School: .... Campus: ....

Academic Year: .... Subject Name: .... Subject Code: ....

Semester: .... Program: .... Branch: .... Specialization: ....

Date: ....

Centurion UNIVERSITY
Shaping Lives...
Empowering Communities...

Applied and Action Learning
(Learning by Doing and Discovery)

Name of the Experiement : **Blockchain Dev Tools – Setting Up Environment**

Objective/Aim:

To learn how to install and configure the essential development tools required for blockchain application development and smart contract deployment.
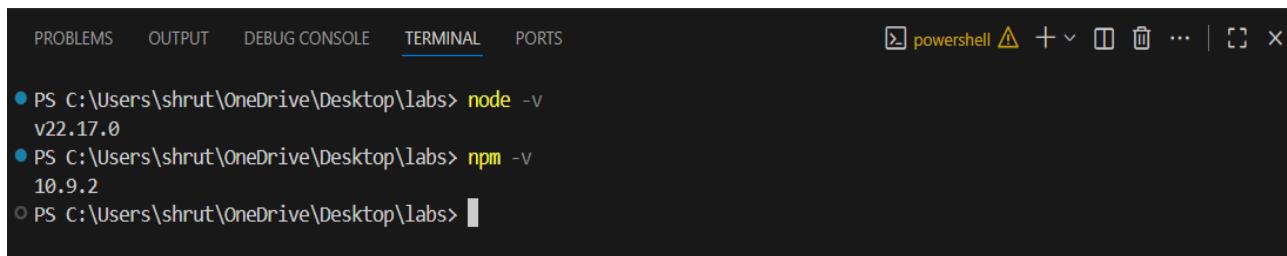
Apparatus/Software Used:

1. Node.js
2. Truffle Suite
3. Visual Studio Code (VS Code)
4. Solidity Extension (VS Code Plugin)

Procedure:

1.Install Node.js:

- Download and install Node.js for your OS (Windows/macOS/Linux), verify using node -v and npm -v. It includes npm for managing blockchain packages.

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS                    powershell  + ⌄  ⬚  🗑  ···  ⛶  ✕

● PS C:\Users\shrut\OneDrive\Desktop\labs> node -v
  v22.17.0
● PS C:\Users\shrut\OneDrive\Desktop\labs> npm -v
  10.9.2
○ PS C:\Users\shrut\OneDrive\Desktop\labs>
```

2. Install truffle :

- These frameworks help compile, deploy, and test Ethereum smart contracts.
- We can install truffle by using the command npm install -g truffle

Procedure:
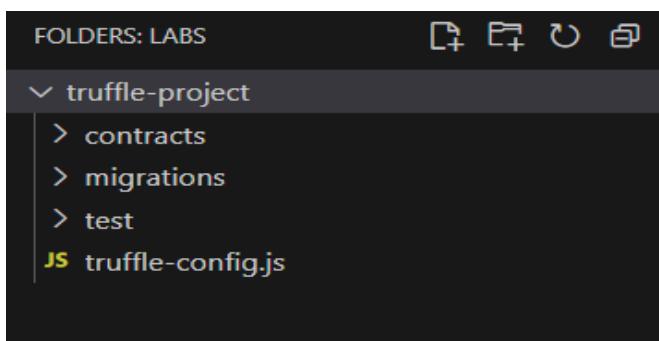
```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS                                    +

● PS C:\Users\shrut\OneDrive\Desktop\labs> npm install -g truffle
  npm warn deprecated inflight@1.0.6: This module is not supported, and leaks memory. Do not use it. Ch
  eck out lru-cache if you want a good and tested way to coalesce async requests by a key value, which
  is much more comprehensive and powerful.
  npm warn deprecated rimraf@2.7.1: Rimraf versions prior to v4 are no longer supported
  npm warn deprecated yaeti@0.0.6: Package no longer supported. Contact Support at https://www.npmjs.co
  m/support for more info.
  npm warn deprecated mkdirp-promise@5.0.1: This package is broken and no longer maintained. 'mkdirp' i
  tself supports promises now, please switch to that.
  npm warn deprecated har-validator@5.1.5: this library is no longer supported
  npm warn deprecated memdown@1.4.1: Superseded by memory-level (https://github.com/Level/community#faq
  )
```

- After installing creating new folder using the command mkdir truffle-project.

```
PS C:\Users\shrut\OneDrive\Desktop\labs> mkdir truffle-project


    Directory: C:\Users\shrut\OneDrive\Desktop\labs


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----        02-11-2025     18:02                truffle-project
```

- Now Generates the template of the smart contract by executing the command- truffle init.

```
FOLDERS: LABS              □+  □+  ↻  ⊟

∨ truffle-project
  > contracts
  > migrations
  > test
  JS truffle-config.js
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

● PS C:\Users\shrut\OneDrive\Desktop\labs\truffle-project> truffle init

  Starting init...
  =================
  Init successful, sweet!

  Try our scaffold commands to get started:
    $ truffle create contract YourContractName # scaffold a contract
    $ truffle create test YourTestName          # scaffold a test

  http://trufflesuite.com/docs
```

- Now we can write the smart contract and deploy it.

Observation:

1.The setup process established a complete local blockchain environment for efficient smart contract development and testing.

2. Integration of Truffle, Ganache, and VS Code streamlined compilation, deployment, and debugging workflows.

3. The environment proved flexible and scalable, supporting future upgrades and diverse blockchain development needs.

ASSESSMENT

Rubrics	Full Mark	Marks Obtained	Remarks
Concept	10		
Planning and Execution/ Practical Simulation/ Programming	10		
Result and Interpretation	10		
Record of Applied and Action Learning	10		
Viva	10		
Total	50		

Signature of the Student:

Name :

Regn. No. :

Signature of the Faculty:

Page No...........

*As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.