

**Batch: B–1 Roll No.: 16010422234 Experiment No.: 08**

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**Aim:** Cloud simulation using CloudSim

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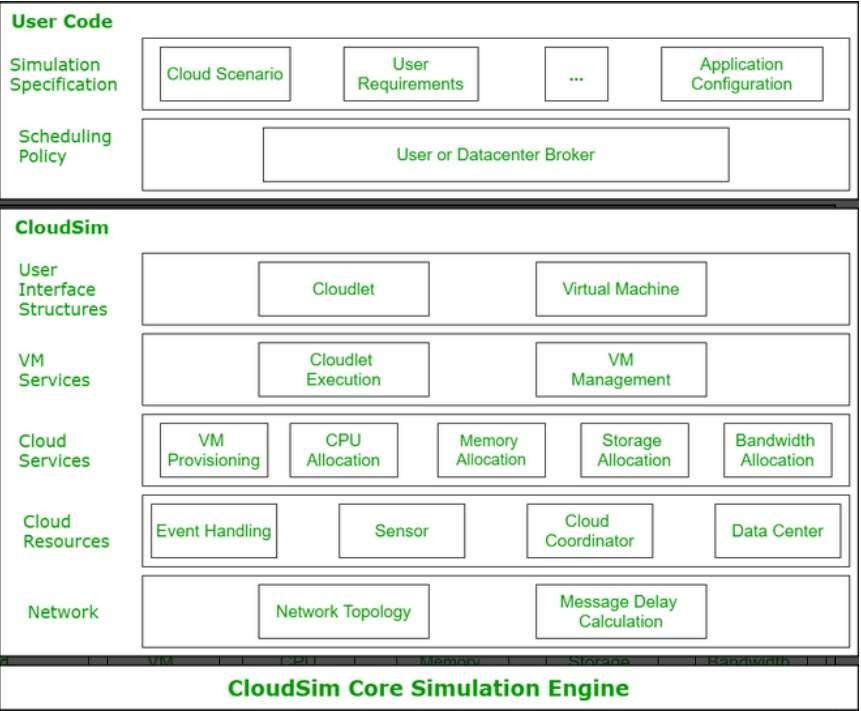
**Resources needed:** CloudSim Simulator

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**Theory:**

CloudSim is a framework for modeling and simulation of cloud computing infrastructures and services. Originally built primarily at the Cloud Computing and Distributed Systems (CLOUDS) Laboratory,The University of Melbourne, Australia, CloudSim has become one of the most popular open source cloud simulators in research and academia. CloudSim is completely written in Java.

**CloudSim Architecture:**



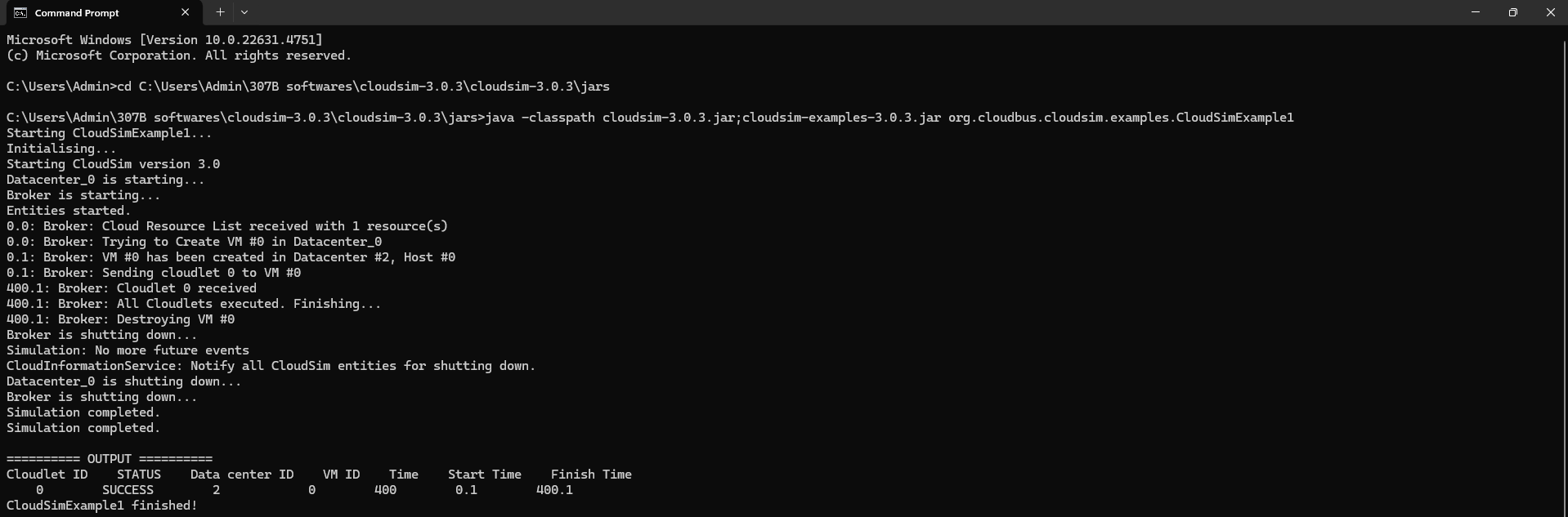
**Procedure:**

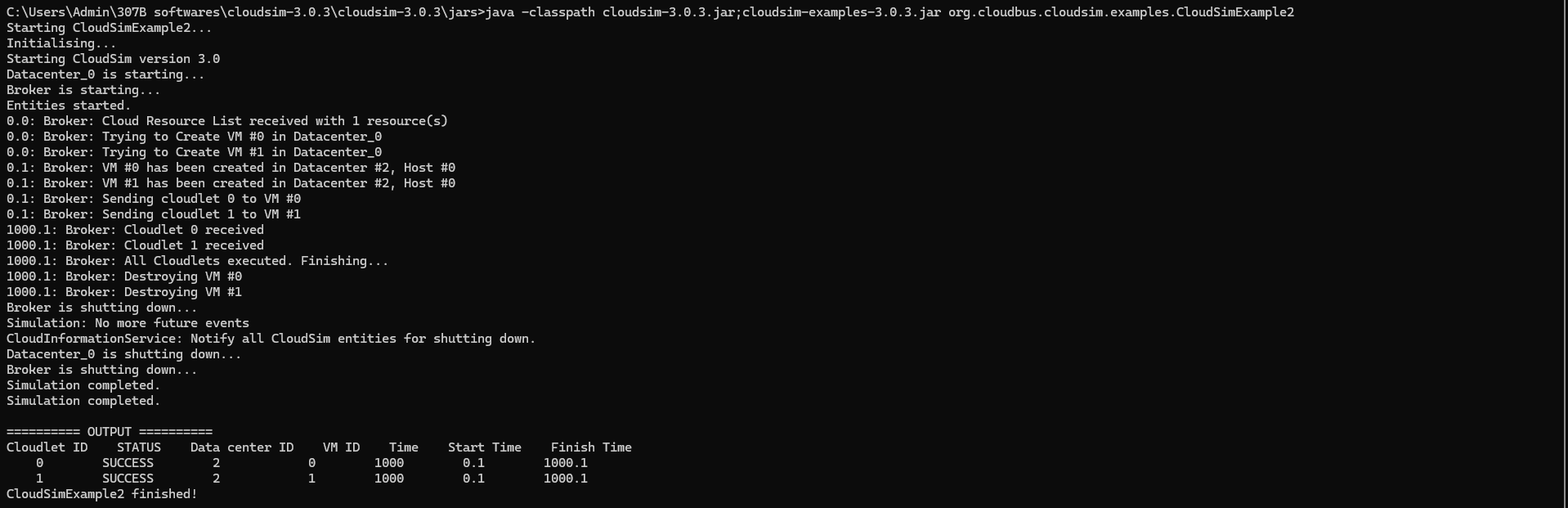
1. Refer: [STEP BY STEP INSTALLATION OF CLOUDSIM INTO NETBEANS](https://researchcloudcomputing.wordpress.com/2015/01/11/step-by-step-ui-installation-of-cloud-sim-into-net-beans/)
2. Run all the examples and observe the results.
3. Add more VM/ Cloudlets in any one example and observe the results.

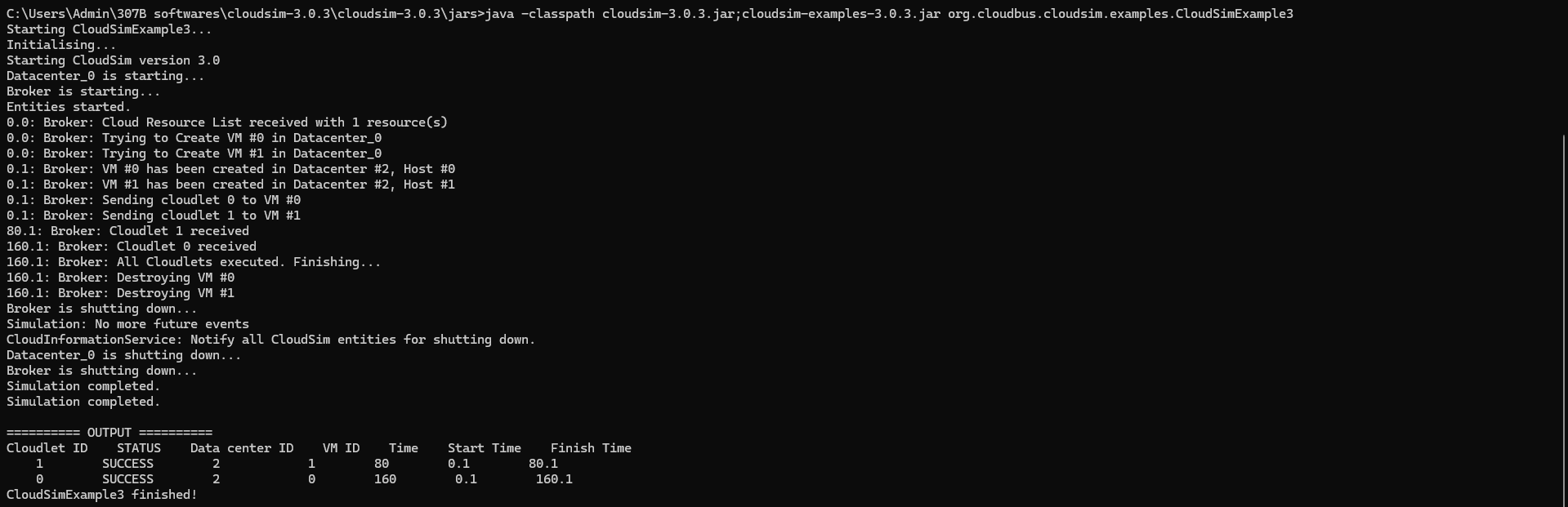
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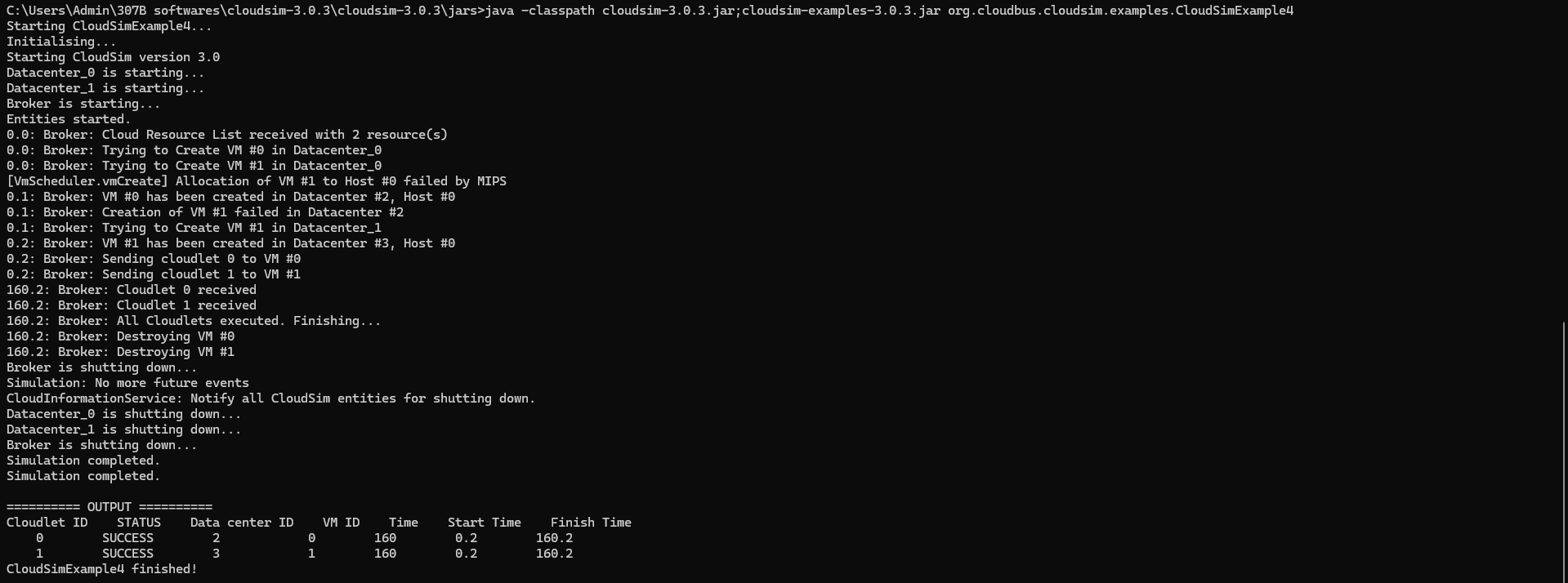
**Results: (Steps with commands and screenshots)**

