The University of the West Indies, St. Augustine
INFO 2603 Platform Technologies 1
2018/2019 Semester 1
Lab 2 - 19th, 20th September 2018

Introduction to Windows Task Manager

Microsoft Windows provides a tool called the Task Manager. It is a useful tool for monitoring system activity, terminating misbehaving processes, and performing some high-level performance analysis. It runs at a higher priority than normal applications, and it has sufficient privilege to view and control the system's running processes.

Learning Objectives

- Use Windows Task Manager to monitor system activity
- Learn how to manage processes using the Task Manager
- Examine system resource allocations using the Task Manager
- Create a system summary.

Activities

Part 1: Explore the Task Manager

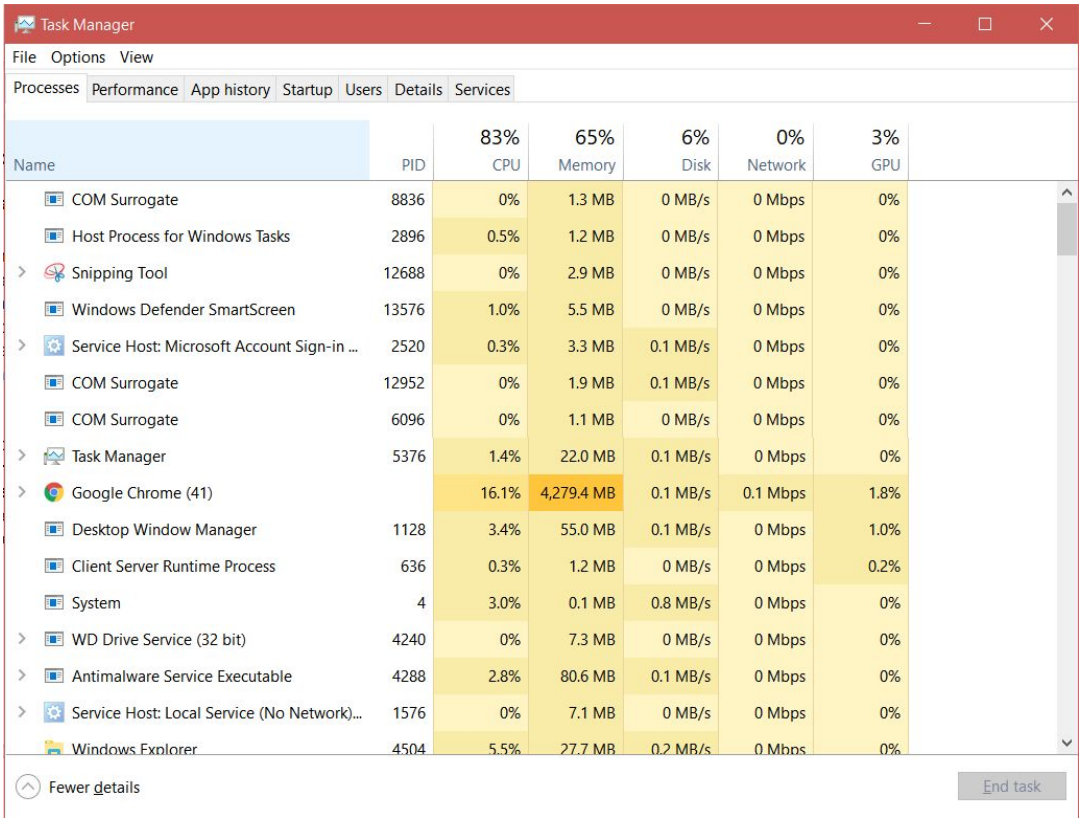

Figure 1. Task Manager Window

There are a couple of ways to invoke the Task Manager: either right-click the task bar and choose "Start Task Manager" from the Context menu, or press Ctrl+Shift+Esc. Either way, Windows displays the Task Manager as shown in Figure 1.

Notice that there are six tabs: **Processes**, **Performance, App History, Startup, Users, Details and Services**. The tab that initially gets the focus is the tab that had the focus the last time the Task Manager was used.

The **Processes** tab provides details about all of the processes running on the system.

By pulling down the View menu you can configure what columns should be shown in the display.

Effective use of the information provided with each process lets you find those that might be exhibiting memory leaks or consuming an inordinate amount of CPU time.

You can also terminate processes from this tab.

