INSTITUTE OF TECHNOLOGY AND MANAGEMENT
SKILLS UNIVERSITY,
KHARGHAR, NAVI MUMBAI

PYTHON PROGRAMMING LAB

Prepared by:

Name of Student: _Shikha singh_____

Roll No: _25_____

Batch: 2023-27

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Exp. No	List of Experiment
	1.1 Write a program to compute Simple Interest.
	1.2 Write a program to perform arithmetic, Relational operators.
	1.3 Write a program to find whether a given no is even & odd.
	1.4 Write a program to print first n natural number & their sum.
	1.5 Write a program to determine whether the character entered is a Vowel or not .
	1.6 Write a program to find whether given number is an Armstrong Number.
	1.7 Write a program using for loop to calculate factorial of a No.
	1.8 Write a program to print the following pattern
	i) * * * * * * * * * * * * * * *
	ii) 1 2 2 3 3 3 4 4 4 4 5 5 5 5 5
	iii) *

	2.1 Write a program that define the list of defines the list of define countries that are in BRICS.
	2.2 Write a program to traverse a list in reverse order. 1.By using Reverse method. 2.By using slicing
	2.3 Write a program that scans the email address and forms a tuple of username and domain.
	2.4 Write a program to create a list of tuples from given list having number and add its cube in tuple. i/p: c= [2,3,4,5,6,7,8,9]
	2.5 Write a program to compare two dictionaries in Python? (By using == operator)
	2.6 Write a program that creates dictionary of cube of odd numbers in the range.
	2.7 Write a program for various list slicing operation. a= [10,20,30,40,50,60,70,80,90,100] i. Print Complete list ii. Print 4th element of list iii. Print list from0th to 4th index. iv. Print list -7th to 3rd element v. Appending an element to list. vi. Sorting the element of list. vii. Popping an element. viii. Removing Specified element. ix. Entering an element at specified index. x. Counting the occurrence of a specified element. xi. Extending list. xii. Reversing the list.
	3.1 Write a program to extend a list in python by using given approach. i. By using + operator. ii. By using Append ()

	iii. By using extend ()
	3.2 Write a program to add two matrices.
	3.3 Write a Python function that takes a list and returns a new list with distinct elements from the first list.
	3.4 Write a program to Check whether a number is perfect or not.
	3.5 Write a Python function that accepts a string and counts the number of upper- and lower-case letters. string_test= 'Today is My Best Day'
	4.1 Write a program to Create Employee Class & add methods to get employee details & print.
	4.2 Write a program to take input as name, email & age from user using combination of keywords argument and positional arguments (*args and**kwargs) using function,
	4.3 Write a program to admit the students in the different Departments(pgdm/btech) and count the students. (Class, Object and Constructor).
	4.4 Write a program that has a class store which keeps the record of code and price of product display the menu of all product and prompt to enter the quantity of each item required and finally generate the bill and display the total amount.
	4.5 Write a program to take input from user for addition of two numbers using (single inheritance).
	4.6 Write a program to create two base classes LU and ITM and one derived class. (Multiple inheritance).
	4.7 Write a program to implement Multilevel inheritance, Grandfather□Father-□Child to show property inheritance from grandfather to child.
	4.8 Write a program Design the Library catalogue system using inheritance take base class (library item) and derived class (Book, DVD & Journal) Each derived

	class should have unique attribute and methods and system should support Check in and check out the system. (Using Inheritance and Method overriding)
	5.1 Write a program to create my_module for addition of two numbers and import it in main script.
	5.2 Write a program to create the Bank Module to perform the operations such as Check the Balance, withdraw and deposit the money in bank account and import the module in main file.
	5.3 Write a program to create a package with name cars and add different modules (such as BMW, AUDI, NISSAN) having classes and functionality and import them in main file cars.
	6.1 Write a program to implement Multithreading. Printing “Hello” with one thread & printing “Hi” with another thread.
.	7.1 Write a program to use ‘whether API’ and print temperature of any city, also print the sunrise and sunset times for the same humidity of that area.
	7.2 Write a program to use the ‘API’ of crypto currency.

