

Software Engineering Tools Lab
Assignment No-2
(Module 2- Software Development Frameworks)

PRN: 2020BTECS00033

Name: Prathamesh Raje

Batch: T6

1. List of Frameworks/IDEs/Softwares and their answers:

a. Eclipse

- Original authors : IBM
- Developers : Mik Kersten, Eclipse foundation
- Initial release : Version 1.0 - 29 November 2001
- Stable release : Version 4.26.0 – 7 December 2022
- Preview release : 4.27 – (2023-03 release)
- Repository with cloud support : emfcloud, emfcloud-modelserver-theia
- Written in (Languages): Java and C
- Operating system support : Linux, macOS, Windows
- Platform, portability : Java SE, Standard Widget Toolkit, x86-64
- 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.
- List of languages supported : C, C++, Perl, Python, Ruby, PHP, Java, etc.
- Type (Programming tool, integrated development environment etc.)
integrated development environment
- Website : <https://www.eclipse.org/>
- Features : GUI, code development, code editing, debugging, data modelling, web/android app development, etc.
- Size : 120 MB
- 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.
- Type of software (Open source/License) : Open source
- If License- Provide details. : -

- Latest version : 2023-03 M1
- Cloud support (Yes/No) : Yes
- Applicability : code development, data modelling, web/android app development, etc.
- Drawbacks (if any) : -

b. Android SDK

- Original author : Google
- Developers : Google
- Initial release : 12 Nov 2007
- Stable release : Jan 2021
- Preview release
- Repository (with cloud support) : github (with support for Google Cloud and Amazon Web Services)
- Written in (Languages) : Java, C++, and XML
- Operating System support : Windows, macOS, and Linux
- Platform ,portability : cross platform
- Available in (Total languages) : varies based on API level, supports multiple languages
- List of languages supported : Java, Kotlin, C++, and XML
- Type (Programming tool, integrated development environment etc.) : IDE, SDK.
- Website : developer.android.com
- Features : Emulator, Debugging tools, Libraries, APIs, Sample Code, and Documentation
- Size (in MB, GB etc.) : approx. 4GB
- Privacy and Security : Google releases regular security updates, user must follow best practices for secure development
- Type of software (Open source/License) : Open-source, under the Apache License 2.0
- 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.
- Latest version : 30.0.4
- Cloud support (Yes/No) : Yes
- Applicability : Mobile Application Development for the Android Operating System

- Drawbacks (if any) : Learning curve for new developers, fragmentation across different Android versions and devices, and slow release cycle for new features.

c. Node.Js

- Original author: Ryan Dahl
- Developers: Node.js Foundation, various individual contributors
- Initial release: May 27, 2009
- Stable release: 15.9.0 (January 2021)
- Preview release: Not applicable
- Repository (with cloud support): GitHub (with support for multiple cloud platforms)
- Written in (Languages): JavaScript and C++
- Operating System support: Windows, macOS, Linux, Unix, and more
- Platform, portability: Cross-platform
- Available in (Total languages): JavaScript
- List of languages supported: JavaScript
- Type: Server-side JavaScript Environment, Application Server, Backend Technology
- Website: nodejs.org
- Features: Event-driven, Asynchronous I/O, Lightweight, Fast, Scalable, and Single-threaded
- Size (in MB, GB etc.): Typically around 40 MB
- Privacy and Security: Regular security updates, user must follow best practices for secure development
- Type of software (Open source/License): Open-source, under the MIT License
- 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.
- Latest version: 15.9.0
- Cloud support (Yes/No): Yes
- Applicability: Server-side Web Application Development, Network Applications, IoT, and Backend Services
- Drawbacks (if only): Steep learning curve for beginners, not suitable for CPU-bound tasks, and callback hell (lack of error handling).

