Assignment 1 : FP2 battery charging issue

1. The first step I will take is to reproduce the issue, which will be the case for any issue I take because without finding out the exact scenario of when the issue is occurring it would be difficult to fix it.

2. From the information given so far, the information about “Reboot of phone seems to temporarily fix the issue” & “High system load” gives some clue to the behavior of the issue.

3. During high system load mostly the system resources get exhausted and the various processes running in background would start contending, and lack of memory would cause problems for the entire system from slowing down and causing apps to force quit and system services to crash.
   But during Reboot, mostly the unwanted apps that were running in the background would be closed and the system would be in normal usage allowing for all the necessary system services to make use of the memory resources, which could be the reason why the Reboot seems to temporarily fix the issue.

4. So taking point (3) into account, and to verify if my point (3) is valid, and when the issue is occurring, I would directly go to System settings, and navigate to the Memory section and clear the Cache memory & close all apps and then try charging to see if the issue is resolved.

5. But before jumping to point (4), I must be in a position to reproduce the issue on demand. So to try to reproduce the issue on demand, I would put the phone to test by increasing the system load by switching on the mobile data(not WiFi, since mobile data has pretty important link to battery consumption whereas WiFi has power save features protecting the battery), and possibly find a tool/test suite that would better help me to push the phone to its limits. If nothing’s available, the manual usage of the phone over the days should hog the system.

6. If the solution provided in point (4) seems to work and the issue gets resolved and the phone starts charging properly and Settings also shows Battery Charging then its clear its a memory issue of the system. At this point, I would try to reproduce the issue again and when the issue is occurring again, I would use “logcat” and verify if there is any logs related to Systems/Battery services failing (or) crashing for some reason. If everything looks fine in the logs then the next step would be to enable some debug logs in System Settings and Battery related in OS Framework and System Services, to get some details related to the issue. At this point, I am pretty sure something pertaining to the issue would come up. From there I would go the point of code where its failing and trace back one by one until I find the root cause of the issue.

7. If even after the debugging done in points (4,5,6) the issue is not resolved and unable to find the root cause, then its time to look at the next key information which is “The issue affects charging in regular system boot, not power-off charge mode”. Now at this case, there is very less information to move forward, so its time to start googling for issues related to Android 9(Pie) to see if similar phones with Pie update are facing this issue. On browsing a little it is becoming clear that it was seen across non-fairphone devices with Android 9 Pie update and the point that the issue even comes during regular boot and since the issue has been seen in all the snapshots of Android 9 Pie, it is becoming clear that this could be a day 1 issue of the Android 9 Pie.

8. For resolving the issue, then the next action plan would be to verify the initial Android 9 release and look at the Android Source tree to verify for any changes related to Battery changes in Framework, system services and then based on that identify the root cause.

Assignment 2 : Code Challenge

https://github.com/jeffreymarius/Fairphone-Assignment → Its a public repository