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| Course Code: **CS-4130** | Course Title: **Virtual Systems and Services Lab** |
| Last date: **29th May, 2025** | Total Marks: **10,** Weightage: **8** |
| Program: **BS IT** | Department: **IT** |

**Task No. 4**

**(Getting Started with Docker: Containers, Images & Basic Commands)**

Dear Students,

This lab will introduce you to **Docker**, a powerful tool for creating, deploying, and running applications in isolated environments called **containers**. You’ll gain hands-on experience in pulling Docker images, running containers, and using essential Docker commands.

**Task Details:**

* **Objective:**  
  To gain foundational knowledge and practical skills in working with Docker by exploring images, containers, and essential Docker CLI operations.
* **Platform:**
* **Docker Desktop** (Windows/Linux/macOS)
* **Docker CLI** installed on any supported environment (e.g., Ubuntu VM)

1. **Install and Set Up Docker**

* Verify Docker installation using the command: docker --version
* Run docker info to check system configuration
* Take a screenshot showing Docker version and setup

1. **Pull and Run a Docker Image**

* Use the command docker pull hello-world
* Then run: docker run hello-world
* Observe the output and explain what happens
* Take screenshots of both commands and their outputs

1. **Explore Docker Hub and Download Images**

* Search for any open-source image (e.g., nginx, ubuntu, python) from https://hub.docker.com
* Pull one image using CLI
* Verify with docker images command
* Screenshot the list of images on your system

1. **Container Management**

* Run the downloaded image (e.g., docker run -it ubuntu)
* Execute a basic Linux command inside the container (e.g., ls, pwd)
* Exit the container
* Show container list using docker ps -a
* Take screenshots throughout

1. **Remove Containers and Images**

* Stop and remove a container
* Remove an image
* Use docker rm and docker rmi commands
* Take screenshots to demonstrate cleanup
* **Marks:**  
  This lab task is worth **10 marks** and will be evaluated based on accuracy, completion, and your understanding of the tasks.

**Submission Instructions**

**Complete Each Exercise:**

Perform all the exercises provided in the assignment.

Ensure that you follow the instructions for each exercise carefully and complete them to the best of your ability.

* **Documentation:**  
  After completing your labs and exercise, take clear screenshots of all outputs. Include step-by-step explanations to demonstrate your understanding.
* **Report:**  
  Compile all your screenshots and procedural explanations into a single Word document.
* **Submission:**  
  Submit the document in **hard copy format** to your **Class Representative (CR)** by the specified deadline. Ensure everything is neat and well-organized.
* **Soft Copy:** Save your completed assignment (Word document with screenshots) on your **laptop or a USB drive** and bring it to the viva for digital submission.
* **Queries:**  
  For any questions or troubleshooting, feel free to email me at [mohsin.ali@uskt.edu.pk](mailto:mohsin.ali@uskt.edu.pk)