How to Save any screen, to review the screen image now or later

Device Type	*Keyboard keys OR button combo*	*Screen image file is stored in folder*
Windows	Win+PRTSCR	Pictures/Screenshots
Macintosh	Shift+Command+3	Desktop
Android	Power+Volume Up	Internal storage/ DCIM/Screenshots
iOS	Home+Volume Down or Power+Volume Down	Photos

THE WINDOWS MDSCHED UTILITY:

Check your Windows PC for RAM errors

A Learn in 30 presentation by

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For PATACS+OPCUG

August 18, 2025

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AGENDA

- The role of RAM in your personal computer
- Symptoms of RAM errors
- Starting MDSCHED from Windows
- How MDSCHED looks as it runs RAM tests
- HOW MDSCHED reports RAM test results to you

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RAM in your computer

- RAM, **Random Access Memory**, is where the Central Processing Unit (CPU) puts applications to be run.
- RAM is where data is created, loaded from storage, updated, and copied to storage.
- Therefore RAM is at the heart is all you can do with your computer.

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Why does RAM sometimes fail?

- RAM is remarkably reliable but is not perfect.
- RAM can be damaged by extreme heat, power spikes, liquids and perhaps other causes.
- RAM is measured in binary digits (bits). Each bit in RAM is not always made 100% the same as all others.
- Some bits may be slightly more likely to fail as usage goes on.
- RAM is organized on Dual Inline Memory Modules (DIMMs), now with gigabytes per DIMM.
- You can replace a DIMM.

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What are RAM failure symptoms?

- Files are corrupted frequently
- Applications crash frequently
- The Windows operating system crashes frequently
- Other problems can cause such behaviors

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The Windows MDSCHED utility

- MDSCHED is the acronym for the **Memory Diagnostic Scheduler** utility.
- MDSCHED was first introduced in Windows Vista in 2007.
- Every personal computer Windows version after that includes MDSCHED.

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MDSCHED tests ALL RAM

- Shut down all Windows applications before starting MDSCHED.
- MDSCHED shuts down the Windows operating system so it can test RAM occupied by Windows.
- While MDSCHED runs, you cannot use Windows on that computer.
- While MDSCHED runs, if you suddenly need to use Windows, then you can halt MDSCHED and start Windows.

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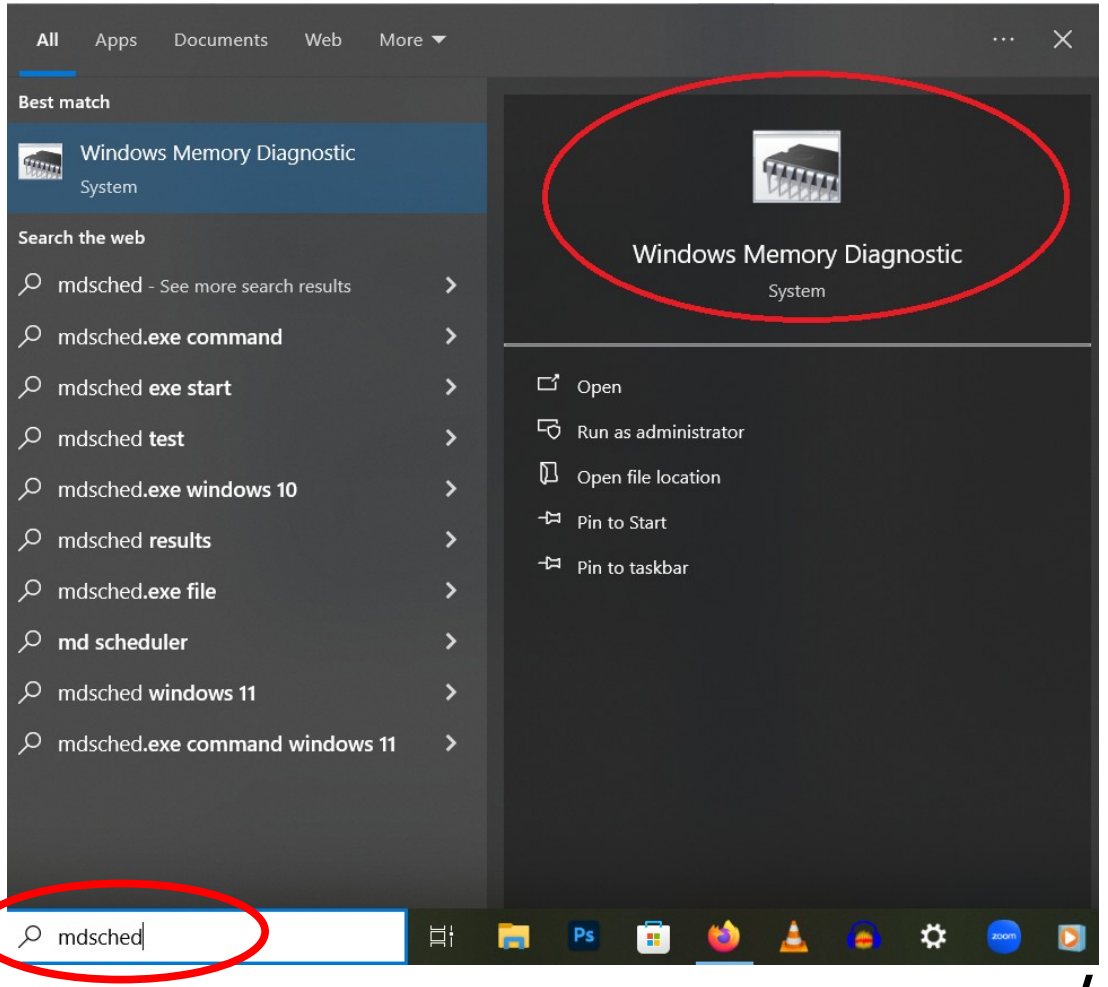
Use Windows to start MDSCHED

