STUDENT DECLARATION
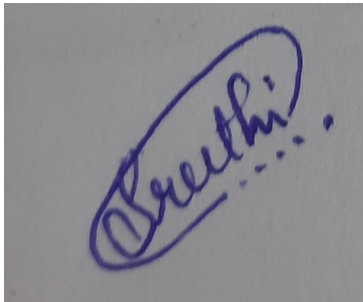
I , [MUGLE SRUTHI], hereby declare that the report titled "[SUMMER TRAINING REPORT BEGIN WITH PYTHON BY PROGRAMMING PATHASHALA]" is my own original work. I have not copied or plagiarized any part of this report from any other source. I have acknowledged all sources that I have used in the preparation of this report, either in the text or in the references.

Signed,

[SIGNATURE]

DATE : 21-08-2023.

ACKNOWLEDGEMENT

I would like to acknowledge the following people for their help in the preparation of this report:

- My instructor, [**Mr. Bharath Khanna**], for their guidance and support throughout the course.
- The staff at the Lovely Professional University library for their assistance in finding resources.
- My classmates for their feedback and encouragement.
- **Programming Pathshala** for providing me with the opportunity to learn Python and for their excellent course materials.

I would also like to acknowledge the following online resources that I found helpful:

- **Python Tutorial** : https://docs.python.org/3/tutorial/
- **Stack Overflow** : https://stackoverflow.com/
- **Real Python**   : https://realpython.com/

I am grateful for all of the help that I received in completing this report. I hope that it is a valuable contribution to the field of Python programming.

Sincerely,

Mugle Sruthi

Reg no : 12109334

Summer Training Certificate

CERTIFICATE

Summer Bootcamp June-July 2023

Programming Pathshala

Mugle Sruthi

This is to certify that Mugle Sruthi has successfully completed the course "**Begin with Python**" with **100**% attendance. We wish you all the best for future endeavours.

17 July 2023

Issue Date

Anoop Garg
Co-founder
Programming Pathshala

INTRODUCTION

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly procedural), object-oriented, and functional programming.

Python is often described as a "batteries included" language due to its comprehensive standard library. This includes modules for many common tasks, such as file I/O, regular expressions, data structures, and mathematical functions.

Python is one of the most popular programming languages in the world. It is used by beginners and experts alike for a wide variety of applications, including:

- Web development
- Data science
- Machine learning
- Artificial intelligence
- Scientific computing
- Software development

Here are some of the key features of Python:

- Easy to learn and use: Python has a simple syntax that is easy to read and write. This makes it a good language for beginners to learn.
- Powerful: Python is a powerful language that can be used to create complex applications.
- Versatile: Python can be used for a wide variety of tasks, from web development to data science.
- Open source: Python is an open source language, which means that it is free to use and modify. This makes it a popular choice for many developers.

Here is a simple Python program that prints "Hello, world!" to the console:

Python

```
print("Hello, world!")
```

What is Python?

Python is a high-level, interpreted programming language known for its simplicity and readability. Created by Guido van Rossum and first released in 1991, Python has become one of the most popular programming languages due to its versatility, ease of learning, and a large community of developers.

Key features of Python include:

1. **Readability**: Python's syntax emphasizes code readability and clarity, making it easy for developers to express their ideas in a concise and organized manner.

2. **Interpreted**: Python is an interpreted language, which means that code is executed line by line by an interpreter, without the need for compilation. This allows for faster development and testing.

3. **Dynamic Typing**: Python is dynamically typed, meaning that variable types are determined at runtime. This provides flexibility but also requires careful attention to type-related issues.

4. Automatic Memory Management: Python's memory management is handled by the interpreter, which automatically allocates and releases memory. This helps developers avoid many low-level memory-related issues.

5. Large Standard Library: Python comes with a comprehensive standard library that provides modules and functions for various tasks, ranging from file manipulation to web development.

6. Cross-Platform: Python is available for various operating systems, making it a versatile choice for developing applications that can run on different platforms.

7. Third-Party Libraries: Python has a rich ecosystem of third-party libraries and frameworks, which extend its capabilities for specialized tasks such as data analysis (NumPy, pandas), web development (Django, Flask), scientific computing (SciPy), machine learning (TensorFlow, PyTorch), and more.

