

21-Day Python Challenge

Day 21 – Final Challenge & Your Next Journey

GK InfoTech Solutions – Institute of Engineers

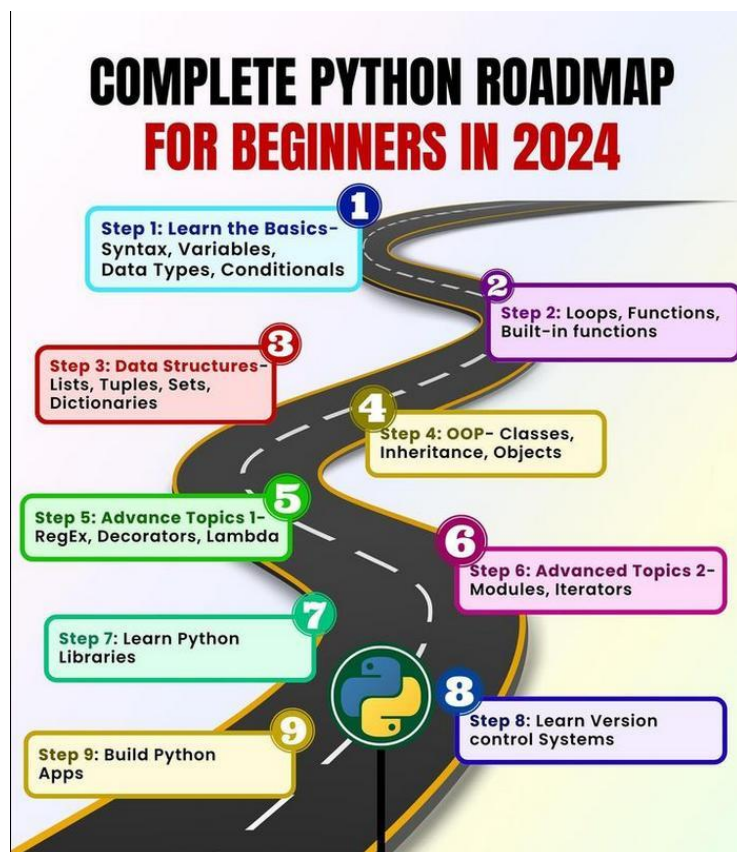
"Congratulations! You have completed 21 days of consistent Python learning. Today is not the end of your journey—it is the beginning of becoming a programmer."

Day 21 Learning Objectives

Today, students will:

-  Review everything learned from Day 1 to Day 20.
 -  Build a complete Python mini project.
 -  Understand how different Python concepts work together.
 -  Learn career opportunities after Python.
 -  Plan the next stage of learning:
 - Data Science
 - Artificial Intelligence (AI)
 - Machine Learning (ML)
 - Web Development
 - Automation
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Picture 1 – 21-Day Python Learning Journey



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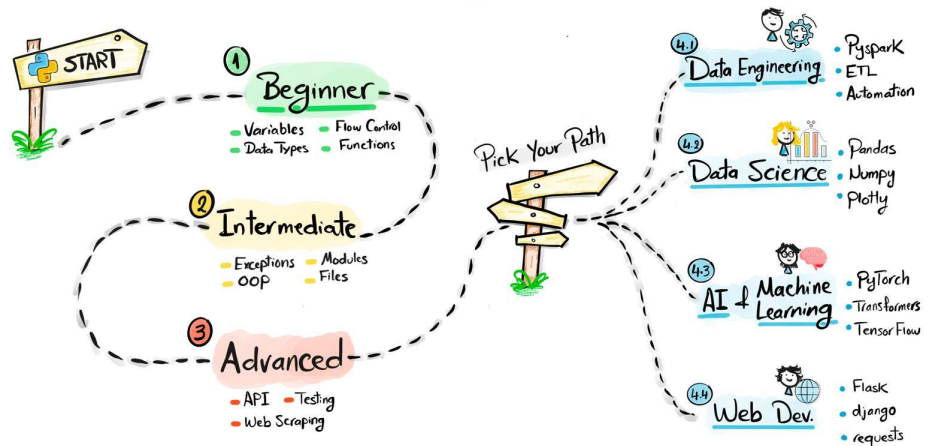
Learning Journey

