

### Experiment No.3

**Aim: To install Truffle, a popular development framework for Ethereum blockchain.**

Truffle is a development framework and toolset for building decentralized applications (dapps) on the Ethereum blockchain. It provides developers with a suite of tools to write, compile, test, and deploy smart contracts efficiently using the Solidity programming language. Truffle also simplifies the integration of smart contracts with user interfaces using a front-end library called Drizzle. With Truffle, developers can create robust and secure dapps that leverage the power and transparency of blockchain technology.

#### Truffle Installation:

Installing Truffle, a development framework for Ethereum, allows you to compile, deploy, and test your smart contracts easily. It requires Node.js and npm (Node Package Manager) to be installed.

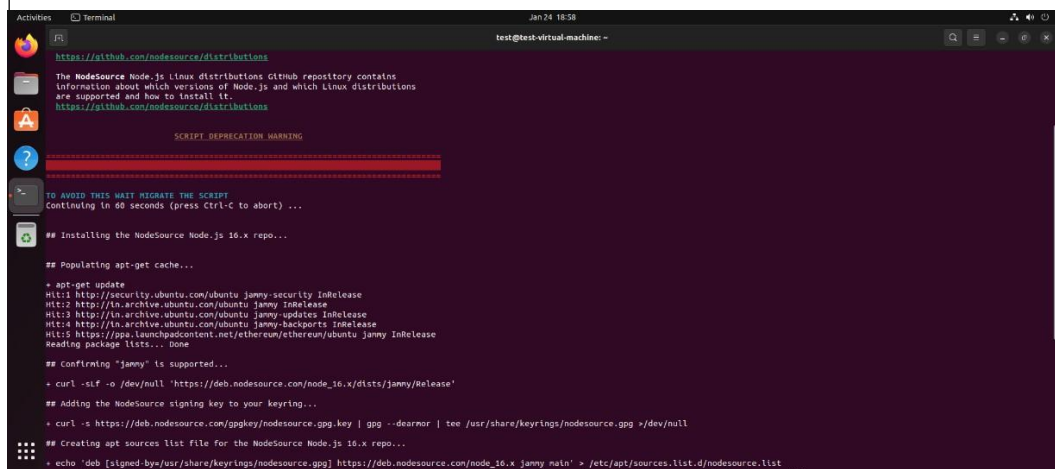
1. **Install Node.js and npm:** Installed Node.js and npm, by executing the following commands in your terminal. These commands install Node.js and npm using the NodeSource repository, which often has more up-to-date versions than the official Ubuntu repositories.

##### A. Install Curl:

```
sudo apt update && sudo apt install curl
```

- B. **Download Node.js (This will install Node.js and npm):** You can install the LTS (Long-Term Support) version of Node.js for stability. Node.js LTS version is 16.x, but you should check the current LTS version for Node.js.

```
curl -sL https://deb.nodesource.com/setup_16.x | sudo -E bash -
```



```
Activities Terminal Jan 24 18:58 test@test-virtual-machine: -
https://github.com/nodesource/distributions
The NodeSource Node.js Linux distributions Github repository contains
information about which versions of Node.js and which Linux distributions
are supported and how to install it.
https://github.com/nodesource/distributions
SCRIPT DEPRECATION WARNING
=====
TO AVOID THIS WAIT MIGRATE THE SCRIPT
Continuing in 60 seconds (press Ctrl-C to abort) ...

## Installing the NodeSource Node.js 16.x repo...

## Populating apt-get cache...

+ apt-get update
Hit:1 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:2 http://n.archive.ubuntu.com/ubuntu jammy InRelease
Hit:3 http://n.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:4 http://n.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:5 https://ppa.launchpadcontent.net/ethereum/ethereum/ubuntu jammy InRelease
Reading package lists... Done

## Confirming "jammy" is supported...

+ curl -sL -o /dev/null 'https://deb.nodesource.com/node_16.x/dists/jammy/Release'

## Adding the NodeSource signing key to your keyring...

+ curl -s https://deb.nodesource.com/gpgkey/nodesource.gpg.key | gpg --dearmor | tee /usr/share/keyrings/nodesource.gpg >/dev/null

## Creating apt sources list file for the NodeSource Node.js 16.x repo...

+ echo 'deb [signed-by=/usr/share/keyrings/nodesource.gpg] https://deb.nodesource.com/node_16.x jammy main' > /etc/apt/sources.list.d/nodesource.list
```

##### C. Install Node.js and npm:

```
sudo apt-get install -y nodejs
```

```
Activities Terminal Jan 24 18:59 test@test-virtual-machine: ~
# echo 'deb-src [signed-by=/usr/share/keyrings/nodesource.gpg] https://deb.nodesource.com/node_16.x jammy main' >> /etc/apt/sources.list.d/nodesource.list
## Running 'apt-get update' for you...
# apt-get update
Get:1 https://deb.nodesource.com/node_16.x jammy InRelease [4,583 B]
Get:2 https://deb.nodesource.com/node_16.x jammy/main amd64 Packages [776 B]
Hit:3 https://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:6 https://ppa.launchpadcontent.net/etherbase/etherbase/ubuntu jammy InRelease
Hit:7 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Fetched 5,359 B to 16 (4,156 B/s)
Reading package lists... Done
## Run 'sudo apt-get install -y nodejs' to install node.js 16.x and npm
## You may also need development tools to build native addons:
sudo apt-get install gcc g++ make
# To install the Yarn package manager, run:
curl -sL https://dl.yarnpkg.com/debian/pubkey.gpg | gpg --dearmor | sudo tee /usr/share/keyrings/yarnkey.gpg >/dev/null
echo 'deb [signed-by=/usr/share/keyrings/yarnkey.gpg] https://dl.yarnpkg.com/debian stable main' | sudo tee /etc/apt/sources.list.d/yarn.list
sudo apt-get update && sudo apt-get install yarn

test@test-virtual-machine: ~$ sudo apt-get install -y nodejs
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
nodejs
0 upgraded, 1 newly installed, 0 to remove and 2 not upgraded.
Need to get 27.2 MB of archives.
After this operation, 128 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_16.x jammy/main amd64 nodejs amd64 16.20.2-deb-inodesource1 [27.2 MB]
Fetched 27.2 MB in 6s (4,924 kB/s)
Selecting previously unselected package nodejs.
(Reading database ... 17746 files and directories currently installed.)
Preparing to unpack .../nodejs_16.20.2-deb-inodesource1_amd64.deb ...
Unpacking nodejs (16.20.2-deb-inodesource1) ...
Setting up nodejs (16.20.2-deb-inodesource1) ...
Processing triggers for man-db (2.10.2-1) ...
test@test-virtual-machine: ~$
```

