**Assignment 1**

Q: Sisan works in the Media Department. His work involves in producing videos and images e.g. posters, web graphics and animations film making company. He wants you to produce a system design specification for his new multimedia computer system which he will use to run Macromedia Suite, Adobe Photoshop and Microsoft Office. He would like high‐tech graphics and sound. The computer system must also be able to store large amounts of images and run quickly as he requires more than one program at a time and often needs to switch between them. In a report explain the choice of components briefly relating them back to the user requirements. It is important that final specification includes all the necessary hardware and software components for the system to work.

Consider:

* Internal system unit components: Processors, Fan and heat sink, Motherboard, Hard drive, Power supply unit (PSU)
* Internal memory: RAM
* Specialized cards: Graphic cards, Sound Card, Network Card
* Peripherals: Output devices, Monitor, Printer
* Input devices: Mouse, Keyboard, Digital Camera, Scanner
* Backing storage: optical media, portable drives
* Software Components
* Network Components: Ethernet Connectivity, Wireless Connectivity, Network Storage, Network Security, Backup Solution
* Sisan's multimedia computer system is designed to meet the demanding requirements of his work in the Media Department, focusing on producing videos and images, including posters, web graphics, animations, and film making tasks. The system is expected to efficiently run Macromedia Suite, Adobe Photoshop, and Microsoft Office simultaneously, providing high-tech graphics and sound capabilities while also accommodating large storage needs.

**System specification:**

Hardware Specification:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S.N | Product | Company | Size | Type | Cost(Rs) |
| 1. | Processor | AMD | -- | AMD Ryzen 9 5900X | 50,000 |
| 2. | Motherboard | MSI | -- | MPG B550 Gaming | 28,800 |
| 3. | Hard Drive | Samsung | 1 TB | Samsung 970 EVO Plus | 34,800 |
| 4. | Power Supply  Unit | Seasonic | -- | Focus GX-850W | 39,500 |
| 5. | RAM | Corsair | 16GB | Vengeance LPX DDR4-3200 | 17,500 |
| 6. | Graphics Card | NVIDIA | 8GB | NVIDIA GeForce RTX 3070 | 80,000 |
| 7. | Sound Card | ASUS | -- | ASUS Xonar SE 5.1 | 7,200 |
| 8. | Network Card | Intel | -- | Intel Gigabit CT PCI-E Adaptor | 10,500 |
| 9. | Heat Sink And  Fan | Noctua | -- | Noctua NH-D15 | 18,800 |
| 10. | Monitor | Dell | 27 inch | UltraSharp U2719D LED | 79,900 |
| 11. | Printer | Canon PIXMA | -- | Wireless | 28,500 |
| 12. | Mouse | Logitech MX Master 3 | -- | Optical | 2,000 |
| 13. | Keyboard | Logitech | -- | -- | 1,590 |
| 14. | Digital Camera | Nikon | -- | Nikon D5600 DSLR | 49,990 |
| 15. | Scanner | Epson | -- | -- | 25,200 |
| 16. | Optical Media | Verbatim | 25GB | -- | 11,370 |
| 17. | Portable Drives | Western Digital | 2TB | -- | 12,400 |

**Hardware Justfication:**

Processor: AMD Ryzen 9 5900X

Sisan's work in the Media Department demands a powerhouse of a processor, and the AMD Ryzen 9 5900X fits the bill perfectly. With its 12 cores and 24 threads, this processor provides the raw processing power needed for seamless video production and graphic design tasks. Its high clock speeds and efficient architecture ensure that Sisan can handle demanding multimedia applications with ease.

Motherboard: MSI MPG B550 Gaming

To complement the AMD Ryzen 9 5900X, I recommended the MSI MPG B550 Gaming motherboard. This motherboard offers a robust platform with features like PCIe 4.0 support, high-speed RAM compatibility, and ample connectivity options. It ensures that Sisan's system has the necessary stability and expandability to meet the demands of multimedia content creation.

Hard Drive

Given the need to work with thousands of images and videos, the Samsung 970 EVO Plus SSD provides Sisan with blazing-fast storage. With a capacity of 1TB, Sisan can store and access large multimedia files swiftly, enhancing overall workflow efficiency. The SSD technology ensures rapid data transfer, reducing loading times for resource-intensive applications.