d. DotNet

- Original author: Microsoft Corporation

- Developers: Microsoft, .NET Community
- Initial release: February 13, 2002
- Stable release: 6.0 (November 10, 2020)
- Preview release: Not applicable
- Repository (with cloud support): GitHub (with support for Microsoft Azure cloud platform)
- Written in (Languages): C#, F#, Visual Basic .NET (VB.NET), and others
- Operating System support: Windows, macOS, and Linux (through .NET Core)
- Platform, portability: Cross-platform (with .NET Core)
- Available in (Total languages): Multiple
- List of languages supported: C#, F#, Visual Basic .NET (VB.NET), and others
- Type: Software Framework, Development Platform
- Website: dotnet.microsoft.com
- Features: Object-Oriented Programming, Garbage Collection, Type Safety, Portability, Interoperability, Standard Library, and others
- Size (in MB, GB etc.): Depends on the installation type, typically around 500 MB to 1 GB
- Privacy and Security: Regular security updates, Microsoft follows strict security practices, user must follow best practices for secure development
- Type of software (Open source/License): Open-source, under the MIT and Apache 2.0 licenses
- 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.
- Latest version: 6.0
- Cloud support (Yes/No): Yes
- Applicability: Windows desktop applications, Windows store apps, Web applications, Cloud services, Games, Mobile apps (through Xamarin), and others
- 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

e. Ruby on Rails

- Original author: David Heinemeier Hansson
- Developers: Rails Core Team, Contributors, and Community
- Initial release: December 13, 2005
- Stable release: 6.1.3 (January 25, 2021)
- Preview release: 6.2.0.rc2 (January 27, 2021)
- Repository (with cloud support): GitHub (with Heroku, AWS, and Google Cloud support)
- Written in (Languages): Ruby
- Operating System support: Windows, macOS, and Linux
- Platform, portability: Cross-platform
- Available in (Total languages): 1 (Ruby)
- List of languages supported: Ruby
- Type: Server-side web application framework
- Website: rubyonrails.org
- Features: MVC pattern, ORM, Routing, Templating, Asset pipeline, and Middleware
- Size (in MB, GB etc.): varies based on application size, framework is lightweight
- Privacy and Security: security patches and updates are regularly released, user should follow best practices for secure development
- Type of software (Open source/License): Open-source, under the MIT License
- 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.
- Latest version: 6.1.3
- Cloud support (Yes/No): Yes
- Applicability: Web development, Content Management Systems, E-commerce Applications, etc.
- 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.

f. Anaconda

- Original author: Continuum Analytics, Inc.
- Developers: Anaconda, Inc.
- Initial release: 2012
- Stable release: Latest version
- Preview release: N/A

- Repository (with cloud support): <https://anaconda.org/anaconda/repo>, Anaconda Cloud
- Written in (Languages): Python, R
- Operating System support: Windows, macOS, Linux
- Platform, portability: Cross-platform
- Available in (Total languages): N/A
- List of languages supported: Python, R
- Type (Programming tool, integrated development environment etc.): Distribution of Python and R for data science and machine learning
- Website: <https://www.anaconda.com/>
- Features: Package management and deployment, integrated development environment (Spyder), Jupyter notebooks, hundreds of pre-installed packages for data science and machine learning
- Size (in MB, GB etc.): Depending on the installation options, anywhere from a few hundred MBs to a few GBs
- Privacy and Security: Anaconda is committed to protecting user privacy and maintaining the security of the platform and its users' data.
- Type of software (Open source/License): Open-source with a commercial license option
- If License- Provide details: Anaconda is available under the open-source BSD license, but also offers a commercial license for businesses and organizations.
- Latest version: N/A (check the official website for the latest version)
- Cloud support (Yes/No): Yes
- Applicability: For data science, machine learning, and scientific computing.
- 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

g. **Google colab**

- Original author: Google
- Developers: Google
- Initial release: April 13, 2012
- Stable release: Ongoing
- Preview release: None
- Repository: Google
- Written in (Languages): Python, JavaScript, etc.
- Operating System support: Web-based, accessible from any device with an internet connection

- Platform, portability: Cloud-based, accessible from any device with an internet connection
- Available in (Total languages): 1 (English)
- List of languages supported: English
- Type: Cloud-based integrated development environment
- Website: <https://colab.research.google.com/>
- Features: Notebook interface, code execution, data analysis, visualization, collaboration, and integration with Google Drive and Google Cloud Storage
- Size (in MB, GB etc.): No required installation, uses cloud storage for data and files
- Privacy and Security: Google's privacy and security policies apply
- Type of software (Open source/License): Closed source, proprietary software
- If License- Provide details: N/A
- Latest version: Ongoing, regularly updated
- Cloud support (Yes/No): Yes
- Applicability: Data analysis, machine learning, research and development, collaboration, education, etc.
- Drawbacks (if any): Limited local storage, dependent on an internet connection, limited support for certain packages, limited control over the hardware.

