THE UNIVERSITY OF TEXAS AT ARLINGTON

**Advanced Topics in Software Engineering
CSE 6324 – Section 004**

Team 1:

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ITERATION-1

Project Proposal:

We are working on an issue posted by contributors of the truffle package. This involves reproducing the issue, finding the cause of the issue, and fixing it.

In this iteration, we worked on finding the modules required to be fixed and install the tools and packages required in fixing the issue.

Issue : **Bug: @truffle/require not able to resolve locally-installed modules (e.g. ts-node, typescript) when running under the globally-installed truffle bundle [#5381](#)**.

Frameworks:

Truffle - It is an open-source development framework that allows users to develop, test and asset pipeline for ethereum.

Ganache - It is an ethereum simulator that makes developing ethereum applications faster and easier.

Lerna - It is a framework for managing and publishing multiple JS/TS packages from a single repo which is used by truffle for its packages.

Package Manager:

npm - It is the default package manager for javascript runtime environment Node.js.

Installing Node & NPM:

Reference: https://docs.npmjs.com/downloading-and-installing-node-js-and-npm

Installing Truffle:

This iteration is in fixing an issue that lies on the truffle version @5.5.24. We are going to install **truffle@5.5.24**

To install truffle@5.5.24, run the below command to install truffle: [1]
    $ npm install -g truffle

Installing Ganache:

To install ganache, run the below command: [2]

```
$ npm install -g ganache
```
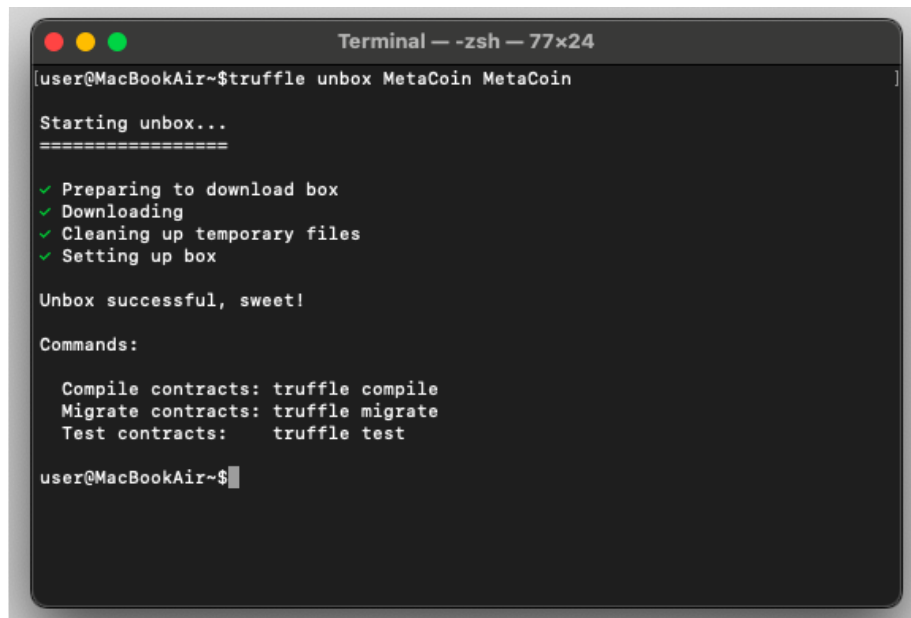

Reproducing The Issue:

I have reproduced the issue by following the steps as mentioned in the issue.
Steps to reproduce,
- With the truffle installed, unbox any templates. we unboxed Metacoin by running:
[3]

```
$ truffle unbox MetaCoin MetaCoin
```
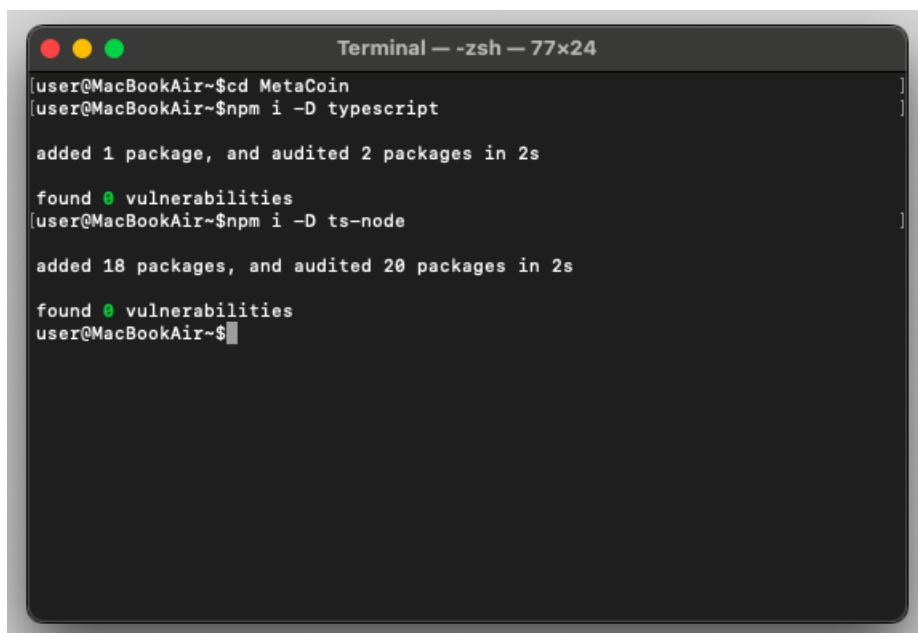
- Change the working directory to MetaCoin and run the below commands to add typescript modules: [4]

        $ npm i -D typescript
        $ npm i -D ts-node

- Configure truffle-config.js to connect to my local node by running the below command in a separate terminal: [5]

        $ ganache

- Rename 1_deploy_contracts.js to 1_deploy_contracts.ts and run:

        $ truffle migrate --reset

From the above REFERENCE [5], we have reproduced the issue.

Finding The Issue:

@truffle/require is responsible for importing modules and its supported typescript in default but fails to do so when the project couldn't check for its (ts-node) peer dependencies.

Work Plan for Remaining Iterations:

Iteration 1: Reproduce the issue, explore the packages, and find the issue.

Iteration 2: Bootstrap truffle source code and integrate ts-node locally.

Iteration 3: Add a flag to unbox typescript added boxes.

Competitor:

when we attempt to work around the issue by installing ts-node and typescript globally, it will then fail on a missing @truffle/resolver package. It should be resolving this from the bundle, but that doesn't seem to be happening. That said, if you go ahead and install that package (globally - yuck), it does work.

Risk Factors and Mitigation Plans:

Risk	Mitigation Plan
Analyzing Dependency issue	Considering a solution to solve the typescript error
Adapt Typescript programming language syntax	Daily Spending Some time for Typescript language.
Some bugs and defects may go unnoticed until and unless deployed on the live Ethereum Network	Must use built-in tools for testing the smart contract and also use the code Reviews and formal verifications.

Customers and Users:

- As these are primarily used for building the Decentralized applications.

- The Customers and the users are primarily the Developers who build smart contracts and   Decentralised apps who deploy their contracts on the Ethereum blockchain technology.

- Also, many organisations started using these blockchain technologies.

- Organisation such as the financial institutes such as banks for cross border money transfer services etc.

- Health care industry also using these services as it provides more security to the patient data and also for medicinal drug supply etc.

- Additionally, Governments across the world are using these technologies however it might be difficult to tell which technology they are specifically using but Governments like Dubai, India, China, Estonia etc.

- After the modifications that are to be done users that use typescript to deploy the contracts on the local environment can use this tool .

References:

- https://github.com/trufflesuite/truffle#install [1]

- https://github.com/trufflesuite/ganache#command-line-use [2]

- https://github.com/trufflesuite/truffle/issues/5381 [3], [4] and [5]

➢ GitHub Link: https://github.com/saicharan1248/cse6324_team1_project.git