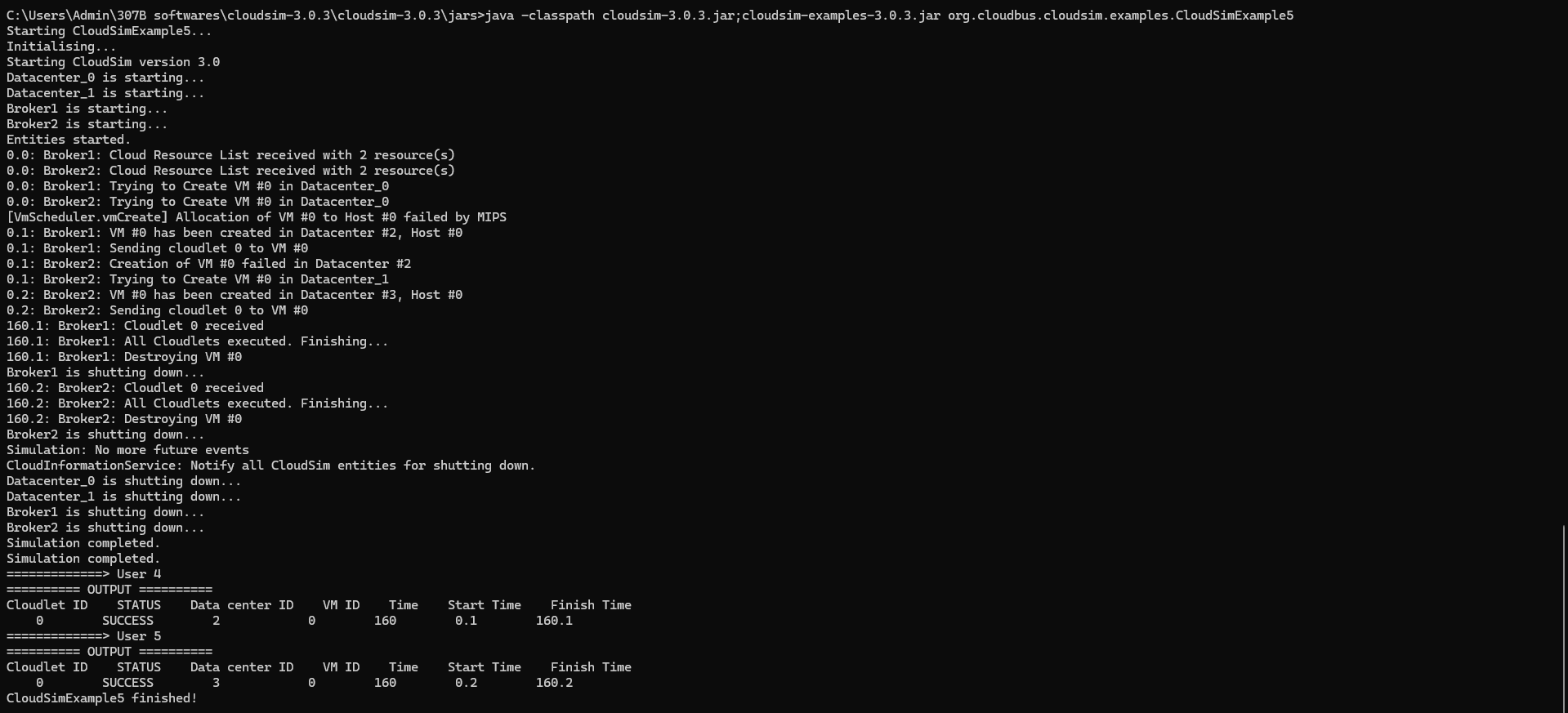
**Command Prompt**

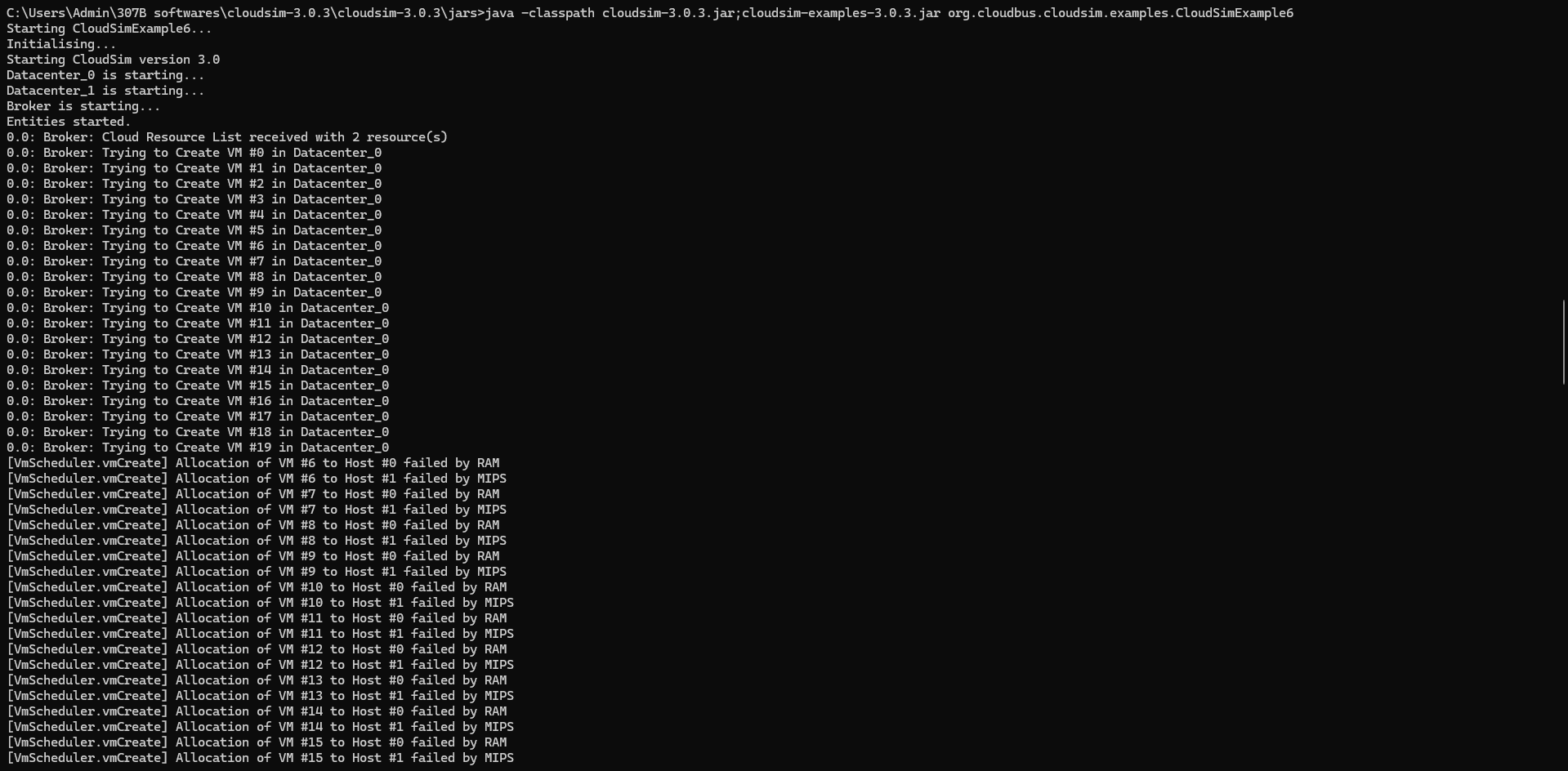
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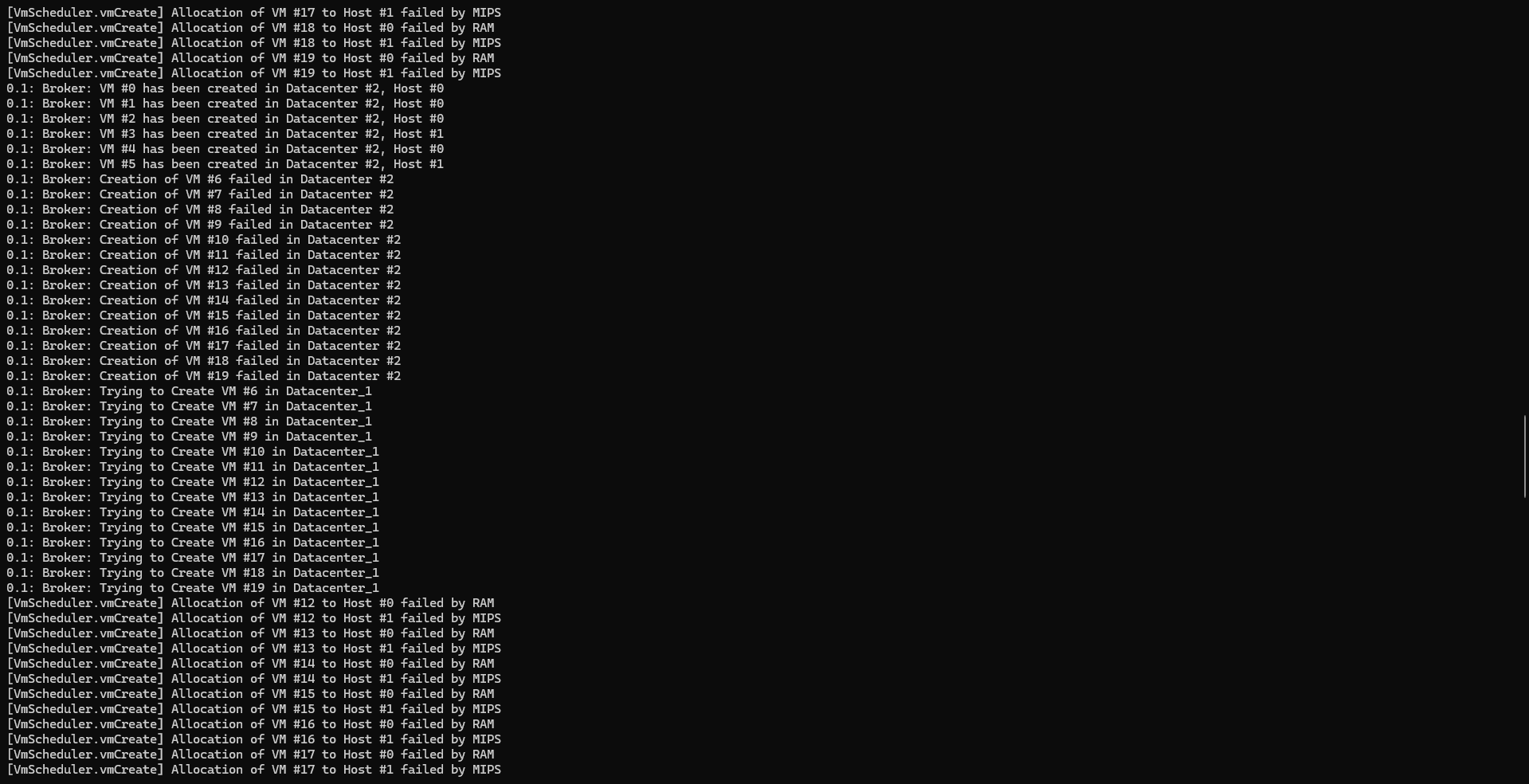
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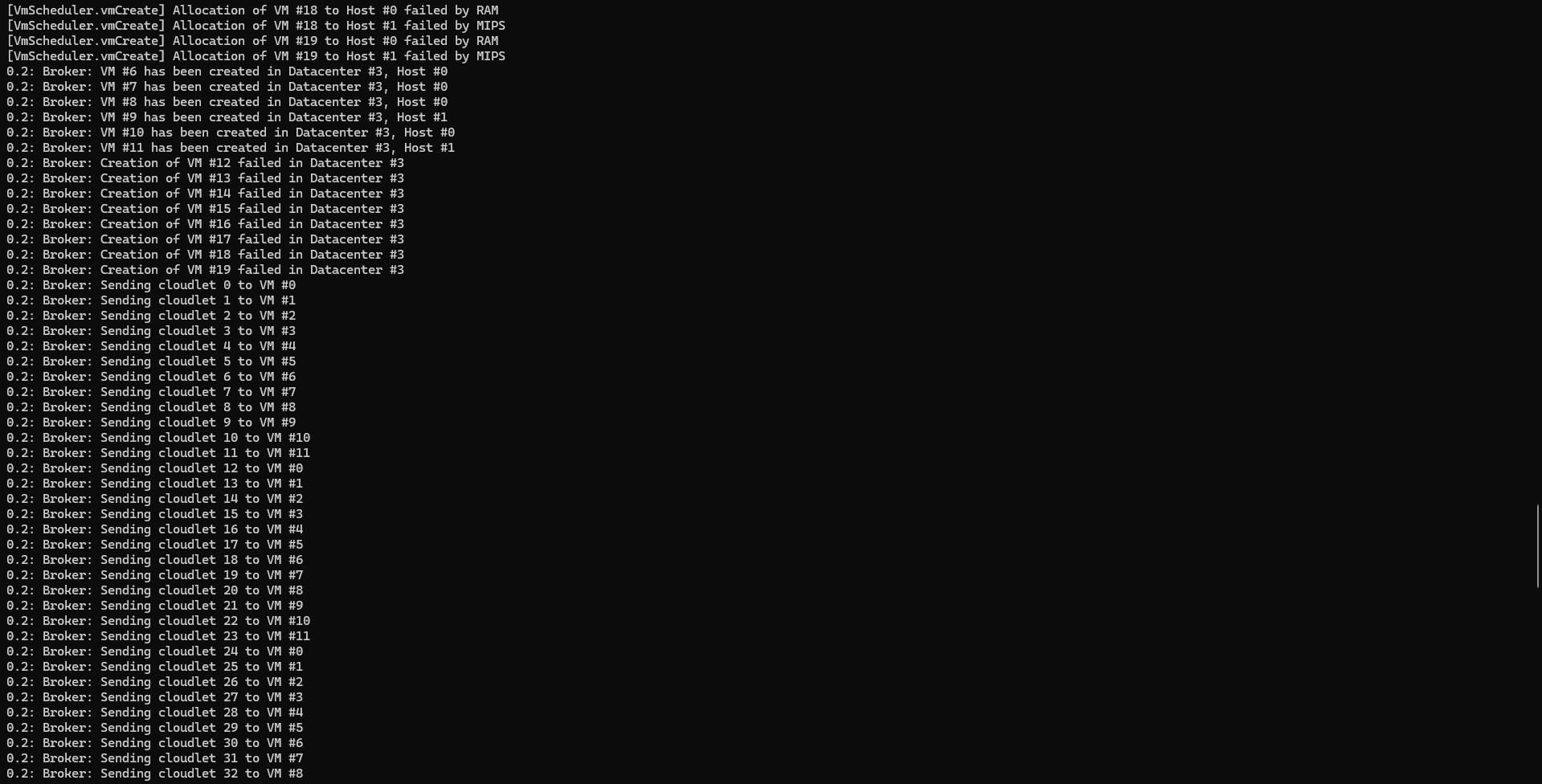
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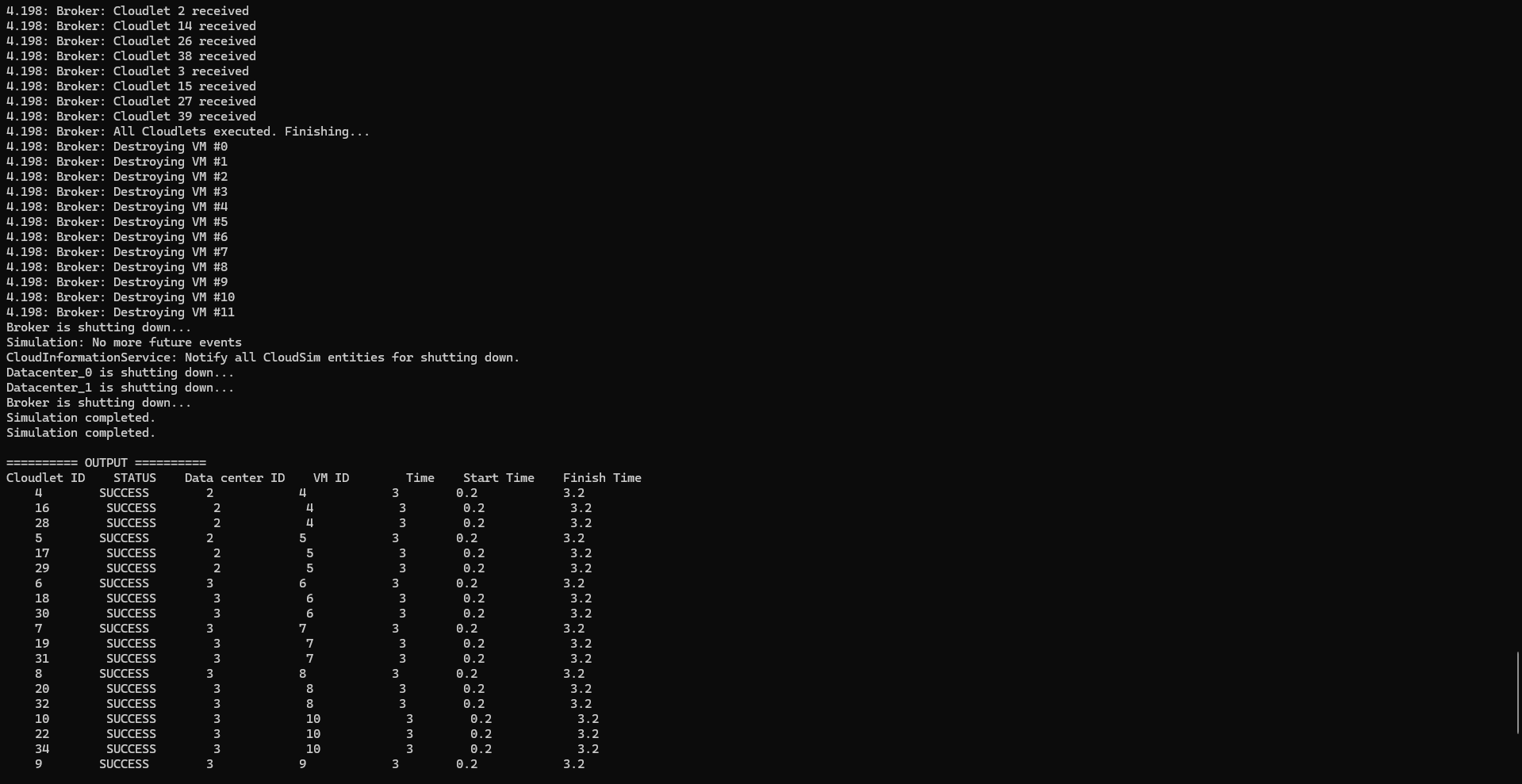
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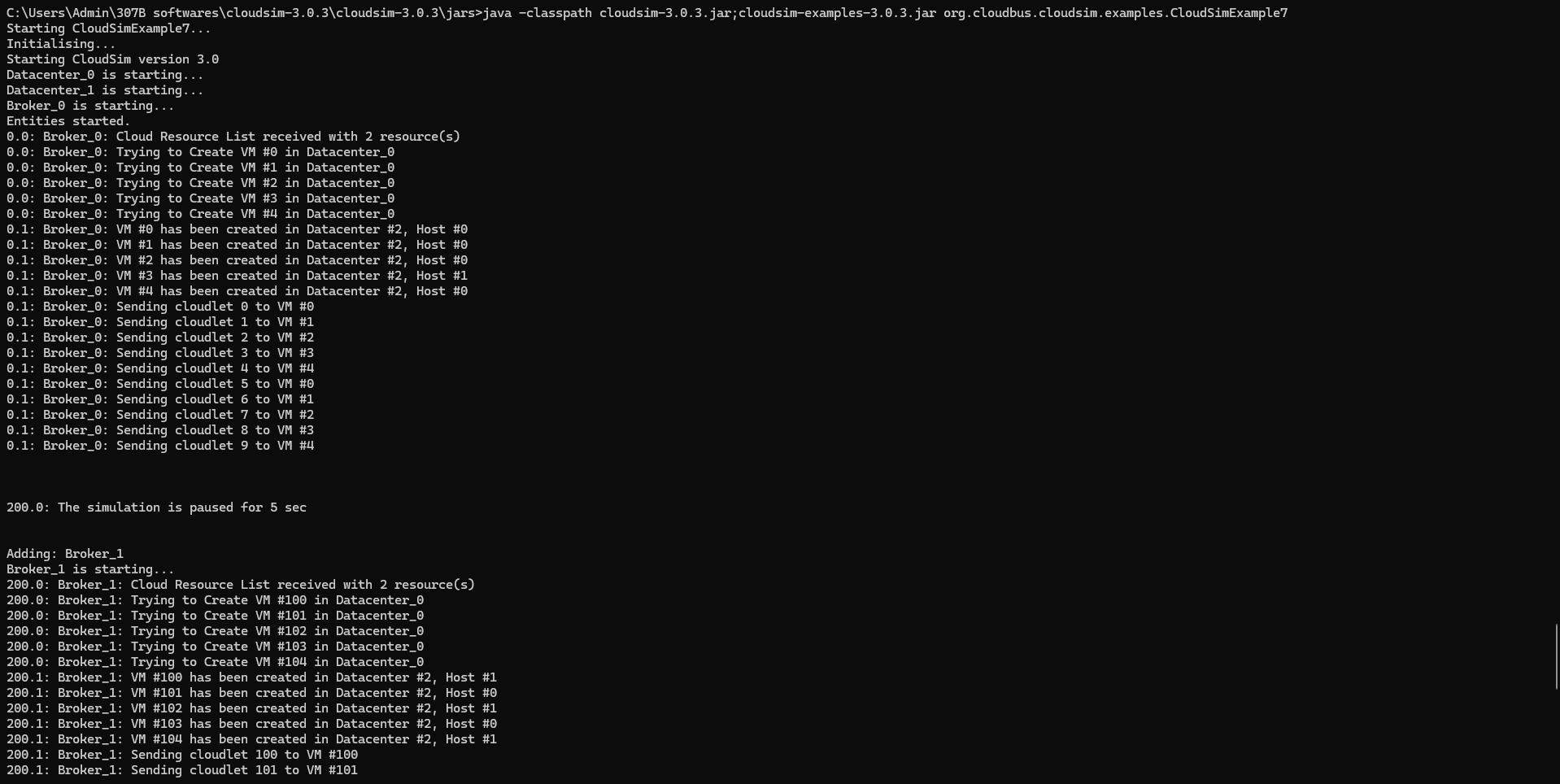
