**Kovrigin** **CTP 103**

# Lab 4: Evaluating a Computer System – 40 points

Objectives:

* Identify the components of a computer system
* List important factors to consider when shopping for a new computer and describe how they relate to user requirements
* Evaluate the differences between computer systems

##### Overview of Assignment

In this assignment, you will learn about your computer’s CPU, memory, storage, video, and audio subsystems, compare your system with a classmate’s system and your instructor’s system (the details are listed below), then you will decide whether your system needs an upgrade.

Instructions: Use the information on the details of your computer system to answer the following questions. To obtain this information do the following, depending on whether you have a PC or a Mac.

**Get your system information**

PC – Right-click on the **Start** button and select **Run**. Type **msinfo32** in the box and click **OK** or **Enter** or you can type **System** **Information** in the search box next to the Start button and **Enter**.

Mac – see [this article](https://support.apple.com/en-us/HT203001) or view [this video](https://www.youtube.com/watch?v=jRJAycd195k) to learn how to run a System Profiler Report. You can also do a web search to obtain your system specifications.

Get specifications of your computer system – once you find you system manufacturer and model number, you will do an Internet search on your system specifications to obtain more information. (The manufacturers website and [www.cnet.com](http://www.cnet.com) are good places to start.)

1. Get specifications of your processor and graphics card (if you have a separate graphics card). For Intel processors, go to <http://ark.intel.com/>, for AMD processors go to <http://search.amd.com/en-us/Pages/search.aspx> and enter your model number for your processor to see detailed specifications.
2. Answer each question in the “Your information” column. Save this document as **LastName\_Lab4.docx**, replacing “LastName” with YOUR last name. In addition to using your computer’s system information, you will need to do a Web search on your computer system and your CPU specifications. When you have finished entering your information, you will compare the two systems.

##### System Specifications – 20 points

**System/CPU Information** –. (9 points)

PC: Click on **System Summary** on the System Information screen. Mac: Click on **Hardware** on the System Profiler and enter the information. For processor information, you will have to do a Web search for model number of your CPU.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Your information | Partner’s Information | Instructor’s information |
| 1. What is your System Manufacturer? | Dell Inc | Dell Inc | HP |
| 1. What is your System Model? | XPS 15 9560 | XPS 8700 | HP ENVY Desktop 795-00xx |
| 1. What operating system does your system have? (This is the OS Name) | Microsoft Windows 10 Home | Microsoft Windows 7 Processional | Microsoft Windows 10 Home |
| 1. What is the manufacturer of your processor? | Intel | Intel | Intel |
| 1. What is the model number of your processor? | i7-7700HQ | i7-4790 | Core i7-8700 |
| 1. When was your processor launched or introduced? | Q1 2017 | Q2 2014 | Q4 2017 |
| 1. What is the clock speed of your processor (in GHz)? | 2.80 GHz | 3.60 GHz | 4.6 GHz |
| 1. How many cores does your processor have? | 4 Cores | 4 Cores | 6 |
| 1. How much cache does your processor have? List the type. If more than one type, list them all. | 6MB SmartCache | 8 MB SmartCache | 12 MB SmartCache |

**RAM (Memory)** – (4 points)

Upgrading memory is one of the cheapest ways to improve the speed of your computer. It is helpful to know how much RAM you have and if it is expandable. You may need the information you found on your computer system online to answer some of these questions.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Your information | Partner’s Information | Instructor’s information |
| 1. How much RAM (memory) does your computer have? (Installed Physical Memory) | 16GB | 24GB | 16 GB |
| 1. What type of memory does your system support? (DDR3/DDR4/DDR5) | DDR4-2400, LPDDR3-2133, DDR3L-1600 | DDR3 SDRAM | DDR4 SDRAM |
| 1. How many memory sockets does your computer have? | 2 | 4 | 4 |
| 1. What is the maximum amount of memory your system supports? | 32GB | 32GB | 64 GB |