Day 1 → Python Basics
 ↓
 Day 2 → Variables & Data Types
 ↓
 Day 3 → Operators
 ↓
 Day 4 → Conditions
 ↓
 Day 5 → Loops
 ↓
 Day 6 → Strings
 ↓
 Day 7 → Lists
 ↓
 Day 8 → Tuples & Sets
 ↓
 Day 9 → Dictionary
 ↓
 Day10 → Functions
 ↓
 Day11 → Modules
 ↓
 Day12 → File Handling
 ↓
 Day13 → Exception Handling
 ↓
 Day14 → OOP
 ↓
 Day15 → Advanced OOP
 ↓
 Day16 → Collections
 ↓
 Day17 → Packages & PIP
 ↓
 Day18 → Student Project
 ↓
 Day19 → Calculator & Game
 ↓
 Day20 → Intermediate Python



Day21 → Final Project

Python Roadmap



Final Challenge

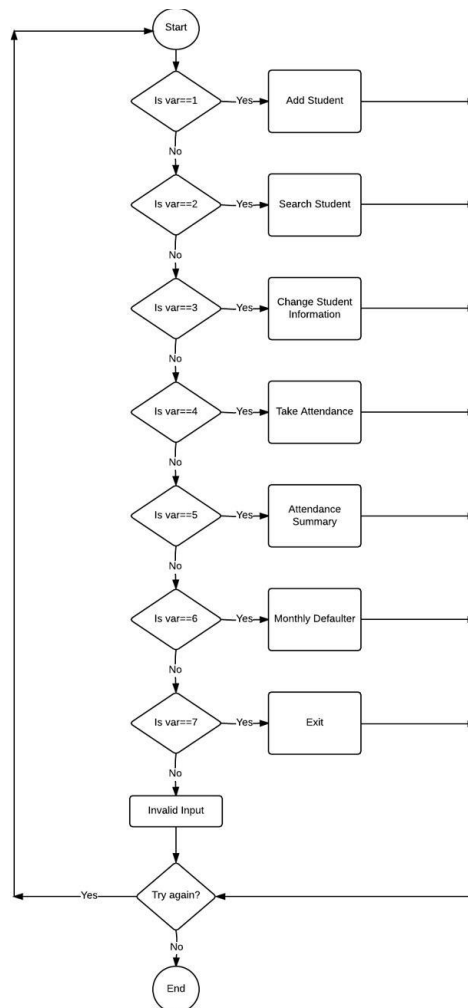
Build a Student Management System

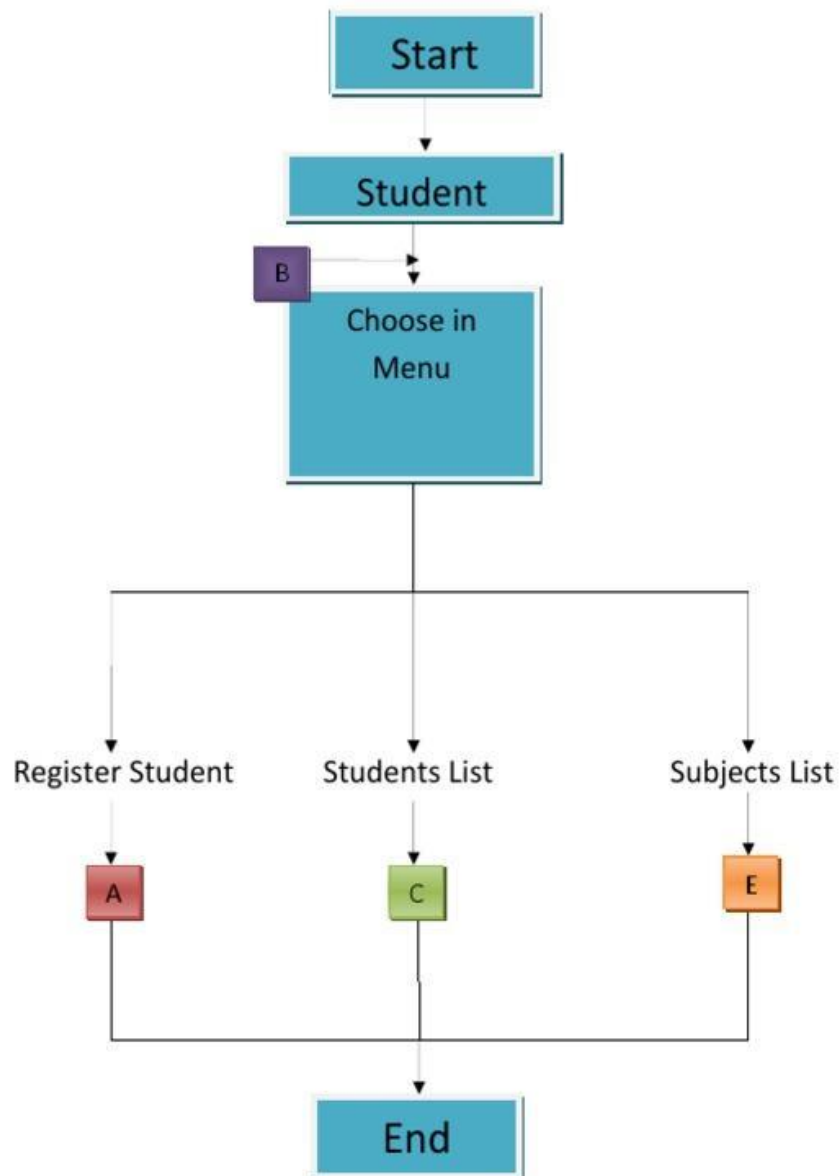
The project should allow users to:

```
=====
STUDENT MANAGEMENT SYSTEM
=====
```