- In the Windows Start menu, type **mdsched** in the search field at the bottom (circled).
- The menu shows **Windows Memory Diagnostic** in the upper right corner (circled).
- Select **Windows Memory Diagnostic.**



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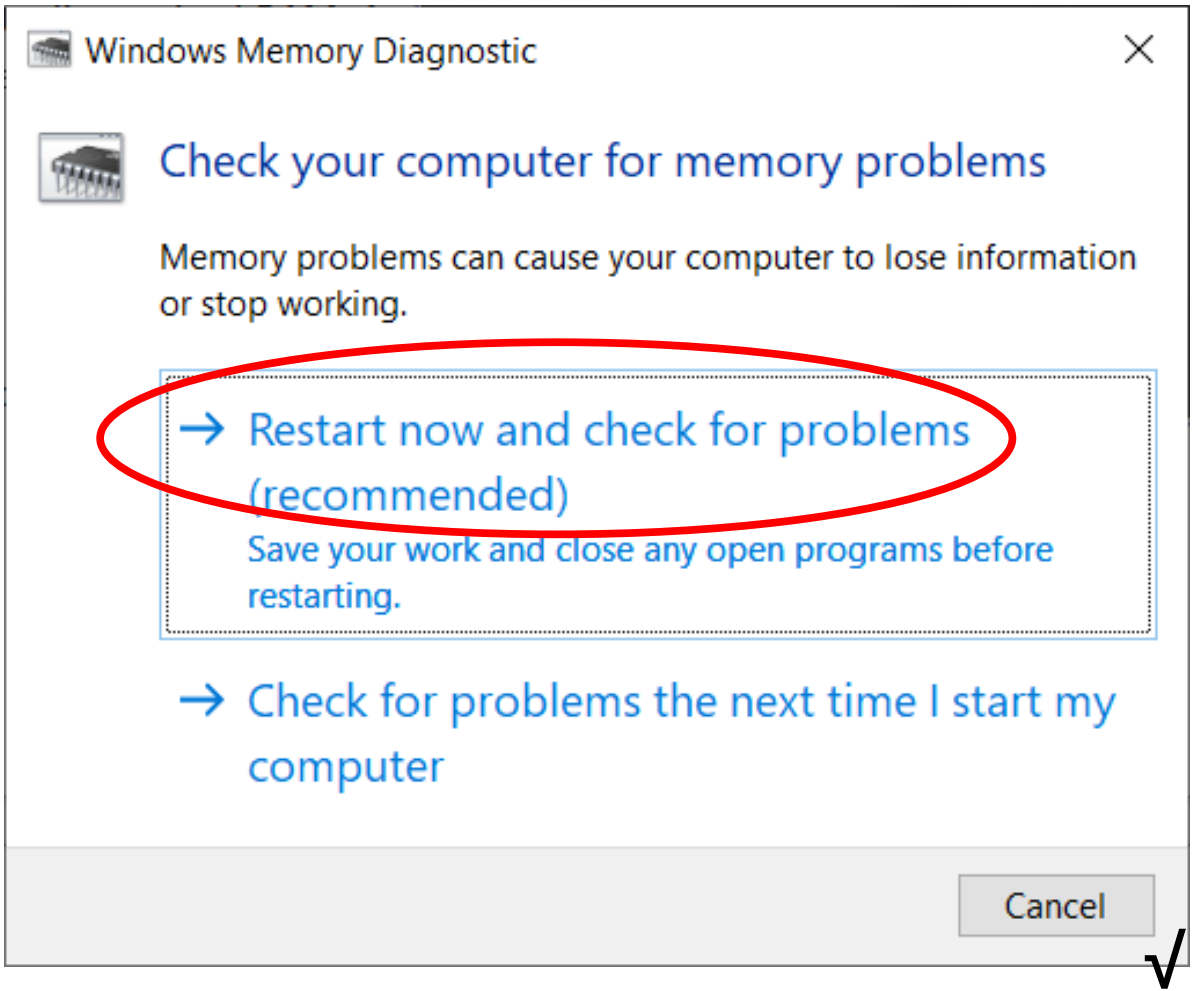
The Schedule Options Popup

