DroidFax Artifacts Usage Instructions

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Overview

This document gives the instruction for *accessing and reproducing* artifacts related to our research-paper submission on DroidFax, a toolkit for systematical, deep dynamic characterization of runtime behaviors of Android apps. The artifacts include source code, executable, project website and documentation for DroidFax, and empirical results dataset.

Prerequisites

To reproduce our artifacts, the following environments and tools are needed to be installed first:

- JRE (used version: 1.8) and R for Linux (used version: 3.3.2)
  - needed for reproducing the dynamic characterization study related artifacts

We verified the artifact reproduction instructions under Ubuntu 15.

Source code and executable

The source code is included in the *droidfax* directory, where the *src* subdirectory contains the Java code used for profiling and characterization as well as for the empirical studies.

The major executable is *droidcat/droidfax.jar*. The subdirectory *droidfax/libs* includes all libraries that are needed for compiling the source code and executing the DroidFax executable in order to reproduce our experimental dataset and final results as reported in the paper.

All these artifacts can be freely browsed and downloaded from our repository on bitbucket (*the link is withheld for now to comply with the double-blind review policy*).

Project website and documentation

The website content is placed in the *projectweb* directory. You may open *index.html* in there to start browsing the project website, where the documentation about this project can be found, including how to use DroidFax (*projectweb/page_usage.html*).

The detailed definition of each of the 122 metrics (features) can be found in the page projectweb/*metricdef.pdf*.

Evaluation dataset

Benchmarks

The dataset used in the paper includes the 125 Android benchmark apps. Due to the large total volume of these apps, we did not upload the APKs themselves here. The benchmark names are provided in *data/benchmarks/used-apps-apk.txt*.

To download the app apks from Google Play, a script has been prepared, to be used as:

droidcat/scripts/downloadapklist.sh the-apk-list-file (e.g., *data/used-apps-apk.txt).*

We used the *Google Play API for Python* (contained in *droidfax/scripts/googleplay-api-master*) for downloading apps from Google Play. It needs google-protobuf for python be installed in order to work: you may install google-protobuf in Ubuntu using "*sudo apt-get install python-protobuf".*

For reproducing the raw characterization results (or for a different set of apps), the usage page *(*projectweb/page_usage.html*)* of the project website provides the main instructions. All the scripts mentioned on the usage page are available in *droidcat/scripts.*

Dynamic Characterization Results

The original results of the dynamic characterization study as presented in the paper can be found in *data/characterization*. It is from these raw results where we summarized the statistics shown in figures and tables of the paper.