Name of Student: _Shikha singh_____

Roll Number: __**25**_____

Experiment No: 4.3

Title:

4.3 Write a program to admit the students in the different

Departments(pgdm/btech) and count the students. (Class, Object and Constructor).

Theory:

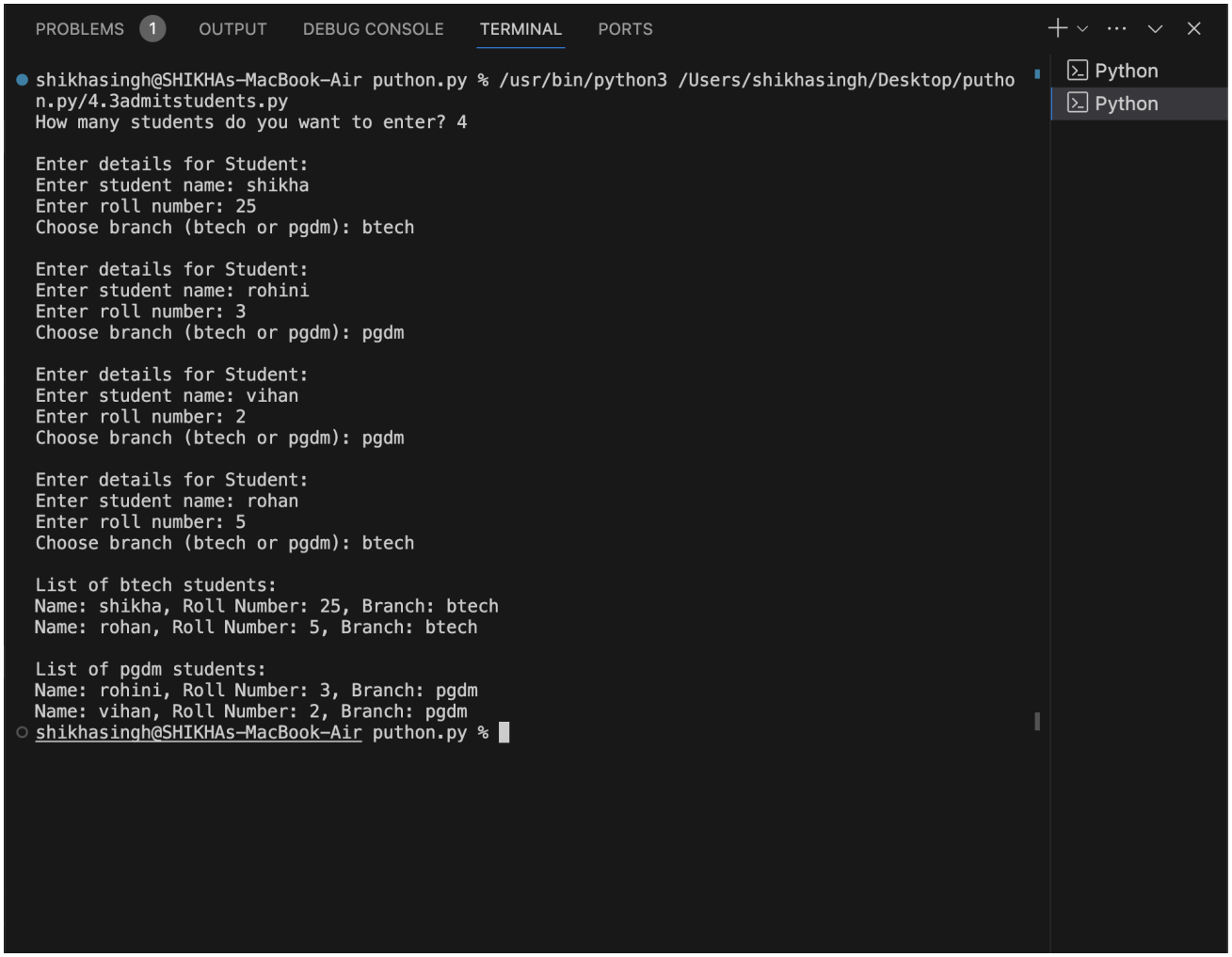
- **Class and Object: In object-oriented programming, a class is a blueprint for creating objects. Objects are instances of a class, and each object can have its own attributes and methods. In the provided Python code, the Student class is defined to represent a student. Objects of this class are created to store details of each student.**
- **Class Variable: The students_by_branch class variable is used to store a dictionary that maps each branch (btech or pgdm) to a list of students belonging to that branch. This allows us to organize and manage students based on their branches.**
- **Constructor (__init__ method): The __init__ method is a special method in Python classes that initializes the attributes of an object when it is created. In this case, it initializes the name, roll_number, and branch attributes of a Student object and adds the student to the list of the respective branch.**
- **Loop and User Input: The program uses a loop to allow the user to enter details for a specified number of students. For each iteration of the loop, the program prompts the user to enter the name, roll number, and branch of a student.**
- **Display Method: The display_details method is defined to display the details of a student. This method is called later to show the details of each student.**
- **Main Function: The main function serves as the entry point of the program. It first asks the user how many students they want to enter, then enters details for each student in a loop. After entering all details, it displays lists of students for each branch.**

