

## Screenshot of kubectl get nodes

```
student@ds-student16:~/NTHU-Scheduler-Plugin$ kubectl get nodes
NAME                STATUS    ROLES    AGE   VERSION
kind-control-plane  Ready    control-plane  5h17m  v1.29.2
kind-worker          Ready    <none>      5h16m  v1.29.2
kind-worker2         Ready    <none>      5h16m  v1.29.2
```

## Screenshot of passing all the unit tests

```
root@69ee7d8152d4:/go/src/app# go test -v ./...
?       my-scheduler-plugins/cmd/scheduler    [no test files]
=== RUN   TestCustomScheduler_PreFilter
=== RUN   TestCustomScheduler_PreFilter/pod_is_accepted
finish adding2024/06/14 05:32:54 Pod  is in Prefilter phase.
=== RUN   TestCustomScheduler_PreFilter/pod_is_just_accepted
finish adding2024/06/14 05:32:54 Pod  is in Prefilter phase.
=== RUN   TestCustomScheduler_PreFilter/pod_is_rejected
finish adding2024/06/14 05:32:54 Pod  is in Prefilter phase.
--- PASS: TestCustomScheduler_PreFilter (0.00s)
    --- PASS: TestCustomScheduler_PreFilter/pod_is_accepted (0.00s)
    --- PASS: TestCustomScheduler_PreFilter/pod_is_just_accepted (0.00s)
    --- PASS: TestCustomScheduler_PreFilter/pod_is_rejected (0.00s)
=== RUN   TestCustomScheduler_Score
=== RUN   TestCustomScheduler_Score/least_mode
2024/06/14 05:32:54 Custom scheduler runs with the mode: Least.
2024/06/14 05:32:54 Pod  is in Score phase. Calculate the score of Node m1.
2024/06/14 05:32:54 Pod  is in Score phase. Calculate the score of Node m2.
=== RUN   TestCustomScheduler_Score/most_mode
2024/06/14 05:32:54 Custom scheduler runs with the mode: Least.
2024/06/14 05:32:54 Pod  is in Score phase. Calculate the score of Node m1.
2024/06/14 05:32:54 Pod  is in Score phase. Calculate the score of Node m2.
--- PASS: TestCustomScheduler_Score (0.00s)
    --- PASS: TestCustomScheduler_Score/least_mode (0.00s)
    --- PASS: TestCustomScheduler_Score/most_mode (0.00s)
=== RUN   TestCustomScheduler_NormalizeScore
=== RUN   TestCustomScheduler_NormalizeScore/scores_in_range
=== RUN   TestCustomScheduler_NormalizeScore/scores_out_of_range
=== RUN   TestCustomScheduler_NormalizeScore/negative_score
--- PASS: TestCustomScheduler_NormalizeScore (0.00s)
    --- PASS: TestCustomScheduler_NormalizeScore/scores_in_range (0.00s)
    --- PASS: TestCustomScheduler_NormalizeScore/scores_out_of_range (0.00s)
    --- PASS: TestCustomScheduler_NormalizeScore/negative_score (0.00s)
PASS
ok      my-scheduler-plugins/pkg/plugins      0.034s
root@69ee7d8152d4:/go/src/app#
```

## ● scenario1 is for PreFilter

I have 3 pods each requires minAvailable as 3.