**Storage** – (3 points)

PC this information will be under **Components—Storage—Drives**. On a Mac, click **About This Mac—More Info—Storage**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Your information | Partner’s Information | Instructor’s information |
| 1. What is the total size of your hard disk (s)? List the drive letter and the storage capacity of each (round to the nearest GB or TB) | Drive C: 1TB | Drive C: 1TB | C: 237.24 GB D: 1.8 TB E: 15.45 GB G: 3.64 TB |
| 1. How much free space do you have on the C: drive (this is your primary hard disk)? (round to the nearest GB or TB) | 752GB | 760GB | 154 GB |
| 1. Do you have a standard hard drive, a solid-state drive, or both | SSDR | Standard | Both |

**Video Graphics** – (4 points)

Using the information on your computer’s details, do a web search on your computer’s video graphics card specifications and answer the following questions. If you are using your computer for streaming video, 3D games, or video processing, it is important that you have a dedicated video card with its own memory called (called Video Random Access Memory or VRAM).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Your information | Partner’s Information | Instructor’s information |
| 1. What is the name and model number of your video card? | Intel(R) HD Graphics 630NVIDIA GeForce GTX 1050 | NVIDIA GeForce GT 720 | NVIDIA GeForce GTX 1060 |
| 1. Is your graphics card integrated into the motherboard or is it a separate PCI card? | Integrated: Intel(R) HD Graphics. Dedicated: 630NVIDIA GeForce GTX 1050 | Dedicated | A separate PCI card |
| 1. How much VRAM (video memory) does your video card have? (This is also called dedicated graphics memory) | 3 GB | 1GB | 3 GB GDDR5 SDRAM |
| 1. How many ports (connectors) and what type (VGA, DVI, HDMI)? | 1 HDMI | 1 DVI and 1 HDMI | DVI, DisplayPort, HDMI |

##### Analysis (Essay Questions) – 20 points

1. Compare your system with your partner’s system and the instructor’s system. For each category, discuss the similarities and differences and how they impact the computer’s performance. Note: you MUST do an analysis, not just list the differences. You need to demonstrate that you understand what the differences mean. This will require you to use the text/lecture notes to support your observations. When you look at each system overall, how does yours compare? Do you need to upgrade? Do you need a whole new system, or can you upgrade components? How has this exercise helped to understand more about a computer system? What was new to you and how will you use the information in the future? (Use the information you have gathered online, the information you have learned in the course and the textbook. You must demonstrate your understanding of the concepts in your analysis. 150-word minimum) (10 points)

I’m comparing my computer, which is a laptop, to my partners and instructors’ computers, which are both desktop computers. Before I start to compare the three, it should be noted that all laptop components are designed different than desktops for efficiency (battery life) and portability. Therefore, I will not consider that I’m comparing a laptop to desktops (since I’m not comparing benchmark test results) and will assess differences based on specs only. All three computers have Intel i7 processors. My partner and I both have 4 core processor. The instructor’s computer has 6 core processor, which make his computer faster (ex. Video encoding will greatly benefit from extra cores). Obviously, the instructor’s CPU with clock speed of 4.6 GHz is the fastest and my CPU with 2.8 GHz is slowest. Having faster clock speed and 2 more cores, results in the instructor’s CPU being the best out of all three. In terms of CPU cache, which serves for faster access to essential data (10 -100 times faster than access to RAM). The machines are rated as follows, the instructor’s CPU with 12MB cache, is the fastest. My CPU with 6MB being the slowest, and my partners’ 8MB in the middle. In general, to compare CPU’s we need to take into consideration the following factors: number of cores, clock speed and the amount of cache memory on the CPU. When comparing RAM of the three machines both the instructor and I have 16GB, while my partner has 24GB. This gives my partner the ability to run a lot more programs at once, which is an advantage if you are using your computer to run a small business. Also, the types of memory supported by my computer (DDR4) and instructors (DDR4) is faster than my partners’ (DDR3). When comparing storage my computer fairs very well compared to my partners. We both have an abundant amount of storage, 1T each. But we can’t compete with the instructor’s copious amount of storage, equaling more than 5T. But you can see majority of that storage is used, available storage is only 154GB. While my partner and I have a more available storage capacity. Both my partner and I only have one drive on our machines, while the instructor has 4 drives. My computer has an SSD and my partners has a standard (HDD). These two Drives use completely different technologies. SSD is newer technology that uses less power, has faster performance at booting and running programs. While HDD provides cheaper storage. The instructor has both drives. My guess is that SSD is used to host OS and to provide for faster booting time. The last thing to compare is the video graphics. My computer has both integrated and dedicated cards. My partner has a dedicated and the instructor has a PCI card. All three of us can get the most out of Fast acting games and desktop publishing. When it came down to ports my computer has limited capability connecting visual monitors. I only have 1 HDMI port while my partner has a DVI and an HDMI and the instructor has DVI, Display port and HDMI. Both the instructor and my partner have more options to connecting to peripherals and are also able to do so all at once. Having only HDMI video, limits my ability to connect to several monitors. When looking at my system compared to the other two, I see that I do not need any upgrades. My system is perfect to for satisfying my needs for school, work and play. This exercise really helped me to appreciate the system that I have on my computer. I have a powerful machine. I was familiar with Memory and SSD, but I did not know how it all tied to the performance of my computer. Now I understand how all off the systems specs play a role in how my computer functions and how fast it does it. What was completely new to me was the CPU information. Now that I know about cores, clock speed and cache, it’s easy for me to understand what kind of system I have and what kind I will need when I’m ready to upgrade.