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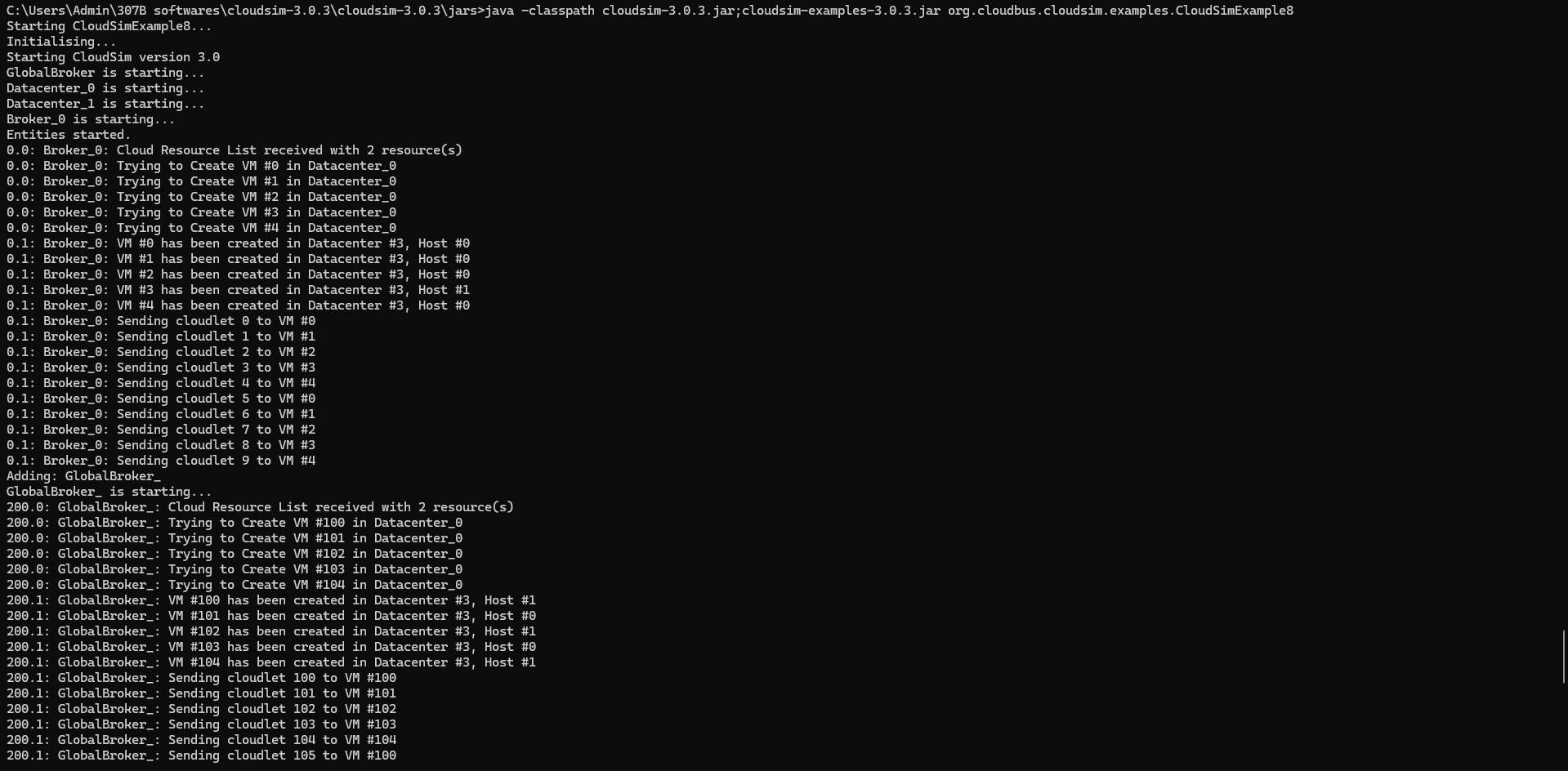
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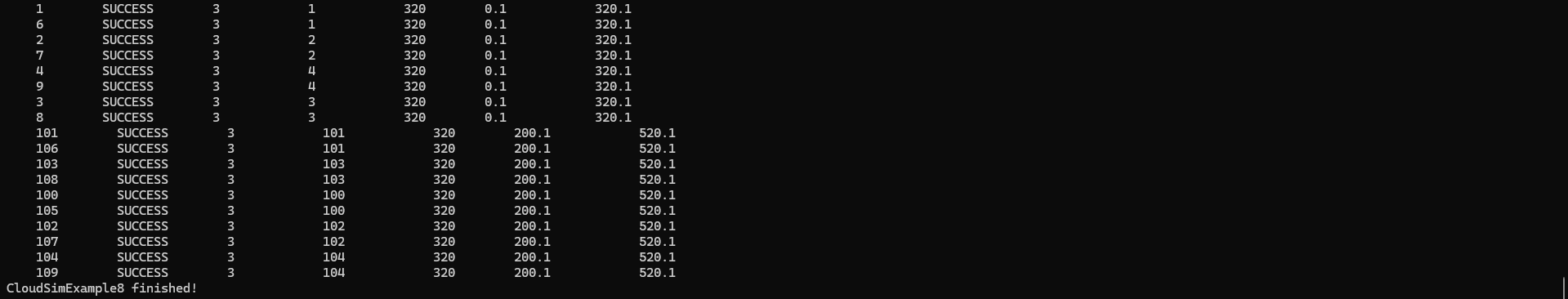
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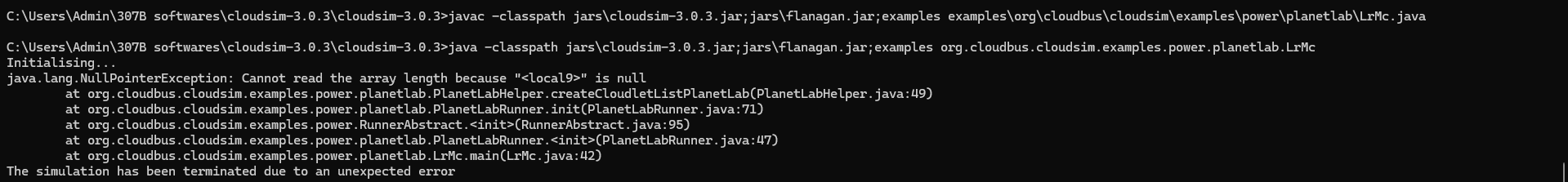
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CloudSimExample1.java : shows how to create a datacenter with one host and run one cloudlet on it.