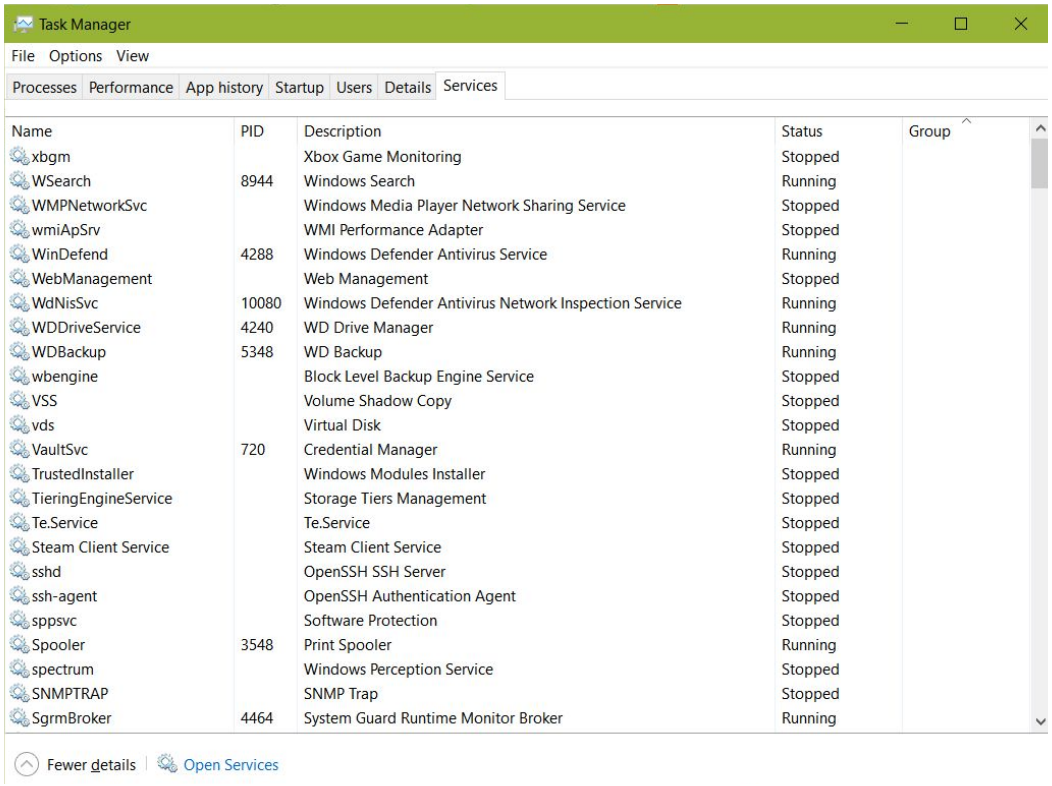

Figure 2. The Services tab of the Windows Task

The **Services** tab displays information about the Windows services installed on your system. (See Figure 2.)

By right-clicking on a service, you can start a stopped service, stop a running service, or immediately go to the process using a service.

By clicking the Services button you can bring up the Services application, where you have full control over your services.

