***Software Engineering Tools Lab***

**Assignment no. 2**

Name: Somesh Sharma

PRN: 2020BTECS00008

Q.1. List of Frameworks/IDEs/Softwares

a. Eclipse

b. Android SDK

c. Node.Js

d. DotNet

e. Ruby on Rails

f. Anaconda

g. Google colab

h. Django

i. Vue.js

j. GitHub

k. React

For every Frameworks/IDEs/Softwares given above provide the answers for below questions

1. Original author

2. Developers

3. Initial release

4. Stable release

5. Preview release

6. Repository (with cloud support )

7. Written in (Languages)

8. Operating System support

9. Platform ,portability

10. Available in (Total languages)

11. List of languages supported

12. Type (Programming tool, integrated development environment etc.)

13. Website

14. Features

15. Size (in MB, GB etc.)

16. Privacy and Security

17. Type of software (Open source/License)

18. If License- Provide details.

19. Latest version

20. Cloud support (Yes/No)

21. Applicability

22. Drawbacks (if any)

*Ans:*

1. **Eclipse**
2. Original authors : IBM
3. Developers : Mik Kersten, Eclipse foundation
4. Initial release : Version 1.0 - 29 November 2001
5. Stable release : Version 4.26.0 – 7 December 2022
6. Preview release : 4.27 – (2023-03 release)
7. Repository with cloud support : [emfcloud](https://github.com/eclipse-emfcloud/emfcloud), [emfcloud-modelserver-theia](https://github.com/eclipse-emfcloud/emfcloud-modelserver-theia)
8. Written in (Languages): Java and C
9. Operating system support : Linux, macOS, Windows
10. Platform, portability : Java SE, Standard Widget Toolkit, x86-64
11. Available in (Total languages) : Ada, ABAP, C, C++, C#, Clojure, COBOL, D, Erlang, Fortran, Groovy, Haskell, JavaScript, Julia, Lasso, Lua, NATURAL, Perl, PHP, Prolog, Python, R, Ruby, Rust, Scala, and Scheme.
12. List of languages supported : C, C++, Perl, Python, Ruby, PHP, Java, etc.
13. Type (Programming tool, integrated development environment etc.) : integrated development environment
14. Website : <https://www.eclipse.org/>
15. Features : GUI, code development, code editing, debugging, data modelling, web/android app development, etc.
16. Size : 120 MB
17. Privacy and security : Will not sell Personal Information to any third party, will not disclose your Personal Information, except as described in the Privacy Policy. Personal Information may be shared among the Eclipse entities within the Eclipse Group.
18. Type of software (Open source/License) : Open source
19. If License- Provide details. : -
20. Latest version : 2023-03 M1
21. Cloud support (Yes/No) : Yes
22. Applicability : code development, data modelling, web/android app development, etc.
23. Drawbacks (if any) : -
24. **Android SDK**
25. Original author : Google
26. Developers : Google
27. Initial release : 12 Nov 2007
28. Stable release : Jan 2021
29. Preview release
30. Repository (with cloud support ) : github (with support for Google Cloud and Amazon Web Services)
31. Written in (Languages) : Java, C++, and XML
32. Operating System support : Windows, macOS, and Linux
33. Platform ,portability : cross platform
34. Available in (Total languages) : varies based on API level, supports multiple languages
35. List of languages supported : Java, Kotlin, C++, and XML
36. Type (Programming tool, integrated development environment etc.) : IDE, SDK.
37. Website : developer.android.com
38. Features : Emulator, Debugging tools, Libraries, APIs, Sample Code, and Documentation
39. Size (in MB, GB etc.) : approx. 4GB
40. Privacy and Security : Google releases regular security updates, user must follow best practices for secure development
41. Type of software (Open source/License) : Open-source, under the Apache License 2.0
42. If License- Provide details : Apache License 2.0 is a permissive free software license that allows for reuse within proprietary software provided all copies of the licensed software include a copy of the Apache License terms and the copyright notice.
43. Latest version : 30.0.4
44. Cloud support (Yes/No) : Yes
45. Applicability : Mobile Application Development for the Android Operating System
46. Drawbacks (if any) : Learning curve for new developers, fragmentation across different Android versions and devices, and slow release cycle for new features.
47. **Node.Js**
48. Original author: Ryan Dahl
49. Developers: Node.js Foundation, various individual contributors
50. Initial release: May 27, 2009
51. Stable release: 15.9.0 (January 2021)
52. Preview release: Not applicable
53. Repository (with cloud support): GitHub (with support for multiple cloud platforms)
54. Written in (Languages): JavaScript and C++
55. Operating System support: Windows, macOS, Linux, Unix, and more
56. Platform, portability: Cross-platform
57. Available in (Total languages): JavaScript
58. List of languages supported: JavaScript
59. Type: Server-side JavaScript Environment, Application Server, Backend Technology
60. Website: nodejs.org
61. Features: Event-driven, Asynchronous I/O, Lightweight, Fast, Scalable, and Single-threaded
62. Size (in MB, GB etc.): Typically around 40 MB
63. Privacy and Security: Regular security updates, user must follow best practices for secure development
64. Type of software (Open source/License): Open-source, under the MIT License
65. If License- Provide details: The MIT License is a permissive free software license that allows for reuse within proprietary software provided all copies of the licensed software include a copy of the MIT License terms and the copyright notice.
66. Latest version: 15.9.0
67. Cloud support (Yes/No): Yes
68. Applicability: Server-side Web Application Development, Network Applications, IoT, and Backend Services
69. Drawbacks (if any): Steep learning curve for beginners, not suitable for CPU-bound tasks, and callback hell (lack of error handling).
70. **DotNet**
71. Original author: Microsoft Corporation
72. Developers: Microsoft, .NET Community
73. Initial release: February 13, 2002
74. Stable release: 6.0 (November 10, 2020)
75. Preview release: Not applicable
76. Repository (with cloud support): GitHub (with support for Microsoft Azure cloud platform)
