

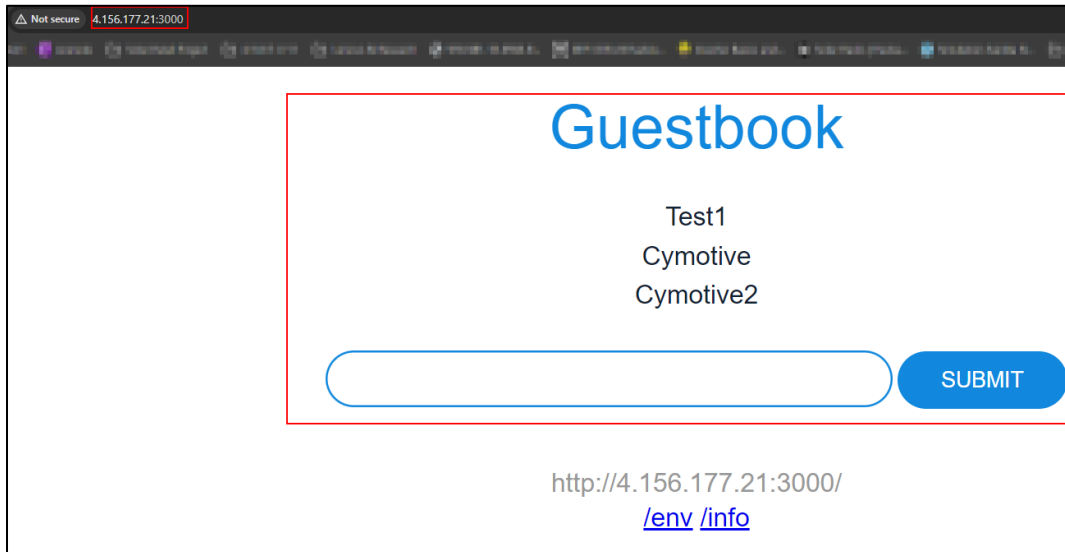
# DevOps Assignment – report

The report includes logs, screenshots, and GitHub links pertaining to Super-linter, Dependabot, and the deployment of a Kubernetes cluster in Azure (AKS). Parts 2 and 3 provide conclusions regarding the checks conducted by Dependabot and Super-linter, covering vulnerabilities, updated versions, best practices in code, etc., along with recommendations for remediation as required in the assignment's output section.

GitHub repository link: <https://github.com/avramit5674/guestbook-go-azure>

## 1. Kubernetes cluster (AKS):

- guestbook application deployed in my k8s cluster in Azure: <http://4.156.177.21:3000/>



- YAML configuration files of the k8s components I've used: [YAML files in GitHub repo](#)
- The provided screenshot displays a "cluster dump" showcasing only the components relevant to the guestbook application, excluding resources from the kube-system namespace for clarity.

```
PS /home/amit> kubectl get pods,services,rc -n default -o wide
```

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	READINESS GATES
pod/guestbook-5g9lv	1/1	Running	0	3h50m	10.224.0.42	aks-agentpool-24129145-vmss000001	<none>	<none>
pod/guestbook-78t5t	1/1	Running	0	3h50m	10.224.0.142	aks-agentpool-24129145-vmss000000	<none>	<none>
pod/guestbook-rbbz8	1/1	Running	0	3h50m	10.224.0.205	aks-agentpool-24129145-vmss000000	<none>	<none>
pod/redis-master-rnjxq	1/1	Running	0	17h	10.224.0.183	aks-agentpool-24129145-vmss000000	<none>	<none>
pod/redis-replica-4b9fh	1/1	Running	0	17h	10.224.0.168	aks-agentpool-24129145-vmss000000	<none>	<none>
pod/redis-replica-hw858	1/1	Running	0	17h	10.224.0.94	aks-agentpool-24129145-vmss000001	<none>	<none>