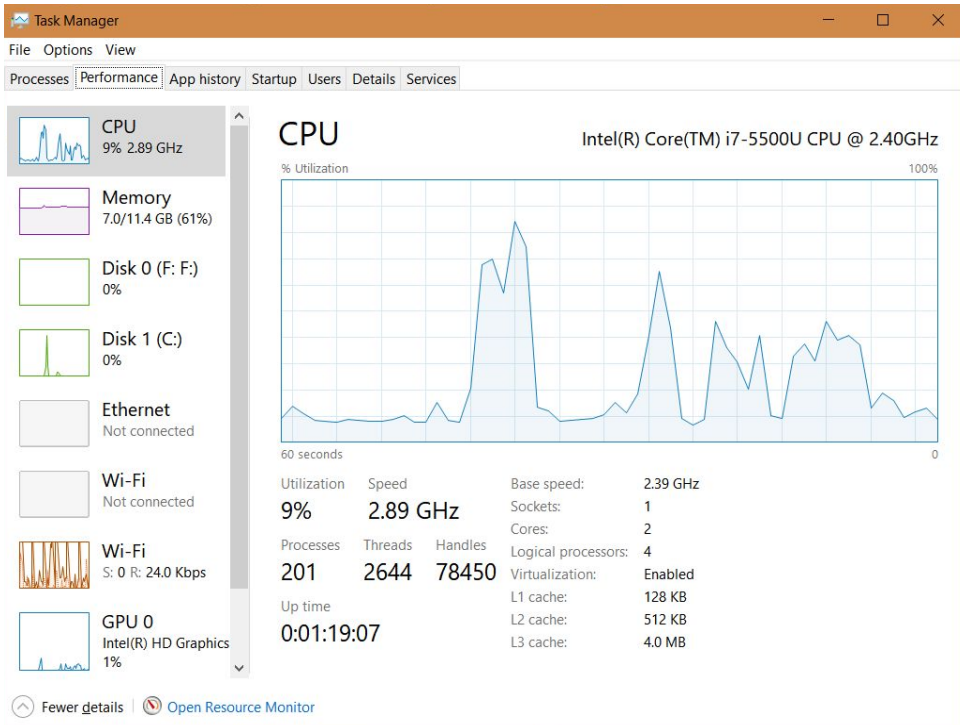

Figure 3. The Performance Tab

The **Performance** tab shown in Figure 3 displays some graphs and some numbers. The top two graphs show CPU usage over time and range between 0% (an idle system) and 100% (a very busy system). Important numbers here are for **Handles**, **Threads**, and **Processes**. A process is an instance of an executable program. Each process can be multi-threaded across the CPUs, and each thread can have multiple I/O handles open to system resources.

The **CPU Usage History** graph can display one graph for all CPUs (as in Figure X), or a separate graph for each CPU core. The **Memory** graphs show the amount of physical memory in use and range between something greater than 0 and the amount of installed memory. If you're consistently seeing high numbers here, then you could probably benefit from adding more memory.

