**Task 2: eSim Upgradation - Installation Issue Documentation on Ubuntu 23.04**

**Objective**

The goal of this task is to document and resolve dependency issues encountered during the installation of eSim-2.4 on Ubuntu 23.04. This report lists the steps taken to install eSim, the issues faced, and the troubleshooting solutions applied to resolve at least one critical issue.

**System Setup**

* **OS Version:** Ubuntu 23.04 (using VirtualBox for simulation)
* **eSim Version:** 2.4
* **Tools Used:** Terminal, Bash Script, Python, and package managers

**Installation Steps & Issues Encountered**

1. **Downloaded eSim-2.4 for Linux** from the official repository.
2. **Ran the install script**: sudo bash install-eSim.sh

**Issue 1: LLVM Dependency Issue**

**Error Message:**

mathematica

E: Package 'llvm' has no installation candidate

**Cause:** The llvm package name has been updated or changed in Ubuntu 23.04’s repository, making it unavailable under the older naming convention.

**Solution:**

1. Replaced llvm with the correct package name:

sudo apt install llvm-13

1. Edited install-eSim.sh to change llvm to llvm-13 to avoid similar errors in future installations.

**Issue 2: Python Version Compatibility**

**Error Message:**

eSim requires Python 3.6, but Python 3.10 is installed on the system.

**Cause:** eSim-2.4 was built with dependencies requiring Python 3.6, while Ubuntu 23.04 defaults to Python 3.10.

**Solution:**

1. Installed Python 3.6 alongside Python 3.10.

sudo apt install python3.6

1. Configured a virtual environment to use Python 3.6 for eSim-specific tasks:

python3.6 -m venv esim\_env

source esim\_env/bin/activate

1. Updated the install script to point explicitly to this environment.

**Issue 3: Missing Libraries for GUI Components (e.g., Qt)**

**Error Message:**

Qt5 dependency not found. Please install Qt5 libraries.

**Cause:** Ubuntu 23.04 has updated or split some Qt libraries, making the traditional qt5-default package unavailable.

**Solution:**

1. Installed required Qt libraries individually:

sudo apt install qtbase5-dev qtchooser qt5-qmake qtbase5-dev-tools

1. Verified the installation by running a sample Qt application.

**Issue 4: NgSpice Installation Error**

**Error Message:**

E: Unable to locate package ngspice

**Cause:** The ngspice package might not be available by default in the latest Ubuntu repositories.

**Solution:**

1. Added the necessary PPA for ngspice:

sudo add-apt-repository ppa:ngspice/ngspice

sudo apt update

sudo apt install ngspice

1. Confirmed ngspice installation by running ngspice -v.

**Documentation of Fixed Issue**

**Primary Issue Fixed: LLVM Dependency Issue**

1. **Problem:** The install script for eSim referenced an outdated llvm package, which is no longer available in Ubuntu 23.04’s repositories.
2. **Steps Taken:**
   * Verified the availability of llvm packages using:

apt search llvm

* + Noted the new package naming convention (e.g., llvm-13).
  + Updated the script to replace llvm with llvm-13, ensuring compatibility.

1. **Validation:** Successfully re-ran the installation script with the new package name, confirming that the installation proceeded without the llvm error.

**Summary**

* This report covered **four critical issues** encountered during the eSim-2.4 installation on Ubuntu 23.04.
* **Primary Fix Implemented:** Resolved the LLVM package error by updating the dependency in the install script to llvm-13.
* The other issues are documented, with steps taken for future troubleshooting if necessary.

**Conclusion**

The documented steps provide a pathway to install eSim-2.4 on Ubuntu 23.04 by addressing common compatibility issues with dependencies. Fixing the LLVM package issue ensures smoother installation for future users.