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE	SELECTOR
service/guestbook	LoadBalancer	10.0.36.138	4.156.177.21	3000:30695/TCP	17h	app=guestbook
service/kubernetes	ClusterIP	10.0.0.1	<none>	443/TCP	20h	<none>
service/redis-master	ClusterIP	10.0.144.9	<none>	6379/TCP	17h	app=redis,role=master
service/redis-slave	ClusterIP	10.0.7.29	<none>	6379/TCP	3h48m	app=redis,role=replica

NAME	DESIRED	CURRENT	READY	AGE	CONTAINERS	IMAGES	SELECTOR
replicationcontroller/guestbook	3	3	3	3h50m	guestbook	registry.k8s.io/guestbook:v3	app=guestbook
replicationcontroller/redis-master	1	1	1	17h	redis-master	registry.k8s.io/redis:e2e	app=redis,role=master
replicationcontroller/redis-replica	2	2	2	17h	redis-replica	registry.k8s.io/redis-slave:v2	app=redis,role=replica

## 2. Dependabot:

- [Dependabot patch](#)
- [Dependabot commit \(suggested changes\)](#)
- **Conclusion on Dependabot check:** The Dockerfile utilized in the guestbook application template employs an outdated version of Go (golang:1.10.0) to execute the application (main.go). It is advisable to upgrade the Go version to a more recent one, such as golang:1.22.2, as recommended by Dependabot

### 3. Super-linter:

- [Super-Linter workflow \(GitHub Actions\)](#)
- [Exported super-linter report](#)
- **Conclusions regarding Super-linter checks:**

- a. **Dockerfiles:** hadolint identified errors and warnings, such as the recommendation to use COPY instead of ADD and referencing a previously defined FROM alias.

```
2024-04-10 13:42:32 [INFO] File:[/github/workspace/Dockerfile]
2024-04-10 13:42:32 [ERROR] Found errors in [hadolint] linter!
2024-04-10 13:42:32 [ERROR] Error code: 1. Command output:
-----
/github/workspace/Dockerfile:20 DL3020 error: Use COPY instead of ADD for files and folders
/github/workspace/Dockerfile:25 DL3022 warning: `COPY --from` should reference a previously defined `FROM` alias
```

- b. **JavaScript:** Linting with ESLint succeeded, but standard linter reported errors related to coding standards, such as undefined variables and code styling issues. Using ESLint with a configuration tailored to code standards can help automatically fix style issues to ensure consistent code quality.

```
2024-04-10 13:42:38 [INFO] File:[/github/workspace/public/script.js]
2024-04-10 13:42:39 [ERROR] Found errors in [standard] linter!
2024-04-10 13:42:39 [ERROR] Error code: 1. Command output:
-----
standard: Use JavaScript Standard Style (https://standardjs.com)
standard: Some warnings are present which will be errors in the next version (https://standardjs.com)
standard: Run `standard --fix` to automatically fix some problems.
  /github/workspace/public/script.js:1:1: '$' is not defined. (no-undef)
  /github/workspace/public/script.js:1:27: Missing space before function parentheses. (space-before-function-paren)
  /github/workspace/public/script.js:2:3: Unexpected var, use let or const instead. (no-var) (warning)
```

- c. **Markdown:** Markdownlint identified issues with the document structure, such as incorrect heading levels and line length. Adhering to Markdown best practices and using a linter like markdownlint with a custom rule set that fits the project's needs can address these issues.

```
2024-04-10 13:42:53 [INFO] File:[/github/workspace/README.md]
2024-04-10 13:42:54 [ERROR] Found errors in [markdownlint] linter!
2024-04-10 13:42:54 [ERROR] Error code: 1. Command output:
-----
/github/workspace/README.md:1 MD041/first-line-heading/first-line-h1 First line in a file should be a top-level heading [Context: "## Guestbook Example"]
/github/workspace/README.md:7 MD001/heading-increment/header-increment Heading levels should only increment by one level at a time [Expected: h3; Actual: h5]
/github/workspace/README.md:9:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:10:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:11:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:12:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:13:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:14:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:15:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:16:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:17:1 MD007/ul-indent Unordered list indentation [Expected: 0; Actual: 1]
/github/workspace/README.md:27:401 MD013/line-length Line length [Expected: 400; Actual: 524]
/github/workspace/README.md:32:5 MD014/commands-show-output Dollar signs used before commands without showing output [Context: "$ kubectl create -f examples/g..."]
```