- The Start Menu closes. This dialog window appears.
- The dialog window offers two options for running MDSCHED.
- I prefer **Restart Now and check.**



How long does MDSCHED take?

- That depends on the speed of your computer and the amount of RAM in your computer.
- Testing 4 gigabytes of RAM will take far less time than testing 32 gigabytes of RAM.
- Testing RAM running at 1 gigahertz (GHz) will take more time than testing RAM running at 3 GHz.

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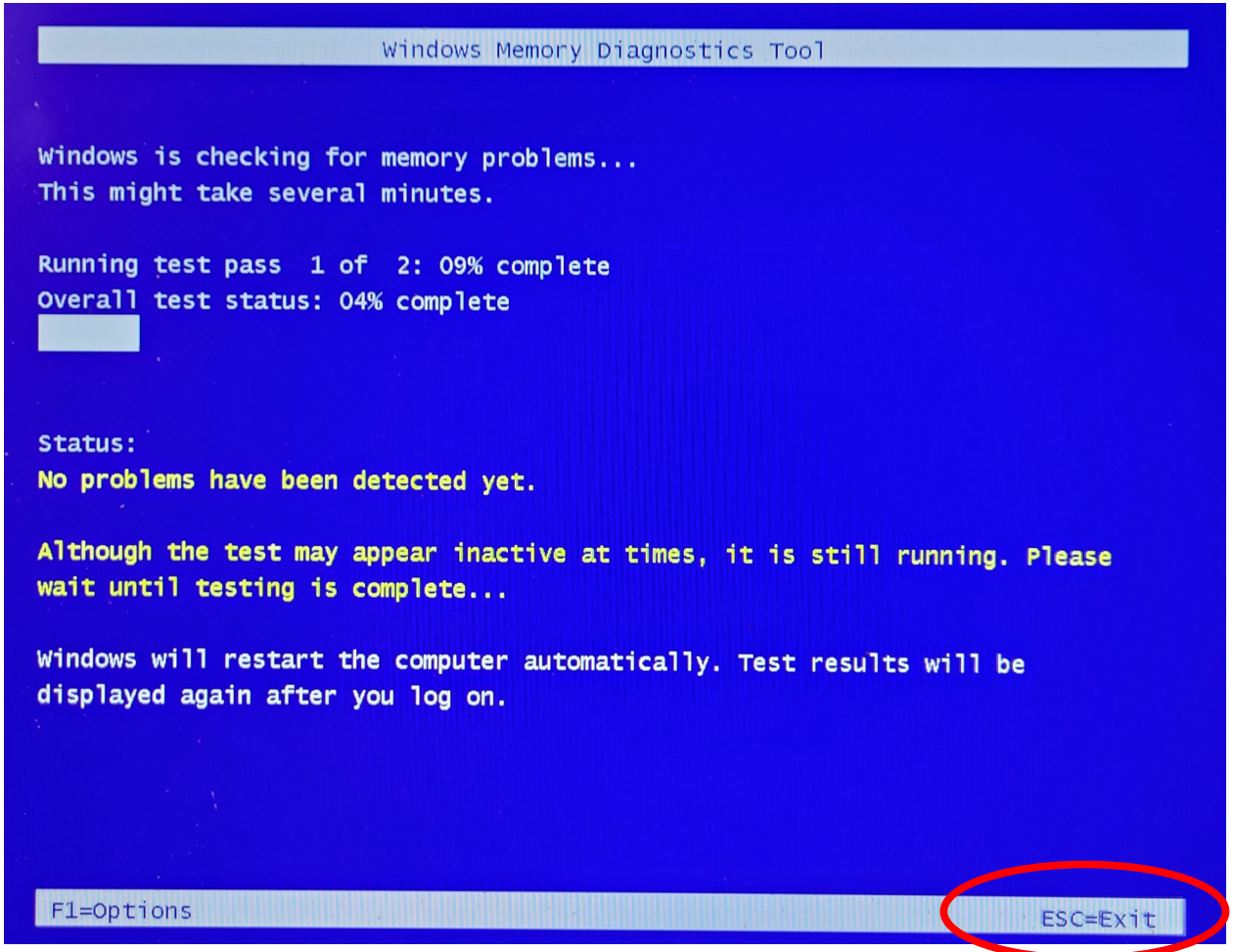
How MDSCHED looks while it works

