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| Internship Project Title | RIO:125: Set up docker container for application development using BlockChain Network |
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| Name of the Company | Tata Consultancy Services |
| Name of the Industry Mentor | Dr. Debashish Roy |
| Name of the Institute | Sister Nivedita University |

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| Start Date | End Date | Total Effort(hrs) | Project Environment | Tools Used |
| 22/12/2021 | 19/02/2022 | 129 | UBUNTU(20.4) | JDK,Eclipse,Solidity,Vim,Git,Github,Docker,Truffle,Ganache etc |
| Project Synopsis:  **Docker** is a set of platform as a service (PaaS) products that use OS-level virtualization to deliver software in packages called *containers*. The service has both free and premium tiers. The software that hosts the containers is called **Docker Engine**. It was first started in 2013 and is developed by Docker, Inc.  Containers are isolated from one another and bundle their own software, libraries and configuration files; they can communicate with each other through well-defined channels. Because all of the containers share the services of a single operating system kernel, they use fewer resources than virtual machines.  Docker can package an application and its dependencies in a virtual container that can run on any Linux, Windows, or macOS computer. This enables the application to run in a variety of locations, such as on-premises, in public or private cloud. When running on Linux, Docker uses the resource isolation features of the Linux kernel (such as cgroups and kernel namespaces) and a union-capable file system (such as OverlayFS) to allow containers to run within a single Linux instance, avoiding the overhead of starting and maintaining virtual machines. Docker on macOS uses a Linux virtual machine to run the containers.  Because Docker containers are lightweight, a single server or virtual machine can run several containers simultaneously. A 2018 analysis found that a typical Docker use case involves running eight containers per host, and that a quarter of analyzed organizations run 18 or more per host.  Docker Container Features:   * Docker has the ability to reduce the size of development by providing a smaller footprint of the operating system via containers. * With containers, it becomes easier for teams across different units, such as development, QA and Operations to work seamlessly across applications.   Components of Docker:   * **Docker Engine** − It is used for building Docker images and creating Docker containers. * **Docker Hub** − This is the registry which is used to host various Docker images. * **Docker Compose** − This is used to define applications using multiple Docker containers.   Solution :  (Followed From Video webinar )   * Create a docker file with the following steps: * Install Jdk and Set Path * Install Eclipse and set up * Install Git * Install Vim * Configure Git with Github * Install YAKINDU plugin and set up for solidity support * Install solc      * Create a docker file and a docker image * Test the image * After Successful running of docker image follow the steps: * Install nodejs successfully and configure it then install truffle package it needs nodejs for configuration * Install testrpc and then initialize the projects * Deploy the Contracts and create contracts * Install Granache and check the version to ensure that Granche is install successfully * Create DAPP and Launch the DAPP successfully   Update Docker and create a image then create blockchain network with Granache with the help of Docker File that has been created  After all the steps check for blockchain transction    Project Diagram:  App1  App2  bins  App2  App1  bins  Guest OS  bins  bins  Guest OS  Hypervisor  Container Engine  Operating System  Host Operating System  Infracture  Infractucture  Customer Host  Docker Demon  Images  Containers  Licence Server Docker Registry  Images  Customer Details    Algorithm:   * Install jdk * Install jre * Set up git,vim * Set environment variable * Install etherium * Install truffle * Set contacts and migration * Install nodejs   Outcome:  Docker image running successfully  Image tasted readily  Blockchain application container is ready    Exception Considered:  Environment variable and path must be set  Os must be updated and in a good condition  All requirements are updated    Enhancement Scope:  Machine should be with good capacity of ram and storage  Internet speed is good for docker image store and creation  Link to code and executable file: https://github.com/souravbhunia/TCS-iON-Remote-Internship.git | | | | |