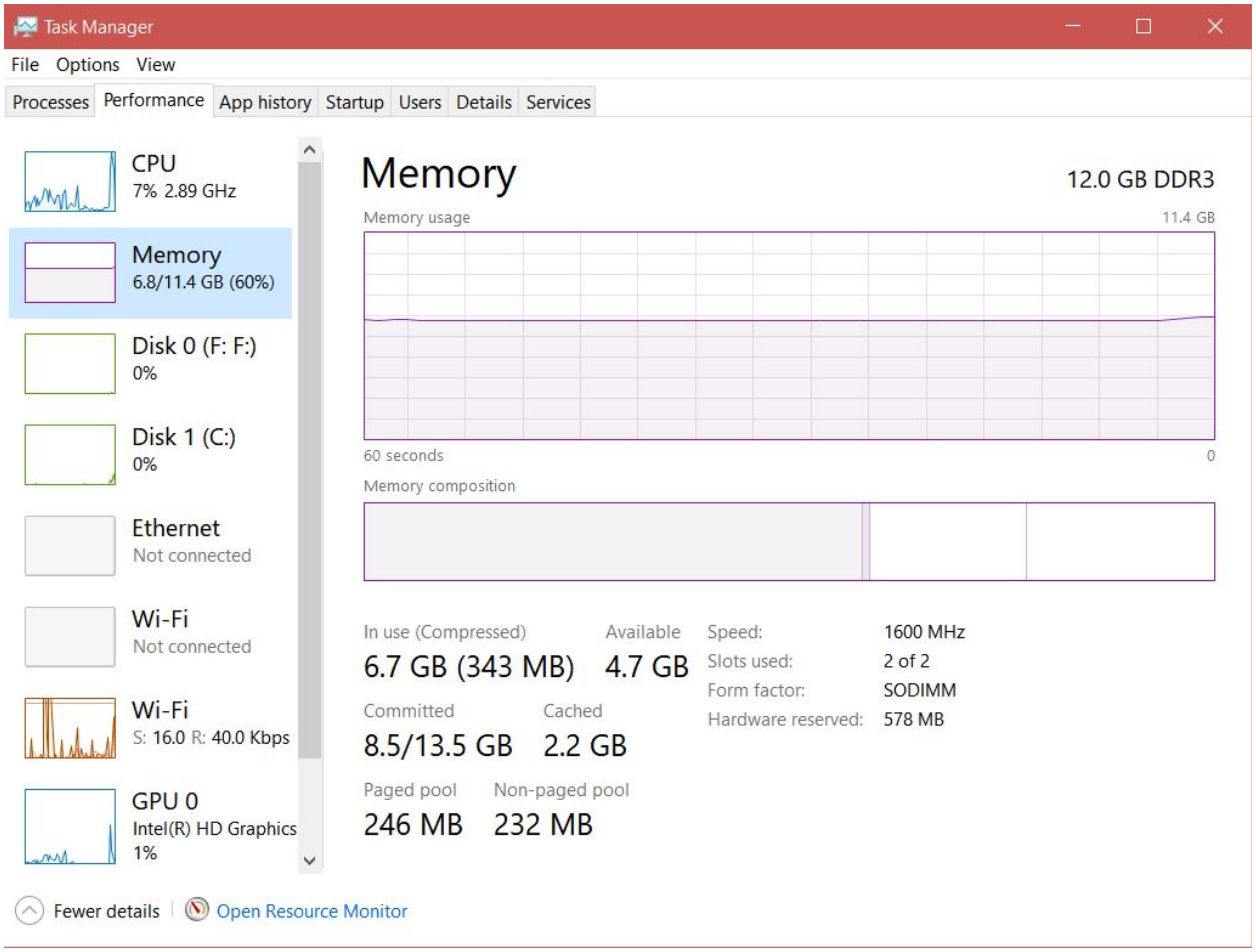

Figure 4. Memory details of the performance tab

Clicking on **Memory** reveals more details about the system's memory, there are two important numbers: the total amount of memory installed on the system (13.5 GB in my case), and how much is available for use (~4700 MB). If the amount of available memory is low, the system will use the disk as virtual memory and performance will suffer.

A process is an instance of an executable program. Each process can be multi-threaded across the CPUs, and each thread can have multiple I/O handles open to system resources.

The Kernel Memory group simply indicates how much physical memory is being used by system-level processes and device drivers.

Clicking the Resource Monitor button brings up a utility that provides much more detail about the CPU, Disk, Network, and Memory.

The **Networking** tab is one of the least interesting and least useful displays of Task Manager. (See Figure 5.)

The graph shows network activity as a percentage of network utilization, and on a dormant client node, this doesn't give much to look at.

You can see more information by pulling down the View menu and selecting additional columns to be shown in the display—perhaps Bytes Sent and Bytes Received.

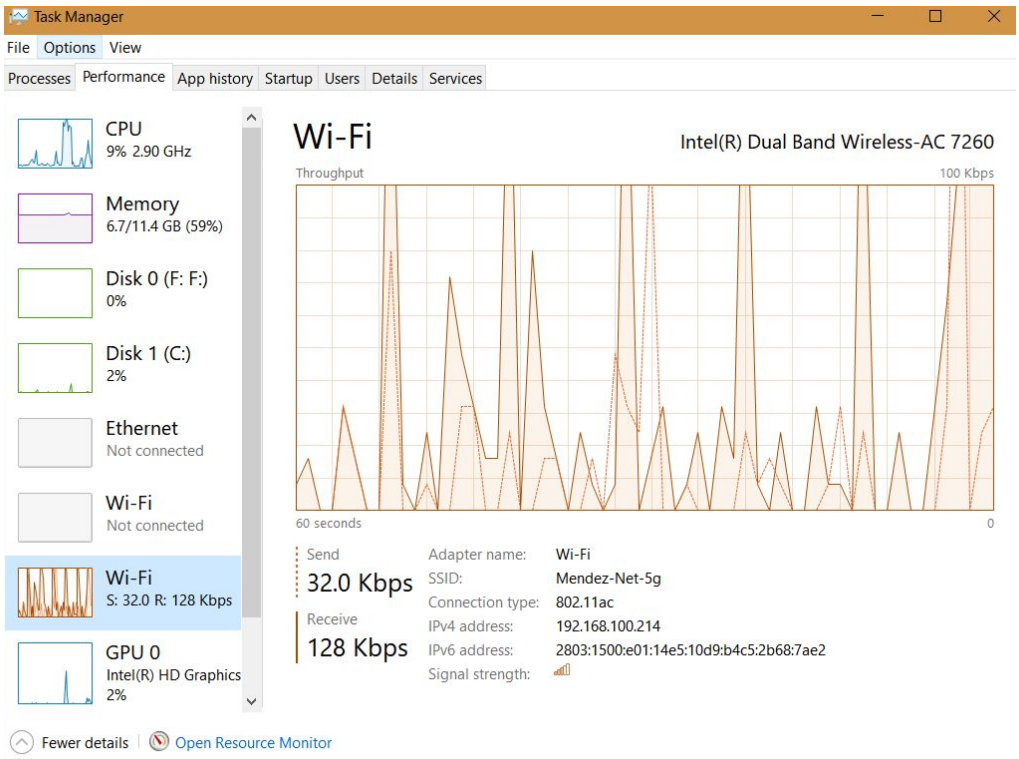

Figure 5. Networking details of the Performance tab

Figure 6. The Users tab of the Windows Task Manager.

The **Users** tab simply provides a list of users who are currently logged in. By selecting a user (other than yourself), you can send that user a message. Additionally, you can disconnect or log the user off the system.