1. How do user requirements relate to choosing system components? Review the information in the “Choosing a Digital Device” section of the text on pp. 99-103. Describe how you use your computer and what factors you would need to consider when you purchase your next computer. Then contrast that with the requirements of someone that uses the computer differently from you. Some examples of comparison could be things like laptop vs. desktop, integrated video graphics vs. a separate video card, solid state hard drive vs. mechanical hard drive, etc. (150-word minimum) (10 points)

When choosing a computer, you need to take a lot into consideration, user requirements are directly related to choosing a system. It is very important to decide what you will be using the computer for. Will it be used for gaming, if so you will need to consider the fastest processor and a powerful graphics card as well as a good monitor. Or maybe you are a professional photographer/videographer, in which case you should consider storage capacity, graphics card and a fast processor. Does it need to be on the go, or will you be using it only at home/office? How much money do you want to spend on it? Also, how compatible is it with the devises you already have? Do you already have devises at home that are running on a OS? For example, do you have an I phone or a Google phone and how compatible will they be with your future Windows or MacOS OS? I currently use my computer for work: Microsoft office, sending emails through outlook, use excel to create spreadsheets for accounting purposes, power point for work presentations. School: Microsoft office: Word and excel to complete homework and project assignments. Personal use; Video and music streaming, internet research. Because I use this computer for work related travel I chose a laptop over a desktop. I chose to have a real notebook over a tablet, because working on a tablet is cumbersome. When making my next computer purchase I will take the following into consideration; processor, manufacturer, memory and comfort. I realize that even thought I have a laptop, it is a lot more comfortable to work on a Desktop. I have a personal preference for Dell products based on research that I have done on the past. I will get a windows-based computer with a fast processor and a SSD. I will not need as much storage because I’m considering keeping my data in a cloud. I’m also finding myself using more cloud based apps (google suite). In the above exercise I compared my laptop to my partners desktop. My partner uses his computer for some work, school and surfing the web. He chooses a desktop because it is more comfortable for him. His computer time span is 2-7 hours per day. He does not really need the last generation processor because the one he has is fast enough for his needs. He does do a lot of multitasking and that is why RAM is very important to him. Storage on his hard disk is not as important because he is a Googler and relies heavily on Google drive. Therefore, his desktop 1T is plenty for his school work papers and assignments and some work documents.

##### Submission Instructions

1. Make sure you have entered your name and section number at the top of the document.
2. Save the document as **LastName\_Lab4.docx**, replacing LastName with YOUR last name.
3. Submit the assignment to the Lab 4 dropbox in Canvas by the due date.