CloudSimExample2.java : shows how to create a datacenter with one host and run two cloudlets on it. The cloudlets run in VMs with the same MIPS requirements. The cloudlets will take the same time to complete the execution.

CloudSimExample3.java : shows how to create a datacenter with two hosts and run two cloudlets on it. The cloudlets run in VMs with different MIPS requirements. The cloudlets will take different time to complete the execution depending on the requested VM performance.

CloudSimExample4.java : shows how to create two datacenters with one host each and run two cloudlets on them.

CloudSimExample5.java : shows how to create two datacenters with one host each and run cloudlets of two users on them.

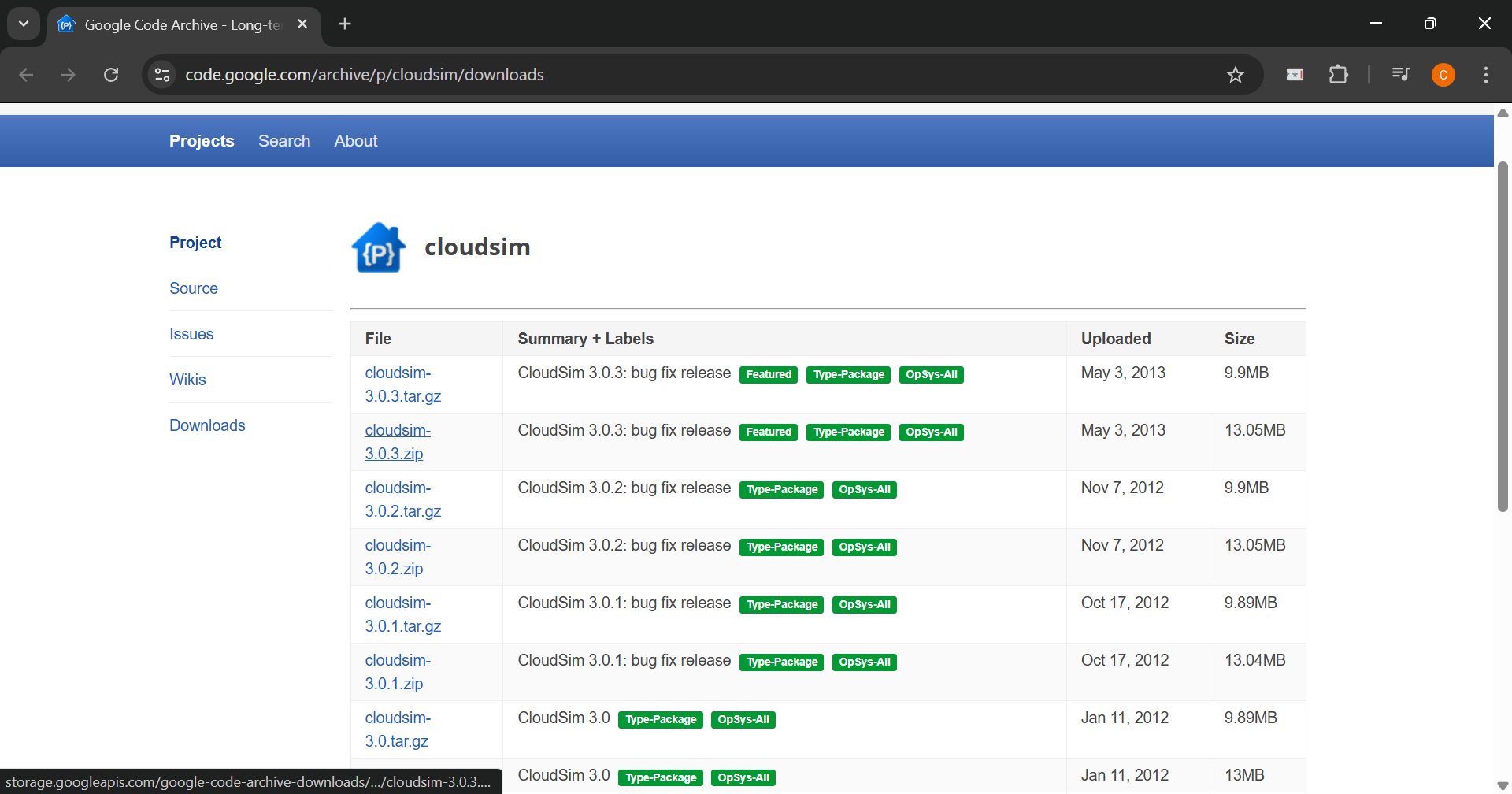
CloudSimExample6.java : shows how to create scalable simulations.

