

## **2B.P2 - Describe the purpose and 'client' requirements for installing and maintaining hardware in a technology system. (Rish)**

Recruit Me, a small company in Manchester relies on technology for managing client's data, communication and producing promo materials. Current setup, used for marketing and advertising experiences slowdowns, overheating and storage issues. Due to this, staff struggle with slow file access even when using graphical manipulation software and uploading from USB sticks. The scanners output quality has declined but they intend on continuing to use it for now. To address these issues the company has, they have a budget of £500 and two weeks break to upgrade and maintain the systems without disrupting the workflow of the company.

This company relies on technology which plays a critical part in day-to-day operations. Standalone computers, while these function, they suffer from performance issues which lead to decrease in productivity. Slowdown in file access and graphic manipulation indicate possible hardware limitations, especially with insufficient ram and processing power.

Overheating could be caused by poor ventilation, aging of integral components such as the cup or the thermal paste. Addressing these issues is time critical to prevent more hardware damage and ensure a boost in performance.

Investing in a graphics tablet for the designers can significantly enhance productivity by streamlining the creation and manipulation of virtual assets, along with the budget of £500, prioritise upgrades such as ram, upgrading the CPU and adding an SSD to increase performance and faster file loading times.

During the two-week break, a very comprehensive maintenance plan should be implemented, this includes cleaning of the components, updating drivers and software, and optimising system settings. Additionally, assessing the network infrastructure to ensure seamless file transfer and printer access can further enhance efficiency.

Overall, by strategically allocating resources and addressing the identified issues, the company can optimise their technology system to be better supported their business objectives and improve customer service delivery.

**Commented [HL1]:** UPDATE 1:

P2: This will need to be fully expanded on to meet this criteria. Go into a lot more detail by reading the client spec some more..

## **2B.P3 - Produce a plan for installing and maintaining hardware in a technology system including:**

**1 - A list of installation and maintenance activities (done in table)**

**2 - A description of hardware components and devices and software resources required for an upgrade (Done in table)**

**Commented [HL3]:** UPDATE 1:

P3: Have you looked at the PC Audit to create a plan? Relate your written work towards that audit as you have all done a great job, but not related to the actual audit..

### **Hardware (Internal)**

<u>Hardware name</u>	<u>Description / specific parts</u>
Total computer	1 pc for marketing /promo purposes
Network type	None
Processor type / speed	Intel core i5/ 3.0GHz
RAM type/size	<u>DDR4 / 8GB</u>
Video card	Intel graphics
Connectivity – USB	3.0
Connectivity – analogue	VGA (this could have been HDMI????)
Storage type / capacity	SSD / 250GB
Optical drive	512MB
Operating system	Windows 10
Applications (2)	MS OFFICE / PHOTOPEA
Security	Microsoft defender

### **External Hardware (external)**

<u>Hardware name</u>	<u>Description /specific parts</u>
Printer	HP LaserJet Pro M402
Monitor	Standard 1080p
Peripheral 1	Epson Perfection V600
Peripheral 2	Ergonomic keyboard and ergonomic mouse

### **Tools/equipment needed.**

Antistatic wristbands, mats, and packaging

Computer toolkit

1. Chip inserter /extractor /tweezers, slotted screwdriver /Philips /Trox screwdriver

### **Software resources**

1. Installing the operating system
2. Configure settings on BIOS.
3. Installing sound drivers
4. Installing print drivers
5. Configure the storage, format the drives (HDD/SSD)
6. Install software needed for webcam access and driver installation.
7. Check for any updates to operating system.

### **Installing and maintenance**

1. Installing the motherboard and battery
2. Insert ram into the motherboard slots.
3. Add the CPU in the correct place.
4. Add the storage needed and connect to motherboard.
5. connect the power supply.
6. adding external hardware such as a printer or webcam

### **Constraints**

1. CPU can be expensive.

2. Power supply can be expensive.
3. Storage is expensive.
4. External hardware may cost a fortune.
5. Tested software that can be trusted can cost not much but does require you to buy.

### **3 - A description of fault-finding tools and techniques (Rish)**

**Device drivers:** when device drivers are not updated, the device can slow down performance of the device. To fix you can do a couple of things:

1. Split system in half, testing the device hardware and software separately.
2. System logs can be used to find what errors occurred to find and fix the problem, dependable.

**RAM:** Can become corrupted and can slow down performance of the computer. To fix you can do things such as:

1. Checking the BIOS, bios settings can affect compatibility and stability and settings can be changed such as frequency, timings, and voltage.
2. Checking the ram physically, the ram module can sometimes damage, first try cleaning it, dusting, check for things such as cracks and burns. After then the RAM module can be put back into the system
3. Replace the ram module, sometimes ram modules fail and replacing it could fix the problem.