Code:

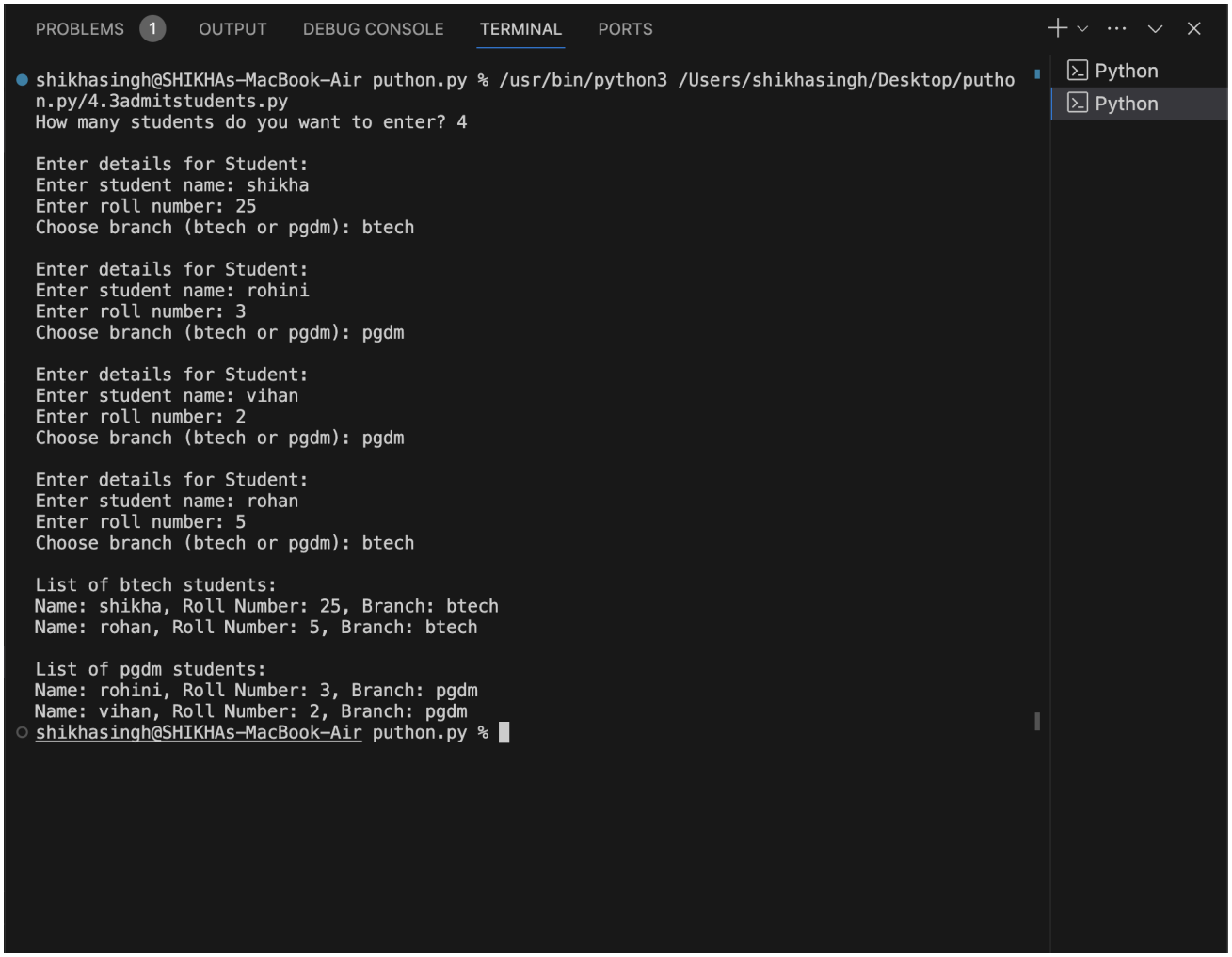
```
class Student:

    students_by_branch = {"btech": [], "pgdm": []}
    def __init__(self, name, roll_number, branch):
        self.name = name
        self.roll_number = roll_number
        self.branch = branch

        Student.students_by_branch[branch].append(self)
    def display_details(self):
        print(f"Name: {self.name}, Roll Number: {self.roll_number}, Branch: {self.branch}")
def main():

    num_students = int(input("How many students do you want to enter? "))

    for _ in range(num_students):
        print("\nEnter details for Student:")
        name = input("Enter student name: ")
```

