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Course: Operating System

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Assignment: Class1

Due Date: May 15, 2025 (12:00 AM)

Please find 5 examples of interrupt drive events inside your daily computer tasks. (hardware, software) by explain and example

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Below are **5 examples** of interrupt-driven events categorized into **hardware** and **software**, along with explanations and examples from typical computer usage.

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## Hardware Interrupt

1. **Keyboard Input:** When you press a key on the keyboard, it triggers a hardware interrupt to notify the CPU that input data is available.
    - **Example:** While typing a document in Microsoft Word, pressing a key (e.g., the letter "A") interrupts the CPU to process and display that character on the screen.
  2. **Mouse Click:** Clicking the mouse sends a signal to the CPU, interrupting the current process to handle the click event.
    - **Example:** When you click the "Start" button in Windows, the operating system pauses its background tasks to respond by opening the Start menu.
  3. **Printer Request (I/O Interrupt):** When a print job is sent to a printer, the printer sends an interrupt back to the CPU when it's ready or if there's an error (e.g., no paper).
    - **Example:** While printing a PDF, if the printer runs out of paper, it interrupts your system to show a pop-up warning.
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## Software Interrupt

4. **System Calls:** Applications request services from the operating system via system calls, which are implemented using software interrupts.
  - **Example:** When you save a file in Notepad, it triggers a software interrupt to ask the OS to write data to disk.

5. **Exception Handling (e.g., Divide by Zero):** Software-generated interrupts occur during exceptions (errors), and the CPU stops current execution to handle the error.
- **Example:** If you're using Excel and a macro script performs a divide-by-zero calculation, the system interrupts to show an error message or halt the script.
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