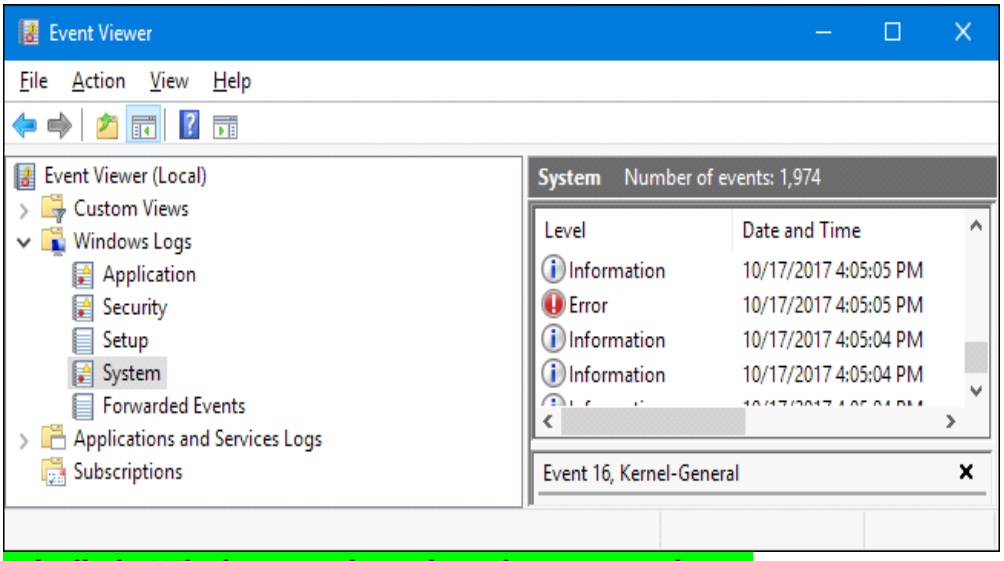
Operating Systems :

Thursday, December 25, 2025 10:26 PM

Operating Systems concepts focusing on **Windows** and **Linux :**

Windows :

Event Viewer :

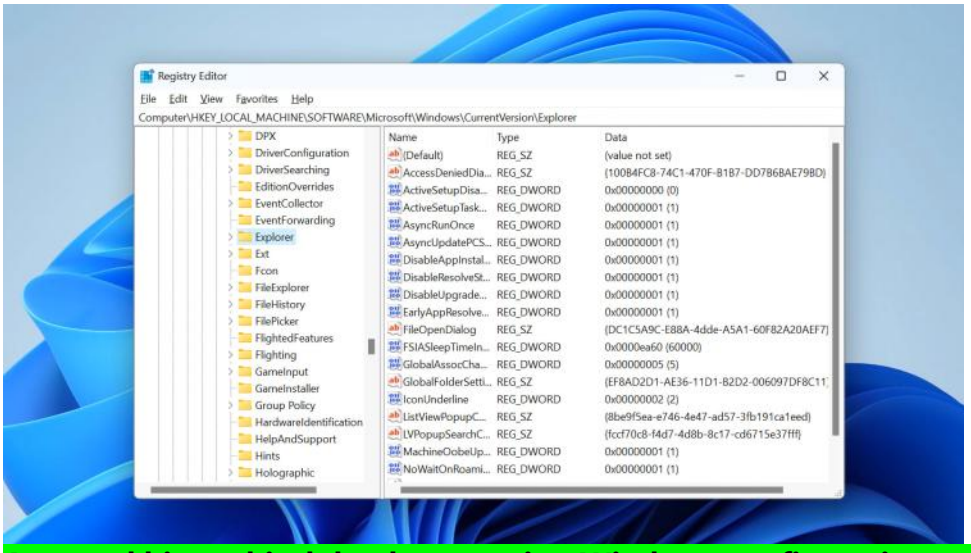


- **A built-in Windows tool used to view system logs .**
- **Helps troubleshoot errors, warnings, crashes, and security events.**
- **Logs are divided into:**
  - **Application – Software-related issues.**
  - **System – OS and hardware events.**
  - **Security – Login attempts, audits, policy changes.**
- **Each event includes:**
  - **Event ID**
  - **Source**
  - **Severity (Information, Warning, Error, Critical)**

