

Android runtime

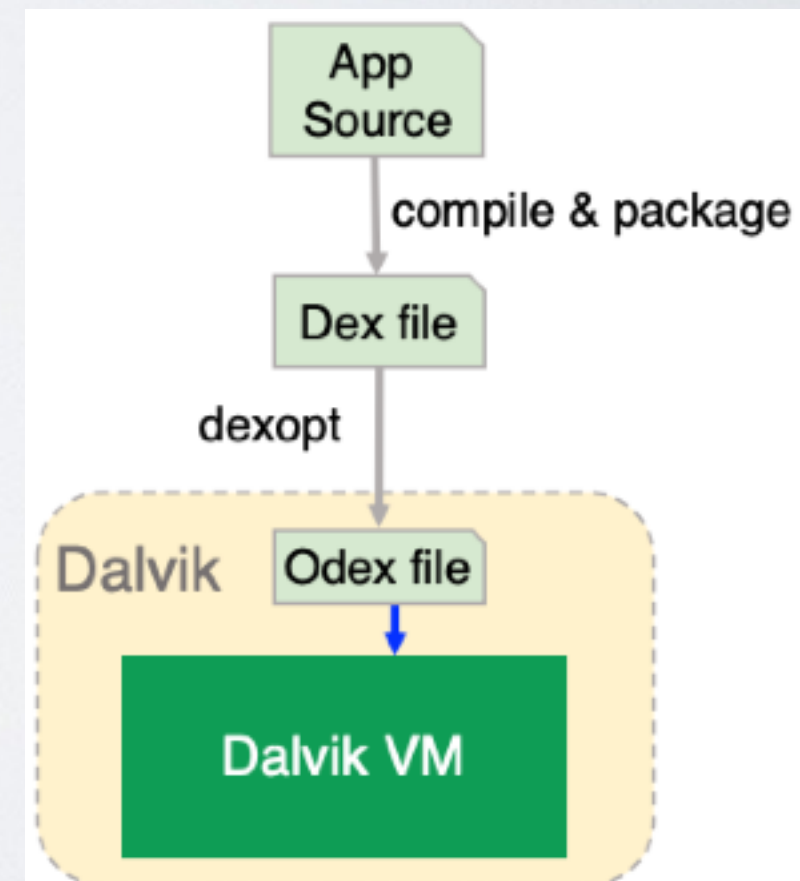
- ➔ Runtime - a component provides functionality necessary for the execution of a program
E.g., scheduling, resource management, stack behavior

Prior to Android 5.0 - Dalvik

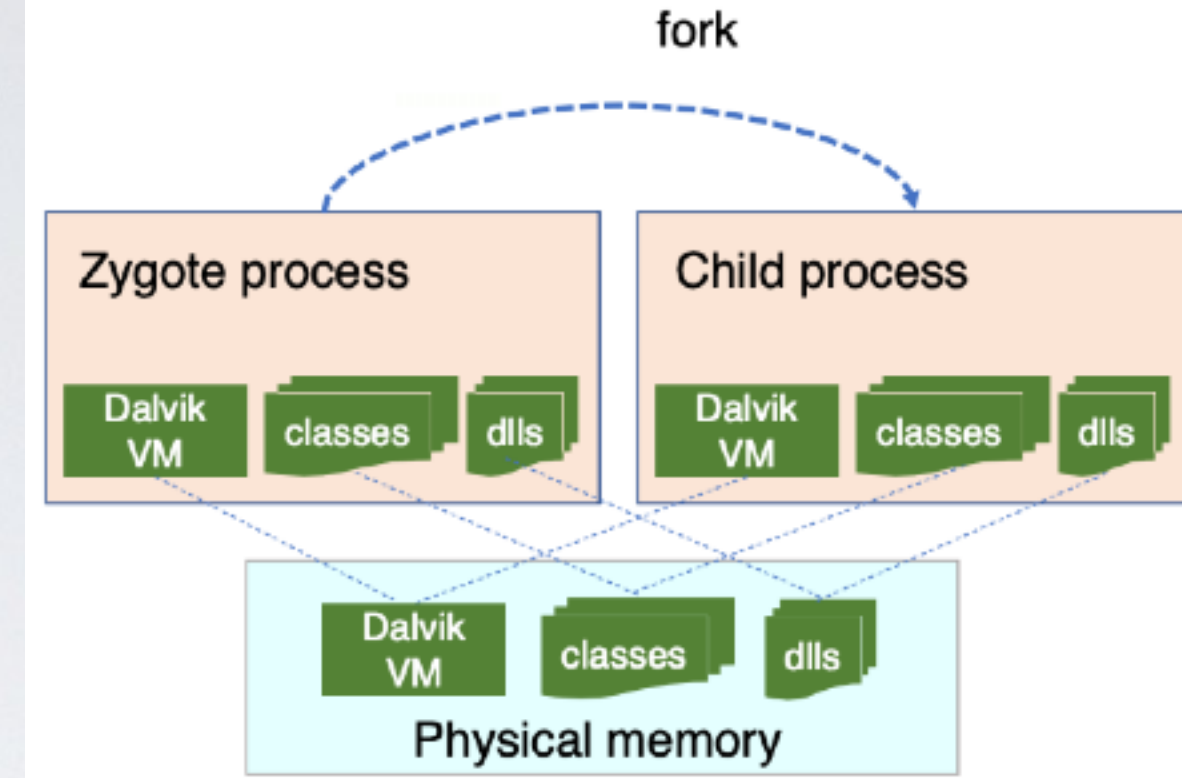
- Each Android app has its own process, runs its own instance of the Dalvik virtual machine (process virtual machine)
- The VM executes the Dalvik executable (.dex) format
- Register-based compared to stack-based of JVM

After Android 5.0 - ART

- Backward compatible for running Dex bytecode
- New feature - Ahead-Of-Time (AOT) compilation
- Improved garbage collection



Android process creation



All Android apps derive from a process called Zygote

- Zygote is started as part of the init process
- Preloads Java classes, resources, starts Dalvik VM
- Registers a Unix domain socket
- Waits for commands on the socket
- Forks off child processes that inherit the initial state of VMs

➔ Uses Copy-on-Write
only when a process writes to a page will a page be allocated