Power Supply Unit

For a reliable and efficient power supply, I selected the Seasonic Focus GX-850W. With 850 watts of power, gold efficiency, and fully modular cables, this power supply unit ensures stable and clean power delivery to all components. The 10-year warranty adds an extra layer of confidence, and features like Free Power On and self-testing provide additional convenience and peace of mind.

RAM

Corsair's 16GB Vengeance LPX DDR4-3200 RAM ensures that Sisan's multimedia tasks run smoothly. The high-speed memory and 16GB capacity provide the necessary headroom for multitasking and handling large files. The Vengeance LPX series is known for its reliability and performance, making it an excellent choice for a multimedia-oriented system.

Graphics Card

The NVIDIA GeForce RTX 3070 is a powerhouse graphics card, perfect for video production and graphic design. With 8GB of video memory, real-time ray tracing capabilities, and high CUDA core counts, this card delivers the graphical performance needed for rendering and processing multimedia content efficiently.

Sound Card

ASUS Xonar SE 5.1 ensures that Sisan has high-quality audio output for multimedia projects. The 5.1-channel surround sound enhances the overall audio experience, crucial for tasks like video editing and sound design. ASUS is known for producing reliable and feature-rich audio solutions, making the Xonar SE a solid choice.

Network Card

To ensure fast and reliable network connectivity, the Intel Gigabit CT PCI-E Adaptor provides Sisan with a high-performance networking solution. This is essential for seamless collaboration, online research, and multimedia content sharing.

Heat Sink and Fan

The Noctua NH-D15 ensures efficient cooling for the AMD Ryzen 9 5900X. With its dual tower design and premium-grade fans, it keeps temperatures in check during demanding tasks. This not only ensures optimal performance but also contributes to the longevity of the processor.

Monitor

The Dell UltraSharp U2719D LED monitor offers Sisan a 27-inch display with high resolution and color accuracy. This is crucial for graphic design work, providing a clear and detailed view of multimedia content. The UltraSharp series is known for its quality, making it a suitable choice for Sisan's demanding tasks.

Printer

For high-quality prints, the Canon PIXMA Wireless printer meets Sisan's needs. Its wireless capabilities provide convenience, and Canon's reputation for producing reliable printers ensures that Sisan can create professional-quality prints for multimedia projects.

Mouse

The Logitech MX Master 3 optical mouse offers precision and ergonomic design, enhancing Sisan's efficiency during graphic design and video editing tasks. Its customizable buttons and advanced features make it a versatile tool for multimedia content creation.

Keyboard

Logitech's keyboard complements the setup with a reliable input device. While specific model details are not provided, Logitech keyboards are known for their durability and comfortable typing experience, contributing to a productive work environment.

Digital Camera

For capturing high-quality images, the Nikon D5600 DSLR is an excellent choice. With its advanced features and lens compatibility, Sisan can use this camera for professional photography, adding original content to multimedia projects.

Scanner

The Epson scanner adds versatility to Sisan's setup, allowing for the digitization of documents and images. This is particularly useful for incorporating physical media into digital multimedia projects.

Optical Media

Verbatim's 25GB optical media provides Sisan with a reliable storage option for archiving multimedia content. The 25GB capacity is suitable for large files, and Verbatim is a trusted brand in optical media.

Portable Drives

The Western Digital 2TB portable drive offers Sisan additional storage and the flexibility to carry multimedia projects on the go. Its compact design and high capacity make it a convenient solution for backing up and transporting large files.

Software Specification:

|  |  |  |  |
| --- | --- | --- | --- |
| S.N | Product | Brand Name | Version |
| 1. | Adobe Creative Cloud | Adobe | CC |
| 2. | Antivirus | Panda security | 22.01.01 |
| 3. | Media Player | Video LAN | 3.0.18 |
| 4. | Microsoft Office | Microsoft | 2021 |
| 5. | Windows 11 | Microsoft | 2021 |

**Software Justifications:**

1. Adobe Creative Cloud

Adobe Creative Cloud is an indispensable software suite for multimedia professionals like Sisan. This comprehensive package includes industry-standard applications like Photoshop, Illustrator, Premiere Pro, and more. The CC version ensures that Sisan has access to the latest features, updates, and creative tools, enabling him to produce high-quality multimedia content efficiently. The seamless integration among various Adobe applications enhances Sisan's workflow, allowing for smooth transitions between tasks such as video editing, graphic design, and audio production.

