from the liquid coolant.

Pump - Integrated within the water block unit, there is a small electric pump responsible for circulating the coolant through tubes and components.

Water Block - The water block directly attaches to your CPU which replaces traditional air cooler heatsinks. It contains microchannels that supervise effective heat transfer between the CPU and coolant.

Coolant - Inside the closed-loop system of an AIO liquid cooler, there is a specialized coolant mixture that effectively takes in heat from the CPU before transferring it to other components in contact with air.

Fans - Radiator fans play an important role in cooling down the warm coolant flowing through them by releasing hot air outside of your case while bringing in fresh cool air from outside.

Be sure to take a quality AIO liquid cooler which will provide the best performance compared to the usual air coolers. This will be able to handle the overclocking gaming sessions when heat production is higher than usual.

4.1. Compatibility - Make sure that the new storage device you choose is compatible with your PC's hardware and operating system. Check for compatibility regarding factors such as interface and capacity limitations supported by your motherboard.

Storage Type - Determine the type of storage that suits your needs best: HDD or SSD. HDDs offer larger capacities at a lower cost but are slower in terms of read or write speeds compared to SSDs which provide better and faster performance but typically are more expensive.

Capacity Planning - Assess your requirements and estimate how much additional storage space you need before selecting a specific capacity for the new drive. Do not only think about current needs but also future needs to avoid quickly running out of space again.

Data Backup - Prioritize backing up any important data on your existing drives before installing a new one. This ensures that no information is lost during the installation process or if any unexpected issues come up.

Installation Method - Always understand the installation process based on the chosen hard drive type and form factor of the new storage device. Some may require physical connections using cables, while others may use direct insertion into specified slots on your motherboard.

Operating System Configuration - Once installed, ensure that you properly configure your operating system to recognize and utilize the newly added storage device effectively. This could include formatting partitions, assigning drive volumes and adjusting settings for peak performance.

4.2. The fastest and most reliable type of memory available for purchase today is Non-Volatile Memory Express Solid-State Drives. NVMe SSDs utilize the Peripheral Component Interconnect Express interface which offers significantly faster data transfer rates compared to hard disk drives and standard data storage components.

Interface - NVMe SSDs connect to your computer via the PCIe bus interface instead of the older SATA interface used by HDDs. The PCIe Gen3 x4 or Gen4 x4 lanes provide a much higher bandwidth which makes data transfer faster.

Controller - NVMe drives have a specialized controller that manages the flow of data between your system and the flash memory chips on the drive. These controllers are designed to handle multiple queues which results in improved performance during both read and write operations.

NAND Flash Memory - The main component of an NVMe SSD is NAND flash memory which stores your data electronically without using power to store it. This allows for quick access times as there are no mechanical parts involved like in traditional hard drives.

Parallelism - Unlike SATA-based drives that operate on a single queue at a time, NVMe SSDs take advantage of parallel processing capabilities provided by their multi-channel design and advanced command queuing systems such as Native Command Queuing - This enables simultaneous processing of multiple input or output requests which leads to increased bandwidth and reduced latency making it faster overall.

Performance Benefits - NVMe SSDs offer significantly faster read or write speeds compared to other storage options currently available in consumer-grade PCs. They can achieve sequential read or write speeds exceeding 3000 MB/s or even higher.

5. Remote Desktop is a feature available in professional versions of Windows that allow users to connect remotely to another computer over a network connection. It enables you to access files, programs and resources on the remote computer as if you were present at that location.

Your home PC needs to have Remote Desktop enabled and configured properly. Your office PC should have the necessary permissions granted by your IT organization or system administrator for allowing remote connections.

On your office PC open the Start menu or Search bar and type "Remote Desktop Connection" to launch the Remote Desktop client application.

Enter your home PC's IP address or hostname into the appropriate field within the client application.

Click 'Connect' or 'Start' button to initiate a connection attempt with your home PC.

After successfully connecting via Remote Desktop, navigate through your home computer's file system using File Explorer on your office computer. Just like you would normally. Locate the PowerPoint file you intend to use or stream for presentation. Double-click on it just like any local file on your current machine. You can then control and navigate through slides as if they were being presented locally.