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Third Year B. Tech., Sem VI 2021-22

Software Engineering Tools Lab

Assignment Submission

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Batch: T2

Assignment: 2

Title of assignment: Software Development Frameworks

1. List of Frameworks/IDEs/Software
   a. Eclipse
   b. Android SDK
   c. Node.Js
   d. DotNet
   e. Ruby on Rails
   f. Anaconda
   g. Google colab

   For every Frameworks/IDEs/Software's given above provide the answers for below questions.

Ans:

a. Node.Js

Node.js is an open-source, cross-platform, back-end JavaScript runtime environment that runs on the V8 engine and executes JavaScript code outside a web browser.
Nodejs lets developers use JavaScript to write command line tools and for server-side scripting running scripts server-side to produce dynamic web page content before the page is sent to user's web browser.

i. **Original Author**
The original author of Node.js is Ryan Dahl

ii. **Developers**
The developers of NodeJS are OpenJS Foundation

iii. **Initial Release**
The initial release of Node.js is 0.1.14 which was on 26 May 2009.

iv. **Stable Release**
The latest stable version of Node.js is 17.4.0 which was released on 18 January 2022.

v. **Preview Release**
The preview release of NodeJS is 17.5.0 which was released on 10 February 2022

vi. **Repository (with cloud support)**
The link for the Eclipse IDE Repository is https://github.com/nodejs/node .

vii. **Written in (Languages)**
The language use is C, C++, JavaScript.

viii. **Operating System Support**

The Eclipse IDE is supported in z/OS, Linux, macOS, SmartOS, FreeBSD, OpenBSD, IBM AIX and Microsoft Windows.

ix. **Platform, portability**

Node. js is an **open-source, cross-platform, back-end JavaScript runtime environment** that runs on the V8 engine and executes JavaScript code outside a web browser.

x. **Available in (Total Languages)**

JavaScript is the only language that Node. js supports natively, but many compile-to-JS languages are available.

xi. **List of languages supported**

As a result, Node. js applications can be written in CoffeeScript, Dart, TypeScript, ClojureScript and others.

xii. **Type (Programming tool, integrated development environment etc.)**

NodeJS is a runtime environment.

xiii. **Website**

https://nodejs.org/en

xiv. **Features**

- Cross-platform compatibility
- The convenience of using one coding language
- Facilitates quick deployment and microservice development
- It is scalable
- Commendable data processing ability
- Active open-source community

xv. Size (in MB, GB etc.)

By default, Node.js (up to 11.x) uses a maximum heap size of 700MB and 1400MB on 32-bit and 64-bit platforms, respectively.

xvi. Privacy and Security

The OpenJS Foundation's core purpose is to foster an ecosystem that supports the collaborative and public development of free and open source software projects (each, a "Project"). This privacy policy ("Privacy Policy") describes our policies and procedures about the collection, use, disclosure and sharing, or other processing of your personal information when you use OpenJS Foundation websites (e.g., openjsf.org)), or participate in or use our Project sites (collectively, the "Sites"), as well as when you interact with or participate in our events, programs, trainings and our other services and offerings (collectively, the "Services").

xvii. Type of Software (Open Source/ License)

It is open-source, cross-platform.

xviii. Latest Version

The latest version of NodeJS is 17.5.0.

xix. Cloud Support

Node. js on Google Cloud **integrates with Cloud Monitoring, Cloud Trace, Cloud Logging, and Error Reporting**, allowing you to transparently instrument live production applications to diagnose performance bottlenecks and software bugs.

xx. Applicability

- Node.js offers an Easy Scalability.
- Node.js offers the developers the luxury of writing the server-side applications in the JavaScript. This allows the Node.js developers to write both the front-end as well as

the back-end web application in JavaScript using a runtime environment.

- Node.js has been regarded as a full-stack JavaScript for serving both the client and the server-side applications.
- The speed of the code execution also enhanced by runtime environment as it supports the non-blocking I/O operations.

xxi. Drawbacks

- Reduces performance when handling heavy computing tasks
- Node.js invites a lot of code changes due to unstable API
- Node.js Asynchronous Programming Model makes it difficult to maintain code
- High demand with a few Experienced Node.js Developers

h. Implement linear regression problem using Google Colab (Perform pre-processing training and testing)

Dataset 1 – https://www.kaggle.com/spittman1248/cdc-data-nutrition-physical-activity-obesity

Dataset 2 – https://archive.ics.uci.edu/ml/datasets/Air+Quality

Dataset 3 – https://archive.ics.uci.edu/ml/datasets/Appliances+energy+prediction

Dataset 4 – https://archive.ics.uci.edu/ml/datasets/Bike+Sharing+Dataset

Dataset 5 – https://archive.ics.uci.edu/ml/datasets/Demand+Forecasting+for+a+store

Dataset 6 –
https://archive.ics.uci.edu/ml/datasets/Hungarian+Chickenpox+Cases

Dataset 7 –
https://archive.ics.uci.edu/ml/datasets/KDD+Cup+1998+Data

Dataset 8 –
https://archive.ics.uci.edu/ml/datasets/Water+Quality+Prediction

Ans:

Using of Dataset-3

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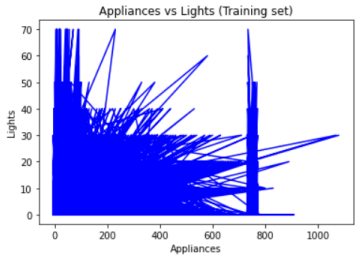
Visualising the traning set results

```
# plt.scatter(x_train, y_train, color = 'red')
plt.plot(x_train, regressor.predict(x_train), color = 'blue')
plt.title('Appliances vs Lights (Training set)')
plt.xlabel('Appliances')
plt.ylabel('Lights')
plt.show()
```



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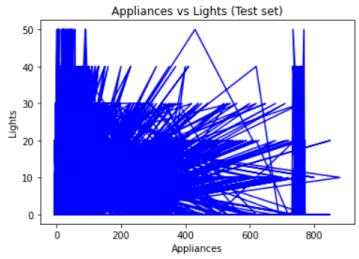
Visualising the test set results

```
plt.plot(x_test, regressor.predict(x_test), color = 'blue')
plt.title('Appliances vs Lights (Test set)')
plt.xlabel('Appliances')
plt.ylabel('Lights')
plt.show()
```



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Fitting Simple Linear Regression to the traning set

```
[33] from sklearn.linear_model import LinearRegression
regressor1 = LinearRegression()
regressor1.fit(x_test,y_test)
```

```
LinearRegression()
```

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Visualising the test set results

```
plt.plot(x_test, regressor1.predict(x_test), color = 'blue')
plt.title('Appliances vs Lights (Test set)')
plt.xlabel('Appliances')
plt.ylabel('Lights')
plt.show()
```