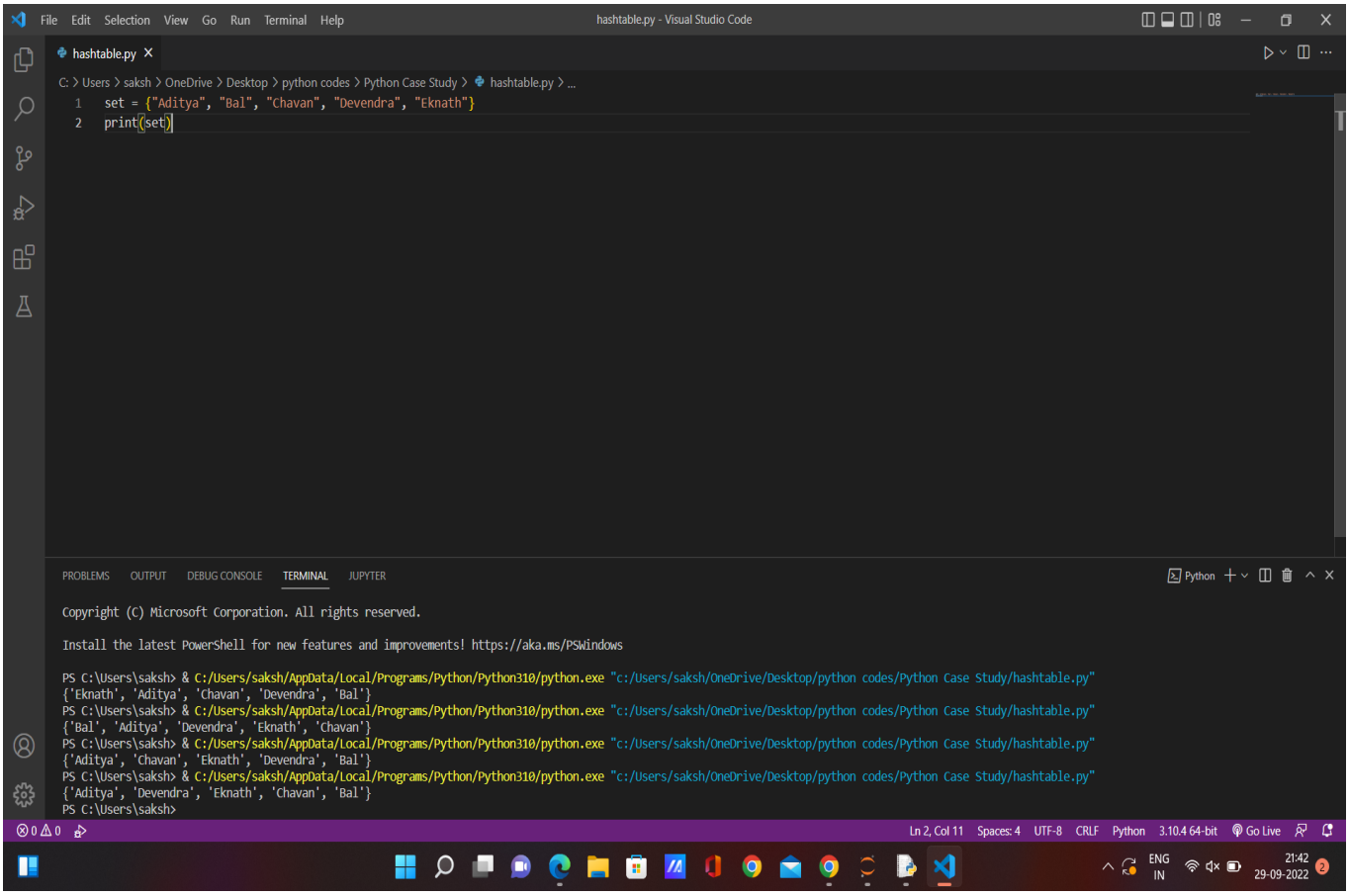
Name: Sakshi Panditrao Jadhav
PRN: 2030331245043
Class: 3rd year
Subject: Software Engineering