- Windows was not running so I could not do a screen capture.
- I shot this screen photo with my smartphone.
- One keyboard key is useful: **ESC** to exit (circled)



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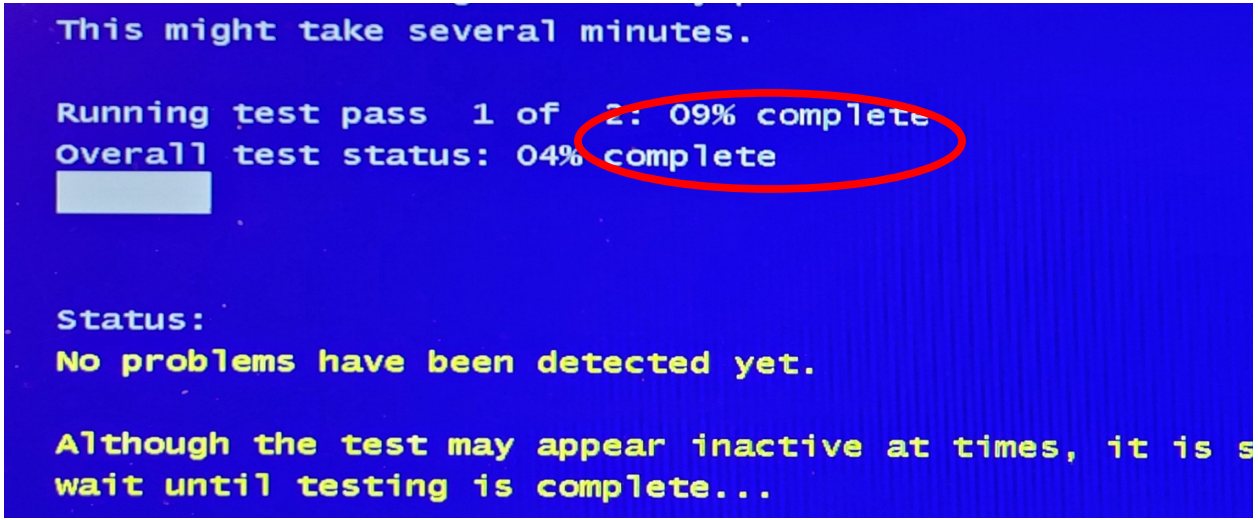
How MDSCHED looks as it works

- The MDSCHED screen includes a progress report percentage (circled)



- On my Windows 10 laptop with 32 gigabytes of RAM, MDSCHED ran for 54 minutes.
- When MDSCHED finishes, it restarts Windows.
- Windows displays a brief popup reporting no errors were found, or errors were found.

