Problems with Permission Request Description

1 Irregularities in the use of research authority (project value)

1.1 Currently identified irregularities

Scope: All marketplace apps, whether they are high usage apps or apps with low usage numbers.

1. Irregularity of permission application: App should provide a Supplementary Description View at the time of permission request to inform users of their purpose and reason for using the permission; if there is no relevant description, it is considered non-standard.

The time points at which this Supplemental Description View can exist are

1. before the permission request panel appears.
2. At the same time as the permission request panel.
3. After the initial click to reject the permission request.

The first two points are to inform the user before the application, and the third point is to inform the user after the initial rejection. Record in detail, not only the "yes/no", but also the details of the three nodes, and you can write down some special cases as notes.

2. Permission to use fraud: Some apps have stated their permission usage when they apply for permission, but often when they do, they will put all the usage contents into the same View. For example, when you open A software, it applies for location function and says that it has the function of "discovering people nearby", but after research, we find that the software does not have this function, so we can think that there is fraud in its permission use part.

3. Permission use prompt is incomplete: Some apps put all the functions to be used in the permission application into one View, but some of them do not appear in the current Activity, and there is no guidance in the description to indicate which Activity this function is in, so we can consider its permission usage hints incomplete.

1.2 Statistical research results

1.2.1 Overall Percentage of Permission Application Methods

In the market APP, permission application methods are mainly divided into the following categories.

1. pop-up window with pop-up in Android while APP pops up on the top of the page with detailed reasons for permission application-53%
2. Android pop-up window pops up before the APP pop-up application window + pop-up in the Android pop-up window while pop-up in the upper interface for detailed reasons for permission application-16%
3. App pop-up application window before Android pop-up -12%
4. part of the permission only Android comes with a pop-up window-5%
5. pop-up window when first login-8%
6. Only Android comes with pop-up window-6%

The problem basically does not exist in the high download volume market applications, but most of the low download volume market applications have the

problem.

1.2.2 Permission Use Fraud

No cases of permission fraud have been found yet

1.2.3 Incomplete permission usage prompt

As the current permission application of popular software is more standardized and complete, it will pop up the permission application description pop-up window when the permission application is made, therefore, we have researched the permission application of Top50 popular software and counted the percentage of software with incomplete permission tips.

1. the function of the permission application description panel is given in the current activity or guidelines are given in the panel - 95.74%

2. the function of the permission application description panel is only the current activity and there is no guidance or detailed description of the subsequent possible use of the permission - 4.36%