77. Written in (Languages): C#, F#, Visual Basic .NET (VB.NET), and others
78. Operating System support: Windows, macOS, and Linux (through .NET Core)
79. Platform, portability: Cross-platform (with .NET Core)
80. Available in (Total languages): Multiple
81. List of languages supported: C#, F#, Visual Basic .NET (VB.NET), and others
82. Type: Software Framework, Development Platform
83. Website: dotnet.microsoft.com
84. Features: Object-Oriented Programming, Garbage Collection, Type Safety, Portability, Interoperability, Standard Library, and others
85. Size (in MB, GB etc.): Depends on the installation type, typically around 500 MB to 1 GB
86. Privacy and Security: Regular security updates, Microsoft follows strict security practices, user must follow best practices for secure development
87. Type of software (Open source/License): Open-source, under the MIT and Apache 2.0 licenses
88. If License- Provide details: The .NET platform is open-sourced under the MIT and Apache 2.0 licenses, which are permissive free software licenses that allow for reuse within proprietary software provided all copies of the licensed software include a copy of the license terms and the copyright notice.
89. Latest version: 6.0
90. Cloud support (Yes/No): Yes
91. Applicability: Windows desktop applications, Windows store apps, Web applications, Cloud services, Games, Mobile apps (through Xamarin), and others
92. Drawbacks (if any): Steep learning curve for beginners, not as widely adopted as some other software platforms, legacy code and compatibility issues with newer versions
93. **Ruby on Rails**
94. Original author: David Heinemeier Hansson
95. Developers: Rails Core Team, Contributors, and Community
96. Initial release: December 13, 2005
97. Stable release: 6.1.3 (January 25, 2021)
98. Preview release: 6.2.0.rc2 (January 27, 2021)
99. Repository (with cloud support): GitHub (with Heroku, AWS, and Google Cloud support)
100. Written in (Languages): Ruby
101. Operating System support: Windows, macOS, and Linux
102. Platform, portability: Cross-platform
103. Available in (Total languages): 1 (Ruby)
104. List of languages supported: Ruby
105. Type: Server-side web application framework
106. Website: rubyonrails.org
107. Features: MVC pattern, ORM, Routing, Templating, Asset pipeline, and Middleware
108. Size (in MB, GB etc.): varies based on application size, framework is lightweight
109. Privacy and Security: security patches and updates are regularly released, user should follow best practices for secure development
110. Type of software (Open source/License): Open-source, under the MIT License
111. If License- Provide details: MIT License is a permissive free software license that allows for reuse within proprietary software provided all copies of the licensed software include a copy of the MIT License terms and the copyright notice.
112. Latest version: 6.1.3
113. Cloud support (Yes/No): Yes
114. Applicability: Web development, Content Management Systems, E-commerce Applications, etc.
115. Drawbacks (if any): Performance issues with large and complex applications, Steep learning curve for beginners, and some features may be over-complicated for simple projects.
116. **Anaconda**
117. Original author: Continuum Analytics, Inc.
118. Developers: Anaconda, Inc.
119. Initial release: 2012
120. Stable release: Latest version
121. Preview release: N/A
122. Repository (with cloud support): https://anaconda.org/anaconda/repo, Anaconda Cloud
123. Written in (Languages): Python, R
124. Operating System support: Windows, macOS, Linux
125. Platform, portability: Cross-platform
126. Available in (Total languages): N/A
127. List of languages supported: Python, R
128. Type (Programming tool, integrated development environment etc.): Distribution of Python and R for data science and machine learning
129. Website: https://www.anaconda.com/
130. Features: Package management and deployment, integrated development environment (Spyder), Jupyter notebooks, hundreds of pre-installed packages for data science and machine learning
131. Size (in MB, GB etc.): Depending on the installation options, anywhere from a few hundred MBs to a few GBs
132. Privacy and Security: Anaconda is committed to protecting user privacy and maintaining the security of the platform and its users' data.
133. Type of software (Open source/License): Open-source with a commercial license option
134. If License- Provide details: Anaconda is available under the open-source BSD license, but also offers a commercial license for businesses and organizations.
135. Latest version: N/A (check the official website for the latest version)
136. Cloud support (Yes/No): Yes
137. Applicability: For data science, machine learning, and scientific computing.
138. Drawbacks (if any): Some users may find the size of the distribution to be large, and may have difficulty configuring it for specific use cases
139. **Google colab**
140. Original author: Google
141. Developers: Google
142. Initial release: April 13, 2012
143. Stable release: Ongoing
144. Preview release: None
145. Repository: Google
146. Written in (Languages): Python, JavaScript, etc.
147. Operating System support: Web-based, accessible from any device with an internet connection
148. Platform, portability: Cloud-based, accessible from any device with an internet connection
149. Available in (Total languages): 1 (English)
150. List of languages supported: English
151. Type: Cloud-based integrated development environment
152. Website: https://colab.research.google.com/
153. Features: Notebook interface, code execution, data analysis, visualization, collaboration, and integration with Google Drive and Google Cloud Storage
154. Size (in MB, GB etc.): No required installation, uses cloud storage for data and files
155. Privacy and Security: Google's privacy and security policies apply
156. Type of software (Open source/License): Closed source, proprietary software
157. If License- Provide details: N/A
158. Latest version: Ongoing, regularly updated
159. Cloud support (Yes/No): Yes