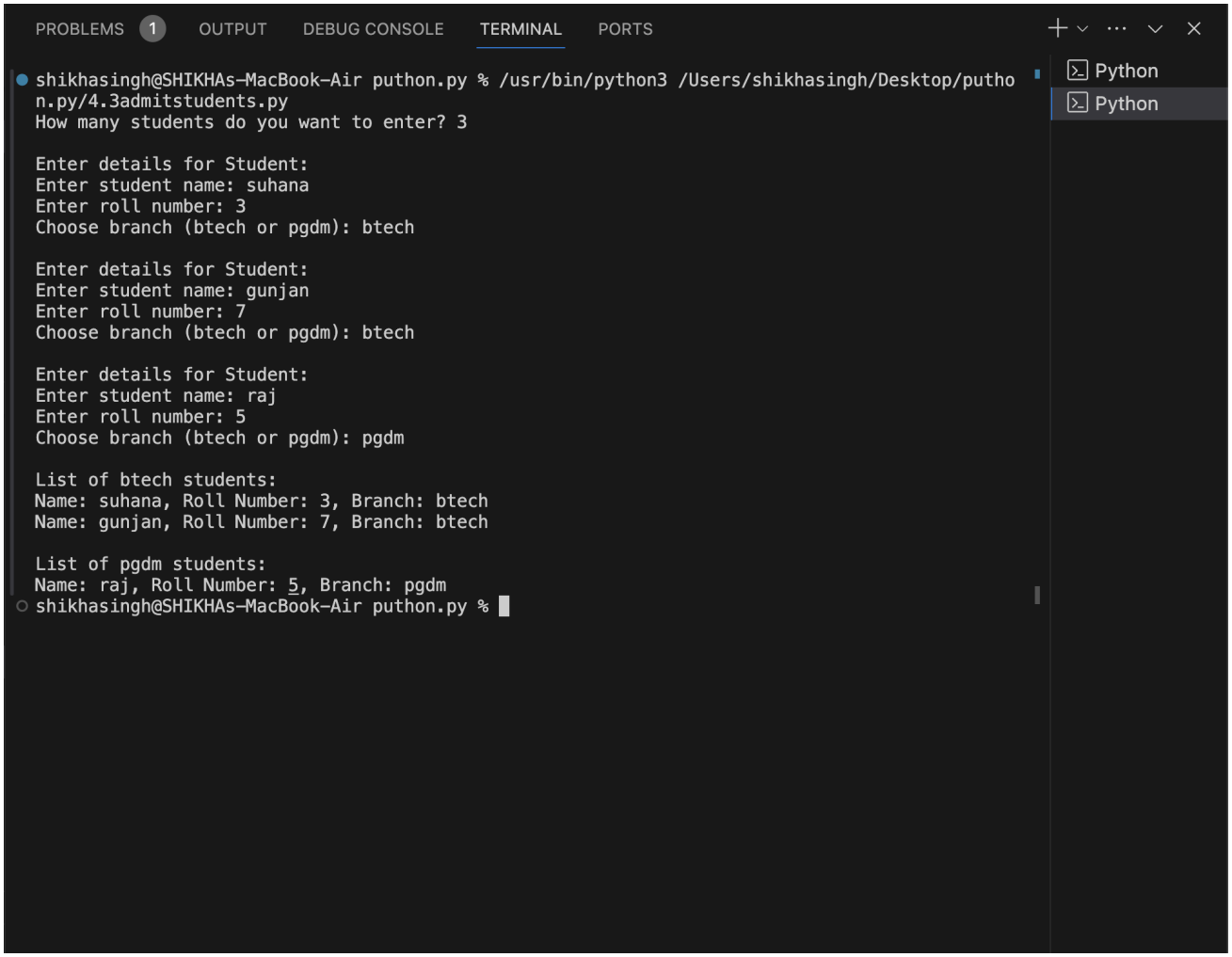
```
        roll_number = int(input("Enter roll number: "))
        branch = input("Choose branch (btech or pgdm): ")

        student = Student(name, roll_number, branch)

    print("\nList of btech students:")
    for student in Student.students_by_branch["btech"]:
        student.display_details()
    print("\nList of pgdm students:")
    for student in Student.students_by_branch["pgdm"]:
        student.display_details()
if __name__ == "__main__":
    main()
```