*nginx1*, *nginx2* won't be loaded because they are the first two, while *nginx3* will be loaded.

```
I0614 12:10:21.325270 1 log.go:194] Pod nginx1 is in Prefilter phase.
I0614 12:10:21.325334 1 log.go:194] Pod len is 1 while PreFiltering pod nginx1.
I0614 12:10:21.325582 1 schedule_one.go:867] "Unable to schedule pod; no fit; waiting" pod="default/nginx1" err="0/3 nodes are available: preempti
on: 0/3 nodes are available: 3 No preemption victims found for incoming pod.."
I0614 12:10:21.368247 1 log.go:194] Pod nginx2 is in Prefilter phase.
I0614 12:10:21.368308 1 log.go:194] Pod len is 2 while PreFiltering pod nginx2.
I0614 12:10:21.368517 1 schedule_one.go:867] "Unable to schedule pod; no fit; waiting" pod="default/nginx2" err="0/3 nodes are available: preempti
on: 0/3 nodes are available: 3 No preemption victims found for incoming pod.."
I0614 12:10:21.411697 1 log.go:194] Pod nginx3 is in Prefilter phase.
I0614 12:10:21.411808 1 log.go:194] Pod len is 3 while PreFiltering pod nginx3.
I0614 12:10:21.412496 1 log.go:194] Pod nginx3 is in Score phase. Calculate the score of Node kind-worker.
I0614 12:10:21.412518 1 log.go:194] Node memory left for kind-worker is 1062.925781 MiB while PreFiltering pod nginx3 with mode Least.
I0614 12:10:21.412532 1 log.go:194] Pod nginx3 is in Score phase. Calculate the score of Node kind-worker2.
I0614 12:10:21.412537 1 log.go:194] Node memory left for kind-worker2 is 1374.925781 MiB while PreFiltering pod nginx3 with mode Least.
I0614 12:10:21.416777 1 schedule_one.go:252] "Successfully bound pod to node" pod="default/nginx3" node="kind-worker" evaluatedNodes=3 feasibleNo
es=2
```

## ● scenario2 is for Least Mode

3 pods, *nginx1*, *nginx2*, and *nginx3*, each request 800Mi, 100Mi, 100Mi.

With mode set to Least Mode, they will all choose *kind-worker* as it has the least remaining memory.

```
I0614 12:11:06.909616 1 log.go:194] Pod nginx1 is in Prefilter phase.
I0614 12:11:06.909737 1 log.go:194] Pod len is 1 while PreFiltering pod nginx1.
I0614 12:11:06.910228 1 log.go:194] Pod nginx1 is in Score phase. Calculate the score of Node kind-worker.
I0614 12:11:06.910265 1 log.go:194] Pod nginx1 is in Score phase. Calculate the score of Node kind-worker2.
I0614 12:11:06.910289 1 log.go:194] Node memory left for kind-worker2 is 1374.925781 MiB while PreFiltering pod nginx1 with mode Least.
I0614 12:11:06.910341 1 log.go:194] Node memory left for kind-worker is 1062.925781 MiB while PreFiltering pod nginx1 with mode Least.
I0614 12:11:06.915583 1 schedule_one.go:252] "Successfully bound pod to node" pod="default/nginx1" node="kind-worker" evaluatedNodes=3 feasibleNo
es=2
I0614 12:11:06.953452 1 log.go:194] Pod nginx2 is in Prefilter phase.
I0614 12:11:06.953514 1 log.go:194] Pod len is 2 while PreFiltering pod nginx2.
I0614 12:11:06.953819 1 log.go:194] Pod nginx2 is in Score phase. Calculate the score of Node kind-worker.
I0614 12:11:06.953851 1 log.go:194] Node memory left for kind-worker is 262.925781 MiB while PreFiltering pod nginx2 with mode Least.
I0614 12:11:06.953861 1 log.go:194] Pod nginx2 is in Score phase. Calculate the score of Node kind-worker2.
I0614 12:11:06.953871 1 log.go:194] Node memory left for kind-worker2 is 1374.925781 MiB while PreFiltering pod nginx2 with mode Least.
I0614 12:11:06.958038 1 schedule_one.go:252] "Successfully bound pod to node" pod="default/nginx2" node="kind-worker" evaluatedNodes=3 feasibleNo
es=2
I0614 12:11:06.999659 1 log.go:194] Pod nginx3 is in Prefilter phase.
I0614 12:11:06.999914 1 log.go:194] Pod len is 3 while PreFiltering pod nginx3.
I0614 12:11:07.000296 1 log.go:194] Pod nginx3 is in Score phase. Calculate the score of Node kind-worker2.
I0614 12:11:07.000318 1 log.go:194] Node memory left for kind-worker2 is 1374.925781 MiB while PreFiltering pod nginx3 with mode Least.
I0614 12:11:07.000328 1 log.go:194] Pod nginx3 is in Score phase. Calculate the score of Node kind-worker.
I0614 12:11:07.000342 1 log.go:194] Node memory left for kind-worker is 162.925781 MiB while PreFiltering pod nginx3 with mode Least.
I0614 12:11:07.003587 1 schedule_one.go:252] "Successfully bound pod to node" pod="default/nginx3" node="kind-worker" evaluatedNodes=3 feasibleNo
es=2
```