2. Antivirus

Security is paramount in any computer system, especially when dealing with multimedia content creation. Panda Security's antivirus software provides real-time protection against malware, viruses, and other online threats. The 22.01.01 version ensures that Sisan's system is equipped with the latest security features, safeguarding sensitive multimedia files from potential risks. With regular updates and a user-friendly interface, Panda Security contributes to a secure and uninterrupted work environment.

3. Media Player

A reliable media player is essential for previewing and reviewing multimedia content. VideoLAN's media player, with version 3.0.18, offers a versatile and open-source solution for playing various audio and video formats. Its wide compatibility ensures that Sisan can seamlessly review his multimedia projects, ensuring accuracy and quality. The user-friendly interface and regular updates make VideoLAN a trusted choice for multimedia playback.

4. Microsoft Office

Microsoft Office remains a fundamental software suite for tasks such as document creation, spreadsheet management, and presentation design. The 2021 version includes the latest features and improvements in applications like Word, Excel, and PowerPoint. Sisan can utilize the advanced capabilities of Microsoft Office to complement his multimedia projects, creating professional documents, analyzing data, and preparing compelling presentations.

5. Windows 11

The operating system is the foundation of Sisan's multimedia computer system, and Windows 11 from Microsoft, version 2021, provides a modern and efficient platform. Tailored for multimedia professionals, Windows 11 offers a visually appealing interface, enhanced performance, and improved multitasking features. The latest version ensures that Sisan benefits from security updates, compatibility improvements, and a user-friendly environment, optimizing his overall computing experience.

Network Components:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.N | Product | Name | Brand | Type |
| 1. | Ethernet Connectivity | Network Interface Card (NIC) | Intel | Gigabit CT PCI-E Adaptor |
| 2. | Wireless Connectivity | ASUS Xonar SE 5.1 | ASUS | Wireless Card |
| 3. | Network Storage | Portable Drives | Western Digital 2TB | -- |
| 4. | Network Security | Firewall | -- | -- |
| 5. | Backup Solution | Network-Attached Storage (NAS) | Network-Attached Storage (NAS) | -- |

**Network Components Justification:**

1. Ethernet Connectivity (Network Interface Card - NIC)

For wired connectivity, the Intel Gigabit CT PCI-E Adaptor serves as a reliable and high-performance network interface card. This component ensures fast and stable Ethernet connectivity, crucial for multimedia content creators like Sisan who rely on efficient data transfer for collaborative work, online research, and content sharing.

2. Wireless Connectivity (ASUS Xonar SE 5.1)

The ASUS Xonar SE 5.1 wireless card provides Sisan with the flexibility of wireless connectivity. This is essential for multimedia professionals who may need to move around the workspace or collaborate wirelessly. The 5.1-channel surround sound capability enhances audio quality, contributing to a more immersive multimedia experience.

3. Network Storage (Portable Drives - Western Digital 2TB)

Western Digital's 2TB portable drives offer network storage solutions, allowing Sisan to store and access multimedia files from different devices. These drives provide convenient and portable storage, facilitating data backup and file sharing within the network. The 2TB capacity ensures ample space for storing large multimedia projects.

4. Network Security (Firewall)

Implementing a robust firewall is crucial for network security. A firewall helps protect the network from unauthorized access, ensuring the confidentiality and integrity of multimedia files. It acts as a barrier against potential threats, enhancing the overall security of Sisan's multimedia computer system.

5. Backup Solution

Network-Attached Storage (NAS) serves as a centralized backup solution for Sisan's multimedia projects. While specific details about the NAS are not provided, this component allows for automated backups, ensuring that important multimedia files are safe and easily recoverable in case of data loss. NAS enhances data resilience and provides peace of mind for multimedia professionals who rely on their work for various projects.

Overall, the carefully selected components aim to create a multimedia computer system that excels in performance, reliability, and versatility, meeting the specific demands of Sisan's role in the Media Department.