

## 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.

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### System Setup

- **OS Version:** Ubuntu 23.04 (using VirtualBox for simulation)
  - **eSim Version:** 2.4
  - **Tools Used:** Terminal, Bash Script, Python, and package managers
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### 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`
  2. Edited `install-eSim.sh` to change `llvm` to `llvm-13` to avoid similar errors in future installations.
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#### 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
```

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

```
python3.6 -m venv esim_env  
source esim_env/bin/activate
```

3. Updated the install script to point explicitly to this environment.
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**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
```

2. Verified the installation by running a sample Qt application.
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**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
```

2. Confirmed `ngspice` installation by running `ngspice -v`.
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## 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.
  3. **Validation:** Successfully re-ran the installation script with the new package name, confirming that the installation proceeded without the `llvm` error.
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## 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.