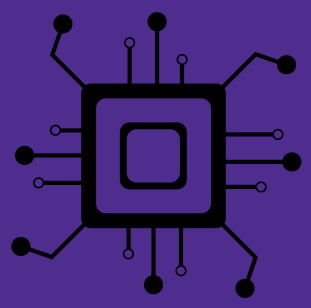

KUBERNETES

ARCHITECTURE

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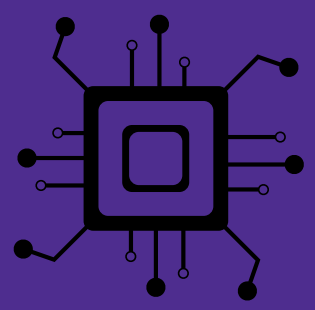
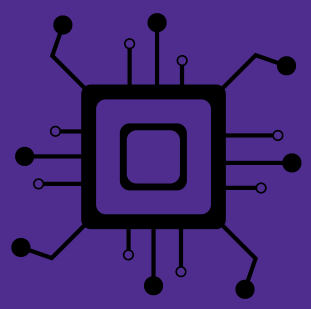
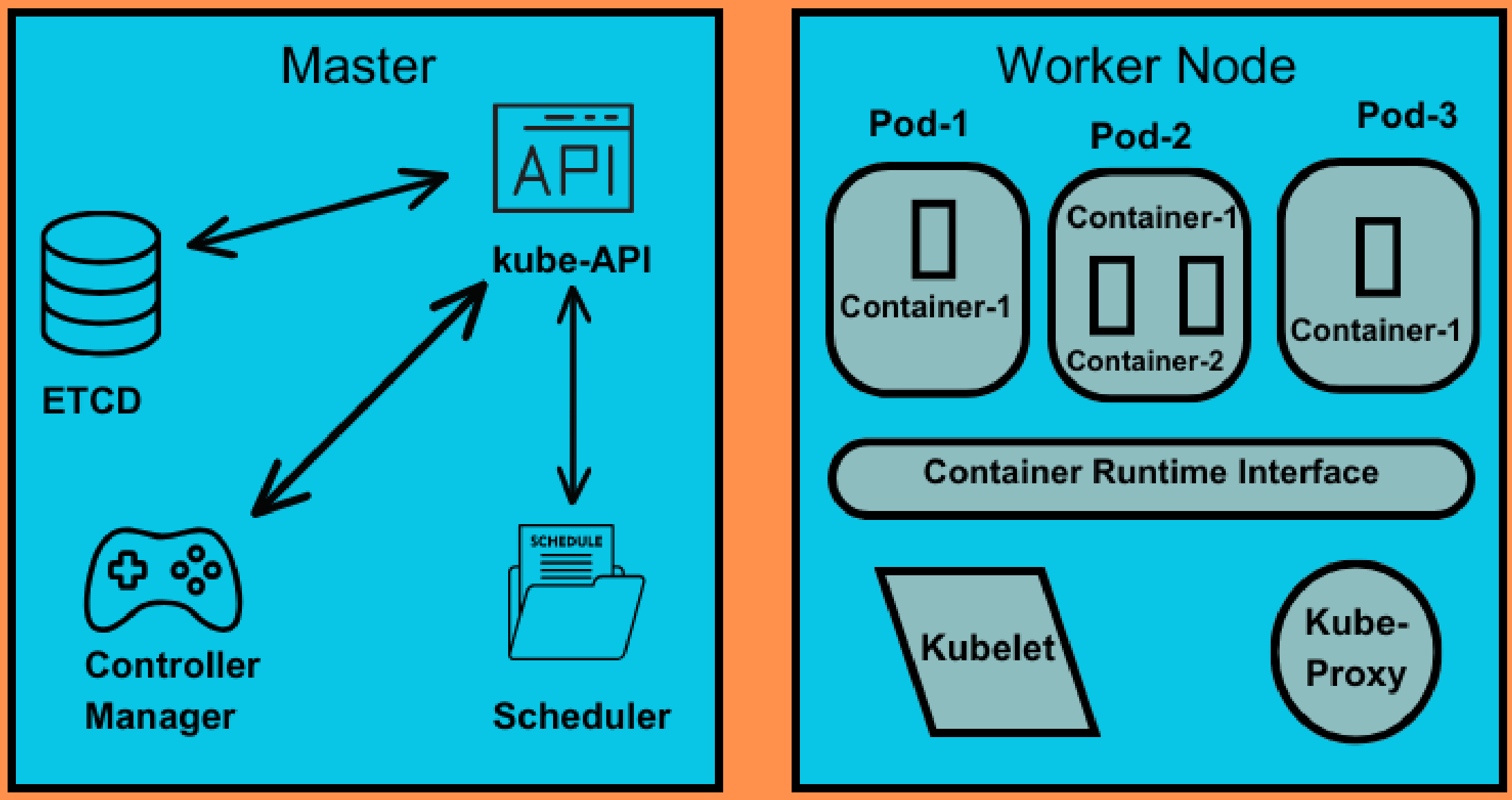
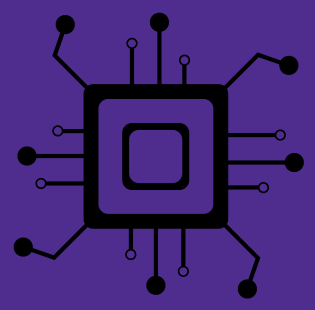




