

computer system fundamental

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COMPUTER SYSTEMS FUNDAMENTALS

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Introduction

The study will look into and assess the current state of the computer industry with a focus on building and analysing machine components, that are essential to the smooth operation of computers. This entails developing a computer program that is user-friendly for older person. It has to be capable of doing basic functions like writing, browsing the internet, and participating in video chats. This task will include choosing and explaining the reason for each part like CPU, memory (RAM), storage space, and getting things in or out features. It must match a person's specifications while keeping up with today's computer standards[10]. Carefully analysing a personal computer system. This can help us to understand computer parts better and also check how well they work through testing or benchmarking[6].

The task stresses the need for cybersecurity and also considers protecting your system from online dangers, which must be taken seriously and is important in the digital world we live in today[5]. It also requires a good operating system, primarily windows10 to help users learn and navigate the Windows environment easily[7].

This complex job entails more than just creating a system that meets specific requirements. It will also help us understand more about the general aspects of computer systems and how they are organised and built as well as the safety issues surrounding them[8]. It is expected to show a good understanding of computers both how they work in and what we do with them.

TASK 1: SYSTEM SPECIFICATION AND JUSTIFICATION

To create a computer system that is suitable for an older person. It must be perfectly tailored to their specific requirements and preferences. This entails selecting the appropriate computer parts and programs to provide a positive, easy-to-use experience for tasks. This facilitates the efficient completion of daily tasks using computers.

User Requirements Analysis

To consider an older person's needs it is important to check how easy it is for them to use and for that person to get around easily. Consideration must be taken into account on what jobs will be carried out on that computer. The main things the user would require are to write, and read web pages, and video calls with easy-to-understand buttons. It is important to be able to move around easily as the older generation has problems with eyesight and moving things which can be difficult, for some people. The system needs to be dependable and safe. It should keep users away from typical online dangers[8]. The aim is to set up a system that reduces complexity but still meets all the basic computer requirements well.

Component specification

CPU and Motherboard – When choosing this a balance between price and performance and how well they work is important. For older people who will use a computer for browsing, video call, and word processing a middle-priced CPU is sufficient without spending too much money on an expensive one. The motherboard must be compatible with the CPU and have adequate space for additional devices. It should also make it easy to maintain or change things later without causing problems. Reliability is crucial because a well-functioning system requires less frequent maintenance. This is especially important for older people who may not be confident using technology [6].

RAM – For completing many things at once and running well for basic tasks, like editing documents or browsing the internet, 8 GB of RAM is normally adequate. It has enough space to use many applications at once without making the system slow. This is important for having a user experience free from frustration[10].

Storage – Thought must be given on SSD (solid state drive) is better than an HDD (hard disc drive). This choice supports your computer to start up and open apps faster. A 256 GB SSD should give the user enough space for their files, pictures, and programs. It will also make sure that the computer is fast enough[4].

Input and Output Features – the computer must have clear ways for input and output, making it easy to link additional devices such as printers, USB sticks, and cameras. This means having lots of USB ports an HDMI port for the monitor and an SD card reader to make pictures easily. Making IO interfaces simple helps users especially those who don't like difficult setups [9].

Graphic Cards- a simple all-in-one picture card is enough for watching the internet and videos. We only normally need specified graphic cards to carry out work for gaming and making videos. This kind of task is not part of daily activities by users. This choice helps to save money and use energy wisely[7].

Case and power supply -choosing a case that is easy to reach and keep up, one with no tools needed to open it, this matters in case any future changes or fixes are planned. The power source must work well and use energy wisely giving enough electricity for what the system requires. A power supply that can be removed or changed easily to assist in keeping cables inside clean and organised[4].

Monitor- this needs to be big enough (at least 24 inches wide) and have good picture quality (1080p minimum). This can make things easier to read and gentler on the eyes, so there's no discomfort, allowing the person to adjust up or down to view easily in a comfortable position[2].

Network connectivity- good and quick internet service is a must, especially for video calls and watching movies. Using a Wi-Fi connection with the standard makes it work better and faster. Moreover, an ethernet port lets you use a wired connection that is stable and faster for the internet which is important to assist with steady communication[3].

