CC - mini project

A Distributed Systems Cluster Simulation Framework

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Section C

Starting server :

|shashanks-MacBook-Air-2:~ shashank\$ docker ps -a

CONTAINER ID IMAGE

COMMAND

CREATED

STATUS

PORTS

NAMES

23f8fa150164 a-distributed-systems-cluster-simulation-framework-srn-180-183-163-167--app

"python app.py"

12 seconds ago

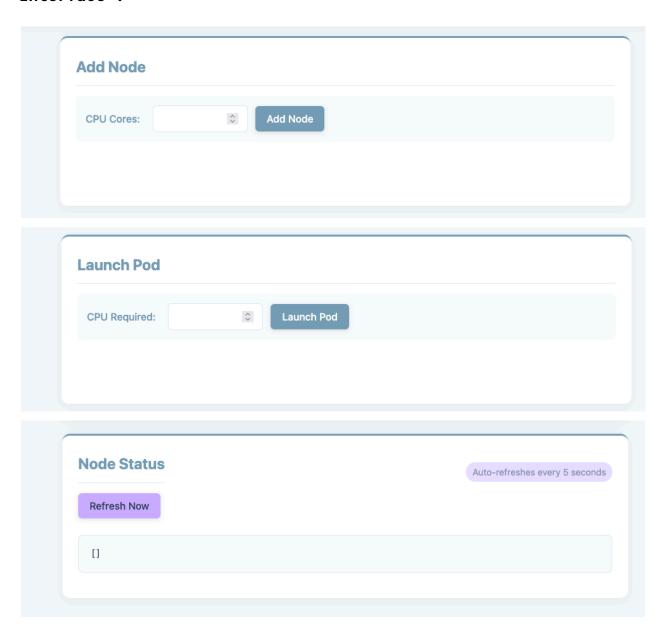
Up 10 seconds

0.0.0.0:5000->5000/tcp

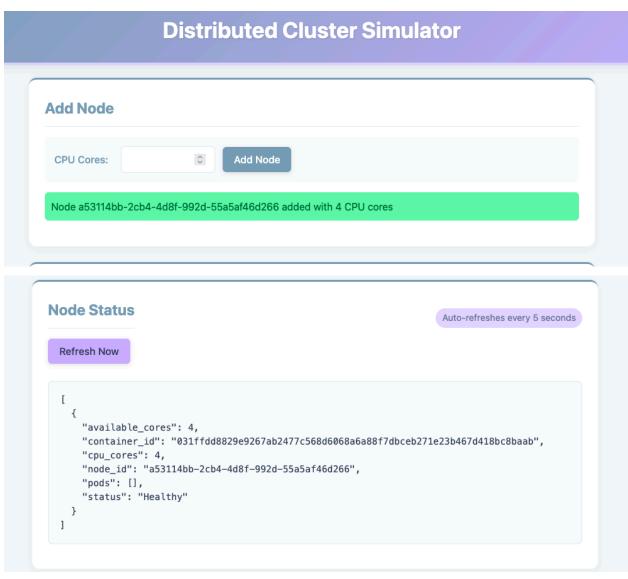
a-distributed-systems-cluster-simulation-framework-srn-180-183-167--app-1

shashanks-MacBook-Air-2:~ shashank\$

Interface:

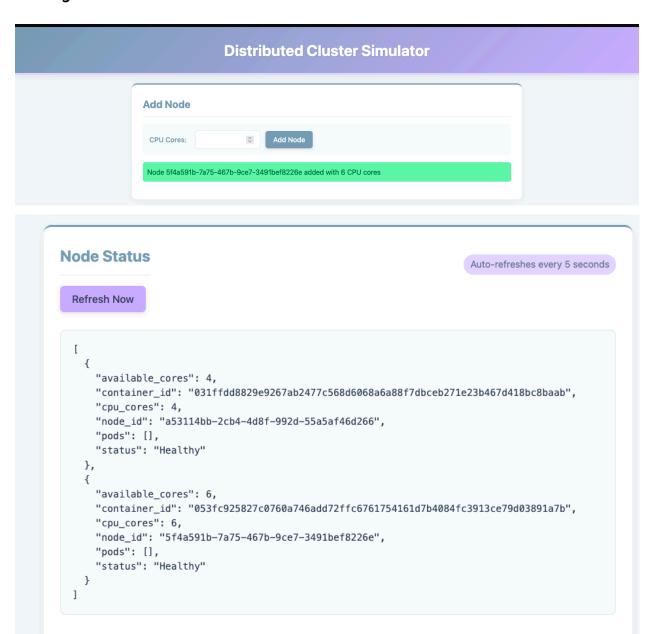


Adding a Node:



CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
031ffdd8829e		"python node.py"	19 seconds ago	Up 18 seconds	
	a-distributed-systems-cluster-simulation-framework-srn-180-183-163-167app	"python app.py"	About a minute ago	Up About a minute	0.0.0.0:5000->5000/tcp
	-systems-cluster-simulation-framework-srn-180-183-163-167app-1 book-Air-2:~ shashank\$ █				

Adding second node:



Launching Pod:

Launch Pod		
CPU Required:	≎ Launch Pod	
Pod 4381ea4c-52a	1-4dcd-b536-5f06c02fd658 launch	ned
Node Status		Auto-refreshes every 5 second
Refresh Now		
"cpu_cores": "node_id": "a "pods": ["4381ea4c-5], "status": "He }, { "available_co "container_io "cpu_cores":	d": "031ffdd8829e9267ab2477c56 4, a53114bb-2cb4-4d8f-992d-55a5af 62a1-4dcd-b536-5f06c02fd658" ealthy" bres": 6, d": "053fc925827c0760a746add72 6, 6f4a591b-7a75-467b-9ce7-3491be	2ffc6761754161d7b4084fc3913ce79d03891a7b",

As we can see it is First fit scheduling so the pod created has chosen the first node that meets the CPU requirements.

All the nodes:

```
[shashanks-MacBook-Air-2:~ shashank$ docker ps -a
CONTAINER ID IMAGE
                                                                                        COMMAND
                                                                                                           CREATED
                                                                                                                              STATUS
                                                                                                                                                  PORTS
NAMES
053fc925827c cluster-node
                                                                                         "python node.py" 47 seconds ago
                                                                                                                              Up 46 seconds
pensive_cartwright
031ffdd8829e cluster-node
                                                                                         "python node.py" About a minute ago Up About a minute
tender_shtern
23f8fa150164 a-distributed-systems-cluster-simulation-framework-srn-180-183-163-167--app "python app.py" 2 minutes ago
                                                                                                                              Up 2 minutes
                                                                                                                                                  0.0.0.0:5000->5000/tcp
a-distributed-systems-cluster-simulation-framework-srn-180-183-163-167--app-1
shashanks-MacBook-Air-2:~ shashank$
```

Fault tolerance:

We will be manually stopping a node now

```
[shashanks-MacBook-Air-2:~ shashank$ docker stop tender_shtern
tender_shtern
shashanks-MacBook-Air-2:~ shashank$
```

As we can see after the node has been stopped, the node has a pod running in it so when the node stopped we have recognised it stopping with heartbeats.

We have reallocated the pods to the next node using the First-fit that meets the CPU requirements.