h. **Django**

- Original author: Adrian Holovaty and Simon Willison
- Developers: Django Software Foundation
- Initial release: July 2005
- Stable release: 3.2.1 (2022-12-06)
- Preview release: N/A
- Repository: GitHub (django/django) with cloud support (AWS, Heroku, etc.)
- Written in: Python
- Operating System support: Cross-platform
- Platform: Web application development
- Available in: English
- List of languages supported: English
- Type: Web framework, High-level Python web framework
- Website: <https://www.djangoproject.com/>
- Features: Dynamic administrative interface, ORM, MVC architecture, URL routing, Templates, Security, Scalability, and Extendibility

- Size: MB (depends on the installation size)
- Privacy and Security: Django provides protection against common web attacks, protection for sensitive information like passwords, and several other security features.
- Type of software: Open source
- If License- Provide details: BSD 3-Clause License
- Latest version: 3.2.1 (2022-12-06)
- Cloud support: Yes
- Applicability: Django can be used for building web applications, CMS, e-commerce sites, and more.
- Drawbacks (if any): Steep learning curve for beginners, heavy server requirements, more time-consuming than some other web frameworks, large applications may slow down.

i. **Vue.js**

- Original author: Evan You
- Developers: Evan You, the Vue.js core team and community of contributors
- Initial release: February 2014
- Stable release: v3.7.0 (January 2022)
- Preview release: N/A
- Repository (with cloud support): <https://github.com/vuejs/vue>
- Written in (Languages): JavaScript
- Operating System support: Cross-platform
- Platform, portability: Web platform
- Available in (Total languages): N/A
- List of languages supported: JavaScript
- Type (Programming tool, integrated development environment etc.): JavaScript framework for building user interfaces
- Website: <https://vuejs.org/>
- Features: Reactive and composable components, reactivity system, virtual DOM, template-based syntax, directives, event handling, and more
- Size (in MB, GB etc.): Approximately 20-30KB minified and gzipped
- Privacy and Security: No information available.
- Type of software (Open source/License): Open source, MIT license
- 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.

- Latest version: v3.7.0
- Cloud support (Yes/No): N/A
- Applicability: Developing dynamic web applications and building user interfaces.
- Drawbacks (if any): Steep learning curve for new developers, limitations in customizing advanced functionality, requires a separate library for state management.

j. **GitHub**

- Original author: Tom Preston-Werner, Chris Wanstrath, and PJ Hyett
- Developers: Microsoft
- Initial release: February 2008
- Stable release: Continuous
- Preview release: N/A
- Repository (with cloud support): GitHub, GitHub Enterprise
- Written in (Languages): Ruby, JavaScript, Elixir
- Operating System support: Web-based, macOS, Windows, Linux
- Platform ,portability: Cross-platform
- Available in (Total languages): N/A
- List of languages supported: Over 100 programming languages
- Type (Programming tool, integrated development environment etc.): Web-based hosting service for version control and collaboration using Git.
- Website: <https://github.com/>
- Features: Code review, Project management, Documentation, Issue tracking, Continuous integration and deployment, etc.
- Size (in MB, GB etc.): N/A
- Privacy and Security: Encryption, 2-factor authentication, auditing, and other security features.
- Type of software (Open source/License): Proprietary
- If License- Provide details: N/A
- Latest version: Continuous
- Cloud support (Yes/No): Yes
- Applicability: Software development, version control, and collaboration
- Drawbacks (if any): Limited features in the free version, private repositories require a paid subscription.

k. **React**

- Original author: Jordan Walke, a software engineer at Facebook
- Developers: Facebook, Instagram
- Initial release: May 2013
- Stable release: 17.0.2 (Jan 2021)
- Preview release: Not applicable
- Repository: <https://github.com/facebook/react> (with cloud support through various platforms including Heroku, AWS, and Firebase)
- Written in: JavaScript
- Operating System support: Cross-platform
- Platform, portability: Web, Native (React Native)
- Available in: 1 (JavaScript)
- List of languages supported: JavaScript
- Type: JavaScript Library for building user interfaces
- Website: <https://reactjs.org/>
- Features: Virtual DOM, Reactive and composable components, Server-side rendering, JSX syntax
- Size: Minified version is around 6 KB
- Privacy and Security: Follows industry standard security practices, developers are responsible for ensuring secure usage
- Type of software: Open source, Licensed under MIT License
- If License: MIT License, a permissive open-source license that allows for modification and distribution of the software
- Latest version: 17.0.2
- Cloud support: Yes (through various platforms including Heroku, AWS, and Firebase)
- Applicability: Building complex and large-scale web applications, cross-platform mobile application development (React Native)
- Drawbacks: Steep learning curve for beginners, Higher complexity in larger projects, Need to regularly keep up with updates.