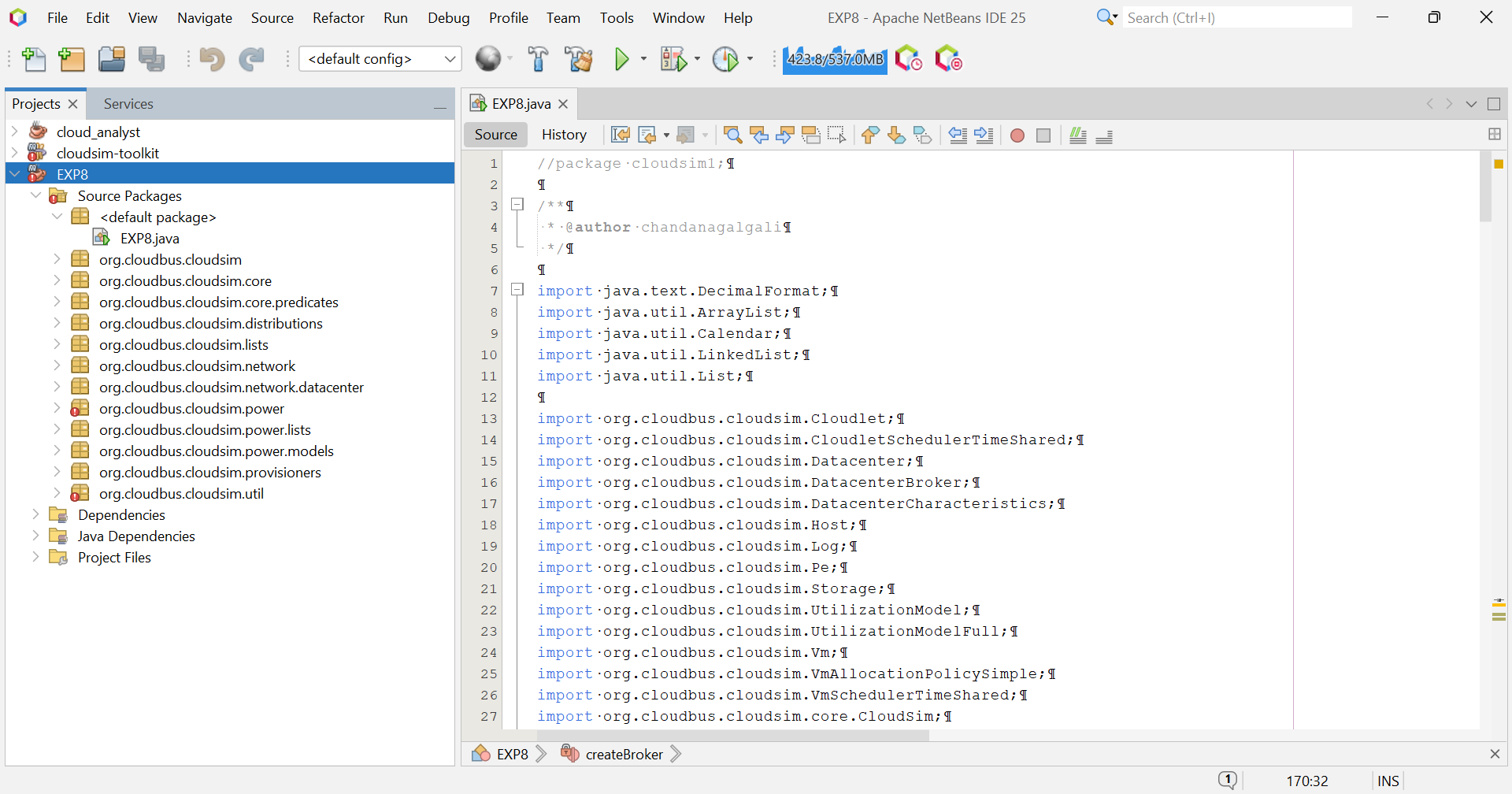


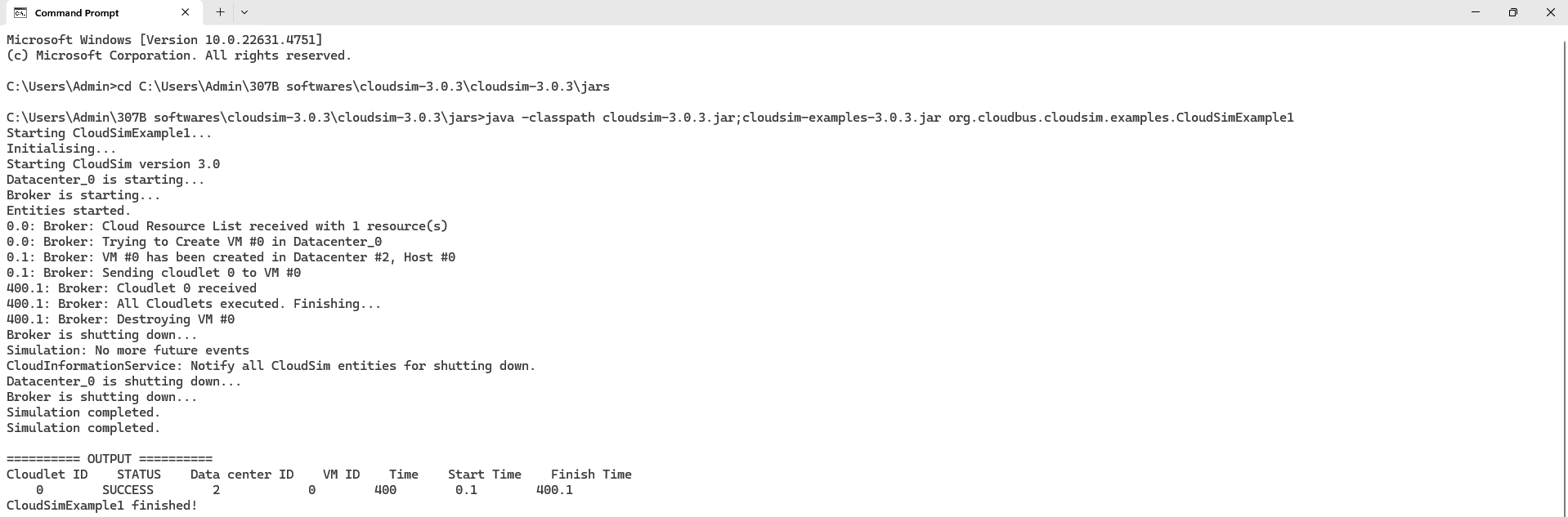
CloudSimExample7.java : shows how to pause simulations.

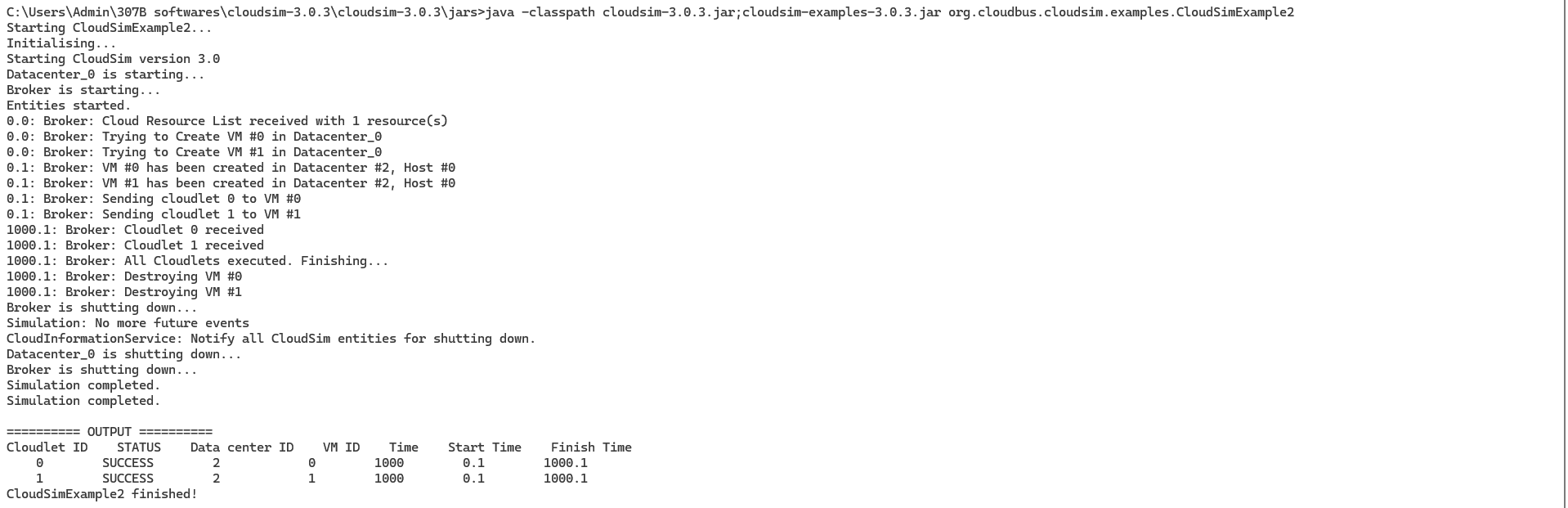
CloudSimExample8.java : shows how to add entities in run time.