## ● scenario3 is for Most Mode, you need to modify mode in `charts/values.yaml` before that

3 pods, *nginx1*, *nginx2*, and *nginx3*, each request 1000Mi, 750Mi, 100Mi.

With mode set to Most Mode,

*nginx1* will choose *kind-worker2* who has 1374MiB left and will have 374MiB after that.

*nginx2* will choose *kind-worker* who has 1062MiB left and will have 312MiB after that.

*nginx3* will choose *kind-worker2*, who has 374MiB left.

```
I0614 12:19:12.857697 1 log.go:194] Pod nginx1 is in Prefilter phase.
I0614 12:19:12.857818 1 log.go:194] Pod len is 1 while PreFiltering pod nginx1.
I0614 12:19:12.858638 1 log.go:194] Pod nginx1 is in Score phase. Calculate the score of Node kind-worker2.
I0614 12:19:12.858716 1 log.go:194] Pod nginx1 is in Score phase. Calculate the score of Node kind-worker.
I0614 12:19:12.858766 1 log.go:194] Node memory left for kind-worker is 1062.925781 MiB while PreFiltering pod nginx1 with mode Most.
I0614 12:19:12.858855 1 log.go:194] Node memory left for kind-worker2 is 1374.925781 MiB while PreFiltering pod nginx1 with mode Most.
I0614 12:19:12.865573 1 schedule_one.go:252] "Successfully bound pod to node" pod="default/nginx1" node="kind-worker2" evaluatedNodes=3 feasibleNo
des=2
I0614 12:19:12.914014 1 log.go:194] Pod nginx2 is in Prefilter phase.
I0614 12:19:12.914299 1 log.go:194] Pod len is 2 while PreFiltering pod nginx2.
I0614 12:19:12.914567 1 log.go:194] Pod nginx2 is in Score phase. Calculate the score of Node kind-worker.
I0614 12:19:12.914584 1 log.go:194] Node memory left for kind-worker is 1062.925781 MiB while PreFiltering pod nginx2 with mode Most.
I0614 12:19:12.914598 1 log.go:194] Pod nginx2 is in Score phase. Calculate the score of Node kind-worker2.
I0614 12:19:12.914603 1 log.go:194] Node memory left for kind-worker2 is 374.925781 MiB while PreFiltering pod nginx2 with mode Most.
I0614 12:19:12.920564 1 schedule_one.go:252] "Successfully bound pod to node" pod="default/nginx2" node="kind-worker" evaluatedNodes=3 feasibleNo
des=2
I0614 12:19:12.966450 1 log.go:194] Pod nginx3 is in Prefilter phase.
I0614 12:19:12.966536 1 log.go:194] Pod len is 3 while PreFiltering pod nginx3.
I0614 12:19:12.966866 1 log.go:194] Pod nginx3 is in Score phase. Calculate the score of Node kind-worker.
I0614 12:19:12.966885 1 log.go:194] Node memory left for kind-worker is 312.925781 MiB while PreFiltering pod nginx3 with mode Most.
I0614 12:19:12.966893 1 log.go:194] Pod nginx3 is in Score phase. Calculate the score of Node kind-worker2.
I0614 12:19:12.966898 1 log.go:194] Node memory left for kind-worker2 is 374.925781 MiB while PreFiltering pod nginx3 with mode Most.
I0614 12:19:12.975095 1 schedule_one.go:252] "Successfully bound pod to node" pod="default/nginx3" node="kind-worker2" evaluatedNodes=3 feasibleNo
des=2
```