8. Community and Documentation: Python has a large and active community of developers who contribute to its growth and development. This also means that there are extensive resources and documentation available for learning and troubleshooting.

Python is used in a wide range of applications, including web development, scientific computing, data analysis, artificial intelligence, machine learning, automation, scripting, and more. Its versatility, ease of use, and robust community support make it a popular choice for both beginners and experienced developers.

fig : 1 LOGO OF PYTHON

*Community and Support: Python's strength lies in its thriving community and robust support ecosystem:

- **Documentation and Resources:** Python's official documentation is extensive and well-maintained, catering to both beginners and experts.
- **Community Collaboration:** Python's open-source nature encourages community contributions, leading to the growth of libraries, frameworks, and tools.
- **Online Presence and Knowledge Sharing:** Platforms like Stack Overflow, Reddit, and GitHub provide spaces for discussions, Q&A, and code sharing.
- **Conferences and Workshops:** Python-centric events, such as PyCon, offer opportunities for learning, networking, and collaboration.

* Impact and Future Trends: Python's impact on the programming landscape is profound:

- **Educational Tool:** Python's simplicity and readability make it a favored language for teaching programming fundamentals.
- **Data Science Revolution:** Python's rich ecosystem of data science libraries has contributed to its dominance in this field.
- **AI Advancements:** Python's role in AI research and development has driven breakthroughs in machine learning and natural language processing.
- **Automation and DevOps:** Python's scripting capabilities have enabled automation in various industries, including DevOps practices.

Application that runs on python

Python is a versatile programming language with a wide range of applications across various domains. Some of the applications that run on Python include:

1. Web Development:

- Django: A high-level web framework that encourages rapid development and clean, pragmatic design.

- Flask: A lightweight web framework that provides the essentials for building web applications.

  - Web2py: A full-stack framework for building scalable and secure web applications.

2. Data Analysis and Visualization:

- NumPy: A library for numerical computations, especially with   large, multi-dimensional arrays and matrices.

- pandas: A library for data manipulation and analysis, providing data structures like DataFrames.

- Matplotlib:A 2D plotting library for creating interactive visualizations and graphs.

- Seaborn: A statistical data visualization library built on top of Matplotlib, offering more aesthetically pleasing visuals.

  - Plotly: A versatile visualization library for creating interactive, web-based graphs.

3. Scientific Computing:
- SciPy: A library for scientific and technical computing, built on top of NumPy.

- SymPy: A symbolic mathematics library for performing algebraic computations and manipulations.

4. Machine Learning and Artificial Intelligence:

- TensorFlow:An open-source machine learning framework developed by Google, used for building and training various types of machine learning models.

- PyTorch: An open-source deep learning framework developed by Facebook's AI Research lab, known for its dynamic computational graph.
- scikit-learn: A machine learning library offering tools for classification, regression, clustering, dimensionality reduction, and more.
- Natural Language Toolkit (NLTK): A library for working with human language data, particularly useful in natural language processing (NLP) tasks.

5. Automation and Scripting:

- Python's scripting capabilities make it suitable for automating various tasks, such as file manipulation, data processing, and system administration.

6. Game Development:

- Pygame: A cross-platform set of Python modules designed for creating video games.

7. Networking and Cybersecurity:

- Python's networking libraries, such as `socket` and `requests`, facilitate tasks like creating network applications and interacting with web services.
- Security professionals use Python for scripting and creating tools for penetration testing and cybersecurity analysis.

8. Desktop Applications:

- Python can be used to create graphical user interfaces (GUI) using libraries like `Tkinter`, `PyQt`, and `wxPython`.

9. Robotics and Internet of Things (IoT):

- Python is used in robotics programming and IoT applications due to its simplicity and ability to interface with hardware.

10. Financial Applications:

- Python is employed in algorithmic trading, financial analysis, and risk management in the financial industry.

11. Audio and Music:

- Libraries like `pydub` and `librosa` allow developers to work with audio files and perform various audio-related tasks.

12. Healthcare and Medical Research:

- Python is used for analyzing medical data, building predictive models, and conducting research in bioinformatics.