Operating systems and software- Windows 10 is recommended because of its ease of use and compatibility with a wide range of devices. It has a strong defence against viruses and malicious malware thanks to its safety measures and regular upgrades. Installing user-friendly software such as a basic word processor, internet browser, and antivirus software will ensure that the user spends their computer time safely and simply [2]. The entire part plan is designed to strike a balance between ease of use, cost, and speed. It makes a computer system ideal for your older family members' requirements.

Justification of Choices- The parts chosen for this computer system were carefully thought out based on what the person needs. It's a balance of cost, how well it works, and is easy to use with that in mind. Choosing a middle-level CPU is an important move to get the needed power for simple jobs without spending too much on fancy technology that isn't necessary [10]. The motherboard goes well with this choice; it gives enough ports and works well without being hard.

Choosing 8 GB of RAM makes sure simple tasks run well and do not slow down. It has extra space to handle future software changes or if you use your computer more than before. This much RAM is a less costly way to reach the performance you want [8].

Choosing an SSD over HDD is because you need a fast and quick response for daily computer tasks. Even though HDD costs less, SSDs are faster. This makes the computer go quicker and cuts down wait times for starting up or using apps [4].

Easy-to-use input/output interfaces are chosen to make it easier for nontechnical people to interact with external tools. The graphics card that comes with the CPU was chosen as this is adequate for simple tasks such as watching videos. This saves us from spending extra money on a separate graphics card we do not need.

The case and power unit are chosen for their trustworthiness and simple care, taking into account possible future changes or replacements in hardware equipment. This way makes the system last long and stay strong, which is very important for people who may not often change their computer parts.

A big, easy-to-read screen is needed for older people, this helps with reading and eye discomfort. This choice makes the overall user experience better by making digital content easier to access [2].

Network choices are chosen to ensure both fast and reliable wireless and wired internet use. This ensures smooth online video calls and web browsing [3].

Finally, Windows 10 is recommended for being easy to use and safe at once. It is simple to use, protects, updates often, and works with many software. This makes a great computing environment that's also safe [2].

Shopping List and Budget

Component	Description	Price	Source
CPU	Mid-range, efficient	£150	Amazon
Motherboard	Compatible, user-friendly	£100	Toms hardware.com
RAM	8GB, reliable	£40	Amazon
Storage	256GB SSD, fast	£60	Amazon
Graphics Card	Integrated	-	Built into CPU
Case & Power Supply	Easy access, durable	£80	Argos
Monitor built-in speakers and webcam	24" HD, clear display	£200	Amazon
mouse		£10	Tesco
Operating System	Windows 10	£56	Microsoft
Keyboard		£15	Tesco
Total		£711	

Task 2 Analysis of a current computer

This requires studying a computer system its detail and how well it functions. The research examines computer components, the software that runs them, the programs used, and how the internet works. It provides insight into the computer's ability to handle various tasks effectively and efficiently.

Computer specification analysis

The main part of the computer called the Central processing unit (CPU), is important. It decides how fast and well it works overall. It deals with all orders it gets from equipment and programs working on the computer. A strong CPU ensures the computer works well, especially on hard tasks[6].

RAM – RAM (Random Access Memory) is vital for a computer's speed, especially when doing several tasks at once. Having enough RAM lets the system use more apps at once without getting slow. This makes for a better experience when using it [10].

Storage – The types of storage whether on HDD or SSD influence how the computer operates. This is especially true when quickly accessing information and turning on your computer. SSDs provide faster data access and greater reliability than HDDs but they can be more costly[4].

I/O Devices – People rely heavily on input/output devices such as keyboards, mouse, and USB ports to communicate with computers. Their quickness and dependability improve the system's usability [9] and functionality.

OS and Applications- The component that allows a computer to function properly, such as Windows 10 makes it simple to use and protect the items inside the machine. The apps that are configured should matter what the user requires and how well the system works[2].

Internet connectivity- Getting online is essential for activities such as looking, watching, and downloading files. A good and fast internet connection is necessary for a smooth computer experience [3].