K8s Cluster



Container Network Interface



Master Node

The master node is like the boss of the team. It manages and controls the overall operation.

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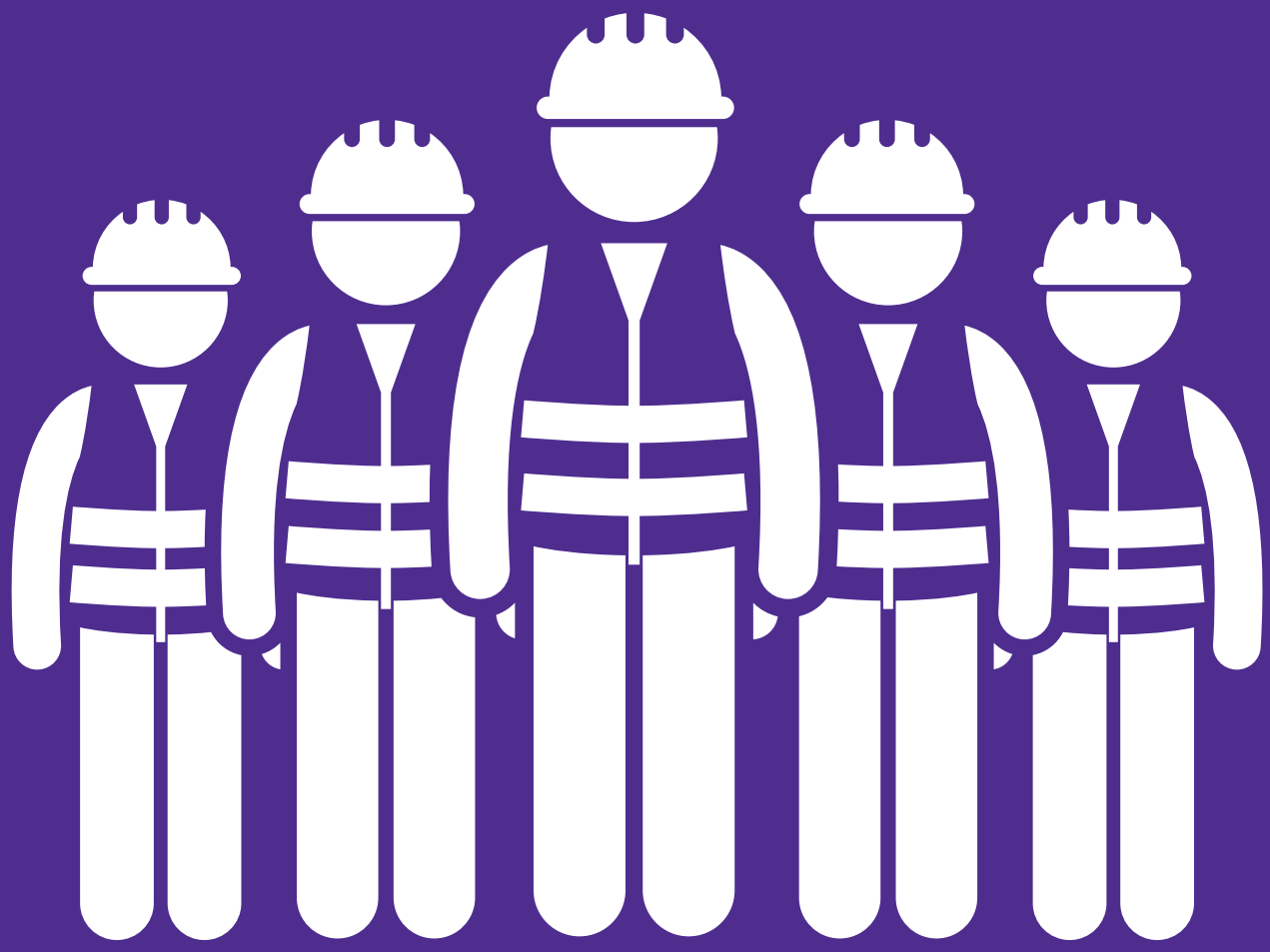
Worker Nodes