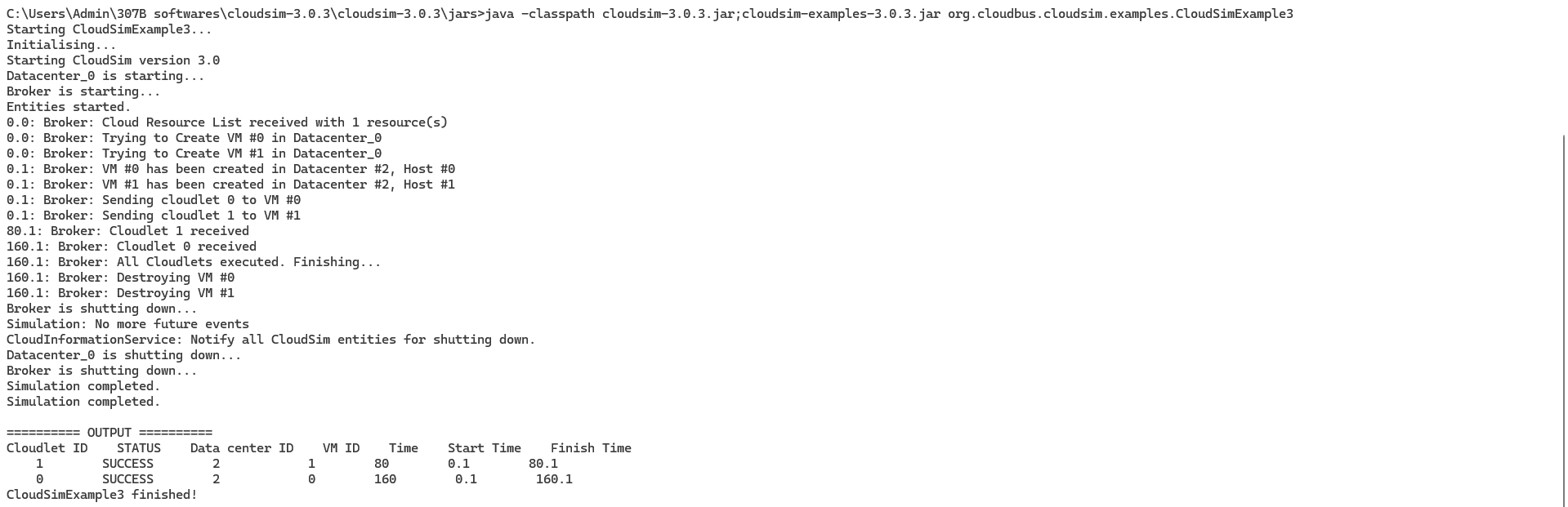
**NetBeans IDE**

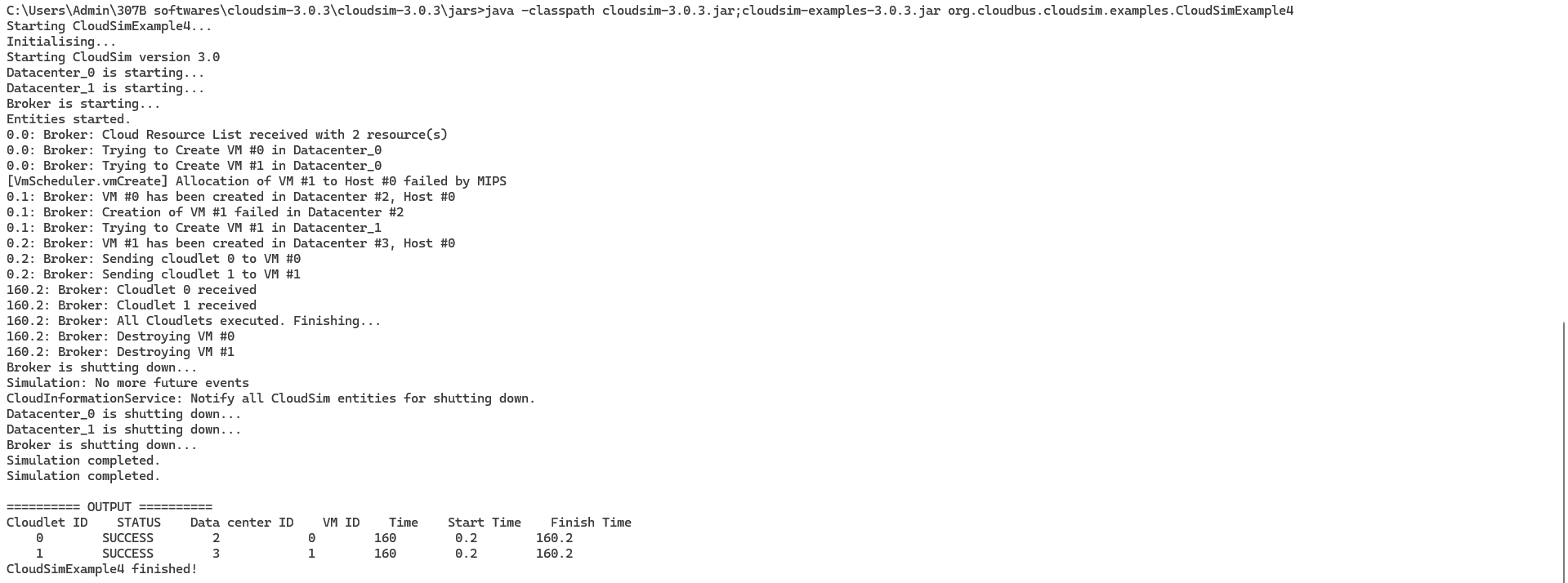
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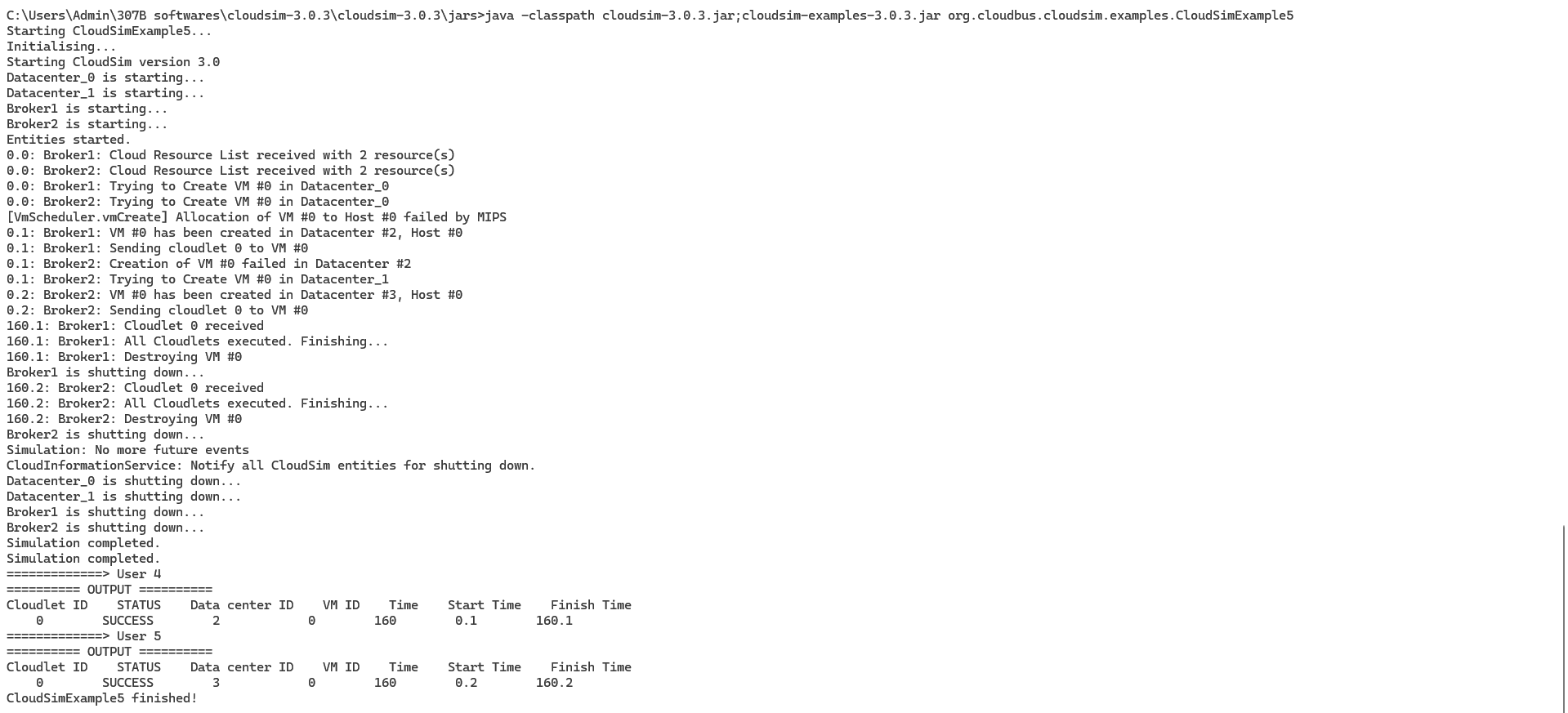
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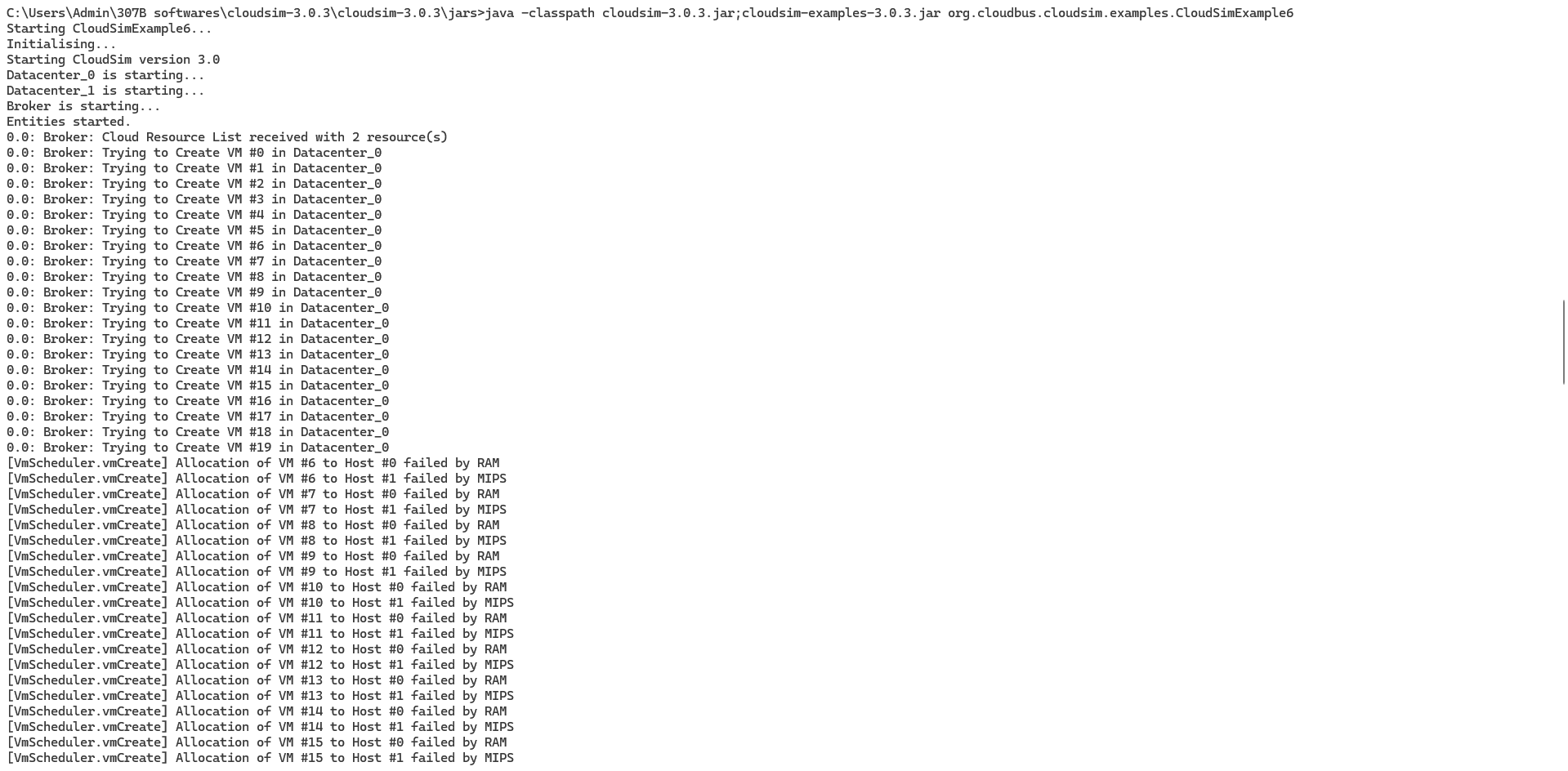
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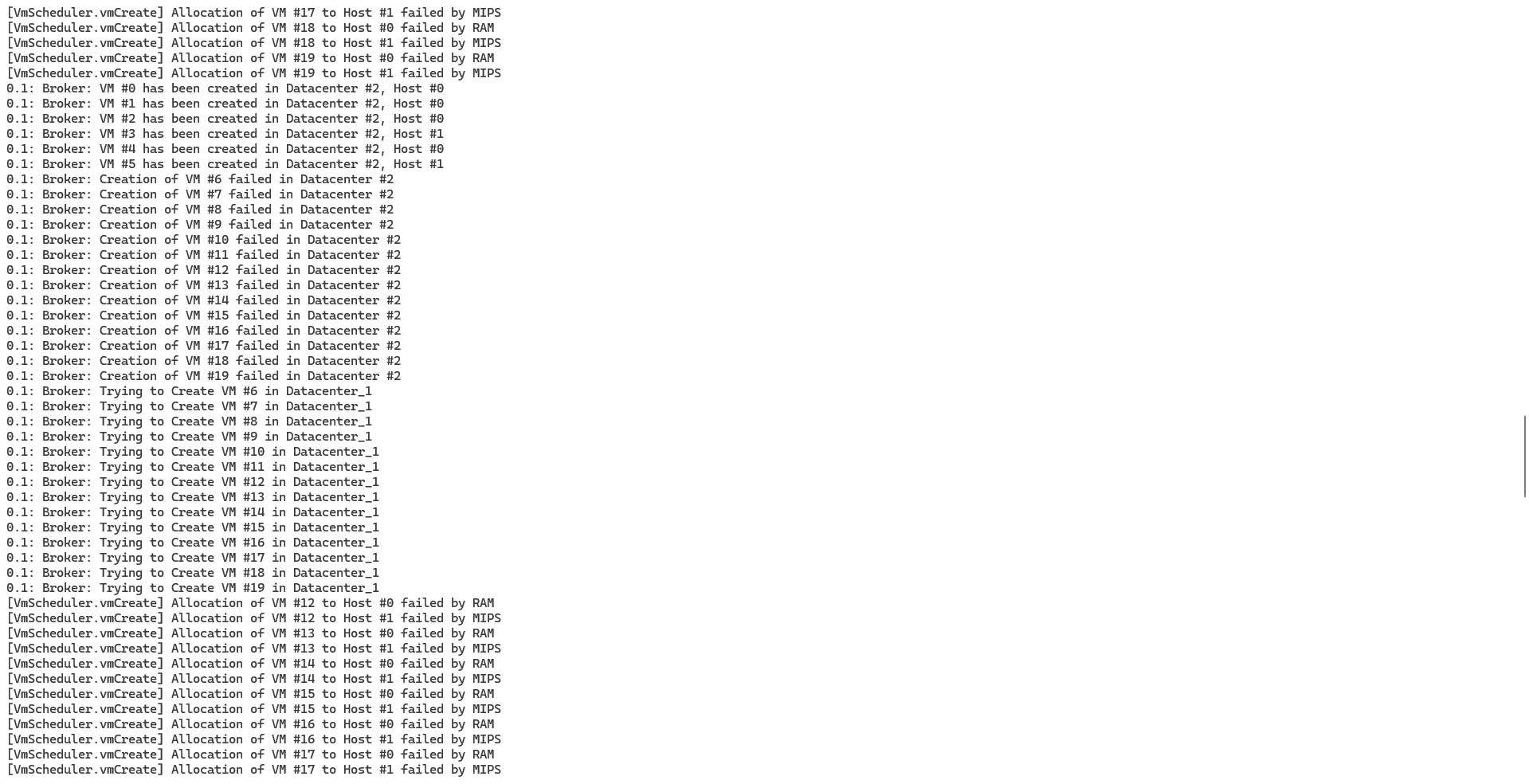
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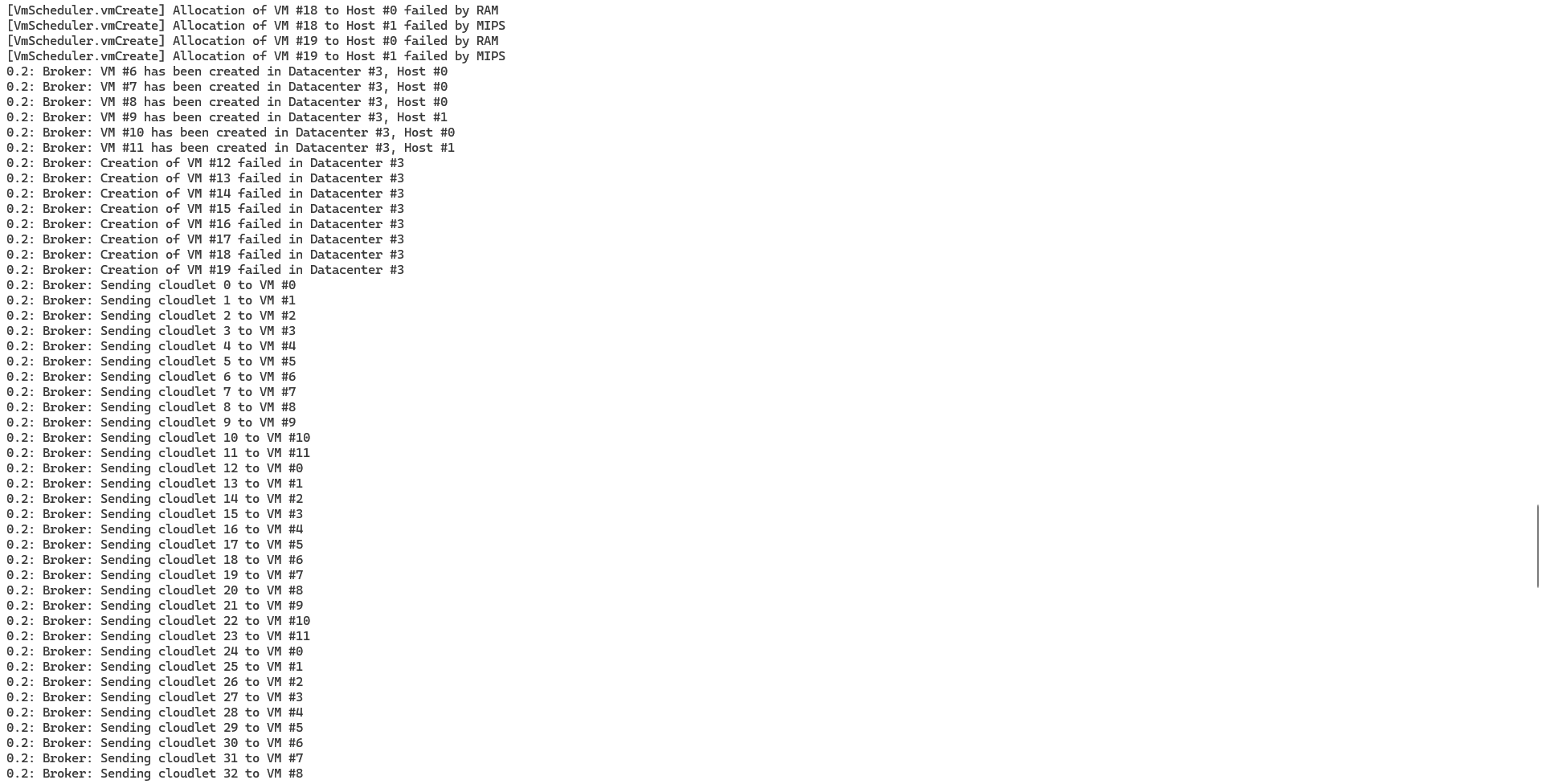
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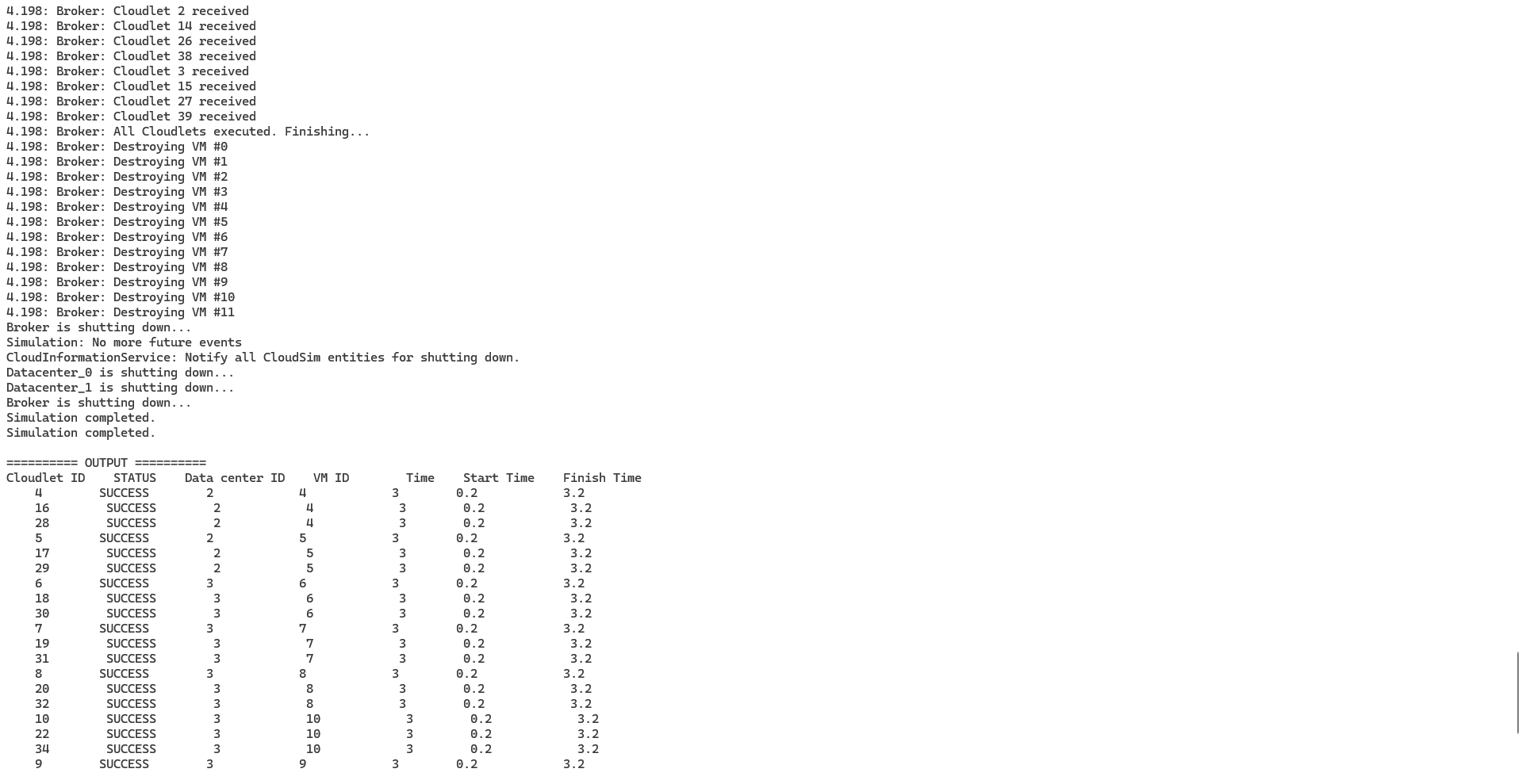
