Dev-Ops HW-2

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HEARTBEAT Job Implementation Using BASH

1. Introduction
This document describes the implementation of a HEARTBEAT job using a BASH script on macOS. The job logs periodic "System is alive" messages to the system log, which can be retrieved using the `log show` command.

2. Steps and Commands Used

Step 1: Creating the BASH Script
A script named `heartbeat.sh` was created to log heartbeat messages using the `logger` command.

```
#!/bin/bash
while true; do
    logger "HEARTBEAT: System is alive - $(date)"
    sleep 20
done
```

- `logger` logs messages to the system log.
- `sleep 20` ensures that messages are logged every 20 seconds.

Step 2: Making the Script Executable
To make the script executable, the following command was run:

```
chmod +x heartbeat.sh
```

Step 3: Running the Script as a Launch Agent
To ensure the script runs continuously in the background, a macOS Launch Agent was created.

Creating the LaunchAgent Directory:

```
mkdir -p ~/Library/LaunchAgents
```

Creating the Plist Configuration File:

A property list (`.plist`) file was created inside `~/Library/LaunchAgents/` with the following content:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN"
"http://www.apple.com/DTDs/PropertyList-1.0.dtd">
<plist version="1.0">
<dict>
    <key>Label</key>
    <string>com.user.heartbeat</string>
```

```
    <key>ProgramArguments</key>
    <array>
        <string>/path/to/heartbeat.sh</string>
    </array>
    <key>RunAtLoad</key>
    <true/>
    <key>KeepAlive</key>
    <true/>
</dict>
</plist>
```

- `RunAtLoad` ensures the script runs upon login.
- `KeepAlive` ensures the script restarts if it stops.

Step 4: Loading the Launch Agent
To load and start the heartbeat job:

launchctl load ~/Library/LaunchAgents/com.user.heartbeat.plist

Step 5: Viewing the Heartbeat Logs
To filter and check heartbeat logs:

Filtering by Process Name:

log show --predicate 'process == "HEARTBEAT"' --style syslog --last 1h

Filtering by Message Content:

log show --predicate 'eventMessage CONTAINS "HEARTBEAT"' --style syslog --last 1h

This command retrieves the logs generated by the `logger` command in the last hour.

3. Conclusion
This implementation ensures that a periodic heartbeat message is logged and can be monitored using system logs. Running it as a Launch Agent allows it to persist across system reboots, making it a reliable background process.