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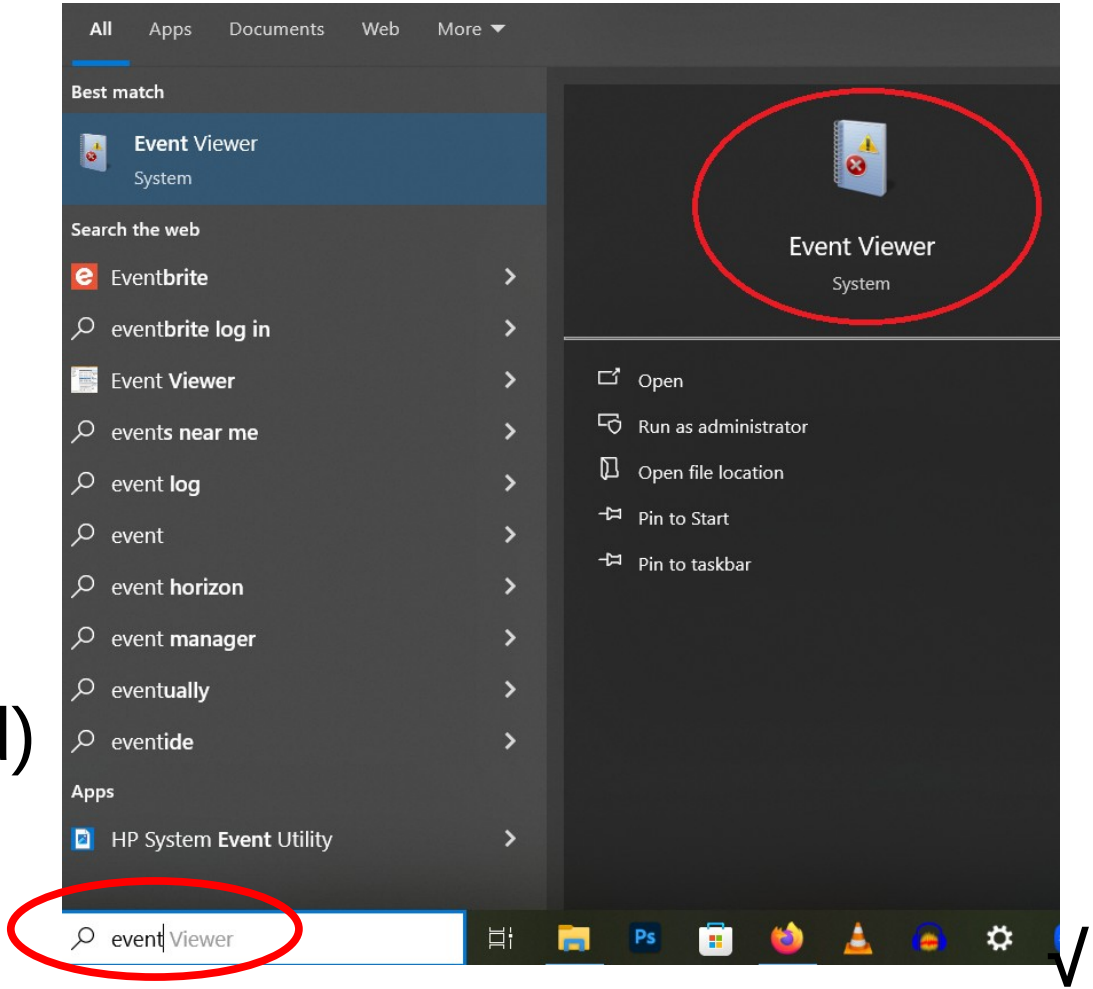
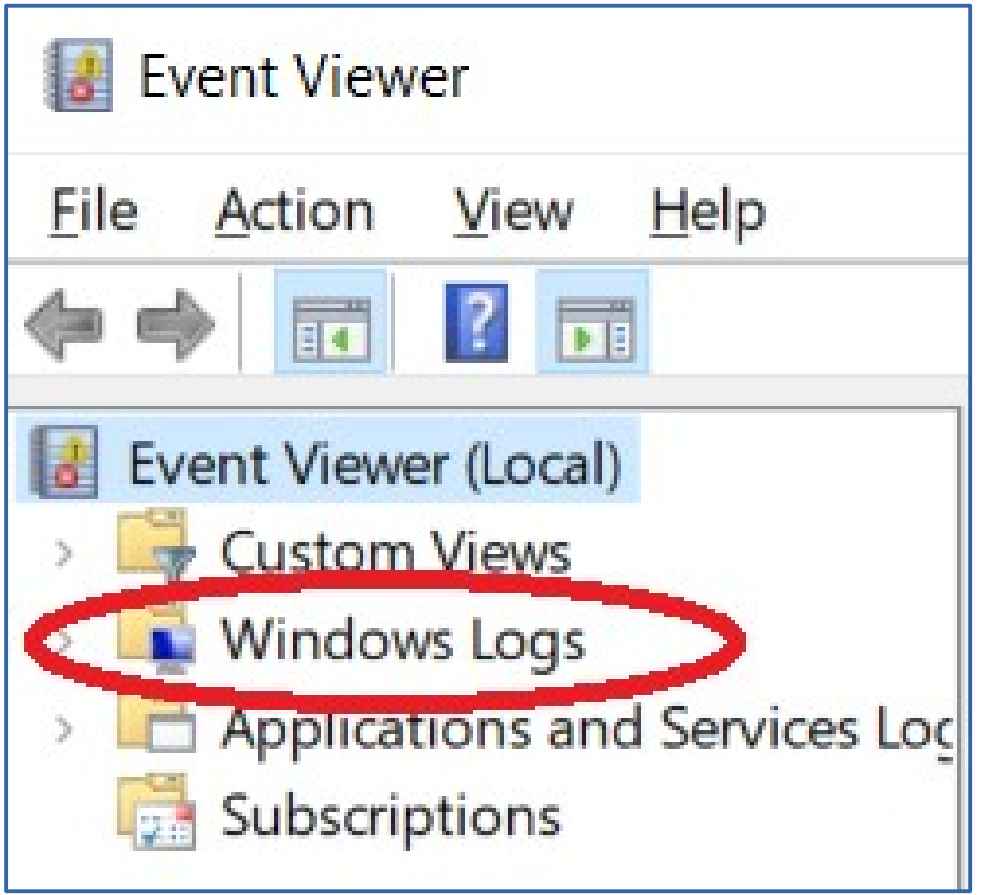
Details of RAM errors found