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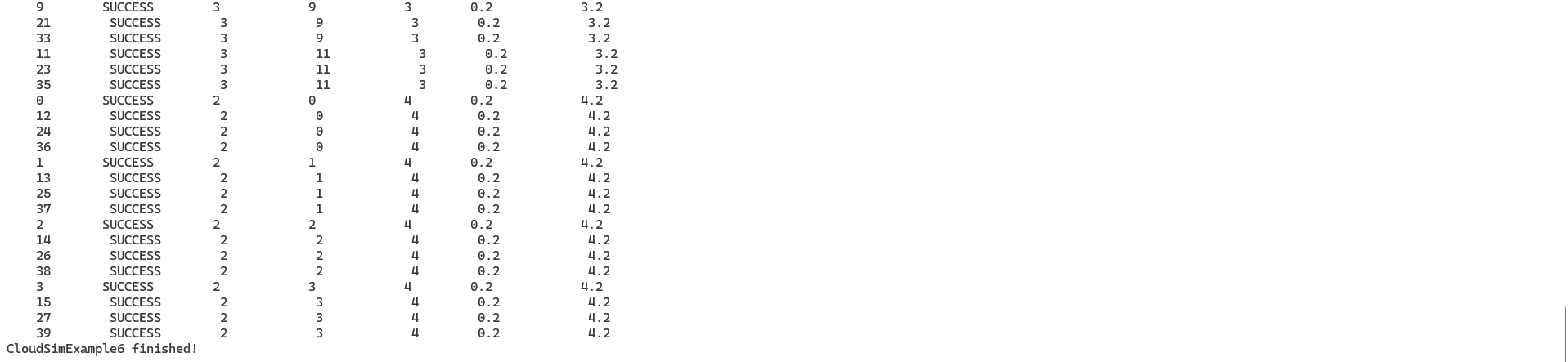
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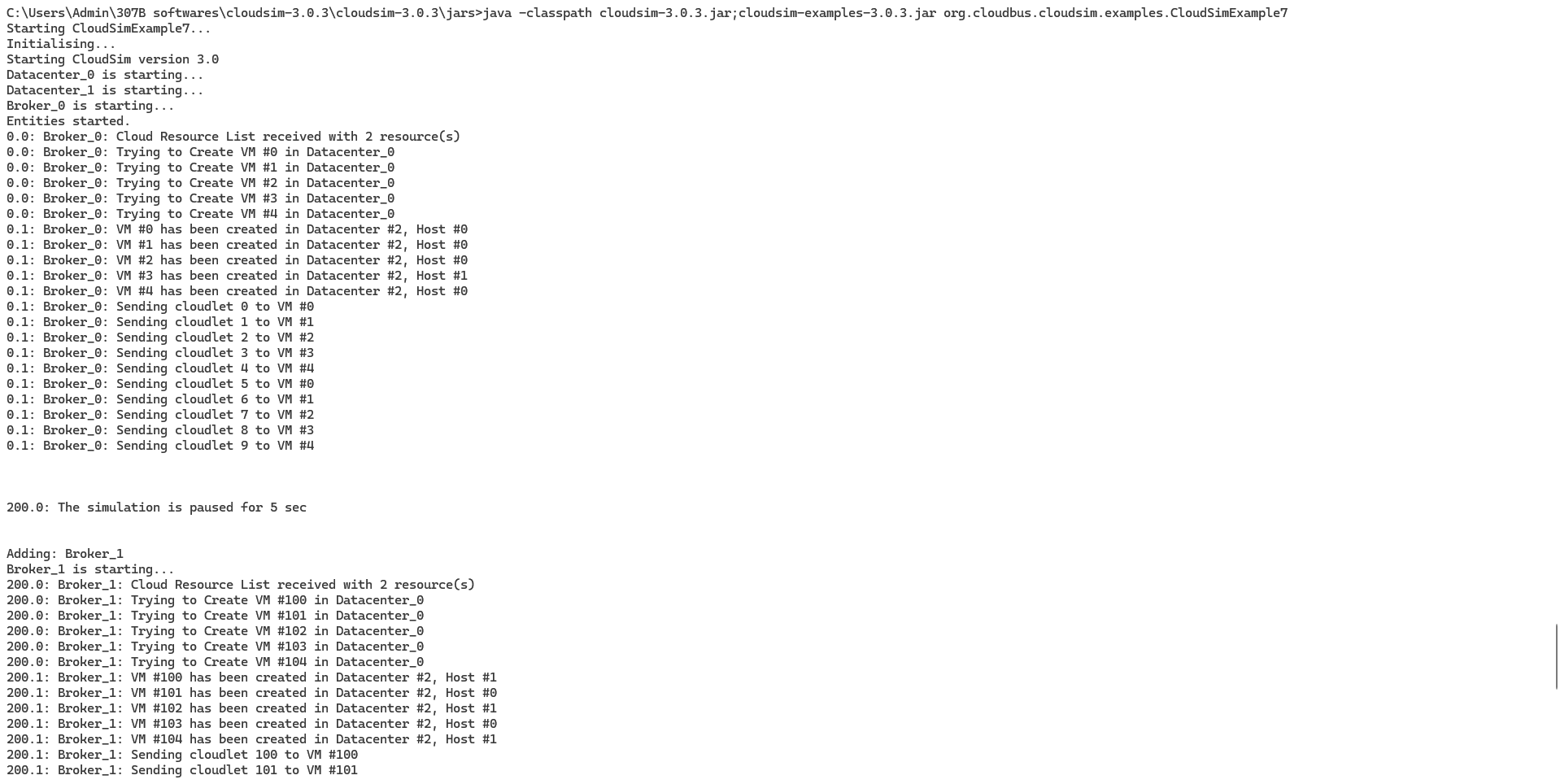
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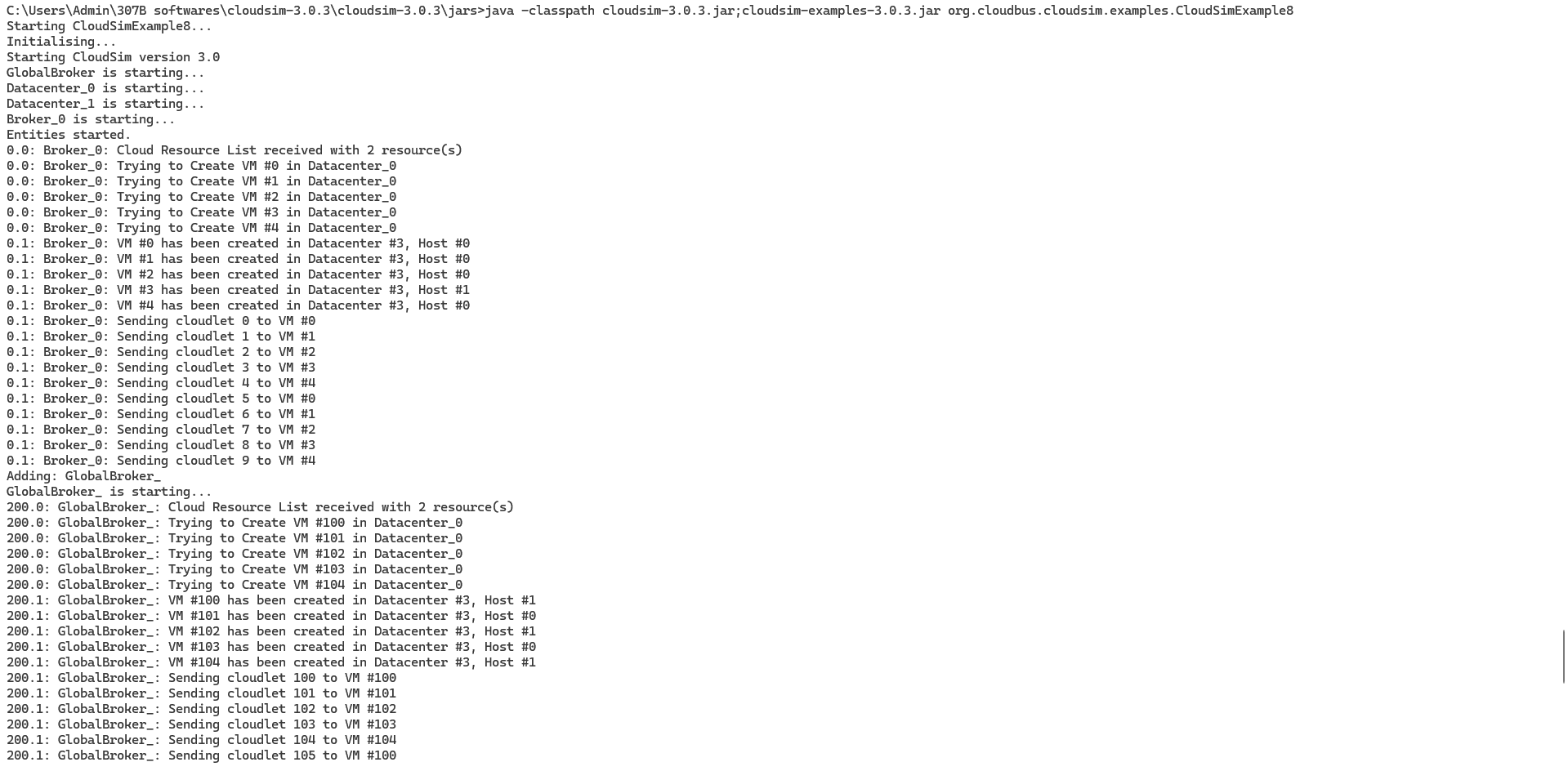
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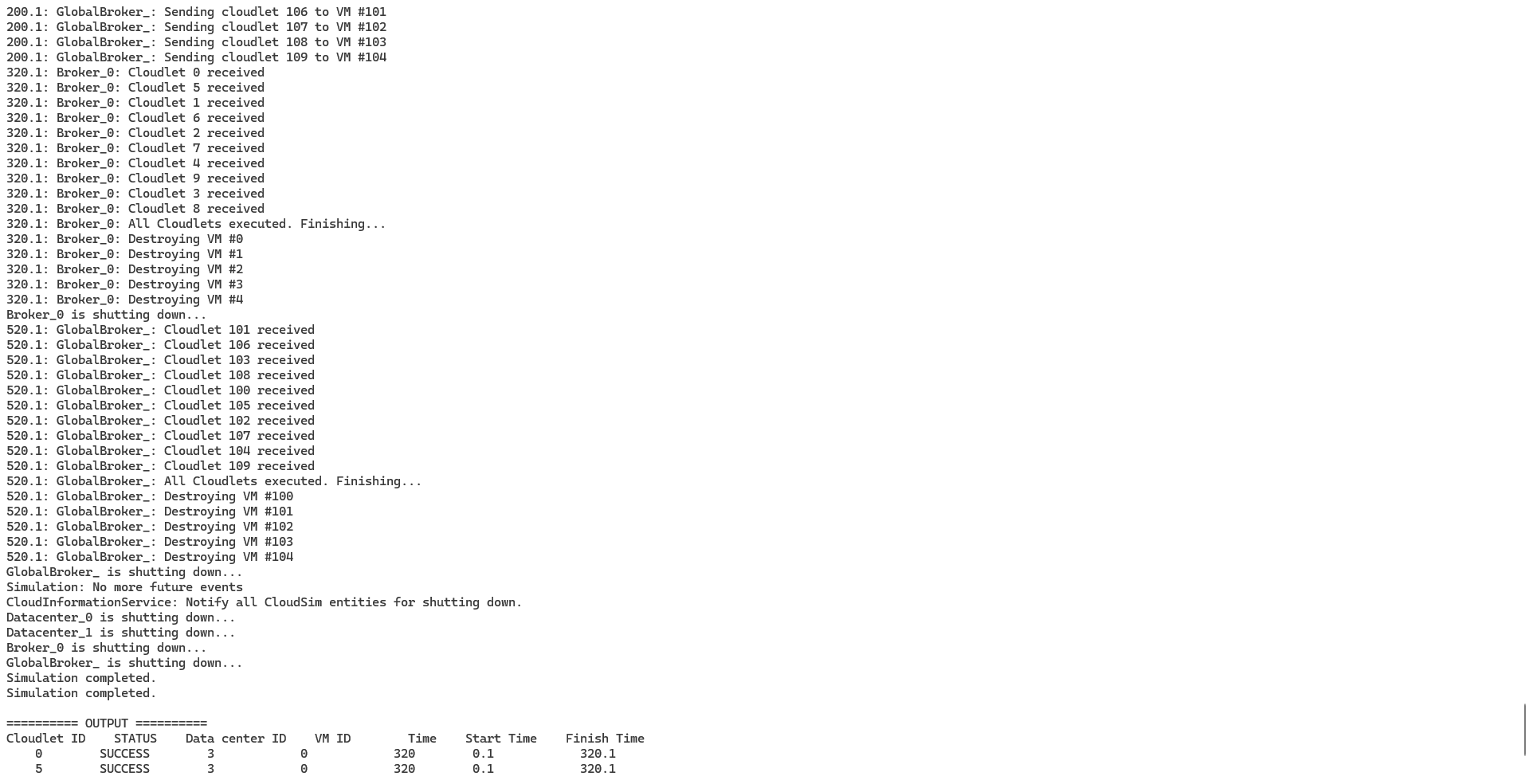
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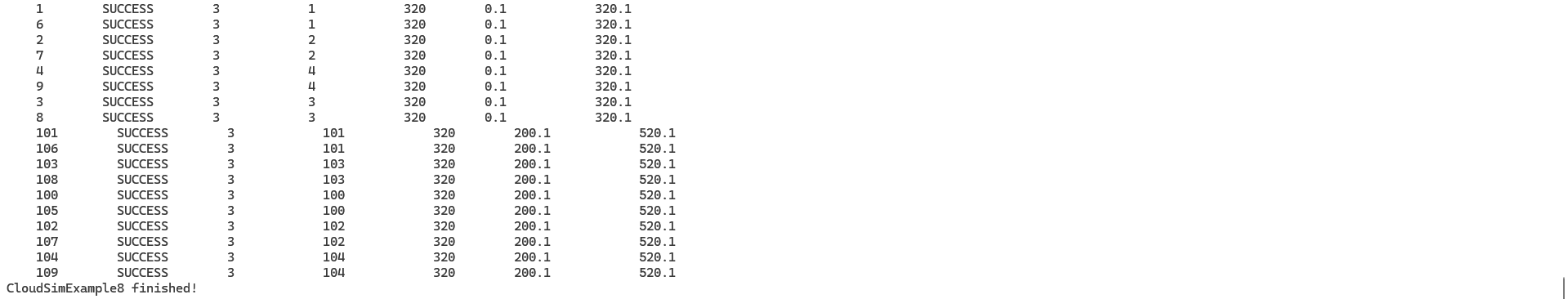
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**Questions:**