Output: (screenshot)



Test Case: Any two (screenshot)


PROBLEMS 1
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
Python
Python
shikhasingh@SHIKHAs-MacBook-Air python.py % /usr/bin/python3 /Users/shikhasingh/Desktop/python.py/4.3admitstudents.py
How many students do you want to enter? 4
Enter details for Student:
Enter student name: shikha
Enter roll number: 25
Choose branch (btech or pgdm): btech
Enter details for Student:
Enter student name: rohini
Enter roll number: 3
Choose branch (btech or pgdm): pgdm
Enter details for Student:
Enter student name: vihan
Enter roll number: 2
Choose branch (btech or pgdm): pgdm
Enter details for Student:
Enter student name: rohan
Enter roll number: 5
Choose branch (btech or pgdm): btech
List of btech students:
Name: shikha, Roll Number: 25, Branch: btech
Name: rohan, Roll Number: 5, Branch: btech
List of pgdm students:
Name: rohini, Roll Number: 3, Branch: pgdm
Name: vihan, Roll Number: 2, Branch: pgdm
shikhasingh@SHIKHAs-MacBook-Air python.py %



Conclusion:

This Python program demonstrates the principles of object-oriented programming by using classes, objects, constructors, and methods. It allows the user to input details for multiple students, organizes and stores these details based on the student's branch, and finally displays lists of students for each branch. The program is modular, making it easy to extend and maintain as the number of students and branches grows.