- RAM errors if any are reported in a Windows System event log.
- To see that log, open the Windows Start Menu and, in the search field, type **Event** (circled).
- In the upper right corner, click **Event Viewer** (circled)



Using Event Viewer

- **Event Viewer** displays a left pane, a middle pane, and a right pane.
- In the left pane, click **Windows Logs** (circled).



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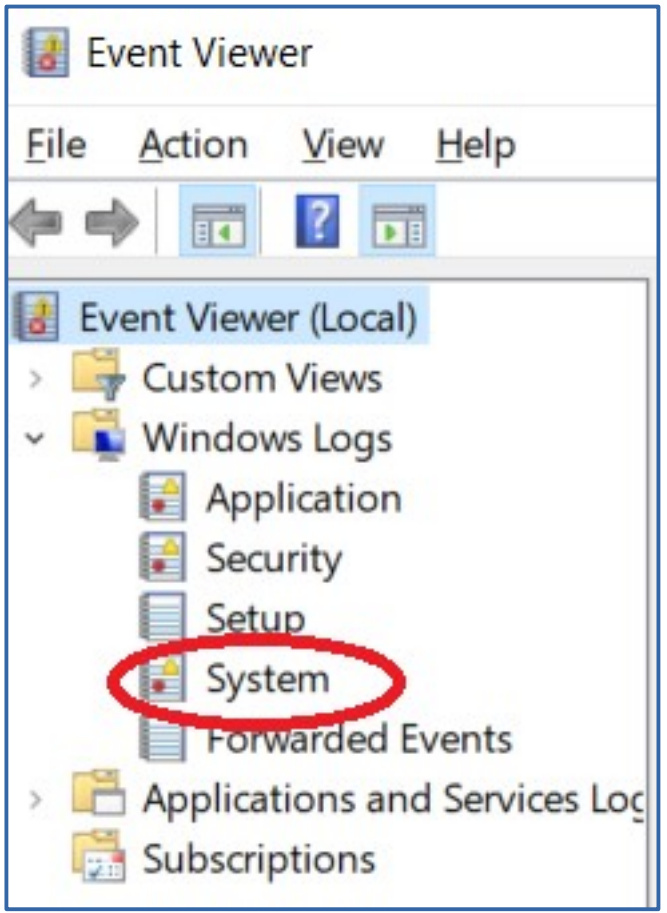
Using Event Viewer

- In the Event Viewer left pane, under Windows Logs, a group of log types appears.
- In the group, click **System** (circled)



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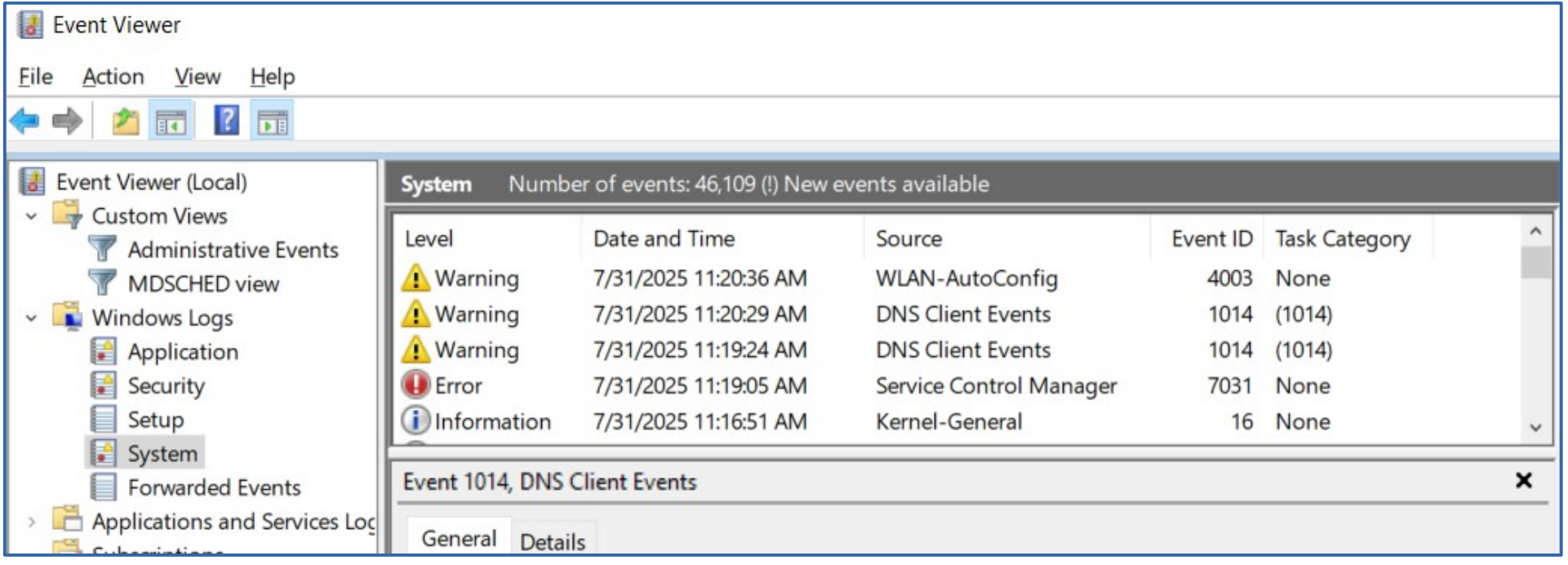
Using Event Viewer