Use cases :

- **Diagnosing system crashes (BSOD)**
- **Investigating failed logins**
- **Tracking software or driver failures**

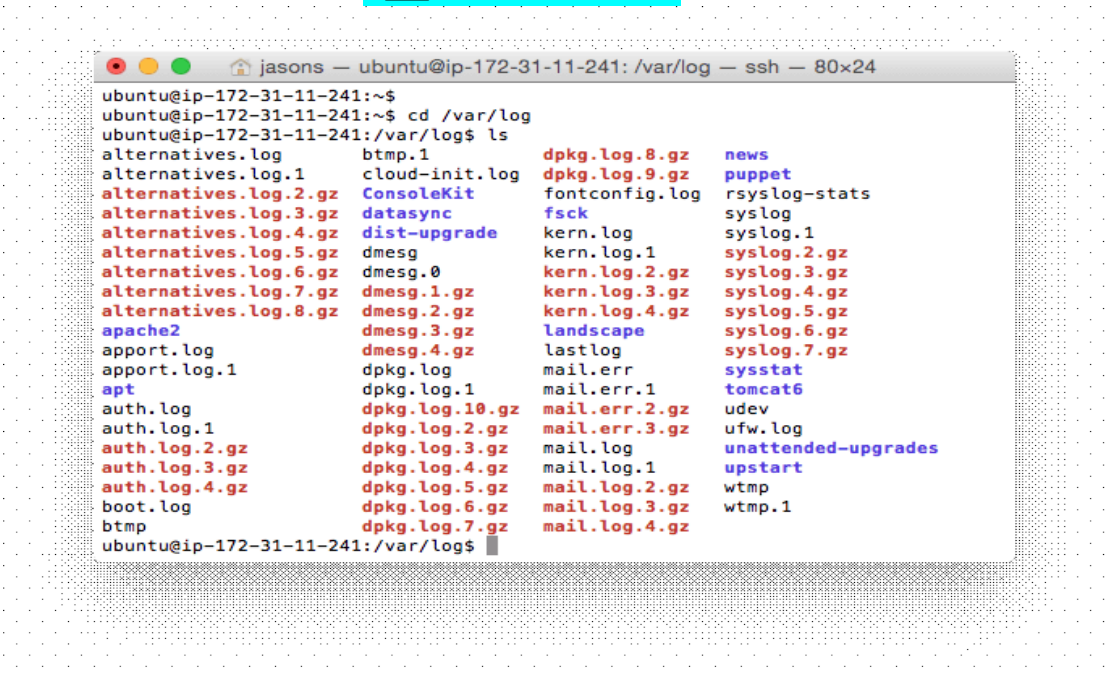
Registry :



- ★ **A central hierarchical database storing Windows configuration settings.**
- ★ **Contains settings for:**
  - **Hardware**
  - **Installed software**
  - **User preferences**
  - **System policies**
- ★ **Important Registry hives**
  - **HKEY_LOCAL_MACHINE (system-wide settings)**
  - **HKEY_CURRENT_USER (current user settings)**
  - **HKEY_CLASSES_ROOT (file associations)**

⚠ **Incorrect changes can damage the OS, so backups are essential.**

Linux :



Logs :

- ★ **Plain text files that record system and application activity**

- **Stored mainly in /var/log/**

Common log files :
/var/log/syslog – General system activity
/var/log/auth.log – Authentication and sudo usage
/var/log/dmesg – Kernel messages
/var/log/boot.log – Boot process info

Viewing logs :
cat, less, tail

Permissions :

Linux uses a permission-based security model for files and directories.
Permission types
- **r – read**
- **w – write**
- **x – execute**

User categories
- **Owner**
- **Group**
- **Others**

Example:
-rwxr-xr--
- **Owner: read, write, execute**
- **Group: read, execute**
- **Others: read only**

Commands :
- **ls -l → View permissions**
- **chmod → Change permissions**
- **chown → Change file owner**

Feature	Windows	Linux
Logs	Event Viewer	Text files in /var/log
Config Storage	Registry	Text config files
Permissions	GUI + ACL	rwx (owner/group/others)
Admin Tool	GUI-heavy	CLI-focused