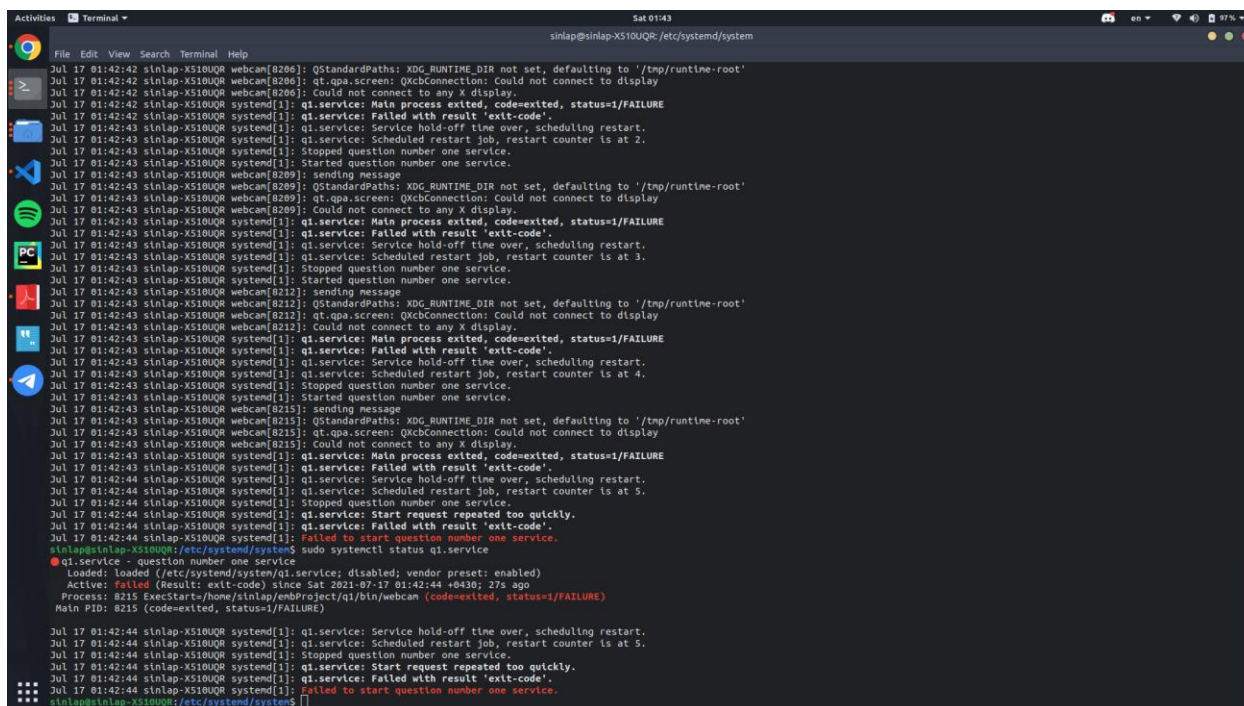


سینا کریمی 97105509

توضیحات مربوط به سوال چهارم:

در این سوال نکته ای که وجود دارد این می باشد که به دلیل اینکه دستوراتی مثل `imshow` حتما نیاز به یک نمایشگر دارند، نمیتوان آن را به صورت سرویس در آورد.



```
Jul 17 01:42:42 sinlap-X510UQR webcan[8206]: QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Jul 17 01:42:42 sinlap-X510UQR webcan[8206]: qt.qpa.screen: QXcbConnection: Could not connect to display
Jul 17 01:42:42 sinlap-X510UQR webcan[8206]: Could not connect to any X display.
Jul 17 01:42:42 sinlap-X510UQR systemd[1]: q1.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:42:42 sinlap-X510UQR systemd[1]: q1.service: Failed with result 'exit-code'.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Service hold-off time over, scheduling restart.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Scheduled restart job, restart counter is at 2.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: Stopped question number one service.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: Started question number one service.
Jul 17 01:42:43 sinlap-X510UQR webcan[8209]: sending message
Jul 17 01:42:43 sinlap-X510UQR webcan[8209]: QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Jul 17 01:42:43 sinlap-X510UQR webcan[8209]: qt.qpa.screen: QXcbConnection: Could not connect to display
Jul 17 01:42:43 sinlap-X510UQR webcan[8209]: Could not connect to any X display.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Failed with result 'exit-code'.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Service hold-off time over, scheduling restart.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Scheduled restart job, restart counter is at 3.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: Stopped question number one service.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: Started question number one service.
Jul 17 01:42:43 sinlap-X510UQR webcan[8212]: sending message
Jul 17 01:42:43 sinlap-X510UQR webcan[8212]: QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Jul 17 01:42:43 sinlap-X510UQR webcan[8212]: qt.qpa.screen: QXcbConnection: Could not connect to display
Jul 17 01:42:43 sinlap-X510UQR webcan[8212]: Could not connect to any X display.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Failed with result 'exit-code'.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Service hold-off time over, scheduling restart.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Scheduled restart job, restart counter is at 4.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: Stopped question number one service.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: Started question number one service.
Jul 17 01:42:43 sinlap-X510UQR webcan[8215]: sending message
Jul 17 01:42:43 sinlap-X510UQR webcan[8215]: QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Jul 17 01:42:43 sinlap-X510UQR webcan[8215]: qt.qpa.screen: QXcbConnection: Could not connect to display
Jul 17 01:42:43 sinlap-X510UQR webcan[8215]: Could not connect to any X display.
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:42:43 sinlap-X510UQR systemd[1]: q1.service: Failed with result 'exit-code'.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: q1.service: Service hold-off time over, scheduling restart.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: q1.service: Scheduled restart job, restart counter is at 5.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: Stopped question number one service.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: q1.service: Start request repeated too quickly.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: q1.service: Failed with result 'exit-code'.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: Failed to start question number one service.
sinlap@sinlap-X510UQR:~$ sudo systemctl status q1.service
● q1.service - question number one service
   Loaded: loaded (/etc/systemd/system/q1.service; disabled; vendor preset: enabled)
   Active: failed (Result: exit-code) since Sat 2021-07-17 01:42:44 +0430; 27s ago
     Process: 8215 ExecStart=/home/sinlap/embProject/q1/bin/webcan (code=exited, status=1/FAILURE)
    Main PID: 8215 (code=exited, status=1/FAILURE)

Jul 17 01:42:44 sinlap-X510UQR systemd[1]: q1.service: Service hold-off time over, scheduling restart.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: q1.service: Scheduled restart job, restart counter is at 5.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: Stopped question number one service.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: q1.service: Start request repeated too quickly.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: q1.service: Failed with result 'exit-code'.
Jul 17 01:42:44 sinlap-X510UQR systemd[1]: Failed to start question number one service.
sinlap@sinlap-X510UQR:~$
```