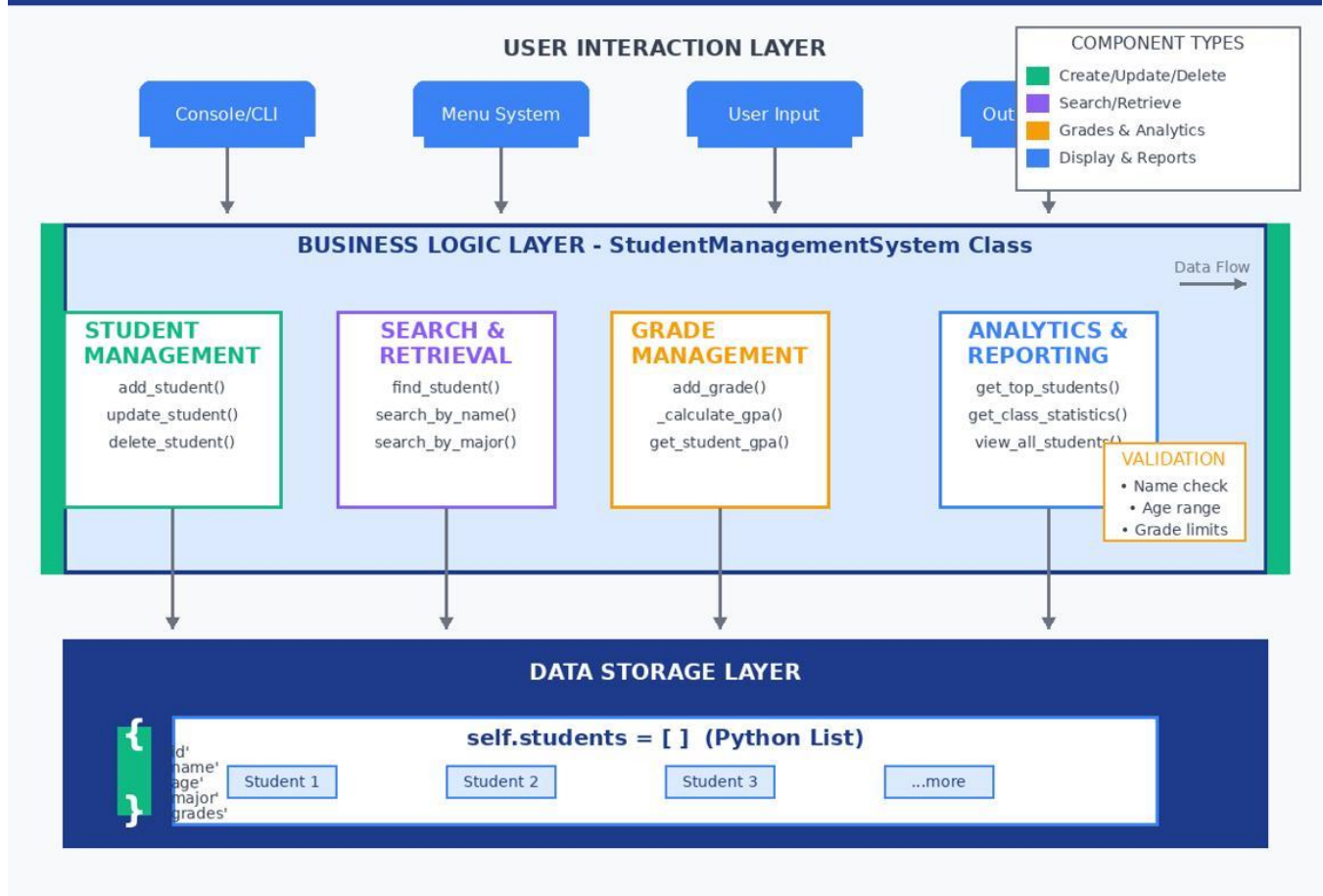
1. Add Student
2. View Students
3. Search Student
4. Update Student
5. Delete Student
6. Exit