Worker nodes are like team members who do the actual work. They run the applications and services.

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Cluster

A group of computers (like a team of workers) that work together to run applications.

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Nodes

Each computer in the cluster is called a node, and it's like a worker in the team.

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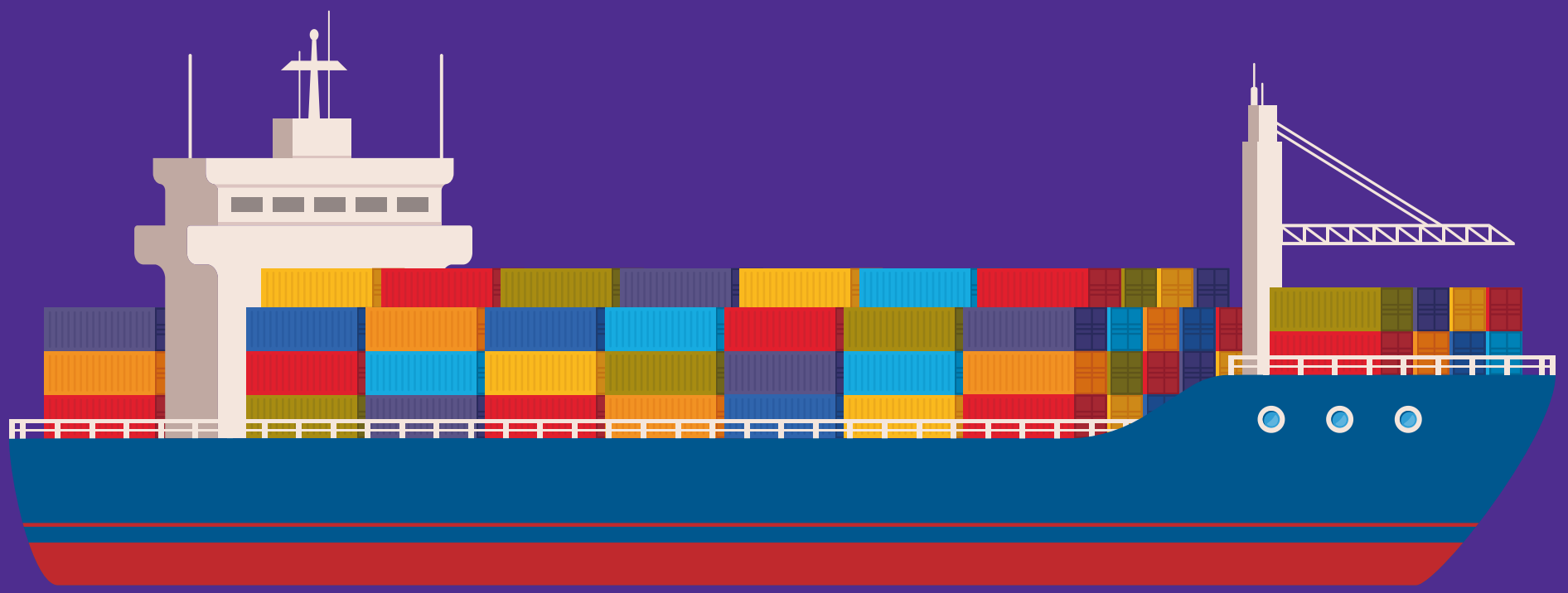
Pod



A pod is like a shipping container.

