1. What is an Operating System?

An operating system provides all fundamental software features of a computer. An OS enables you to use the computer's hardware providing you the basic tools that make the computer useful. all for those features relay on the OS's kernel. Other OA feature are owed to additional programs that run atop the kernel .

2. What is a kernel?

An OS Kernel is a software component that's responsible for managing low-level features of the computer, including the following managing system hardware, memory allocation, cpu time, and program to program.

3. Which other parts aside from the kernel identify an OS?

- **command-lines hells**
  - this was the facto way of using computers before the graphical interface was invented. CMDs work by typing commands in a shell. In linux the entire system can be control via the CLI
- **Graphical User interfaces**
  - GUIs rely on icons, menus, and mouse pointer for the user interaction. linux relies on a GUI known as the X Window System in combination with desktop environment program suites.
- **Utility and productivity programs**
  - Tools like web browsers, documents processors and text editors.
- **libraries**
  - Libraries are collections of programming functions that can be used by a variety of programs.

4. What is linux and linux distribution?

- Linux is a **Uix-like Operative system** popular in academic and business environment
- Popular Linux distribution include **Arch, CentOS, Debian, Fedora, openSUSE, Red Hat, Salckware**, Ubuntu and many more.

6. List at least 4 linux characteristics:

- LInux is **open source software**
- Linux is available **free of charge**
- Linux includes many of the **Unix tools** including many important internet server programs and programing languages out of the box.
- Linux is **highly scalable** and customizable

7. What is Debian?

Debian is a all-volunteer organization dedicated to developing free software and promoting the ideals of the free software community.

9. List and define the different types of licensing agreements

- types of licensing agreement:
  - **open source:** the software may be distributed for a fee or free. The source code is distributed with the software.

    - **close source:** the software is not distributed with the source code. the user is restricted from modifying the code.
        - **freeware:** the software is free but the source code is not available.
        - **shareware:** the software is free on a trial basis.

10. What is Free Software? Define the 4 freedoms.

Free Software: the software is distributed with the source code. The software can be free of change or obtained by a fee.

- **software freedoms:**
    - **Freedom 0:** use the software for any purpose
    - **Freedom 1:** examine the source code and modify it as you see fit
    - **freedom 2:** redistribute the software
    - **freedom 3:** distribute the modifued software

11. What is virtualization?

Virtualization is a technology that creates virtual, software-based versions of physical IT resources like servers, storage, networks, and operating systems, allowing multiple virtual environments to run on a single piece of physical hardware.