160. Applicability: Data analysis, machine learning, research and development, collaboration, education, etc.
161. Drawbacks (if any): Limited local storage, dependent on an internet connection, limited support for certain packages, limited control over the hardware.
162. **Django**
163. Original author: Adrian Holovaty and Simon Willison
164. Developers: Django Software Foundation
165. Initial release: July 2005
166. Stable release: 3.2.1 (2022-12-06)
167. Preview release: N/A
168. Repository: GitHub (django/django) with cloud support (AWS, Heroku, etc.)
169. Written in: Python
170. Operating System support: Cross-platform
171. Platform: Web application development
172. Available in: English
173. List of languages supported: English
174. Type: Web framework, High-level Python web framework
175. Website: https://www.djangoproject.com/
176. Features: Dynamic administrative interface, ORM, MVC architecture, URL routing, Templates, Security, Scalability, and Extendibility
177. Size: MB (depends on the installation size)
178. Privacy and Security: Django provides protection against common web attacks, protection for sensitive information like passwords, and several other security features.
179. Type of software: Open source
180. If License- Provide details: BSD 3-Clause License
181. Latest version: 3.2.1 (2022-12-06)
182. Cloud support: Yes
183. Applicability: Django can be used for building web applications, CMS, e-commerce sites, and more.
184. Drawbacks (if any): Steep learning curve for beginners, heavy server requirements, more time-consuming than some other web frameworks, large applications may slow down.
185. **Vue.js**
186. Original author: Evan You
187. Developers: Evan You, the Vue.js core team and community of contributors
188. Initial release: February 2014
189. Stable release: v3.7.0 (January 2022)
190. Preview release: N/A
191. Repository (with cloud support ): https://github.com/vuejs/vue
192. Written in (Languages): JavaScript
193. Operating System support: Cross-platform
194. Platform, portability: Web platform
195. Available in (Total languages): N/A
196. List of languages supported: JavaScript
197. Type (Programming tool, integrated development environment etc.): JavaScript framework for building user interfaces
198. Website: https://vuejs.org/
199. Features: Reactive and composable components, reactivity system, virtual DOM, template-based syntax, directives, event handling, and more
200. Size (in MB, GB etc.): Approximately 20-30KB minified and gzipped
201. Privacy and Security: No information available.
202. Type of software (Open source/License): Open source, MIT license
203. If License- Provide details: The MIT License is a permissive free software license originating at the Massachusetts Institute of Technology (MIT). It allows the reuse of software released under the license in source and binary forms, without needing to provide source code to the users.
204. Latest version: v3.7.0
205. Cloud support (Yes/No): N/A
206. Applicability: Developing dynamic web applications and building user interfaces.
207. Drawbacks (if any ): Steep learning curve for new developers, limitations in customizing advanced functionality, requires a separate library for state management.
208. **GitHub**
209. Original author: Tom Preston-Werner, Chris Wanstrath, and PJ Hyett
210. Developers: Microsoft
211. Initial release: February 2008
212. Stable release: Continuous
213. Preview release: N/A
214. Repository (with cloud support): GitHub, GitHub Enterprise
215. Written in (Languages): Ruby, JavaScript, Elixir
216. Operating System support: Web-based, macOS, Windows, Linux
217. Platform ,portability: Cross-platform
218. Available in (Total languages): N/A
219. List of languages supported: Over 100 programming languages
220. Type (Programming tool, integrated development environment etc.): Web-based hosting service for version control and collaboration using Git.
221. Website: https://github.com/
222. Features: Code review, Project management, Documentation, Issue tracking, Continuous integration and deployment, etc.
223. Size (in MB, GB etc.): N/A
224. Privacy and Security: Encryption, 2-factor authentication, auditing, and other security features.
225. Type of software (Open source/License): Proprietary
226. If License- Provide details: N/A
227. Latest version: Continuous
228. Cloud support (Yes/No): Yes
229. Applicability: Software development, version control, and collaboration
230. Drawbacks (if any ): Limited features in the free version, private repositories require a paid subscription.
231. **React**
232. Original author: Jordan Walke, a software engineer at Facebook
233. Developers: Facebook, Instagram
234. Initial release: May 2013
235. Stable release: 17.0.2 (Jan 2021)
236. Preview release: Not applicable
237. Repository: https://github.com/facebook/react (with cloud support through various platforms including Heroku, AWS, and Firebase)
238. Written in: JavaScript
239. Operating System support: Cross-platform
240. Platform, portability: Web, Native (React Native)
241. Available in: 1 (JavaScript)
242. List of languages supported: JavaScript
243. Type: JavaScript Library for building user interfaces
244. Website: https://reactjs.org/
245. Features: Virtual DOM, Reactive and composable components, Server-side rendering, JSX syntax
246. Size: Minified version is around 6 KB
247. Privacy and Security: Follows industry standard security practices, developers are responsible for ensuring secure usage
248. Type of software: Open source, Licensed under MIT License
249. If License: MIT License, a permissive open-source license that allows for modification and distribution of the software
250. Latest version: 17.0.2
251. Cloud support: Yes (through various platforms including Heroku, AWS, and Firebase)
252. Applicability: Building complex and large-scale web applications, cross-platform mobile application development (React Native)
253. Drawbacks: Steep learning curve for beginners, Higher complexity in larger projects, Need to regularly keep up with updates.