همانطور که میبینیم مشکلی که در این سرویس در جورنال نوشته شده است این می باشد که این برنامه نمیتواند نمایشگری پیدا کند زیرا به صورت سرویس در حال اجرا است و بعد از چندین بار ری استارت شدن، خود سیستم این برنامه را میندود.

همین مشکل دقیقا برای سوال دوم نیز برقرار می باشد:

```
Activities Terminal Sat 01:43
sinlap@sinlap-X510UQR: /etc/systemd/system

Jul 17 01:43:19 sinlap-X510UQR webcan[8253]: QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Jul 17 01:43:19 sinlap-X510UQR webcan[8253]: qt.qpa.screen: QXcbConnection: Could not connect to display
Jul 17 01:43:19 sinlap-X510UQR webcan[8253]: Could not connect to any X display.
Jul 17 01:43:19 sinlap-X510UQR systemd[1]: q2.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:43:19 sinlap-X510UQR systemd[1]: q2.service: Failed with result 'exit-code'.
Jul 17 01:43:19 sinlap-X510UQR systemd[1]: q2.service: Service hold-off time over, scheduling restart.
Jul 17 01:43:19 sinlap-X510UQR systemd[1]: q2.service: Scheduled restart job, restart counter is at 2.
Jul 17 01:43:19 sinlap-X510UQR systemd[1]: Stopped question number two service.
Jul 17 01:43:19 sinlap-X510UQR systemd[1]: Started question number two service.
Jul 17 01:43:19 sinlap-X510UQR webcan[8256]: sending message
Jul 17 01:43:19 sinlap-X510UQR webcan[8256]: QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Jul 17 01:43:19 sinlap-X510UQR webcan[8256]: qt.qpa.screen: QXcbConnection: Could not connect to display
Jul 17 01:43:19 sinlap-X510UQR webcan[8256]: Could not connect to any X display.
Jul 17 01:43:19 sinlap-X510UQR systemd[1]: q2.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:43:19 sinlap-X510UQR systemd[1]: q2.service: Failed with result 'exit-code'.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Service hold-off time over, scheduling restart.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Scheduled restart job, restart counter is at 3.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: Stopped question number two service.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: Started question number two service.
Jul 17 01:43:20 sinlap-X510UQR webcan[8259]: sending message
Jul 17 01:43:20 sinlap-X510UQR webcan[8259]: QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Jul 17 01:43:20 sinlap-X510UQR webcan[8259]: qt.qpa.screen: QXcbConnection: Could not connect to display
Jul 17 01:43:20 sinlap-X510UQR webcan[8259]: Could not connect to any X display.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Failed with result 'exit-code'.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Service hold-off time over, scheduling restart.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Scheduled restart job, restart counter is at 4.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: Stopped question number two service.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: Started question number two service.
Jul 17 01:43:20 sinlap-X510UQR webcan[8262]: sending message
Jul 17 01:43:20 sinlap-X510UQR webcan[8262]: QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
Jul 17 01:43:20 sinlap-X510UQR webcan[8262]: qt.qpa.screen: QXcbConnection: Could not connect to display
Jul 17 01:43:20 sinlap-X510UQR webcan[8262]: Could not connect to any X display.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Failed with result 'exit-code'.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Service hold-off time over, scheduling restart.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Scheduled restart job, restart counter is at 5.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: Stopped question number two service.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Start request repeated too quickly.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Failed with result 'exit-code'.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: Failed to start question number two service.
sinlap@sinlap-X510UQR: /etc/systemd/system$ sudo systemctl status q2.service
● q2.service - question number two service
   Loaded: loaded (/etc/systemd/system/q2.service; disabled; vendor preset: enabled)
   Active: failed (result: exit-code) since Sat 2021-07-17 01:43:20 +0330; 18s ago
     Process: 8262 ExecStart=/home/sinlap/embProject/q2/bin/webcan (code=exited, status=1/FAILURE)
    Main PID: 8262 (code=exited, status=1/FAILURE)

Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Service hold-off time over, scheduling restart.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Scheduled restart job, restart counter is at 5.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: Stopped question number two service.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Start request repeated too quickly.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: q2.service: Failed with result 'exit-code'.
Jul 17 01:43:20 sinlap-X510UQR systemd[1]: Failed to start question number two service.
sinlap@sinlap-X510UQR: /etc/systemd/system$
```