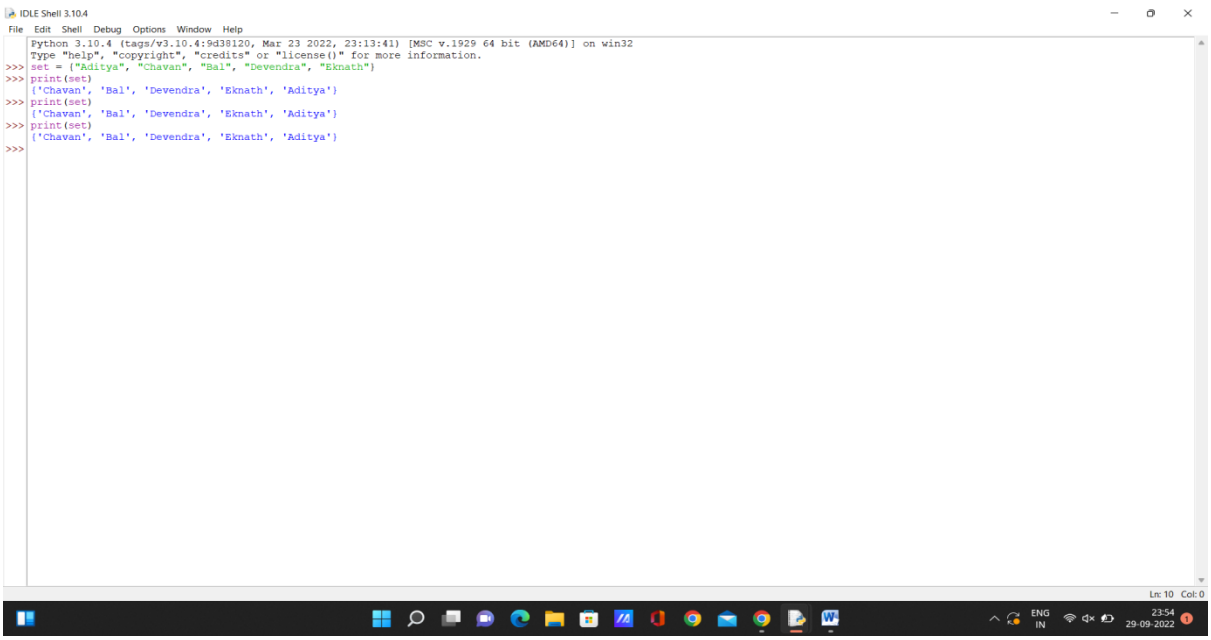
Assignment No. 1

Task 1: Implement a HashSet in Python/Java. Test your implementation of HashSet using the following data : Aditya, Bal, Chavan, Devendra, Eknath. Run your program on different versions or compilers for languages like PyCharm, IDLE, Colab etc. Observe the ordering of the output.

Visual Studio Code:



IDLE:



Task 2: Visit the official repositories of the following open source software. Check the features released in the latest three releases and prepare the following report.

Version No	Released Date	Feature released
Linux Kernel		
5.17.15	March 2022	• BPF CO-RE support • Random number generator improvements • New Real-Time Linux Analysis (RTLA) tool • Support giving names to anonymous memory • Mitigate straight-line speculation attacks
5.18.19	May 2022	• Support for Indirect Branch Tracking on Intel CPUs • User events • fprobe, for probing multiple functions with a single probe handler • Headers rearchitecturing preparations for faster compilation times • Stricter memcpy() compile-time bounds checking
5.19.9	July 2022	• Initial support for LoongArch • Support for Big TCP • More secure encrypted

		virtualization with AMD SEV-SNP and Intel TDX • Armv9 Scalable Matrix Extension support • Introduce Intel In-Field Scan driver to run targeted low level diagnostics outside of the CPU's architectural error detection capabilities
Apache Web Server		
2.4.4	August 2020	• Run-time Loadable MPM • Event MPM • Asynchronous suppor • Per-request configuration section • KeepAliveTimeout in millisecond
2.4.5	June 2022	• mod_proxy X-Forwarded-For dropped by hop-by-hop mechanism • Information Disclosure in mod_lua with websockets • mod_sed denial of service Denial of service in mod_lua r:parsebody
MySQL DB		
8.0.28	Jan 2022	• The new audit_log_disable system variable permits disabling audit logging for all connecting and connected sessions • A new statement metric, CPU_TIME, is now available, enabling you to measure the CPU time spent on a query.
8.0.29	April 2022	• The maximum size of FIDO authenticator data was increased. • The derived materialized table condition pushdown optimization can now be used with most unions. • New Performance Schema instrumentation collects information about whether a query was processed on the PRIMARY or SECONDARY engine, where the PRIMARY engine is InnoDB and the SECONDARY engine is HeatWave.
8.0.30	July 2022	• Generated Invisible Primary Keys (GIPKs) • Added Ubuntu 22.04 support. Performance Schema provides instrumentation for performance monitoring of Group Replication memory usage

Task 3: Prepare your own laptop as a LAMP machine by installing the latest version of Ubuntu OS. Download the tar.gz files of Apache Web Server, MySQL DB, and PHP on your machine. Build and install Apache WebServer, MySQL DB, and PHP Webserver from the downloaded tar.gz file. Observe the build process and note down the build time