Q.2. Implement linear regression problem using Google colab (Perform preprocessing, training and testing) Node.Js, Android SDK , Dot Net, Ruby on Rails, Anaconda,Eclipse Use any of one following appropriate dataset.

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 dataset 3:

import pandas as pd

import numpy as np

from sklearn.model\_selection import train\_test\_split

from google.colab import drive

drive.mount("/content/gdrive")

**Output:**

Mounted at /content/gdrive

import pandas as pd

data=pd.read\_csv('/content/gdrive/My Drive/energydata\_complete.csv')

x = data.iloc[:, 1].values

y = data.iloc[:, 2].values

x = x.reshape(-1,1)

X\_train, X\_test, y\_train, y\_test = train\_test\_split(x, y, test\_size=0.2, random\_state=0)

from sklearn.linear\_model import LinearRegression

regressor = LinearRegression()

regressor.fit(X\_train, y\_train)

**Output:**

LinearRegression()

from sklearn.metrics import mean\_squared\_error, r2\_score

y\_pred = regressor.predict(X\_test)

mse = mean\_squared\_error(y\_test, y\_pred)

r2 = r2\_score(y\_test, y\_pred)

print('Mean Squared Error:', mse)

print('R-Squared Score:', r2)

**Output:**

Mean Squared Error: 60.653250410961824

R-Squared Score: 0.03204507312679328

import matplotlib.pyplot as plt

import numpy as np

from sklearn.linear\_model import LinearRegression

reg = LinearRegression().fit(x, y)

plt.scatter(x, y, color='blue')

plt.plot(x, reg.predict(x), color='red')

plt.xlabel('Independent variable')

plt.ylabel('Dependent variable')

plt.title('Linear Regression')

plt.show()

**Output:**

