Name: _____

Part 1: Instant OS Updates via Userspace Checkpoint-and-Restart

1. What is the main idea for Instant OS updates in this paper?

> **Solution:** a userspace checkpoint-and-restart mechanism

2. What are the problems pointed out in this paper?

> **Solution:** To complete updates, users must reboot their systems, resulting in unavoidable downtime and further loss of the states of running applications.

3. What is the significance of this paper's solution?

> **Solution:** instant kernel updates spanning across major kernel versions without any kernel modifications.

4. Why those OS update topic is important?

> **Solution:** OS have become complex and more prone to problem, OS update to solve these issues

5. What are the three components of an existing OS update?

> **Solution:** Stop service, Soft reboot, Start service

6. What are the KUPs lifecycle?(3step)

> **Solution:** checkpoint, In-kernel switch, Restart

7. What kind of method they are used for reducing downtime?

> **Solution:** incremental checkpoint and on-demand restore

8. What is the properties on Incremental checkpoint?

> **Solution:** Multiple snapshots

9. What kind of method they are used for inefficient C/R?

> **Solution:** file offset-based address mapping (FOAM), and persistent physical pages (PPP)

10. What kind of socket can be provided KUP?

> **Solution:** TCP, UDP, netlink

11. What is the factor to affect FOAM?

> **Solution:** number of cache to-disk writes

12. Why KUP has failure during restoration?

> **Solution:** System call is removal or interface modification

13. What kind of techniques are employed by KUP?

> **Solution:** . FOAM, New data abstraction for app C/R . Fast in-kernel switching technique . PPP, reuse memory without an explicit dump,

14. What is the meaning of this paper?

> **Solution:** first work that realizes swift kernel updates without modifying any kernel source.

Part 2: Unsafe time handling in Smartphones

15. What was the purpose of this paper?

> **Solution:** First study of new class of software bugs on smartphones called sleep-included time bugs, and detect it

16. What problems solved this paper?

> **Solution:** Tool detects SITBs. It can help to Battery and Time Usage

17. What was the solution?

> **Solution:** They created novel tool KLOCK

18. What are current, main problems of smartphones?

> **Solution:** Power requirement, Power supply, Battery life

19. What is mean of CLOCK_REALTIME function?

> **Solution:** first read the real time clock during the kernel initialization phase and then later updated at every tick

20. What is mean of CLOCK_BOOTTIME function?

> **Solution:** gives the time elapsed since the boot time

21. What is SITB?

> **Solution:** Sleep-included time bugs

22. What are 4 categories of time usages in Android?

> **Solution:** Timed callback, Time settings, Time Arithmetic, Logging

23. What is usage pattern of Timed Callback?

> **Solution:** code wishes to perform a certain task at future time.

24. What is usage pattern of Time Settings?

> **Solution:** the subject code updates the current system time

Part 3: Questions or presenters

25. What implications does the work has on your research

> **Solution:** .

26. What are the limitations of the work

> **Solution:** .

27. If you are to improve the work, how would you enhance the work

> **Solution:** .