Performance and Benchmarking Analysis

CPU Speed- This determines how quickly the computer can complete a task. A faster CPU can handle complex tasks and run large-scale programs efficiently. Tests use numbers to determine how well the CPU performs in various situations. This will provide a clear picture of what it is capable of doing [6].

Hard disk Transfer Speed- Transfer speed of the hard disc determines how quickly we can retrieve and store data. This speed is critical for jobs requiring large files. It affects how quickly the system boots up and loads applications [4].

Graphics Performance- It is necessary for tasks that require pictures to appear, such as watching videos or editing photos. This includes activities such as playing games. Tests can measure a graphics card's ability to perform these tasks. It demonstrates how suitable it is for various types of jobs [4].

Network and Internet speed – Tests for Internet and network speed can determine how quickly a computer can retrieve data from the Internet. This is critical for internet activities such as watching videos, playing online games, and using video calls. A fast and steady internet connection is important to improve online activities [3].

Screenshots and evidence

This section includes images as well as test results. They help to demonstrate how well the computer works. These include CPU and hard disc speed checks, graphics performance tests, and internet speed test results. The data provides real-world proof that computers can perform a variety of tasks and applications. This picture record is critical for demonstrating how well the system works providing a fair assessment of its effectiveness [11].



Figure 1: CPU performance

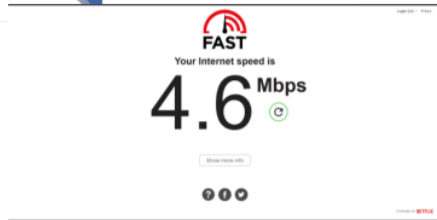


Figure 2: Internet speed

Conclusion

After completion, I have a good idea about how to create a computer system that fits precisely and by carefully examining one that currently exists. Task 1 demonstrated the importance of tailoring solutions to the needs and preferences of the user. This demonstrates how important it is to understand each component's role and the extent to which it affects the overall performance.

Task 2 demonstrated how to benchmark in the new world. It explained how computer components and software interact to determine what your computer can do. This task also demonstrated the importance of having a thorough understanding of computers. It combines learning with doing it in the real world and demonstrates the importance of connecting technology answers with what the users need.

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GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

76/100

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GRADING FORM: GRADING

ENGAGEMENT WITH LITERATURE

Marks will be awarded based on the extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions. Your research sources should extend beyond simply using the links provided in the moodle content. You MUST include evidence of sources that you have discovered yourself during the course of your own student centred work.



Engagement with an extensive range of relevant and credible literature. Consistently accurate application of referencing. Good range of references were included in the assignment

4**KNOWLEDGE AND UNDERSTANDING**

Marks will be allocated based on the demonstration and extent of knowledge and understanding of the general concepts and underlying principles covered in this module.



Excellent knowledge and understanding of the basic underlying concepts and principles of the subject. Further reading would have enabled you to include detailed explanations of each and every component of the PC you built.

25**COGNITIVE AND INTELLECTUAL**

This section covers your ability to look at the alternative solutions, and provide solid justification as to why your chosen components are the most suitable compared to others.



Excellent evaluation of the underlying concepts and principles. Excellent ability to devise arguments using evidence and make appropriate and valid judgements. Comparison between the components chosen with others available in the market would have provided great insight into the report

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PRACTICAL SKILLS

This section will allocate marks based on the real life practicality of overall system. Have you come up with a sensible, balanced, usable system with no obvious omissions or unsuitable choices etc.



An advanced application of a range of taught, basic methods, materials, tools and/or techniques. The context of the application is well considered, and insightful. Excellent evidence of different approaches to problem-solving in particular contexts and proposes appropriate solutions. This was evident by the different of sources to used to purchase the component and providing the price quotation.

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TRANSFERABLE SKILLS FOR LIFE

This section will be assessed based on the written and presentational quality of the report. Style, structure, grammar, spelling etc. Make sure it conforms to the layout conventions previously discussed in class.



Work is accurate, coherent, fluent, well-structured and organised.

Demonstrates very good skills for employment requiring the exercise of some personal responsibility, with just occasional minor weakness. Good referencing skills.