PAKISTAN STUDENTS' ASSOCIATION
KOBLENZ

UNIVERSITÄT
KOBLENZ·LANDAU

PSA Koblenz 8 Days Extensive Workshop on Python, Docker and Microservices Architecture

Days	Date and Time	Topic	Trainers
Day 1	5th April 2020 12:00 - 14:00	Python basics Workshop I	Faizan Khan and Rubhan Azeem
Day 2	6th April 2020 12:00 - 14:00	Python basics Workshop II	Daniyal Saleem and Usama Cheema
Day 3	10th April 2020 12:00 - 14:00	Micro-service Architecture, REST and Creating it in Python	Nabil Afraz and Syed Saad Ahmed
Day 4	11th April 2020 12:00 - 14:00	Creating Dynamic Microservices with Python	Nabil Afraz and Syed Saad Ahmed
Day 5	14th April 2020 18:00 - 20:00	Virtualization and Basic Concepts with Dockers	Nabil Afraz and Syed Saad Ahmed
Day 6	15th April 2020 18:00 - 20:00	Docker files and Docker-compose Architecture	Nabil Afraz and Syed Saad Ahmed
Day 7	18th April 2020 12:00 - 14:00	Deploying Microservices on Containerized Platform	Nabil Afraz and Syed Saad Ahmed
Day 8	19th April 2020 12:00 - 14:00	Deploying different applications like (Selenium and other testing frameworks) on Containerized Platform	Syed Ahmed

Course Contents

Day:1
Python basics Workshop I

- Variables & Constants Comments
- Dynamic vs. Static Typing
- Built-in Types
- Numbers and Math Operators, Conversions, Type Casting
- Comparison and Identity Operators. Mutability vs. Immutability
- Boolean Variables + Boolean Operators
- Git Understanding and Operations

Day:2
Python basics Workshop II

- Strings + Printing Special Characters, Formatting Strings & String Methods
- User Input
- If Elif and Else Statements
- Loops (For Loops While Loops), Continue Statements & Break Statements in Loops
- Lists & List Methods Append, Insert, Copy, Clear, Pop, Count
- Dictionary & Dictionary Operations and Methods

Day:3
Micro-service Architecture, REST and Creating it in Python

- Understanding the basic Micro-Service Architecture.
- Concepts of REST Services.
- Creating a REST API using Python-Flask and Eve.
- Execution and understanding of REST API (POST, GET, DELETE, UPDATE)

Day:4
Creating Dynamic Microservices with Python

- Applying the data-base layer into the application created using Flask.
- SQL and NoSQL databases .
  - Difference between SQL Databases eg: MariaDB, MYSQL, MSSQL. .
- A little hands on with REST API front-end (**Postman** and **Swagger-UI**)
  - GraphQL.
- A little understanding of **nginx** and **gunicorn** for deploying the services.

Day:5
Virtualization and Basic Concepts with Dockers

- Understanding the basic concepts of Virtualization.
- Seeing primitive LXC (Linux containers) and basics of Dockers.
- Understanding the concepts of docker containers and images.
- Playing with containers and images via CLI (Command Line Interface)

Day:6
Docker files and Docker-compose Architecture

- Understanding Docker Files.
- Creation of images using docker files and using them.
- Basic understanding of docker-compose file and concepts of IaaC (Infrastructure As A Code)
- Merger of docker files and docker-compose files.

Day:7
Deploying Microservices on Containerized Platform

- Understanding the basics of deployment and its functionality.
- Having a look at different types of deployments. (Blue / Green).
- Deploying the python based application on a containerized based environment

Day:8
Deploying different applications like (Selenium and other testing frameworks) on Containerized Platform

- Basic concepts of CI / CD Pipeline.
- Understanding the concepts and working of browser automation.
- Having a look at a couple of testing frameworks like puppeteer, chrome headless browser and selenium etc.
- Deploying the application in a Dockerized environment along with full testing functionality.