Picture 2 – Student Management System Flow



Main Program:

Student Management System - Architecture



```

Start
↓
Main Menu
↓
Choose Option
↓
Add / View / Search
↓
Update / Delete
↓
Exit
  
```



Complete Mini Project

```
students = {}

while True:

    print("\n===== STUDENT MANAGEMENT SYSTEM =====")
    print("1. Add Student")
    print("2. View Students")
    print("3. Search Student")
    print("4. Update Student")
    print("5. Delete Student")
    print("6. Exit")

    choice = input("Enter Choice : ")

    if choice == "1":

        roll = input("Roll Number : ")
        name = input("Student Name : ")
        marks = int(input("Marks : "))

        students[roll] = {
            "Name": name,
            "Marks": marks
        }

        print("Student Added Successfully")

    elif choice == "2":

        if len(students) == 0:
            print("No Records Found")

        else:

            for roll, data in students.items():

                print("-----")
                print("Roll :", roll)
                print("Name :", data["Name"])
                print("Marks :", data["Marks"])

    elif choice == "3":

        roll = input("Enter Roll Number : ")

        if roll in students:

            print(students[roll])

        else:

            print("Student Not Found")

    elif choice == "4":

        roll = input("Enter Roll Number : ")
```

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```

if roll in students:

    name = input("New Name : ")
    marks = int(input("New Marks : "))

    students[roll]["Name"] = name
    students[roll]["Marks"] = marks

    print("Record Updated")

else:

    print("Student Not Found")

elif choice == "5":

    roll = input("Enter Roll Number : ")

    if roll in students:

        del students[roll]

        print("Record Deleted")

    else:

        print("Student Not Found")

elif choice == "6":

    print("Thank You")
    break

else:

    print("Invalid Choice")

