Here is the most comprehensive, sentence-by-sentence breakdown and study notes of the document **“115. Disk Utility.docx”**, rewritten for easy exam prep based on the **CompTIA A+ 220-1102 exam (Objective 1.8)**. This breakdown includes deep insight into how **macOS Disk Utility** works, its parallels with Windows tools, and how it’s used in real-world scenarios.

**🧠 Study Notes – Disk Utility (macOS)**

**🔎 What Is Disk Utility?**

* **Disk Utility** is a built-in macOS application used to **verify, repair, erase, partition, and format disks**.
* It’s similar in function to the **Disk Management Console** in Windows.

**📍 How to Launch Disk Utility**

* Two methods:
  1. **Applications > Utilities > Disk Utility**
     + Navigate via Finder to Applications → Utilities → Disk Utility.
  2. **Spotlight Search**
     + Press Command + Spacebar, type **“Disk Utility”**, and launch it.

**🛠️ What Can You Do with Disk Utility?**

* **Verify or repair** file systems or physical disks.
* View:
  + **Physical disks** (like your hard drive or SSD)
  + **Logical volumes/partitions** within those disks

**🧱 Internal Disk Structure Example**

* Example setup: Internal disk named **macOS**
  + Contains two main volumes:
    - **Mac HD**
    - **Mac HD – Data**
  + Includes a **snapshot** of Mac HD (used for system recovery).
* Partition Info:
  + Single partition across the full disk.
  + Used: **805 GB**
  + Recovery volume: **1.85 GB**
  + Free space: **~193 GB**

**🧾 Key Terms**

* **APFS (Apple File System)** – default format for macOS drives.
* **Volume Group** – macOS combines multiple volumes into one APFS container.
  + In this example: 5 volumes on a 1 TB drive.
* Shows **macOS version** installed (e.g., 12.5.1).
* Shows **connection type** (e.g., PCIe = solid-state drive).
  + Disk identifier example: disk1s5s1.

**🧪 Working with External Drives (USB)**

**📥 Connecting a USB Thumb Drive**

* Plugging in a **64 GB USB drive** named “Recovery” shows:
  + Appears on **desktop**
  + Appears in Disk Utility under **External**

**📉 Problem Identified:**

* USB is **formatted with FAT32**
  + Only **~34 GB usable** due to file system limits.

**🧼 Erasing and Reformatting the Drive**

**🧭 Steps:**

1. Click **Erase**
2. Enter a new name (e.g., Storage)
3. Choose **ExFAT** format (more compatible than FAT32)
4. Configure **Security Options**:
   * **Fastest**: quick format; data easily recoverable
   * **More secure**: takes longer; writes over data
     + **2 passes** = moderate security
     + **3 passes** = higher security
     + **7 passes (most secure)** = US DoD-level data removal
5. Choose **Fastest** (used here for demonstration purposes)
6. Click **Erase** to begin the process

✔ Outcome:

* New ExFAT volume named Storage
* Capacity still shows **~34 GB** (why? see next)

**🧰 Why Only ~34 GB Shows on a 64 GB USB?**

* Disk Utility was only showing **volumes**, not the full physical disk.
* Use the **View > Show All Devices** option to reveal:
  + Parent device: **SanDisk Ultra Media**
  + Volume (Storage) is just a **portion** of the disk
* Clicking on SanDisk Ultra Media shows full **64 GB drive** (with ~61.5 GB usable)

**📏 Formatting the Entire Physical Disk**

**Steps:**

1. Select **SanDisk Ultra Media** (not just the Storage volume)
2. Click **Erase**
3. Rename to Store
4. Format as **ExFAT**
5. Select **Partition Scheme**:
   * **GUID Partition Map (GPT)** – Best for Mac + Windows
   * **Master Boot Record (MBR)** – For legacy BIOS systems
   * **Apple Partition Map** – Only for macOS compatibility

✅ Choose **GUID** for cross-platform support

1. Confirm **Security Option = Fastest**
2. Click **Erase**

✔ Outcome:

* New volume Store created
* Disk formatted with ExFAT and full capacity restored
  + Final size: **~61.29 GB**
  + Actions logged: unmounting, partitioning, activation, format success

**⚙️ Advanced Disk Utility Features**

* **Partitioning**:
  + Split a drive into multiple logical sections (like using diskpart in Windows)
* **First Aid**:
  + macOS equivalent of **Check Disk** (chkdsk)
  + Verifies and repairs file system errors

**✅ Summary – Disk Utility Overview**

| **Feature** | **Description** |
| --- | --- |
| **Launch Path** | Applications > Utilities > Disk Utility or Spotlight Search |
| **Primary Functions** | Format, erase, partition, repair disks (internal/external) |
| **View Options** | Toggle between Volumes Only and All Devices |
| **File Systems** | APFS (Mac), ExFAT (Mac/Windows), FAT32 (legacy) |
| **Partition Schemes** | GUID (Mac/Win), MBR, Apple Partition Map |
| **Security Options** | 1–7 overwrite passes; 7 = most secure |
| **Disk Types Supported** | HDD, SSD, USB drives, external drives |
| **First Aid Tool** | Verifies/repairs disk issues |
| **Comparison to Windows** | Like Disk Management + Check Disk + Format Tool combined |

**🎯 Exam Connection – CompTIA A+ 220-1102 (Objective 1.8)**

* You’re expected to **recognize** tools like Disk Utility and what they do.
* Focus is on **identification**, not deep command-line use or configuration.

Would you like:

* A **visual flowchart** of Disk Utility actions?
* A **practice quiz** based on Objective 1.8 (macOS tools)?
* A **comparison chart** of Disk Utility vs Windows Disk Management?

Let me know what you’d like next!