13. Education:

- Python's ease of learning and simplicity make it a popular choice for teaching programming concepts in schools and universities.

These are just a few examples of the many applications that can be developed using Python. Its versatility, extensive library ecosystem, and active community support have contributed to its adoption in a wide variety of fields.

Companies that uses python

Many companies across various industries use Python for a wide range of applications due to its versatility and ease of use. As of my last update in September 2021, here are some well-known companies that have been known to use Python:

1. Google:

Python is one of the main languages used internally at Google. It's used for various projects, including web applications, backend services, and automation.

2. Facebook:

Python is used for various tasks within Facebook, including web development, data analysis, and machine learning.

3. Instagram:

Instagram, a subsidiary of Facebook, also uses Python extensively for backend services and development.

4. Netflix:

Python is used for various internal tools, automation, and backend services at Netflix.

5. Dropbox:

Dropbox's desktop client is primarily written in Python. Python is also used for various backend services.

6. Spotify:

Python is used for data analysis, backend services, and internal tools at Spotify.

7. NASA:

Python is used in various scientific and engineering applications at NASA, including data analysis and simulation.

8. Reddit:

Reddit's backend is partially built using Python, and it's used for various internal tools as well.

9. Pinterest:

Python is used for backend services, data analysis, and machine learning at Pinterest.

10. Microsoft:

Python is used in various capacities at Microsoft, including web development, scripting, and automation.

11. Amazon Web Services (AWS):

AWS provides support for Python in its cloud services, and many developers use Python for building applications on AWS.

12. IBM:

Python is used for various data science, analytics, and machine learning projects at IBM.

13. Quora:

Quora uses Python for backend development, data analysis, and various internal tools.

14. Slack: Python is used for various backend services and automation at Slack.

15. Uber:

Python is used for building tools, backend services, and data analysis at Uber.

16. Airbnb:

Python is used for various backend services, data processing, and machine learning at Airbnb.

17. Tesla:

Python is used for various automation and scripting tasks at Tesla.

18. Square:

Python is used for building tools, automating tasks, and data analysis at Square.

19. Intel:

Python is used for various scientific computing, data analysis, and machine learning projects at Intel.

20. CERN:

Python is used in scientific computing and data analysis in high-energy physics research at CERN.

Remember that technology choices can evolve over time, and the usage of languages can change. It's also worth noting that many companies use a combination of programming languages, and Python might not always be the primary language.
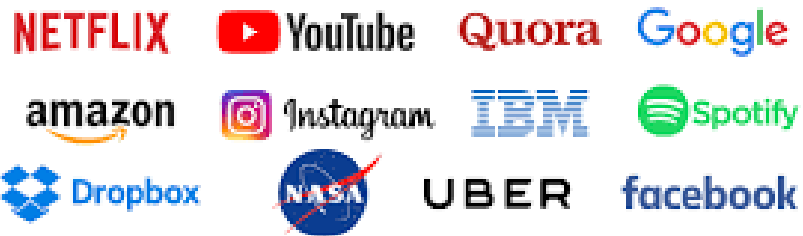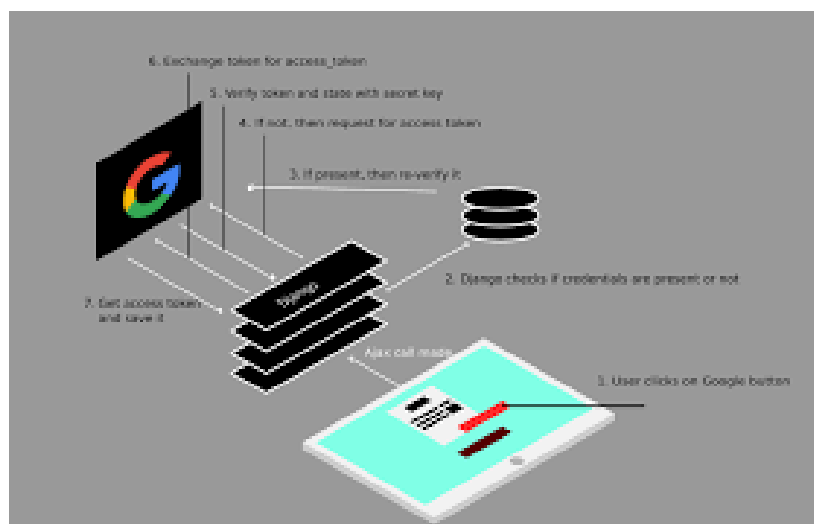
FIG 2: COMPANIES WHICH USE PYTHON