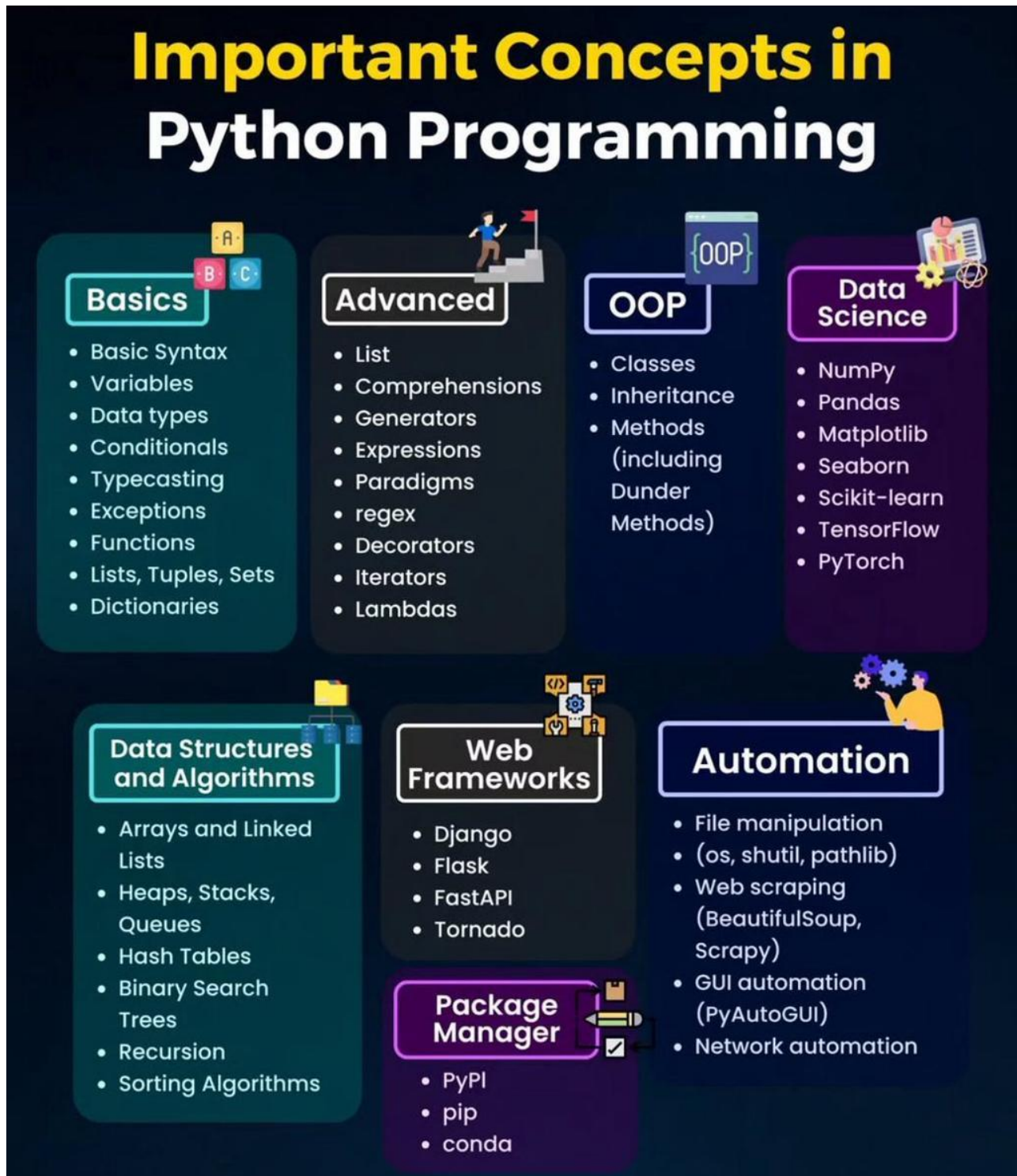
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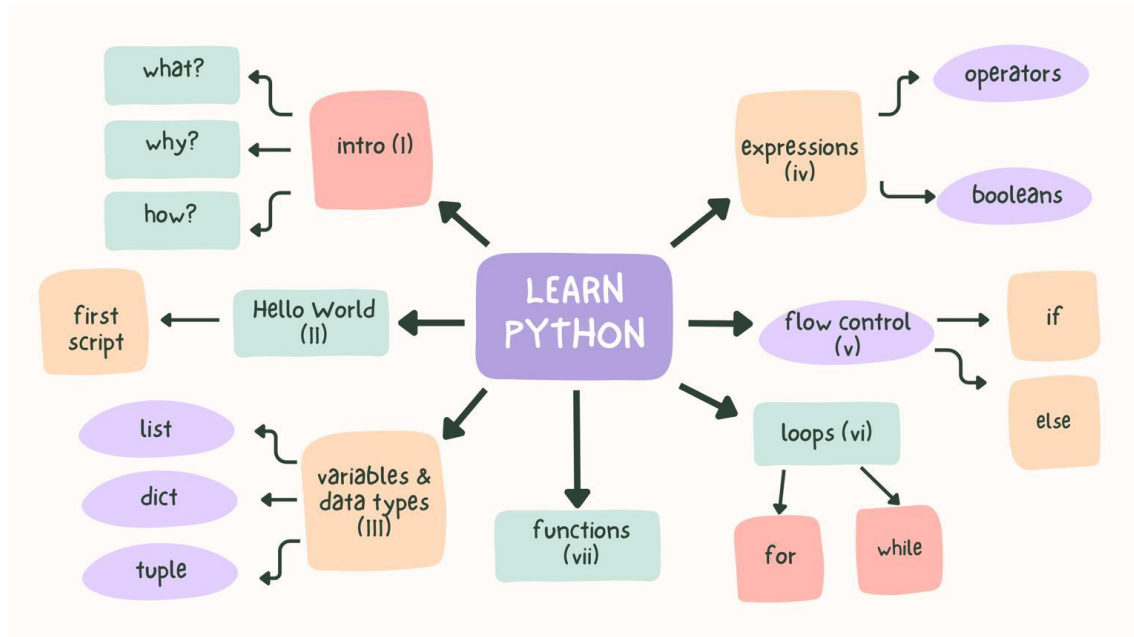
Concepts Used

