**Group 8:**

**Problem Statement:**

Designing and Implementing an Automated Cloud Resource Scaling and Management System to Optimize Performance and Cost-Efficiency in Dynamic Cloud Environments.

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| **Name** | **Enrollno** | **Contribution** |

**Team members:-**

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| --- | --- | --- |
| Sapavath Yashwanth Krishna Naik | 21114093 | PSO |
| Pasala Veera Siva | 21114070 | PSO |
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| Sai Rohan Pawar | 21114088 | SJF |
| Akula Koushik | 21114010 | WICS |
| Cheedu Praneeth Reddy | 21114031 | WICS |
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| Taddi Satya Sai Shyam Sundar | 21114102 | SERVER |
| Nenavath Suresh Kumar | 21114066 | SERVER |

**Summary:**

**TASK SCHEDULING ALGO:**  
 PSO initializes a population of potential solutions and iteratively updates them based on their own experiences and that of their neighbors. By adjusting positions and velocities in a multidimensional search space, it aims to converge towards an optimal solution. In cloud computing, PSO finds applications in tasks like resource allocation, task scheduling, enhancing system performance by optimizing resource utilization, reducing response times, and improving overall efficiency.  
**Shortest Job First (SJF)** is a task scheduling algorithm that prioritizes tasks with the smallest expected processing time, aiming to minimize response times and optimize resource utilization in cloud computing. It enhances overall system efficiency and is particularly useful for quick and efficient task execution in dynamic cloud environments.  
**VM ALLOCATION ALGO:**  
 WISWCS( Weight interval scheduling with capacity sharing) is the algo used to efficiently allocate VM’s in minimum number of datacenters maximizing the weight(profit) by sharing the total capacity of a datacenter for VM’s with different capacity, weight(profit).

**Dynamic Implementation:**

A Real time cloud like model using client server with TCP connection. Master Server as Datacenter broker, client as a companies request, Child server as VM’s.

**Steps to execute:-**

**Requirements:**

* Eclipse IDE installed Java Development Kit (JDK) installed (recommended version 8 or later) CloudSim toolkit (downloadable from the official website: CloudSim).
* Extract PSO Folder, SJF from Github Link. Open file in eclipse and run PSO\_Scheduler.java.
* Use the same process for WICS. Place the file in CloudSim example and run it.
* For the folder execution\_cpp and open in any IDE such as VSCode in any system which supports threads and client-server connection.
* Run the server code, then run client code as many times required with inputs as type of client and then the time to execute.
* The status of all servers will be shown in “server\_status.txt”.