2. **Install Truffle:** With Node.js and npm installed, you can now install Truffle using npm. Run the following command in your terminal:

```
sudo npm install -g truffle
```

```
Activities Terminal Jan 24 19:01 test@test-virtual-machine: ~
test@test-virtual-machine: ~$ sudo npm install -g truffle
npm WARN deprecated har-validator@3.0.0: this library is no longer supported
npm WARN deprecated mkdirp-promises@5.0.1: This package is broken and no longer maintained. 'mkdirp' itself supports promises now, please switch to that.
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.com/request/request/issues/3142
npm WARN deprecated multibase@0.1: This module has been superseded by the multiformats module
npm WARN deprecated cid@0.7.5: This module has been superseded by the multiformats module
npm WARN deprecated multicodec@0.5.7: This module has been superseded by the multiformats module
npm WARN deprecated apollo-server-types@0.10.0: The 'apollo-server-types' package is part of Apollo Server v2 and v3, which are now deprecated (end-of-life October 22nd 2023 and October 22nd 2024, respectively). This package's functionality is now found in the '@apollo/server' package. See https://www.apollographql.com/docs/apollo-server/previous-versions/ for more details.
npm WARN deprecated apollo-server-errors@0.3.1: The 'apollo-server-errors' package is part of Apollo Server v2 and v3, which are now deprecated (end-of-life October 22nd 2023 and October 22nd 2024, respectively). This package's functionality is now found in the '@apollo/server' package. See https://www.apollographql.com/docs/apollo-server/previous-versions/ for more details.
npm WARN deprecated apollo-datasource@0.3.2: The 'apollo-datasource' package is part of Apollo Server v2 and v3, which are now deprecated (end-of-life October 22nd 2023 and October 22nd 2024, respectively). This package's functionality is now found in the '@apollo/server' package. See https://www.apollographql.com/docs/apollo-server/previous-versions/ for more details.
npm WARN deprecated apollo-server-plugin-base@0.7.2: The 'apollo-server-plugin-base' package is part of Apollo Server v2 and v3, which are now deprecated (end-of-life October 22nd 2023 and October 22nd 2024, respectively). This package's functionality is now found in the '@apollo/server' package. See https://www.apollographql.com/docs/apollo-server/previous-versions/ for more details.
npm WARN deprecated apollo-server-env@2.1.1: The 'apollo-server-env' package is part of Apollo Server v2 and v3, which are now deprecated (end-of-life October 22nd 2023 and October 22nd 2024, respectively). This package's functionality is now found in the '@apollo/usage-reporting-protobuf' package. See https://www.apollographql.com/docs/apollo-server/previous-versions/ for more details.
npm WARN deprecated apollo-reporting-protobuf@0.4.0: The 'apollo-reporting-protobuf' package is part of Apollo Server v2 and v3, which are now deprecated (end-of-life October 22nd 2023 and October 22nd 2024, respectively). This package's functionality is now found in the '@apollo/usage-reporting-protobuf' package. See https://www.apollographql.com/docs/apollo-server/previous-versions/ for more details.
npm WARN deprecated testrpc@0.1: testrpc has been renamed to ganache-cli, please use this package from now on.
npm WARN deprecated @ensdomains/resolver@2.4.0: Please use @ensdomains/ens-contracts
npm WARN deprecated @ensdomains/ens@4.1.1: Please use @ensdomains/ens-contracts
npm WARN deprecated uuid@3.4.0: Please upgrade to version 7 or higher. Older versions may use Math.random() in certain circumstances, which is known to be problematic. See https://v8.dev/blog/math-random for details.
npm WARN deprecated multicodec@0.4.0: This module has been superseded by the multiformats module
npm WARN deprecated uuid@2.0.1: Please upgrade to version 7 or higher. Older versions may use Math.random() in certain circumstances, which is known to be problematic. See https://v8.dev/blog/math-random for details.
npm WARN deprecated multibase@0.7.0: This module has been superseded by the multiformats module
[ ] | ref:trufflesuite/ows-js-unofficial: http fetch GET 200 https://registry.npmjs.org/trufflesuite/ows-js-unofficial/-/ows-js-unofficial-20.30.0-unofficial.0.tgz 2779ms (cache miss)
```

3. **Verify the Installation:** After installation, you can verify that Truffle is installed correctly by checking its version:

```
truffle version
```



**VIDYAVARDHINI'S COLLEGE OF ENGINEERING & TECHNOLOGY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

K.T. Marg, Vasai Road (W), Dist-Palghar - 401202, Maharashtra

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