**ROM:** this can become corrupted or can be incompatible, ways to fix this could be:

1. Memory testing software, using a program to scan ROM for errors such as bad sectors, corrupted data etc. this can also check integrity and authenticity.
2. Changing settings, amending settings can solve issues within ROM. Things such as boot order, memory frequency etc can be updated and changed.
3. Checking/replacing the rom chip, not recommended as you could cause damage, inspecting the chip for suspected damage, dust etc. replacing the ROM chip can be tedious and needs precision.

**GPU:** can cause performance drops in games, videos and applications, way to resolve these issues are:

1. Memory testing software, using a software program to test GPU memory for errors such as sectors and corrupted data, can testing speed and performance of the GPU memory. Memory as in VRAM etc.
2. BIOS setting, this involves checking and adjusting settings in BIOS, these settings can affect stability, compatibility, stability, and performance of the GPU.
3. Checking the GPU, taking it out of the motherboard and looking for dust, cracks, burns etc. if it continues to be faulty, consider getting a new one but it can be expensive.

**CPU:** can cause performance drop and slow down, potentially being overloaded leading to a blue screen, way to fix this could be to:

1. Inspect the CPU, make sure if there are pins that they not bent and they are all straight, do not touch the pins as you may damage it.
2. Replacing the CPU, most of the time it is a faulty CPU so swap it out and restart the computer.
3. Performing stress tests, is the CPU underclocking itself? Monitor its temperature and stability.

### **List of installation and maintenance Activities (Thomas)**

<b><u>Preinstall</u></b>	<b><u>Description of components (Steps needed)</u></b>
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Set up work area	<ol style="list-style-type: none"> <li>1. Find adequate space to hold system, peripherals, safety equipment and hardware components.</li> <li>2. Use correct lighting for clear visibility.</li> <li>3. wipe down the surface till dirt free</li> </ol>
Gathering necessary tools	<ol style="list-style-type: none"> <li>1. Locate an antistatic mat and wristband to protect against static electricity.</li> <li>2. Identify correct screwdrivers needed to do the job.</li> <li>3. Have containers to organise the screws so they do not mix.</li> <li>4. Have a torch and cleaning supplies</li> </ol>
Backup files / data	<ol style="list-style-type: none"> <li>1. Use appropriate external storage (USB or SSD) to backup data just in case something goes wrong</li> </ol>
Label cables and components	<ol style="list-style-type: none"> <li>1. Have labels and a pen and label everything before proceeding to install components</li> </ol>

<b><u>Component Installation</u></b>	<b><u>Description of components (Steps needed)</u></b>
Clean inside the PC	<ol style="list-style-type: none"> <li>1. Power off and disconnect cables for safety.</li> <li>2. Unscrew case, leave screws in a tub.</li> <li>3. Use cleaning supplies to clean inside the pc</li> </ol>
Insert Specialists cards	<ol style="list-style-type: none"> <li>1. Check these for compatibility and that they fit.</li> <li>2. Specialists' cards can be things such as Graphics cards, sound cards and network cards</li> </ol>
Install RAM (Random Access Memory)	<ol style="list-style-type: none"> <li>1. Check for compatibility.</li> <li>2. Press the ram into the slots until you hear a click, this means its secure.</li> <li>3. If for some reason your system does not seem to boot, try and switch these ram sticks around.</li> </ol>
Instal the Hard drive (HDD)	<ol style="list-style-type: none"> <li>1. Disconnect from pc and inspect.</li> <li>2. After this, make sure to reconnect the cable and insert the drive in the case</li> </ol>
Connect other USB peripherals	<ol style="list-style-type: none"> <li>1. Connect things via a USB to the pc.</li> <li>2. Once you have done this, then you can see if the PC identifies it by clicking on "This PC" and check if the items registered</li> </ol>
Close the case	<ol style="list-style-type: none"> <li>1. Recrew case onto PC to protect internal components</li> </ol>
Clear workspace	<ol style="list-style-type: none"> <li>1. Clear anything from the workspace and make it tidy</li> </ol>

<b><u>System monitoring</u></b>	<b><u>Description of components (Steps needed)</u></b>
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Check CPU functions	1. Open task manager and monitor the CPU Temperature, and make sure that you also monitor it at rest
Check ram usage	1. Open task manager and monitor the ram usage when programs are running
Check Hard drive usage	1. Open disk management to identify issues with HDD and run this to check for errors
Check software running processes	1. Open task manager to identify software issues and observe for expected software behaviour

<b><u>Post Maintenance</u></b>	<b><u>Description of components (Steps needed)</u></b>
Power on and test	<ol style="list-style-type: none"> <li>1. Reconnect all cables and power.</li> <li>2. Power on the PC</li> <li>3. Listen for startup information and check ram recognition</li> </ol>
Update drivers	<ol style="list-style-type: none"> <li>1. Update specialists' cards drivers to latest stable versions</li> <li>2. Install drivers for new peripherals</li> </ol>
Verify backup	1. Insert the drive with the backed-up data and install it onto the PC
Test the PC	1. Complete all tests in the test plan and identify any errors
Signoff	1. Sign off with client signature and confirm dates to complete all actions

