M183
Insecure Direct Object Reference

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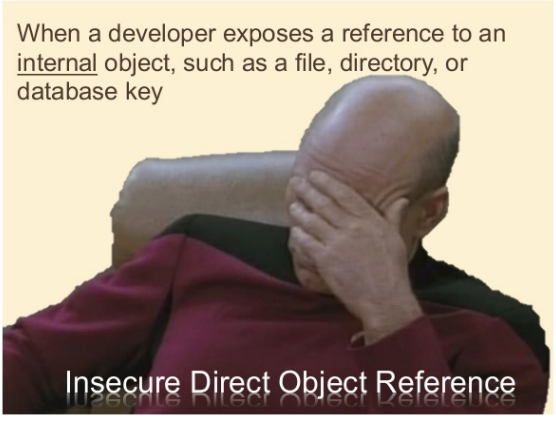
What is *Insecure Direct Object References*



Threats

- **Threat Agents:** Any user who has only partial access to certain type of system data
- **Attacker's Approach:** Attacker, an authorized system user, simply changes a parameter value that directly refers to a system object to another object the user isn't authorized to use
- **Security Weakness:** Applications don't always verify the user is authorized for target objects

Example: Code

Example Website:

...

```
String query = "SELECT * FROM accts WHERE account = ?";
PreparedStatement pstmt = connection.prepareStatement(query , ... );
pstmt.setString( 1, request.getParameter("acct"));
ResultSet results = pstmt.executeQuery();
```

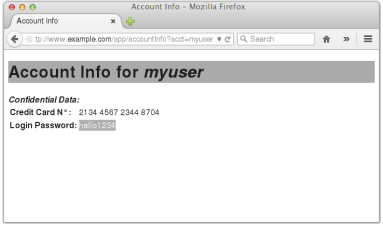
...

Example: Attack

Normal behavior

Example URL: `http://example.com/app/accountInfo?acct=myacct`

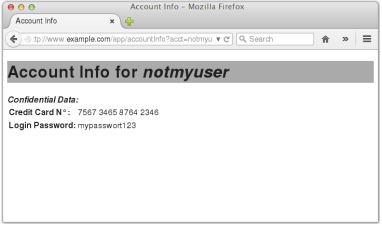
Result:



Attack behavior

Example URL: `http://example.com/app/accountInfo?acct=notmyacct`

Result:



Example: Attack

This URL:

`app/accountInfo?acct=`*`myacct'; DROP accts;`* (5)

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Session

- No *Direct Object Reference* has to be sent to the client, the references can be saved on the session
- In the case references are needed, they can differ from the server side data (i.e. database) an can be remapped on the server

Authorization

- Every access is checked if the user is authorized to do that. Example: A random token can be created for each user which then is checked every time the user accesses the page

Solutions and Problems

	Advantage	**Disadvantage**
Session Based	Only one authorization has to be done, access data for Database etc. is saved on the server and is not accessible by the attacker	A session uses a lot of memory for each user. For applications with a high number of users, a session for each client is not possible i.e. a non-session solution has to be implemented
Authorization	No Session is needed i.e. less memory is used and more users can access the application	Authorization is needed every time the user accesses data which is more complex to implement

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Summary

- Serious Issue
- Easily preventable
- Several fixing solutions

End

Sources:

- OWASP: 2010-A4-Insecure Direct Object References
- Wikipedia: HDIV