- In the middle pane, by default, Event Viewer shows events from all sources, in chronological order.
- Here you see that the middle pane shows **event level flags**. is Info, is Warning, is Critical, and is Error.



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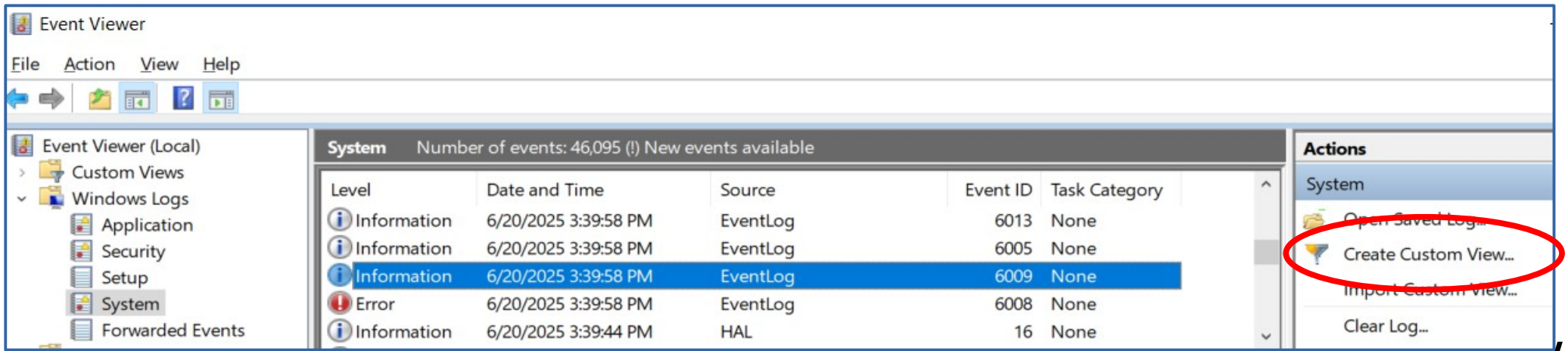
Filter to see only MDSCHED Events

- In the right pane, click **Create Custom View** (circled)
- A **Custom View Filter dialog box** opens (next slide)



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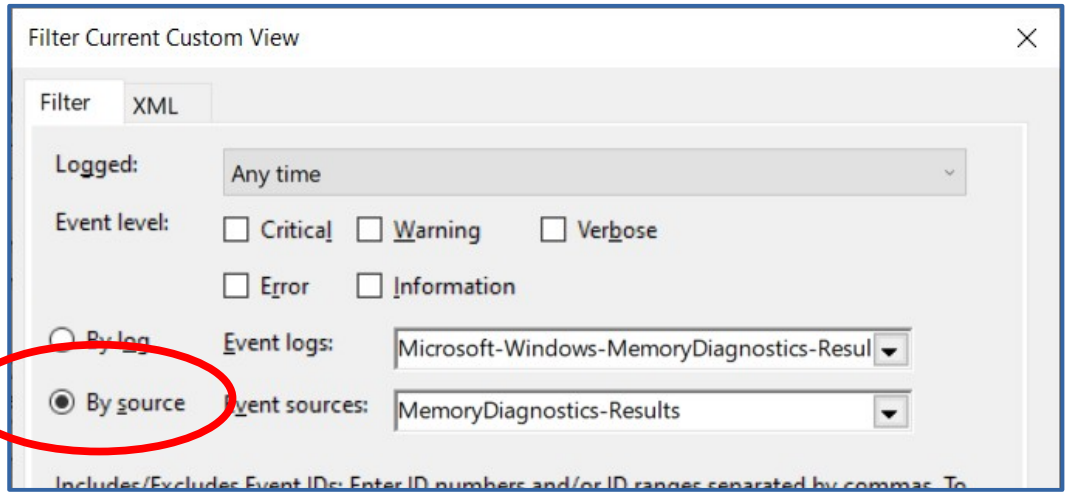
Filter to see only MDSCHED Events

