JSON File (k8s_security_findings.json):

JSON


```
[
 {
  "controlID": "C-0001",
  "name": "RBAC: Cluster-admin role should not be used",
  "description": "The cluster-admin role grantssuperuser permissions. Avoid binding it to users or groups unless absolutely necessary.",
  "severity": "High",
  "category": "RBAC",
  "occurrences": [
   {
    "resourceType": "RoleBinding",
    "resourceName": "default:admin-binding",
    "namespace": "default",
    "message": "RoleBinding 'admin-binding' in namespace 'default' is bound to the 'cluster-admin' role."
   }
  ],
  "remediation": "Review RoleBindings and avoid using the 'cluster-admin' role. Create more specific roles with the minimum required permissions.",
  "status": "Fail"
 },
 {
  "controlID": "C-0012",
  "name": "Secrets: Secrets should be encrypted at rest",
  "description": "Kubernetes Secrets should be encrypted when stored in etcd to prevent unauthorized access.",
  "severity": "Medium",
  "category": "Data Protection",
  "occurrences": [
   {
    "resourceType": "Cluster",
    "resourceName": "etcd",
    "namespace": null,
    "message": "etcd is not configured for encryption at rest."
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      }
    ],
    "remediation": "Configure encryption at rest for etcd. Consult your Kubernetes distribution's documentation for specific instructions.",
    "status": "Fail"
  },
  {
    "controlID": "C-0045",
    "name": "NetworkPolicy: Default network policy should deny all ingress and egress traffic",
    "description": "Implement default deny network policies to restrict network traffic within the cluster.",
    "severity": "Low",
    "category": "Network Security",
    "occurrences": [
      {
        "resourceType": "Namespace",
        "resourceName": "default",
        "namespace": "default",
        "message": "No default deny ingress network policy found in namespace 'default'."
      },
      {
        "resourceType": "Namespace",
        "resourceName": "kube-system",
        "namespace": "kube-system",
        "message": "No default deny egress network policy found in namespace 'kube-system'."
      }
    ],
    "remediation": "Create default deny NetworkPolicy objects for ingress and egress in all namespaces.",
    "status": "Fail"
  },
  {
    "controlID": "C-0101",
    "name": "Containers: Running as root user should be avoided",
    "description": "Containers should run with the least privilege necessary and avoid running as the root user.",
    "severity": "High",
    "category": "Workload Security",
    "occurrences": [
```

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    {
      "resourceType": "Pod",
      "resourceName": "my-app-pod-123",
      "namespace": "default",
      "containerName": "app-container",
      "message": "Container 'app-container' in pod 'my-app-pod-123' is running as root."
    }
  ],
  "remediation": "Update the Pod's SecurityContext to specify a non-root user and group ID.",
  "status": "Fail"
 },
 {
  "controlID": "C-0022",
  "name": "API Server: Ensure API server certificate is valid and not expired",
  "description": "The Kubernetes API server relies on certificates for secure communication. Ensure the certificate is valid and has not expired.",
  "severity": "Medium",
  "category": "Control Plane Security",
  "occurrences": [],
  "remediation": "Monitor the API server certificate expiry and rotate it before it expires.",
  "status": "Pass"
 }
]
```


Explanation of the Fields:

- **controlID**: A unique identifier for the security control or rule that was checked.
- **name**: A short, descriptive name of the security control.
- **description**: A more detailed explanation of the security control and its importance.
- **severity**: The level of risk associated with the finding (e.g., High, Medium, Low).
- **category**: The area of Kubernetes security the finding belongs to (e.g., RBAC, Network Security).
- **occurrences**: An array detailing each instance where the security control was violated or checked.
  - **resourceType**: The type of Kubernetes resource involved (e.g., RoleBinding, Pod, Namespace).
  - **resourceName**: The name of the specific resource.
  - **namespace**: The namespace the resource belongs to (if applicable).

    - **containerName**: (Specific to containers) The name of the container within the pod.
    - **message**: A specific message describing the finding for this occurrence.
- **remediation**: Steps or recommendations on how to fix the identified issue.
- **status**: The outcome of the check for this control ("Fail" indicates a violation, "Pass" indicates compliance).

How to Actually Generate This:

To get a real k8s_security_findings.json file, you would need to:

1. **Install a local Kubernetes cluster:** Choose one like Minikube, K3s, or Kind and follow their installation instructions.
2. **Install a Kubernetes security scanning tool:** Kubescape is a good option. Follow the installation instructions for your chosen tool (usually involves downloading a binary or using a package manager).
3. **Run the security scan:** Execute the scanning tool against your local Kubernetes cluster. For Kubescape, it might look something like:
   Bash
   `kubescape scan --format json --output k8s_security_findings.json`
   (The exact command might vary slightly depending on the tool and its version).
4. **Examine the output file:** The k8s_security_findings.json file will be created in your current directory (or the specified output path) and will contain the actual findings from your local cluster.

This example JSON provides a good understanding of the structure and content you can expect from such a scan. Remember that the actual findings will depend on the configuration and security posture of your local Kubernetes cluster.