It holds one or more application containers and the storage resources needed.

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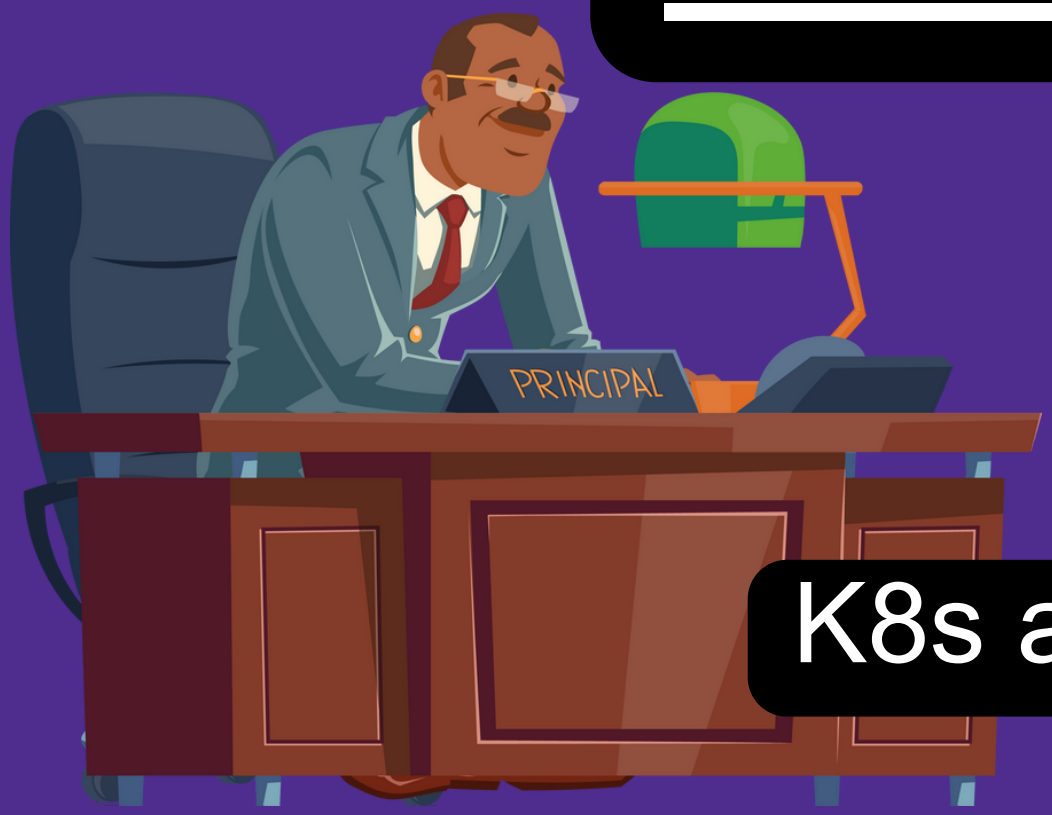
Container Runtime Interface



K8s as a School Principal

Containers are like the students in different classrooms. Each container (student) is doing its own task.