اگر از دستورات نمایشی استفاده نشود، برنامه بدون هیچ مشکلی اجرا میشود.

برای سوال سوم به دلیل اینکه باید برای اینکه برنامه درست اجرا شود به آن Argument بدهیم، یک فایل `argconf` در فولدر `/etc/` ایجاد شده که مقادیر این آرگومنت ها در آن ذخیره شده است.

```
ARG1 = 0.0.0.0
ARG2 = 8080
ARG3 = .
ARG4 = 100
ARG5 = block
```

و در فایل سرویس به آن اشاره میشود و از این متغیر ها استفاده میشود:

```
[Service]
Type=simple
EnvironmentFile=/etc/.argconf
ExecStart=/home/sinlap/embProject/q3/httpServerFast/bin/restServer $ARG1 $ARG2 $ARG3 $ARG4 $ARG5
StandardOutput=journal+console
```

و همانطور که در تصویر زیر میبینیم، برنامه بدون هیچ مشکلی اجرا میشود:

```
Activities Terminal Sat 01:41
sinlap@sinlap-X510UQR: ~/embProject/q3/httpServerFast/bin

Jul 17 01:36:54 sinlap-X510UQR runServer.sh[7143]: /home/sinlap/embProject/q3/httpServerFast/bin/runServer.sh: line 2: ./restServer: No such file or directory
Jul 17 01:36:54 sinlap-X510UQR systemd[1]: q3.service: Main process exited, code=exited, status=127/n/a
Jul 17 01:36:54 sinlap-X510UQR systemd[1]: q3.service: Failed with result 'exit-code'.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: q3.service: Service hold-off time over, scheduling restart.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: q3.service: Scheduled restart job, restart counter is at 4.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: Stopped question number three service.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: Started question number three service.
Jul 17 01:36:55 sinlap-X510UQR runServer.sh[7145]: /home/sinlap/embProject/q3/httpServerFast/bin/runServer.sh: line 2: ./restServer: No such file or directory
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: q3.service: Main process exited, code=exited, status=127/n/a
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: q3.service: Failed with result 'exit-code'.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: q3.service: Service hold-off time over, scheduling restart.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: q3.service: Scheduled restart job, restart counter is at 5.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: Stopped question number three service.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: q3.service: Start request repeated too quickly.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: q3.service: Failed with result 'exit-code'.
Jul 17 01:36:55 sinlap-X510UQR systemd[1]: Failed to start question number three service.
Jul 17 01:38:30 sinlap-X510UQR systemd[1]: Started question number three service.
Jul 17 01:38:50 sinlap-X510UQR restServer[7256]: /webcam
Jul 17 01:38:50 sinlap-X510UQR restServer[7256]: [ WARN:0] global /home/sinlap/opencv/opencv/modules/videoio/src/cap_v4l.cpp (890) open VIDEOIO(V4L2/dev/video0): can't open camera by index
Jul 17 01:38:50 sinlap-X510UQR restServer[7256]: Error: OpenCV(4.5.3-dev) /home/sinlap/opencv/opencv/modules/imgcodecs/src/loadsave.cpp:803: error: (-215:Assertion failed) !_img.empty() in function 'imwri
Jul 17 01:38:50 sinlap-X510UQR systemd[1]: q3.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:38:50 sinlap-X510UQR systemd[1]: q3.service: Service hold-off time over, scheduling restart.
Jul 17 01:38:50 sinlap-X510UQR systemd[1]: q3.service: Scheduled restart job, restart counter is at 1.
Jul 17 01:38:50 sinlap-X510UQR systemd[1]: Stopped question number three service.
Jul 17 01:38:50 sinlap-X510UQR systemd[1]: Started question number three service.
Jul 17 01:38:51 sinlap-X510UQR restServer[7286]: /webcam
Jul 17 01:38:51 sinlap-X510UQR restServer[7286]: [ WARN:0] global /home/sinlap/opencv/opencv/modules/videoio/src/cap_v4l.cpp (890) open VIDEOIO(V4L2/dev/video0): can't open camera by index
Jul 17 01:38:51 sinlap-X510UQR restServer[7286]: Error: OpenCV(4.5.3-dev) /home/sinlap/opencv/opencv/modules/imgcodecs/src/loadsave.cpp:803: error: (-215:Assertion failed) !_img.empty() in function 'imwri
Jul 17 01:38:51 sinlap-X510UQR systemd[1]: q3.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:38:51 sinlap-X510UQR systemd[1]: q3.service: Failed with result 'exit-code'.
Jul 17 01:38:51 sinlap-X510UQR systemd[1]: q3.service: Service hold-off time over, scheduling restart.
Jul 17 01:38:51 sinlap-X510UQR systemd[1]: q3.service: Scheduled restart job, restart counter is at 2.
Jul 17 01:38:51 sinlap-X510UQR systemd[1]: Stopped question number three service.
Jul 17 01:38:51 sinlap-X510UQR systemd[1]: Started question number three service.
Jul 17 01:38:51 sinlap-X510UQR restServer[7323]: /webcam
Jul 17 01:38:51 sinlap-X510UQR restServer[7323]: [ WARN:0] global /home/sinlap/opencv/opencv/modules/videoio/src/cap_v4l.cpp (890) open VIDEOIO(V4L2/dev/video0): can't open camera by index
Jul 17 01:38:51 sinlap-X510UQR restServer[7323]: Error: OpenCV(4.5.3-dev) /home/sinlap/opencv/opencv/modules/imgcodecs/src/loadsave.cpp:803: error: (-215:Assertion failed) !_img.empty() in function 'imwri
Jul 17 01:38:51 sinlap-X510UQR systemd[1]: q3.service: Main process exited, code=exited, status=1/FAILURE
Jul 17 01:38:51 sinlap-X510UQR systemd[1]: q3.service: Failed with result 'exit-code'.
Jul 17 01:38:52 sinlap-X510UQR systemd[1]: q3.service: Service hold-off time over, scheduling restart.
Jul 17 01:38:52 sinlap-X510UQR systemd[1]: q3.service: Scheduled restart job, restart counter is at 3.
Jul 17 01:38:52 sinlap-X510UQR systemd[1]: Stopped question number three service.
Jul 17 01:38:52 sinlap-X510UQR systemd[1]: Started question number three service.
sinlap@sinlap-X510UQR: ~/embProject/q3/httpServerFast/bin$ sudo systemctl status q3.service
● q3.service - question number three service
   Loaded: loaded (/etc/systemd/system/q3.service; disabled; vendor preset: enabled)
   Active: active (running) since Sat 2021-07-17 01:38:52 +0430; 2min 21s ago
 Main PID: 7344 (restServer)
    Tasks: 8 (limit: 4915)
   CGroup: /system.slice/q3.service
           └─7344 /home/sinlap/embProject/q3/httpServerFast/bin/restServer 0.0.0.0 8080 - 100 block

Jul 17 01:38:52 sinlap-X510UQR systemd[1]: Started question number three service.
sinlap@sinlap-X510UQR: ~/embProject/q3/httpServerFast/bin$
```

و سرور در پس زمینه سیستم فعال باقی میماند.