**What are cloudlets?**

Cloudlets in CloudSim are lightweight computational tasks that represent user applications or workloads submitted to the cloud for execution. They model the processing requirements of real-world applications, including factors like execution time, file size, and resource utilization. Cloudlets are assigned to Virtual Machines (VMs) in a data center, where they get executed based on scheduling policies.

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**Outcomes: CO3 -– Analyze different cloud architectures and IOT cloud**

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**Conclusion: (Conclusion to be based on the objectives and outcomes achieved)**

CloudSim is a powerful simulation framework that enables researchers and developers to model and analyze cloud computing environments without deploying actual infrastructure. Through various predefined examples, it demonstrates how cloud resources such as data centers, hosts, VMs, and cloudlets interact. By modifying configurations like the number of cloudlets, VMs, or data centers, users can observe the impact on performance, efficiency, and resource allocation. CloudSim is a valuable tool for studying cloud computing scenarios, optimizing resource management, and improving cloud-based services.

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**Grade: AA / AB / BB / BC / CC / CD / DD**

**Signature of faculty in-charge with date**

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**References:**

1. [**STEP BY STEP INSTALLATION OF CLOUDSIM INTO NETBEANS**](https://researchcloudcomputing.wordpress.com/2015/01/11/step-by-step-ui-installation-of-cloud-sim-into-net-beans/)

[**https://researchcloudcomputing.wordpress.com/2015/01/11/step-by-step-ui-installation-**](https://researchcloudcomputing.wordpress.com/2015/01/11/step-by-step-ui-installation-of-cloud-sim-into-net-beans/)[**of-cloud-sim-into-net-beans/**](https://researchcloudcomputing.wordpress.com/2015/01/11/step-by-step-ui-installation-of-cloud-sim-into-net-beans/)

1. **Cloud Computing Practical 1**

**https://**[**www.youtube.com/watch?v=kdsGzLNkMQ8**](http://www.youtube.com/watch?v=kdsGzLNkMQ8)

1. **CloudSim Example 1**

[**https://www.youtube.com/watch?v=YYTrlyUYpRU**](https://www.youtube.com/watch?v=YYTrlyUYpRU)

[**http://www.cloudbus.org/cloudsim/**](http://www.cloudbus.org/cloudsim/)

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