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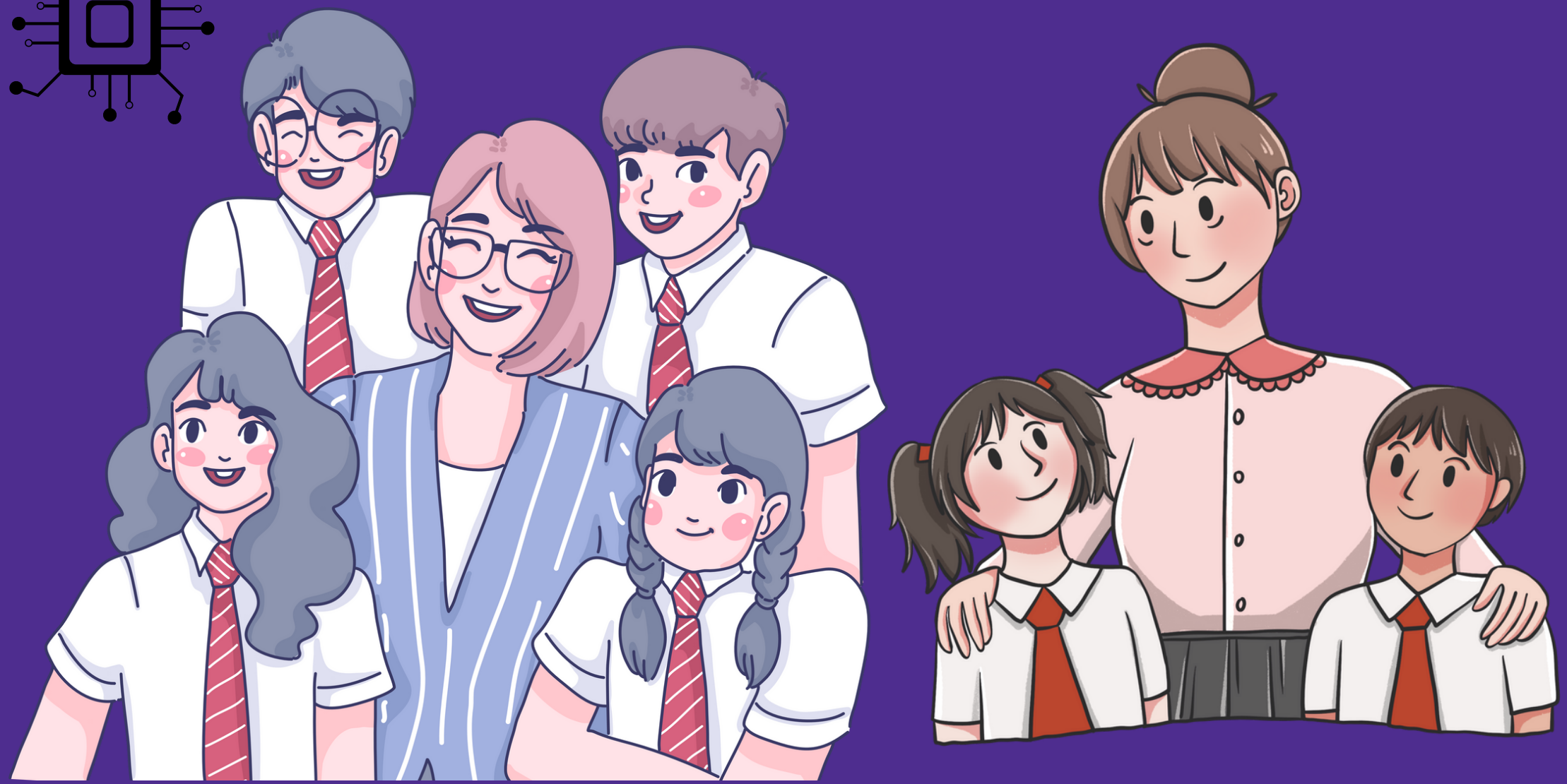

The CRI is like the group of teachers who know how to manage and interact with students (containers).

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Kubelet

Kubelet ensures that the containers are running correctly on each node, reporting any issues to the control plane, and taking care of their lifecycle.

Just like a waiter in a restaurant keeps customers happy and their food served correctly.

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Kube- Proxy

Kube-Proxy is like the communication enabler, making sure that different pods can talk to each other and the outside world.

It simplifies the network connectivity between pods by managing the routing and firewall rules, allowing them to work seamlessly.

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ETCD

It's a distributed key-value store that stores all the configuration data for a Kubernetes cluster.

This data includes information about the state of the cluster, such as which nodes are part of it, and the configuration settings for all the objects like pods, services, and more.

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Controller Manager

Manages controllers, which are like event organizers for different parts of your cluster.

Managing things like replication, deployments, and stateful sets, among others.

It helps maintain the desired configuration you've specified in your Kubernetes manifests.

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Scheduler

It then makes the decisions on which node (server) each task should run to keep the whole system in harmony.

It takes into account factors like available resources, the constraints of each task, and the desired placement policy (like spreading tasks across nodes for fault tolerance).

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Kube-API

API Server, is like the front door to your Kubernetes cluster.

Its job is to provide a way for users, administrators, and other components to interact with the cluster.

Ensures that all interactions with the Kubernetes cluster are secure, authorized, and well-coordinated.

Container Network Interface

The CNI is like the city's postal system.

It ensures that containers in different neighborhoods (pods) can send and receive messages (network traffic) to each other.

It assigns unique IP addresses to each container and sets up the routes for them to send and receive data.

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