Topic	Used
Variables	✓
Data Types	✓
Operators	✓
if-else	✓
Loops	✓
Functions	✓ (can be added)
Lists & Dictionary	✓
File Handling	Can be added
Exception Handling	Can be added
OOP	Can be added
Modules	✓

This project combines many of the topics you have learned over the past 20 days.

Picture 3 – Python Concepts Working Together





1. Python Basics & Syntax

- Installing Python & setting up environment
- Writing your first program
- Indentation & basic rules

2. Data Types & Variables

- Numbers, strings, booleans
- Type conversion
- Input & output

3. Control Flow (if, loops)

- if / elif / else
- for loop
- while loop

4. Functions & Modules

- Creating functions
- Parameters & return values
- Using built-in & custom modules

5. Data Structures

- Lists
- Tuples
- Sets
- Dictionaries

6. OOP Concepts

- Classes & objects
- Methods & attributes
- Inheritance & encapsulation (basics)

7. Error Handling & Debugging

- Common errors
- try / except blocks
- Reading error messages

8. File Handling & OS Basics

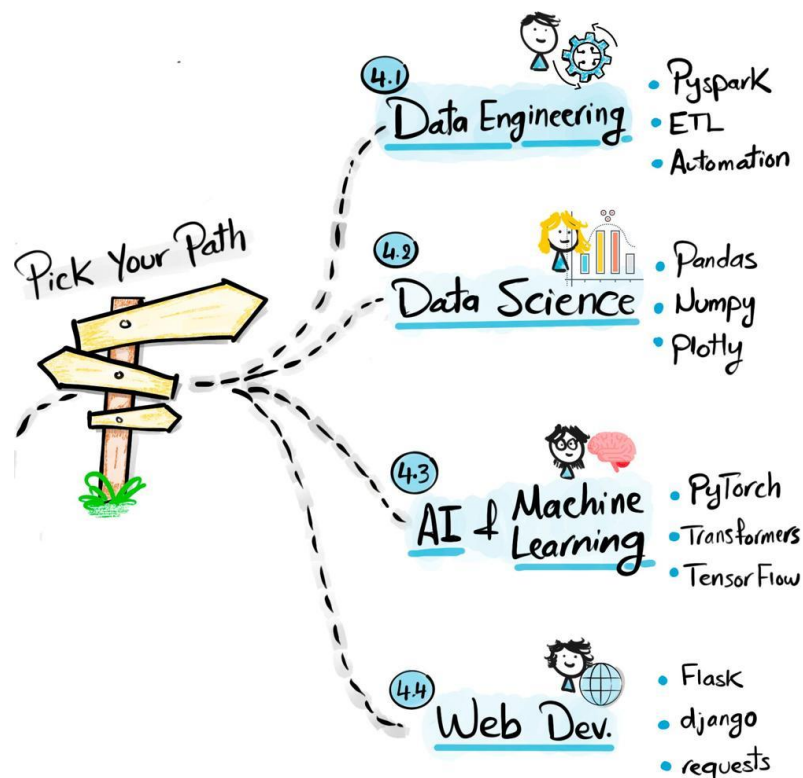
- Reading & writing files
- Working with folders
- Basic OS operations

Variables
↓
Conditions
↓
Loops
↓
Functions
↓
Dictionary
↓
File Handling
↓
Complete Project

Where Can You Use Python?

Python is one of the most popular programming languages because it is used in many different fields.

Picture 4 – Career Opportunities with Python





1 Data Science

Python helps analyze data, create reports, and find useful insights from large amounts of information.