#### 4 - A test plan.

##### Test Plan

TEST PLAN					
NAME OR DESCRIPTION OF SPREADSHEET		Installing and Maintaining software			
LEARNER NAME:		N/A			
NAME OF TESTER		N/A			
Number	Test description	Expected output	Actual outcome	Comments	Date of test
1	Device drivers	To make sure that the program makes the device run properly	They		
2	RAM	Making sure programs use correct memory			
4	Specialists' cards	They are working as expected			
5	CPU	Decoding and executing instructions			

## **2B.M2 - Produce a detailed plan including reasons why alternative ideas for installing and maintaining hardware have been discarded.**

The issues the company face affects productivity, with the standalone computer used for marketing and advertising. They aimed to solve this by improving the standalone computer to improve performance and optimise productivity within the office.

### **The current setup consists of**

1. A standalone computer for promotional materials
2. files are taking their time (slow) with graphics manipulation software.
3. overheating when multiple applications are run.
4. limited storage capacity leading to use of external drives.
5. poor quality scans from attached scanner
6. they need a graphics tablet to enhance graphical design capabilities.
7. they have a budget of £500 which isn't much.

### **Solutions**

#### **1. Hardware Upgrades**

upgrading RAM in the computer to improve multi-tasking capabilities and overall performance, this will therefore address slowness during file uploading and when running graphics manipulation software.

Installing cooling fans or upgrading the CPU cooler to address overheating issues, ensuring stable performance for intensive tasks.

#### **2. Storage Solutions**

Installing a larger internal hard drive to address storage issues and this will eliminate the need to transfer files from external hard drives to improve performance.

Schedule regular backups to the system to automatically back data up reducing the reliance of external hard drives for temp storage.

#### **3. Graphics Tablet**

Purchasing and installing graphics tablets to enable the designer to create high quality logos and manipulate images more effectively, therefore enhancing the quality of promotional material produced.

Reasons for discarding alternative ideas.

1. **Outsourcing maintenance:** client's budget doesn't make outsourcing maintenance an option as it increases costly.
2. **Reactive maintenance:** addressing issues as they arise doesn't fix anything and leads to increased downtime and cost in the long run.
3. **Continue to use existing scanner:** while using this scanner seems cost effective, this outputs poor scans which questions professionalism of the promotional material.
4. **Delaying upgrades:** delaying and delaying the upgrades would prolong the inefficiency and hinder office productivity, therefore not any short-term cost savings.

### **Implementation plan**

1. Schedule upgrades and installations within the 2 weeks allocated to minimise disruption.
2. Make use of the £500 budget and purchase necessary parts for the upgrade.
3. Ensure thorough testing and quality assurance after each upgrade and to confirm improved performance and functionality.

### **Conclusion**

Implementing these upgrades and improvements will not address current technical issues but also enhance the overall efficiency and productivity of the office therefore serving its clients well.

## **2B.D2 - Justify final decisions, explaining how the technology system will fulfil the stated purpose and 'client' requirements, describing the impact of any constraints on the plan.**

### **Final decisions**

#### **1. Hardware upgrades**

Upgrade the RAM and cooling system to address performance issues therefore able to perform intensive tasks smoothly.

**Justification:** by increasing multi-tasking capabilities and preventing overheating, these upgrades will enhance productivity and improve the user experience for the staff producing promo materials

#### **2. Storage solutions**

Installing a larger internal drive and implementing a scheduled backup system will resolve storage constraints. This will reduce the need for external drives.

**Justification:** the solution will help ensure files can be accessed seamlessly and prevent workflow disruptions caused by storage limits. Adding automated backups will safeguard the data and minimize chance of data loss.

3. **Graphics tablet**

Purchasing this will empower the designer to create high quality logos and manipulate images efficiently.

**Justification:** the tool quips the designer with advanced capabilities, enabling for greater creativity and flexibility in producing appealing promo materials

**Impact on constraints**

1. **Budget constraints**

The £500 budget is very limiting in terms of upgrades, so would need to choose this part wisely, what's essential and what need to be prioritised. this constraint influences decisions to focus more on performance, storage while deferring nonessential upgrades.

2. **Time constraints**

The two-week break provides a limited time for implementing and testing these upgrades, to maximise efficiency, label each task based on office productivity to get the build done in the timeframe.

**Conclusion**

This final decisions regarding hardware upgrades, storage, and graphical tablets. These all meet the companies' requirements and address the issues effective within the constricted time frame. These solutions ensure the technology system fulfils its purpose of supporting the agency operations, therefore enhancing productivity and delivering high quality service to clients.