<div style="border:1px solid black; padding:10px;">

Project Details

TASK MANAGER AND REMINDER

Description:
Create a command-line task manager and reminder application that allows users to add, view, and manage tasks with due dates. The application will also provide reminders for upcoming tasks.

Features:

1. **Task Creation:** Allow users to add tasks with a title, description, and due date.

2. **Task List:** Display a list of tasks with their titles, due dates, and statuses (completed or pending).

3. **Task Details:** Provide the ability to view detailed information about a specific task, including its description and due date.

4. **Mark as Completed:** Allow users to mark tasks as completed.

5. **Reminders:** Implement reminders that notify users about upcoming tasks. Reminders can be displayed when the user starts the application.

6. **Persistence:** Store tasks and their details in a text file or a simple database so that they persist between different runs of the application.

7. **Search and Filter:** Implement functionality to search for tasks based on keywords or to filter tasks by status (completed/pending) or due date.

8. **Error Handling:** Handle potential errors gracefully, such as incorrect user input or missing task data.

Skills and Concepts:

- Working with date and time in Python (you can use the `datetime` module).

</div>

- Reading and writing data to files or using a simple database.
- Creating a user-friendly command-line interface.
- Implementing reminders or notifications.
- Handling user input and providing feedback.

Example Libraries to Use:

- datetime: For working with dates and times.
- time: For implementing timed reminders.
- argparse: For handling command-line arguments.
- File handling for reading and writing task data.

Getting Started:

1. Plan the structure of your application, including how tasks will be stored and managed.
2. Set up your Python environment and install any necessary libraries.
3. Design the command-line interface to allow users to interact with the app.
4. Start by implementing basic features, such as adding tasks and displaying a task list.
5. Add more advanced features like task details, marking tasks as completed, and reminders.
6. Implement data persistence to ensure tasks are stored between app sessions.
7. Test your application thoroughly, including edge cases and error scenarios.
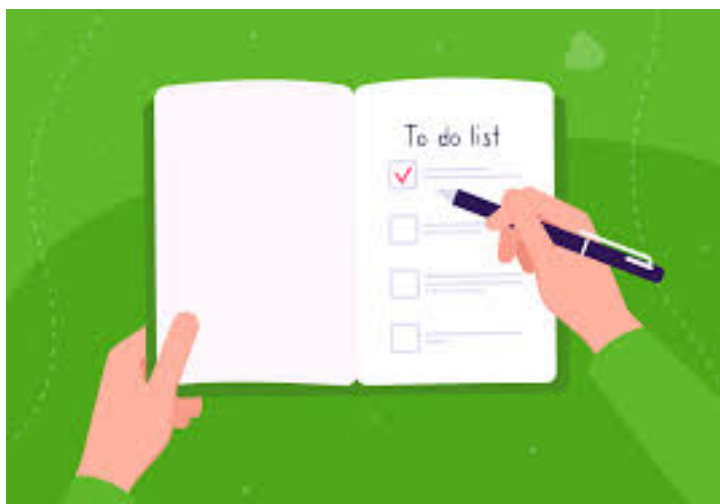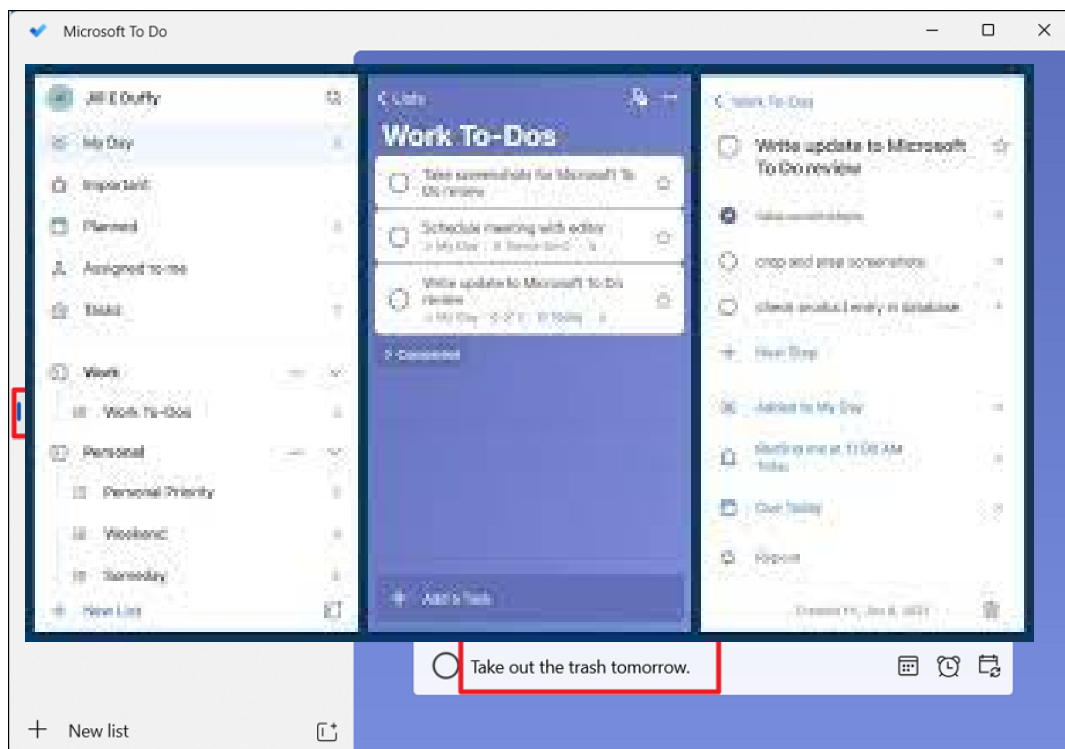
 This are the images for the reference , This is my project I have created on console or terminal .