Examples:

- Student results analysis
- Sales reports
- Business analytics

2 Artificial Intelligence (AI)

AI enables computers to perform tasks that usually require human intelligence.

Examples:

- Voice assistants
- Chatbots
- Image recognition
- Language translation

3 Machine Learning (ML)

Machine Learning allows computers to learn from data and improve their predictions over time.

Examples:

- Movie recommendations
- Spam email detection
- Weather prediction
- Face recognition

4 Web Development

Python is used to build websites and web applications.

Examples:

- Online shopping websites
- College portals
- Hospital management systems
- Banking applications

Popular Python web frameworks include **Django** and **Flask**.

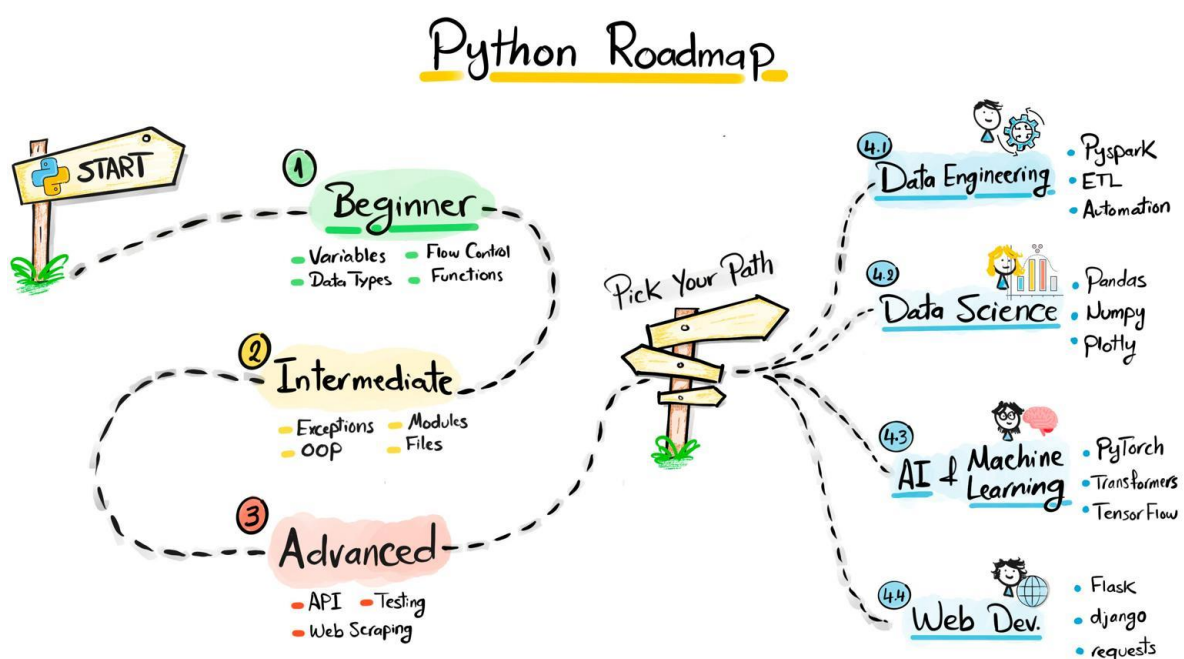
5 Automation

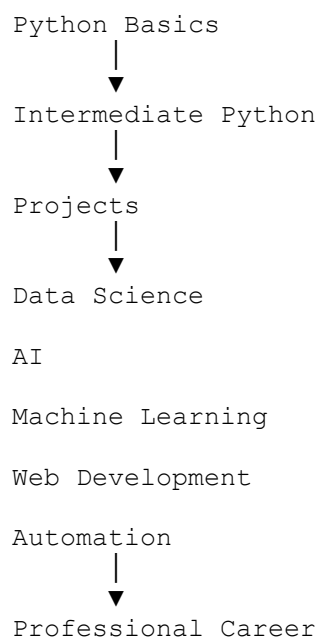
Python can automate repetitive tasks, saving time and reducing manual effort.