1. 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

Selected Database:

Dataset 4- <https://archive.ics.uci.edu/ml/datasets/Bike+Sharing+Dataset>

CO Untitled0.ipynb ☆
File Edit View Insert Runtime Tools Help All changes saved

+ Code + Text

31s

```
from google.colab import files
uploaded = files.upload()
```

Choose Files day.csv

- day.csv(text/csv) - 57569 bytes, last modified: 2/24/2023 - 100% done

Saving day.csv to day.csv

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
bike=pd.read_csv('day.csv')
bike
```

	instant	dteday	season	yr	mnth	holiday	weekday	workingday	weathersit	temp	atemp	hum	windspeed	casual	registered	cnt
0	1	2011-01-01	1	0	1	0	6	0	2	0.344167	0.363625	0.805833	0.160446	331	654	985
1	2	2011-01-02	1	0	1	0	0	0	2	0.363478	0.353739	0.696087	0.248539	131	670	801
2	3	2011-01-03	1	0	1	0	1	1	1	0.196364	0.189405	0.437273	0.248309	120	1229	1349
3	4	2011-01-04	1	0	1	0	2	1	1	0.200000	0.212122	0.590435	0.160296	108	1454	1562
4	5	2011-01-05	1	0	1	0	3	1	1	0.226957	0.229270	0.436957	0.186900	82	1518	1600
...
726	727	2012-12-27	1	1	12	0	4	1	2	0.254167	0.226642	0.652917	0.350133	247	1867	2114
727	728	2012-12-28	1	1	12	0	5	1	2	0.253333	0.255046	0.590000	0.155471	644	2451	3095
728	729	2012-12-29	1	1	12	0	6	0	2	0.253333	0.242400	0.752917	0.124383	159	1182	1341
729	730	2012-12-30	1	1	12	0	0	0	1	0.255833	0.231700	0.483333	0.350754	364	1432	1796
730	731	2012-12-31	1	1	12	0	1	1	2	0.215833	0.223487	0.577500	0.154846	439	2290	2729

```
bike.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 731 entries, 0 to 730
Data columns (total 16 columns):
 #   Column      Non-Null Count  Dtype
---  -
 0   instant    731 non-null   int64
 1   dteday     731 non-null   object
 2   season     731 non-null   int64
 3   yr         731 non-null   int64
 4   mnth       731 non-null   int64
 5   holiday    731 non-null   int64
 6   weekday    731 non-null   int64
 7   workingday 731 non-null   int64
 8   weathersit  731 non-null   int64
 9   temp       731 non-null   float64
10  atemp      731 non-null   float64
11  hum        731 non-null   float64
12  windspeed  731 non-null   float64
13  casual     731 non-null   int64
14  registered 731 non-null   int64
15  cnt        731 non-null   int64
dtypes: float64(4), int64(11), object(1)
memory usage: 91.5+ KB
```

```
bike.head()
```

	instant	dteday	season	yr	mnth	holiday	weekday	workingday	weathersit	temp	atemp	hum	windspeed	casual	registered	cnt
0	1	2011-01-01	1	0	1	0	6	0	2	0.344167	0.363625	0.805833	0.160446	331	654	985
1	2	2011-01-02	1	0	1	0	0	0	2	0.363478	0.353739	0.696087	0.248539	131	670	801
2	3	2011-01-03	1	0	1	0	1	1	1	0.196364	0.189405	0.437273	0.248309	120	1229	1349
3	4	2011-01-04	1	0	1	0	2	1	1	0.200000	0.212122	0.590435	0.160296	108	1454	1562
4	5	2011-01-05	1	0	1	0	3	1	1	0.226957	0.229270	0.436957	0.186900	82	1518	1600

```

y=bike['cnt']
X=bike[['season','mnth','holiday','weekday','workingday','weathersit','temp','atemp','hum','windspeed']]
from sklearn.model_selection import train_test_split
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.3,random_state=101)
from sklearn.linear_model import LinearRegression
lm=LinearRegression()
lm.fit(X_train,y_train)

LinearRegression()

```