Activities

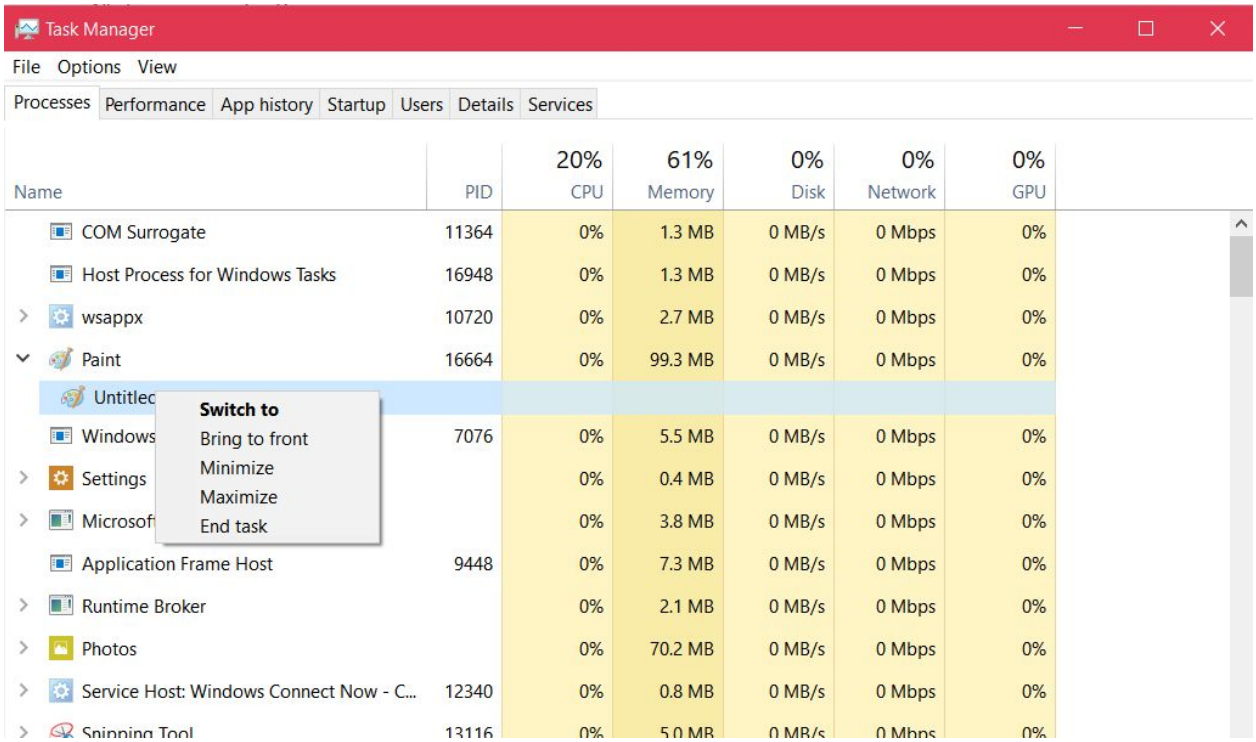

Figure 7. Active Applications View

Part 2: Explore the Task Manager and Manage Applications from within it.

- Open a browser (Firefox, Internet Explorer, or Chrome).
- Open a folder on your lab machine using Windows Explorer.
- Start the Task Manager (Press Ctrl-Alt-Delete).
- Select the open browser from the task list, and then click the **Switch To** button.
- **Question 1**: What happened to the browser? Why did this happen?
- Navigate back to the Task Manager.

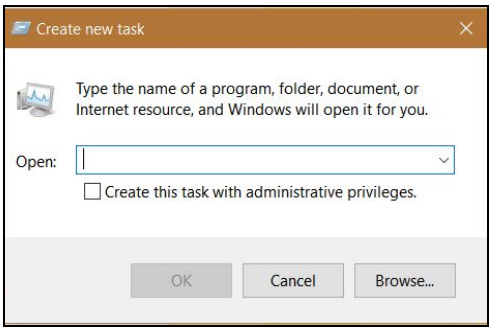

Figure 8. New Task Creation

- Click File then click **New Tas**k.
- The "Create New Task" window opens. In the Open field, type **Notepad** and then click the **OK** button.
- **Question 2:** What happens? Why did this happen?
- Navigate back to the Task Manager.
- Select **Notepad** and then click **End Task**.
- **Question 3:** What happens? Why did this happen?
- **Question 4:** How many active applications are open in the Task Manager at this point?

Part 3: Explore the Services.