Examples:

- Renaming files
- Sending emails
- Creating reports
- Reading Excel files

Picture 5 – Future Learning Roadmap





Skills You Have Developed

After completing this challenge, you can:

- ✓ Write Python programs confidently.
- ✓ Solve logical problems.
- ✓ Build console-based applications.
- ✓ Work with files and collections.
- ✓ Create classes and objects.
- ✓ Handle program errors.
- ✓ Understand real-world programming concepts.

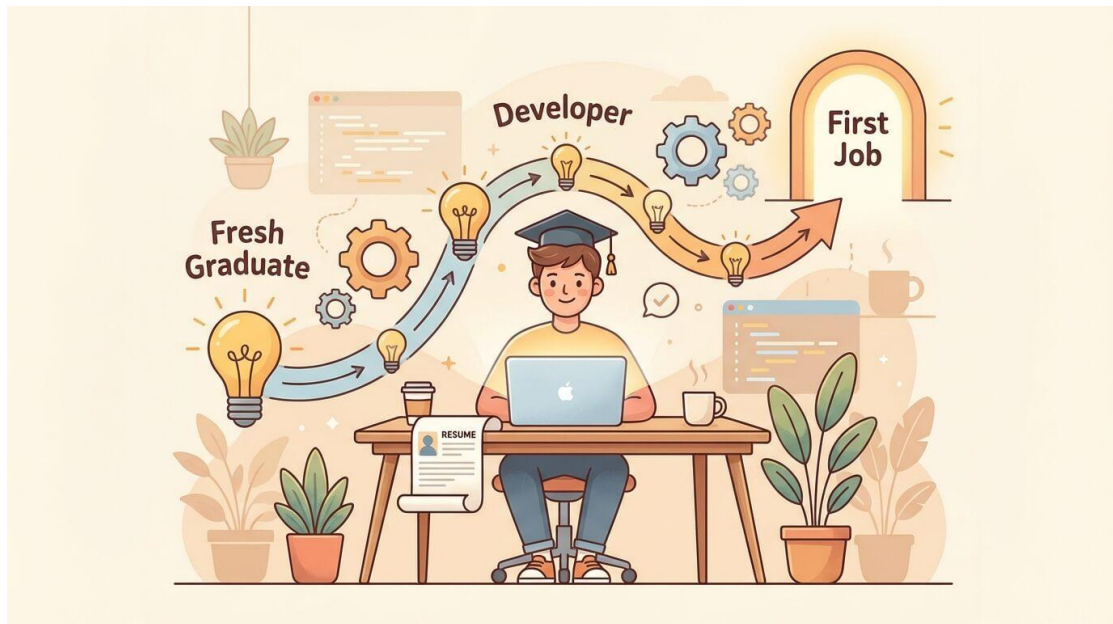
Final Practice Challenge

Improve the Student Management System by adding:

- Save student records to a file.
 - Load records automatically when the program starts.
 - Display pass/fail status.
 - Calculate the class average.
 - Find the highest and lowest marks.
 - Count the total number of students.
-

 Picture 6 – From Student to Software Developer

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```

Student
  ↓
Learn Python
  ↓
Practice Daily
  ↓
Build Projects
  ↓
Gain Confidence
  ↓
Become a Software Developer
  
```

✳ Why Join This 21-Day Python Challenge?

- ✓ Learn Python from **Zero to Intermediate**
 - ✓ Daily Step-by-Step Lessons
 - ✓ Practical Coding Exercises
 - ✓ Real-Time Mini Projects
 - ✓ Build Logical Thinking & Problem-Solving Skills
 - ✓ Prepare for College Assignments, Placements, and Future Careers
 - ✓ Build a strong foundation for advanced technologies
-

🎓 Certificate Message

Congratulations! 🎉

*You have successfully completed the **21-Day Python Programming Challenge** at **GK InfoTech Solutions – Institute of Engineers**.*

This achievement shows your dedication, curiosity, and willingness to learn. The skills you have gained are a strong foundation for building software, solving real-world problems, and exploring advanced technologies.

✳ Final Inspirational Message

"Every expert programmer was once a beginner who wrote their first line of code. Your success does not depend on how fast you learn—it depends on how consistently you practice. Keep building projects, keep solving problems, and keep learning. The future belongs to those who never stop improving."

🚀 Your Python journey has just begun. Continue learning, continue practicing, and continue creating. The best projects you will build are still ahead of you!