- d. **Go (Golang):** The super-linter error indicates inconsistent spacing in variable declarations (masterPool and replicaPool). Fix it by aligning the declarations and running goimports -w main.go to automatically format the Go files according to Go's conventions.

```
2024-04-11 15:34:08 [INFO] File:[/github/workspace/main.go]
2024-04-11 15:34:11 [ERROR] Found errors in [golangci-lint] linter!
2024-04-11 15:34:11 [ERROR] Error code: 1. Command output:
-----
main.go:31: File is not `goimports`-ed (goimports)
      masterPool *simpleredis.ConnectionPool
      replicaPool *simpleredis.ConnectionPool
```

- e. **Natural language:** Indicate errors in the README.md file due to incorrect usage of the term "front end"; the fix is to replace it with "frontend" to adhere to correct terminology.

```
2024-04-10 13:42:54 [INFO] File:[/github/workspace/README.md]
2024-04-10 13:42:54 [ERROR] Found errors in [textlint] linter!
2024-04-10 13:42:54 [ERROR] Error code: 1. Command output:
-----
/github/workspace/README.md
  3:132 ✓ error Incorrect usage of the term: "front end", use "frontend" instead terminology
 205:108 ✓ error Incorrect usage of the term: "front end", use "frontend" instead terminology
```

- f. **CSS Styling Issues:** Errors were found by the stylelint linter, mainly related to code style issues like newline requirements, hex color case sensitivity, and number formatting.

```
public/style.css
 1:5  ✖ Expected newline after ",", "      selector-list-comma-newline-after
13:3  ✖ Expected newline after ",", "      selector-list-comma-newline-after
13:7  ✖ Expected newline after ",", "      selector-list-comma-newline-after
13:10 ✖ Expected newline after ",", "      selector-list-comma-newline-after
13:17 ✖ Expected newline after ",", "      selector-list-comma-newline-after
19:10 ✖ Expected "#BDB76B" to be "#bdb76b" color-hex-case
36:31 ✖ Expected "#BDB76B" to be "#bdb76b" color-hex-case
41:12 ✖ Expected a leading zero            number-leading-zero
46:15 ✖ Expected "#BDB76B" to be "#bdb76b" color-hex-case
49:10 ✖ Expected "#FFF" to be "#fff"       color-hex-case
52:12 ✖ Expected a leading zero            number-leading-zero
```

- g. **warning level-YAML:** Files were linted with yamllint, showing warnings mostly related to document formatting and indentation.

```
2024-04-10 13:42:57 [INFO] File:[/github/workspace/k8s cluster configuration files/redis-master-controller.yaml]
2024-04-10 13:42:57 [INFO] - File:[redis-master-controller.yaml] was linted with [yamllint] successfully
2024-04-10 13:42:57 [INFO] - Command output:
-----
Warning: orkspace/k8s cluster configuration files/redis-master-controller.yaml:1:1: [warning] missing document start "---" (document-start)
Warning: orkspace/k8s cluster configuration files/redis-master-controller.yaml:20:7: [warning] wrong indentation: expected 8 but found 6 (indentation)
Warning: orkspace/k8s cluster configuration files/redis-master-controller.yaml:23:7: [warning] wrong indentation: expected 8 but found 6 (indentation)
Warning: orkspace/k8s cluster configuration files/redis-master-controller.yaml:26:9: [warning] wrong indentation: expected 10 but found 8 (indentation)
```