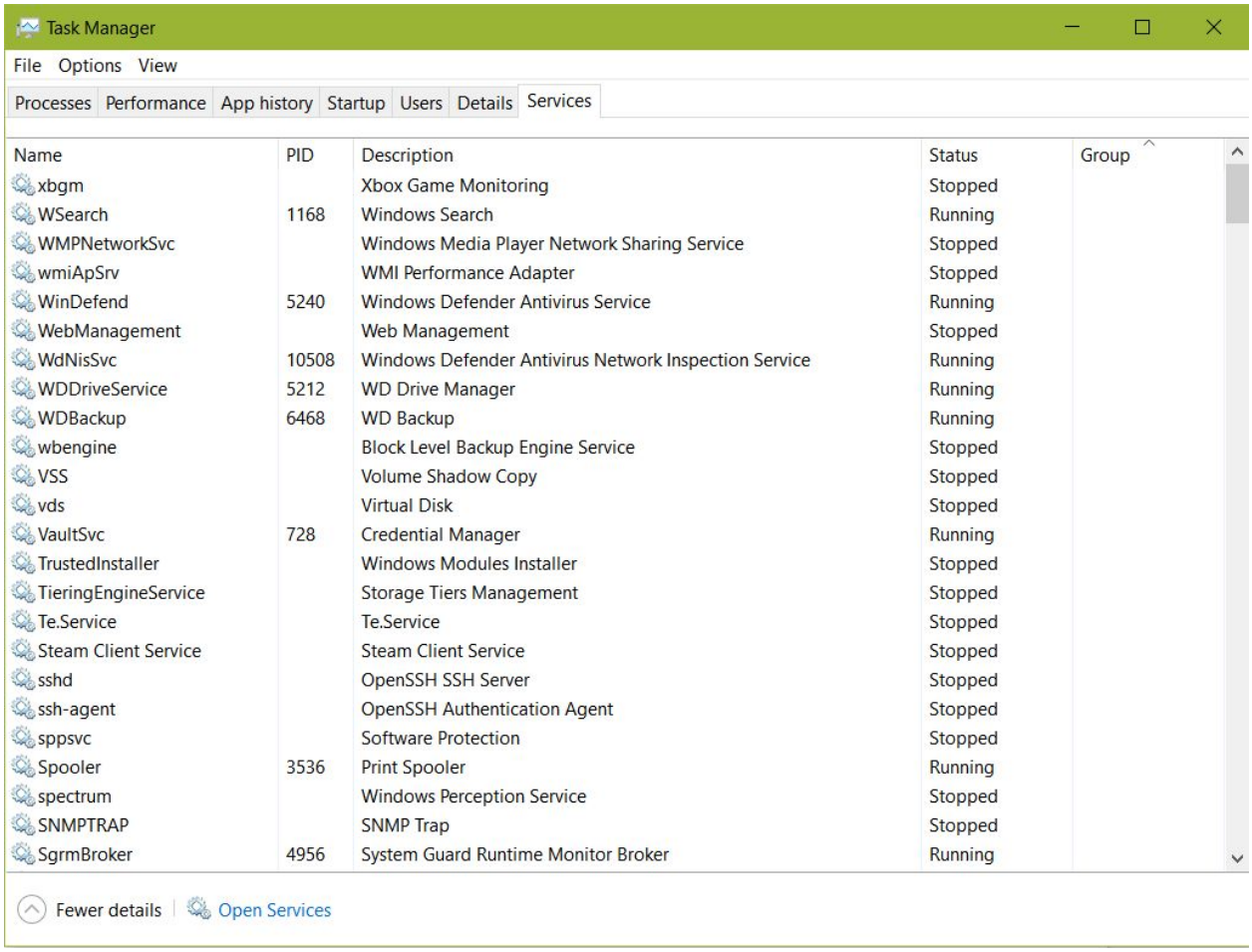

Figure 9. Services View

- Click on the **Services** tab.
- **Question 5:** What values are given to the status of the services shown?

Part 4: Explore the System's Performance.

- Click on the **Performance** tab.
- **Question 6:** How many Processes are running?
- **Question 7:** How many Threads are running?
- **Question 8:** What is the Total Physical Memory (MB) of the system?

- **Question 9:** What is the Available Physical Memory (MB) of the system?
- **Question 10:** How much Physical Memory is being used by the system?

Part 5: Explore the Network Performance.

- Click on the **Networking** tab.
- **Question 11:** What is the state and Link Speed for all of the connections listed?

Part 6: Explore the System Users.

- Click on the **Users** tab to list all users and their status.
- **Question 12:** What actions can you perform on the user's profile from the Task Manager?