1.2.4 The percentage of applications in the Top50 software for the eight competencies covered by the subject

1、Calendar - 78%

2、Telephone (making calls) - 18%

3、Phone (get network information and call status) - 78%

4、Location - 90%

5、Contacts - 48%

6、Microphone - 96%

7、Camera - 100%

8、Storage - 100%

1.2.5 English case video

Complete permission request for all types of video recording

2 Static analysis for irregularities in the use of permissions (problem solving)

2.1 Tidy up sensitive function entry points

Subject eight sensitive permissions and corresponding APIs:

```
1. // Android permission book:https://www.cnblogs.com/diyishijian/p/5629545.html
2.
3. <!-- Calendar -->
4. //Permissions:
5. <uses-permission android:name="android.permission.READ_CALENDAR"></uses-permissi
   on>
6. <uses-permission android:name="android.permission.WRITE_CALENDAR"></uses-permiss
   ion>
7.
8. //API:
9. android.provider.CalendarContract
10. android.provider.CalendarContract.Calendars
11. android.provider.CalendarContract.Events
12. android.provider.CalendarContract.Reminders
```

```
android.provider.CalendarContract.Instances
android.provider.CalendarContract.Attendees
android.provider.CalendarContract.EventsColumns

// Link：https://developer.android.google.cn/guide/topics/providers/calendar-provider?hl=zh-cn


<!--Phone-->
//Permissions：
<uses-permission android:name="android.permission.CALL_PHONE"></uses-permission>
<uses-permission android:name="android.permission.READ_PHONE_STATE"></uses-permission>
<uses-permission android:name="android.permission.PROCESS_OUTGOING_CALLS"></uses-permission>
<uses-permission android:name="android.permission.MODIFY_PHONE_STATE"></uses-permission>
<uses-permission android:name="android.permission.CALL_PRIVILEGED"></uses-permission>

//API：
android.content.Intent

//without Link

<!-- Data Storage Permissions -->
//Permissions：
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"></uses-permission>
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"></uses-permission>

//API：
android.provider.MediaStore
android.app.blob.BlobStoreManager // The system will cache large data sets that may be used by multiple applications
android.content.ContentProvider，androidx.core.content.FileProvider // Data Sharing

/*
Link：https://developer.android.google.cn/training/data-storage/shared?hl=zh-cn
     https://developer.android.google.cn/training/secure-file-sharing?hl=zh-cn
*/
```

```
47.
48. <!-- Calling camera privileges -->
49. //Permissions:
50. <uses-permission android:name="android.permission.CAMERA" ></uses-permission>
51.
52. //API:
53. android.view.Surface, androidx.camera.view.PreviewView // Image Preview
54. androidx.camera.core.ImageCapture // Photo shooting
55. androidx.camera.video.VideoCapture // Video and audio recording
56.
57. //Link: https://developer.android.google.cn/training/camerax/architecture?hl=zh-cn
58.
59.
60. <!-- Calling contact permissions -->
61. //API:
62. android.provider.ContactsContract
63. android.provider.ContactsContract.Contacts(Search contact list)
64. android.provider.RawContacts(Use intent to modify contacts)
65. android.provider.Data(Retrieve contact details)
66. //Link:https://developer.android.google.cn/reference/android/provider/ContactsContract
67. // Contact call description URL: https://developer.android.google.cn/guide/topics/providers/contacts-provider?hl=zh-cn
68. <uses-permission android:name ="android.permission.READ_CONTACTS"></uses-permission>
69.
70. <!-- Please add this permission if you need precise positioning -->
71. //API
72. android.provider.Settings.ACTION_LOCATION_SOURCE_SETTINGS
73. android.location.LocationManager
74. // Calling instructions //Link: https://developer.android.google.cn/training/location/permissions?hl=zh-cn
75. // Example of application position:
76. https://blog.csdn.net/nanoage/article/details/128114107?spm=1001.2101.3001.6650.2&utm_medium=distribute.pc_relevant.none-task-blog-2%7Edefault%7EYuanLiJiHua%7EPosition-2-128114107-blog-84207301.pc_relevant_default&depth_1-utm_source=distribute.pc_relevant.none-task-blog-2%7Edefault%7EYuanLiJiHua%7EPosition-2-128114107-blog-84207301.pc_relevant_default&utm_relevant_index=5
77. <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" ></uses-permission>
78. <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"></uses-permission>
```

```
79.
80. <!-- Recording -->
81. //API:
82. android.media.MediaRecorder
83. android.media.AudioRecord
84. // Link to recording permissions:
    https://developer.android.google.cn/reference/android/media
85.
86. <uses-permission android:name="android.permission.RECORD_AUDIO" ></uses-permissi
    on>
87. <!-- Bluetooth -->
88. //API:
89. android.bluetooth.BluetoothDevice
90. android.bluetooth.BluetoothAdapter
91. // Bluetooth permission link:
    https://developer.android.google.cn/reference/android/bluetooth/package-summary
92. <uses-permission android:name="android.permission.BLUETOOTH"></uses-permission>
93. <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"></uses-p
    ermission>
```

2.2 Find permission usage paths for entry points

The API corresponding to the eight permissions was found in the open source software, and the permissions call diagram was obtained through this API (documented in detail in a separate file)

2.3 Building static analysis tools

3 Static analysis tool evaluation

4 Paper Writing