- In the dialog box, click **By Source** (circled)
- Click the Event Sources down-arrow on the right to see the menu of event sources. It is a very long menu.
- In the menu, select **MemoryDiagnostics-Results**. The menu closes.
- In the bottom right corner of the dialog box, click the **OK button** (not shown).



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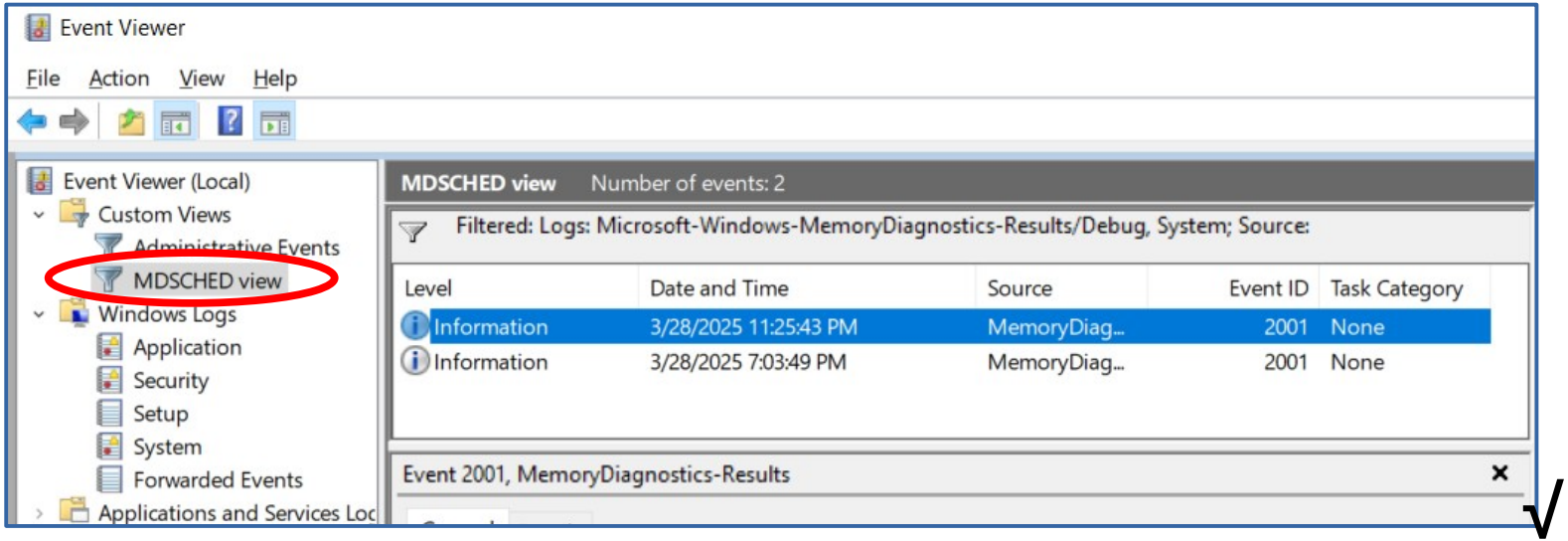
Filter to see only MDSCHED Events

- You can also assign a name to the filter. I assigned **MDSCHED view**.
- In the left pane, the assigned name shows up (circled) so you can click to re-use the filter if desired.
- The center pane now shows only Memory Diagnostic events.
- If all you see is **Info level events**, then your RAM tested fine.



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PREVIEW OF COMING ATTRACTIONS

- At the next PATACS+OPCUG joint meeting on Saturday, September 19:
- LUNCHEON in lieu of Learn in 30
- A special Windows 10 end-of-support topic: **TEST-DRIVING LINUX** presented by me.
- See how closely zero-cost Linux Mint with Cinnamon resembles the Windows 10 Graphical User Interface (GUI)
- Learn how to install Linux Mint on an external drive, and how to set your computer to start up Linux on that external drive
- If Windows fails to boot, then Mint can recover drive C files. √

THE END