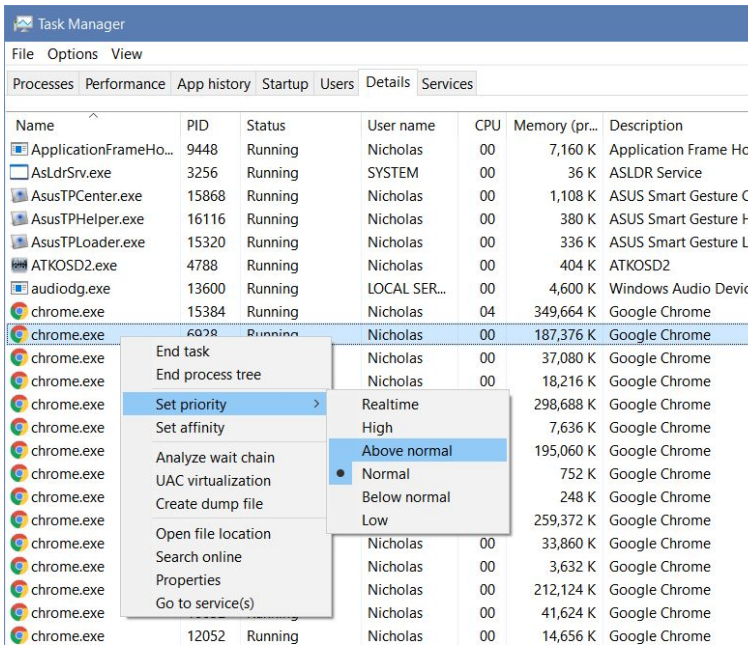

Figure 10. Changing a Process Priority

Part 7: Explore the Details Tab.

- Click on the Details tab.
- Double-click the border around the tabs. The Task Manager view switches to *compact mode*
- Click on the **Name** column header.
- **Question 13:** Click on the **Name** header again. What effect does this have on the column listings?
- **Question 14:** Click on the **Memory** column header. What effect does this have on the column listings?
- Double-click on the outside border to return to the *tabs mode* view of the Task

Manager.

- Locate the process associated with the open browser from step #1 using the descriptions.

  Right-click on the process name (e.g. firefox.exe for FireFox).

  i. Select **Set Priority** from the menu.

  ii. **Question 15:** What is the default priority for the browser?

  iii. Set the priority to **Above Normal**.

  iv. Click the **Change Priority** button when the Task Manager alert box pops up.

- Right Click the header row of the details view and then **Select Columns**.
- The "Select Process Page Columns" window appears.
- Place a checkmark next to **Base Priority**. Click the **OK** button.

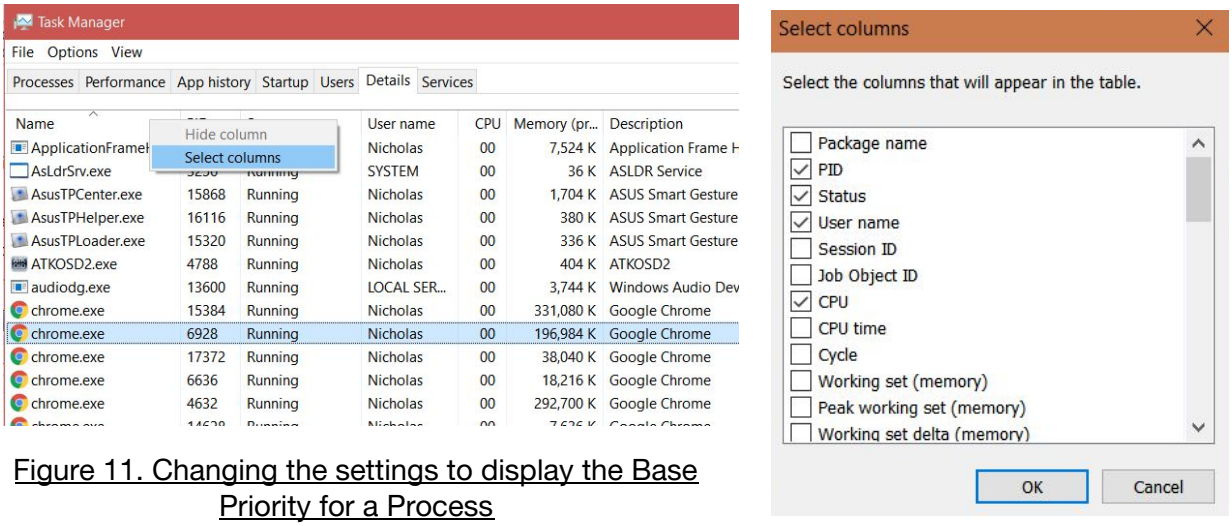

Figure 11. Changing the settings to display the Base Priority for a Process

Expand the width of the "Windows Task Manager" so that the Base Priority column is visible

- Click on the **Base Priority** column header.
- **Question 16:** Which image name has a base priority of N/A?
- **Question 17:** List the image name that has a base priority of Above Normal?
- Reset the browser process base priority to normal.

  i. Right-click image name > Set Priority > Normal > Change priority.

  ii. Click View from the main menu > Select Columns > uncheck Base Priority > OK.

