

Distributed systems course

Cloud computing Lab.

Background:

Cloud computing is a model that delivers computing services, on demand, over the internet to offer faster innovation and economies of scale. It builds on top of several predecessor models called: cluster computing, distributed computing, autonomic computing, utility computing, and can be envisaged as a natural step forward from the grid computing model. Cloud computing leverages these existing models, together with the virtualization concept, to meet the technological and economic requirements of cloud users with new features and characteristics.

Purpose:

The purpose of this assignment is to create virtual entities with different configurations, install SW on them, run some applications, and analyze the results.

Tasks:

- Write separate codes to do the following tasks:

- 1- Find the value of x , such that:

$$x = a + b$$

a and b are any positive integer numbers less than 10.

- 2- Find the value of y , such that:

$$y = \sum_{i=1}^n (a_i^4 + b_i^2)^3 + \sum_{i=1}^m (a_i^2 - b_i)^2$$

$n = 50, m = 40$

a and b are any positive integer numbers less than 100.

- 3- Find the elements' value of the 2D matrix Z , such that:

$$Z1 = A1.B1$$

$$Z2 = A2.B2$$

$$Z = Z1 + Z2$$

$A1, A2, B1$, and $B2$ are 2D matrices, each with 250x250 dimensions.

The elements of the matrices are positive integer numbers less than 100.

- Then, run each code on two different VMs, which have different configurations, and record the total execution time, and cost, of each run.

- Feel free to choose your preferable programming language, and the way you generate the values of the data, but you must consider using same data values with each code on the two different VMs.
- In your final report, compare the result of running the same code, with same data, on two different VMs. Analyze the result from the performance and cost perspectives. Support your performance evaluation with charts and/or tables.

Deadline:

Results need to be submitted no later than the *21th of December, 2023* in the submission folder on Learn/Assignment.

Grade:

This assignment is graded as U/G.

G will be given if all the tasks are completed successfully.

U will be given if any task is not completed.