CONCLUSION OF PROJECT :

This project will help you practice working with dates, managing data, and creating interactive command-line applications. Plus, it can be a useful tool to help you stay organized with your tasks!
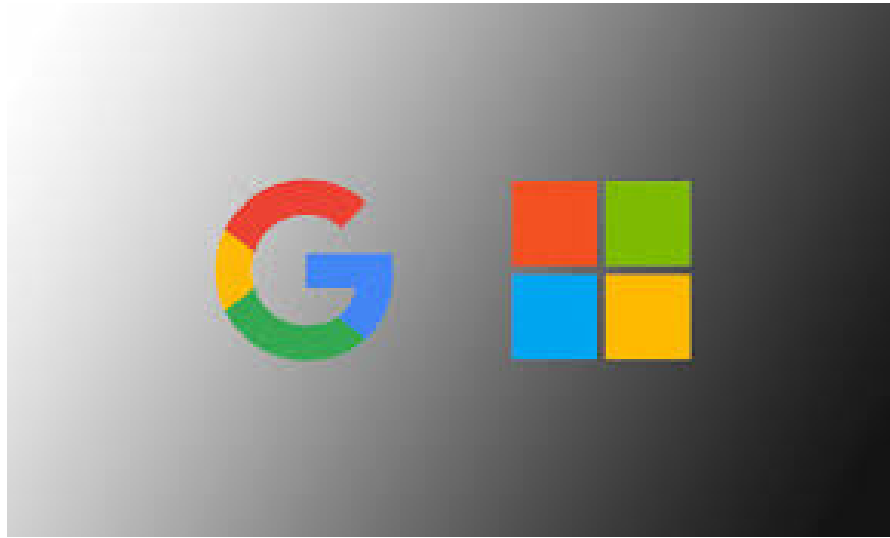
 CONCLUSION :

    Python's evolution from a modest scripting language to a versatile, industry-standard programming language is a remarkable journey. Its commitment to simplicity, coupled with an expansive library landscape and a passionate community, ensures its relevance across domains. As technology continues to evolve, Python's adaptability and innovation guarantee its continued prominence in the world of programming.

       *******   THE END   *******