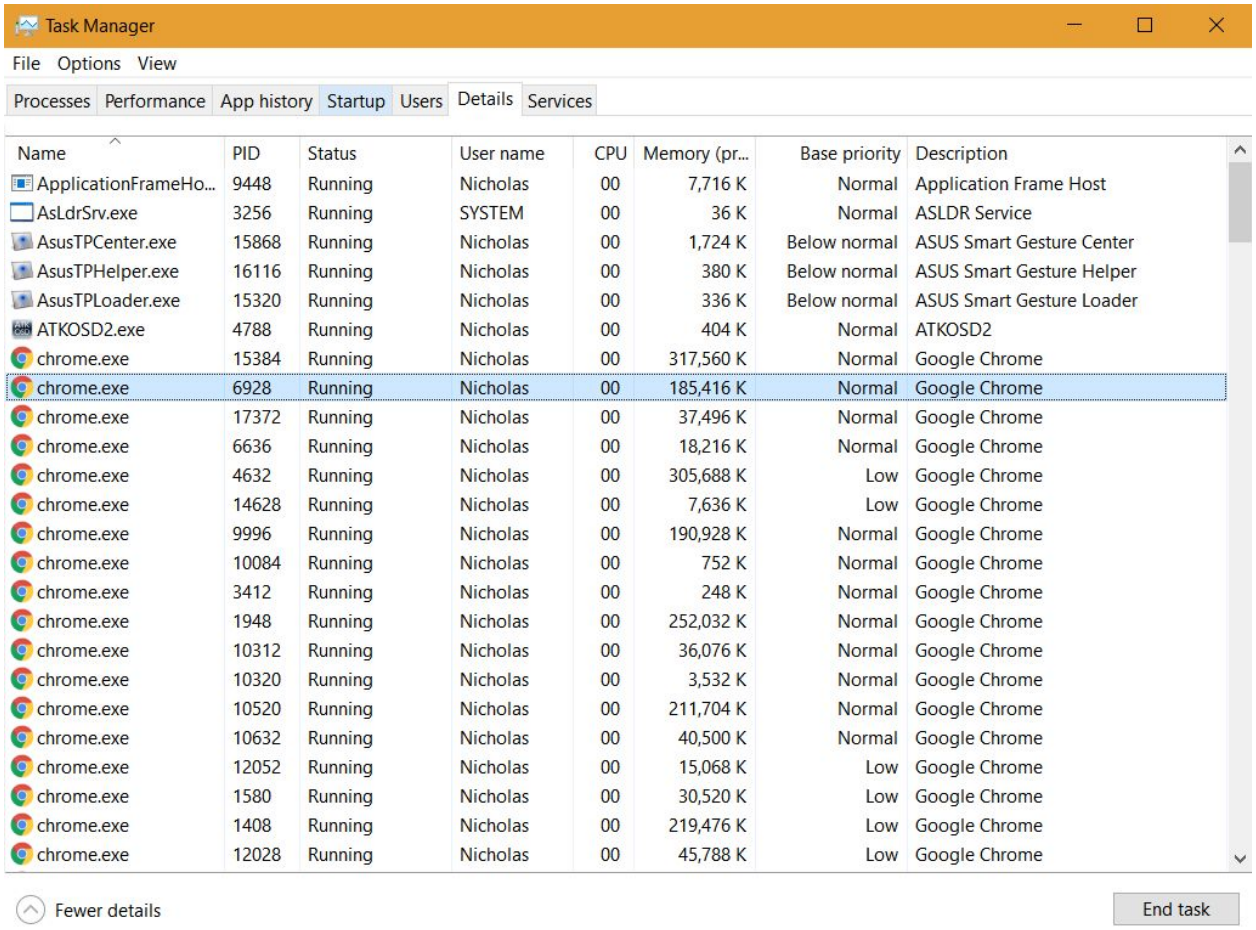

Figure 12. Expanded Task Manager view showing additional process column - Base Priority

- Close the browser window.
- **Question 18:** Is the browser still listed as process in the Task Manager?
- Close all open windows.

Windows Task Manager Lab: Answer Sheet

Student Name:		Student #:	

Question:	Answers:
Question 1:	
Question 2:	
Question 3:	
Question 4:	
Question 5:	
Question 6:	
Question 7:	
Question 8:	
Question 9:	
Question 10:	
Question 11:	
Question 12:	
Question 13:	
Question 14:	
Question 15:	
Question 16:	
Question 17:	
Question 18:	