

Table 5: Discovered suspicious processing methods (Part I).

No.	Suspicious Processing Method	Suspicious Package Setting	Element Type	Vul#	Ver. [‡]
1	addAllPermissions	List<ParsedPermission> permissions	permission, permission-tree	1, 2	11
2	addAllPermissionsInternal	List<ParsedPermission> permissions	permission, permission-tree	2	12
3	revokeRuntimePermissionsIfGroup-Changed	List<ParsedPermission> permissions	permission, permission-tree	2	11
4	revokeRuntimePermissionsIfGroup-ChangedInternal	List<ParsedPermission> permissions	permission, permission-tree	2	12
5	hasPermission	List<ParsedPermission> permissions	permission, permission-tree	3, 4	11, 12
6	addActivitiesLocked	List<ParsedActivity> activities	activity, activity-alias	bug	11, 12
7	queryIntentActivitiesInternal-Body	List<ParsedActivity> activities	activity, activity-alias	bug	12
8	addReceiversLocked	List<ParsedActivity> receivers	receiver	bug	11, 12
9	addServicesLocked	List<ParsedService> services	service	bug	11, 12
10	removeAllPermissions	List<ParsedPermission> permissions	permission, permission-tree	–	11
11	removeAllPermissionsInternal	List<ParsedPermission> permissions	permission, permission-tree	–	12
12	preparePackageLI	List<ParsedPermission> permissions, List<ParsedPermissionGroup> permissionGroups	{permission, permission-tree} [‡] , permission-group	–	11, 12
13	addAllPermissionGroups	List<ParsedPermissionGroup> permissionGroups	permission-group	–	11
14	addAllPermissionGroupsInternal	List<ParsedPermissionGroup> permissionGroups	permission-group	–	12
15	cleanPackageDataStructuresLILPw	List<ParsedInstrumentation> instrumentations	instrumentation	–	11, 12
16	commitPackageSettings	List<ParsedInstrumentation> instrumentations	instrumentation	–	11, 12
17	pkgInstruments	List<ParsedInstrumentation> instrumentations	instrumentation	–	11, 12
18	addAllComponents	List<ParsedActivity> activities	activity, activity-alias	–	11, 12
19	adjustPackageToBeUnresizeable-AndUnpipable	List<ParsedActivity> activities	activity, activity-alias	–	11, 12
20	collectDomainsInternal	List<ParsedActivity> activities	activity, activity-alias	–	12
21	collectDomainsLegacy	List<ParsedActivity> activities	activity, activity-alias	–	12
22	getAllIntentFilters	List<ParsedActivity> activities	activity, activity-alias	–	11, 12
23	hasDomainURLs	List<ParsedActivity> activities	activity, activity-alias	–	11, 12
24	indexOfIntentFilterEntry	List<ParsedActivity> activities	activity, activity-alias	–	12
25	parseActivityAlias	List<ParsedActivity> activities	activity, activity-alias	–	11, 12
26	primeDomainVerificationsLPw	List<ParsedActivity> activities	activity, activity-alias	–	11
27	setMaxAspectRatio	List<ParsedActivity> activities	activity, activity-alias	–	11, 12
28	startIntentFilterVerifications	List<ParsedActivity> activities	activity, activity-alias	–	11
29	addProvidersLocked	List<ParsedProvider> providers	provider	–	11, 12
30	assertProvidersNotDefinedLocked	List<ParsedProvider> providers	provider	–	11, 12

‡: The version of Android OS. ‡: The element types in the curly braces ({}) correspond to the same package setting.

Table 6: Discovered suspicious processing methods (Part II).

No.	Suspicious Processing Method	Suspicious Package Setting	Element Type	Vul#	Ver. [‡]
31	matchesProviders	List<ParsedProvider> providers	provider	–	11, 12
32	applyDefaultPreferredAppsLPw	List<Pair<String, ParsedIntentInfo>> preferredActivityFilters	activity + preferred	–	11, 12
33	addAllProperties	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers	{activity, activity-alias} [‡] , receiver, service, provider	–	12
34	assertPackageIsValid	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers	{activity, activity-alias}, receiver, service, provider	–	11, 12
35	configurePackageComponents	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers	{activity, activity-alias}, receiver, service, provider	–	11, 12
36	generateWithComponents (PackageInfoWithoutState- Utils.java)	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers	{activity, activity-alias}, receiver, service, provider	–	11, 12
37	generateWithComponents (PackageInfoUtils.java)	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers	{activity, activity-alias}, receiver, service, provider	–	11, 12
38	hasComponentClassName	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers, List<ParsedInstrumentation> instrumentations	{activity, activity-alias}, receiver, service, provider, instrumentation	–	11, 12
39	matchesPackage	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers	{activity, activity-alias} [‡] , receiver, service, provider	–	11, 12
40	removeAllComponentsLocked	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers	{activity, activity-alias}, receiver, service, provider	–	11, 12
41	removeAllProperties	List<ParsedActivity> activities, List<ParsedActivity> receivers, List<ParsedService> services, List<ParsedProvider> providers	{activity, activity-alias}, receiver, service, provider	–	12
42 [§]	generateWithoutComponents- Unchecked	List<ParsedUsesPermission> usesPermissions	uses-permission, uses-permission-sdk-23, uses-permission-sdk-m	–	12
43 [§]	parseUsesPermission	List<ParsedUsesPermission> usesPermissions	uses-permission, uses-permission-sdk-23, uses-permission-sdk-m	–	12
44 [§]	isAttributionInPackage	List<ParsedAttribution> attributions	attribution, feature	–	12
45 [§]	onReceive	List<ParsedAttribution> attributions	attribution, feature	–	11, 12
46 [§]	parseBaseApkTags	List<ParsedAttribution> attributions	attribution, feature	–	11, 12
47 [§]	verifyAndGetBypass	List<ParsedAttribution> attributions	attribution, feature	–	11

‡: The version of Android OS. ‡: The element types in the curly braces ({}) correspond to the same package setting. §: False positive.