

CS 858 – User Authentication

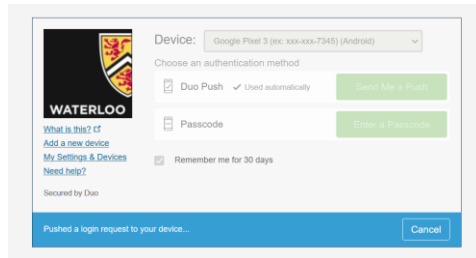
Introduction

Fall 2022

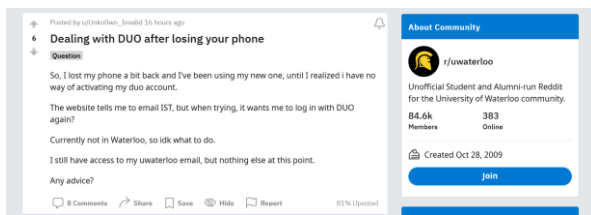
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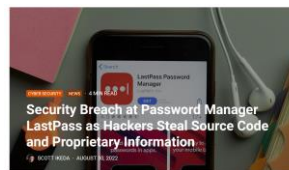


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https://www.reddit.com/uwaterloo/comments/1ta2dealing_with_duo_after_losing_your_phone/

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<https://www.cybermagazine.com/2022/08/24/security-breach-at-password-manager-lastpass-as-hackers-steal-source-code-and-proprietary-information/>

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About the security of passkeys

Passkeys are a replacement for passwords. They are faster to sign in with, easier to use, and much more secure.

Passkeys are a replacement for passwords that are designed to provide websites and apps a passwordless sign-in experience that is both more convenient and more secure. Passkeys are a standard-based technology that, unlike passwords, are resistant to phishing, are always strong, and are designed so that there are no shared secrets. They simplify account registration for apps and websites, are easy to use, and work across all of your Apple devices, and even non-Apple devices within physical proximity.

<https://support.apple.com/en-ca/HT213305>

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Course Topics

- Passwords
- Password managers
- Two-factor authentication
- Fallback authentication
- Risk-based authentication
- Phishing
- FIDO2
- Implicit authentication
- Voice authentication
- Deauthentication
- Shoulder surfing
- Biometrics
- Cryptographic authentication

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Course Organization

- **Seminar course** – we will discuss recent research papers on user authentication
- The papers cover various areas of Computer Science, such as
 - Security
 - Human computer interaction
 - Machine learning
 - Mobile systems
- Publication venues: USENIX Security, SOUPS, ACM CCS, IEEE Oakland, NDSS, Mobicom, Percom,...
- The course assumes a basic knowledge of computers, networks, and distributed systems, but does not assume any prior knowledge of security or cryptography

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Meetings

- Time: Mondays and Wednesdays 11:00am-12:20pm
 - **Please wear a mask!**
- Location: DC 2568
- Drop-in hours:
 - Mondays 1:30-2:00pm in DC 3526
 - **Please wear a mask!**
 - Mondays 2:00-2:30pm in MS Teams
- Or by appointment

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Course Website

- Reachable from my personal website
- Has reading list, policies, links to reviewing systems and Piazza,...

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Lectures

- First week:
 - Introduction
- Second week:
 - The basics and future trends of user authentication
- Third week:
 - Two technical guest lectures by Dr. Stacey Watson and Dr. Jiayi Chen
 - Advice on giving technical presentations
 - Project opportunities
- Following lectures:
 - Two students will each present and lead a discussion on a research paper
- End of term:
 - Project presentations

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Grading

- Paper presentations: 25%
- Paper reviews: 20%
- Class participation: 15%
 - Includes presentation feedback
- Research project: 40%

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Discussion Forum

- On Piazza
 - Watch it for announcements
- Link on course website
- **Sign up today!**

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COVID-19

- If you get sick (with COVID-19 or something else), please let me know and stay at home
- No need to submit paper or presentation reviews
 - No impact on your mark
- If you are the presenter, we will re-schedule your presentation
- If I get sick, we will either switch to remote or re-schedule affected presentations

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Paper Reviews

- Goal: learn what makes a good paper
 - So that you can write your own good papers ☺
- Every student should **read the two papers** discussed in a lecture beforehand
 - See [Keshav's How to Read a Paper](#)
- Every student should **submit a review** for **one of the two** papers by 11:59pm the day before the paper is presented in class
 - Using submission system, see later
- You will see each others' (anonymized) reviews

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Paper Presentations

- Goal: practice your presentation skills
- Every student should present two-three research papers during the term
- Workshop/conference-style presentation
 - Present the paper as if it were your own
- Carefully prepare your slides
 - Will give advice in two weeks, corresponding slides will be online soon
 - You can re-use figures and animations (with attribution)
- At most 25 minutes
- Email me your slides before the lecture

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Paper Discussion

- After each paper presentation, the **presenter leads a discussion** about their paper
- Suggested format:
 - Presenter answers clarification questions from the audience
 - Presenter gives their opinion about the paper, audience responds
 - Presenter has some backup questions to stimulate discussion if necessary
- About 15 minutes

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Presentation Feedback

- Feedback is essential for training speaking skills
- Every student should submit a review for each presentation **by 12:01pm the day after a presentation**
 - Using submission system, see later
- Look at review form in system before preparing your presentation
- Presenter will see (anonymized) reviews
- Please give **constructive feedback** and list both positive and negative points

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HotCRP

- We will use the HotCRP paper reviewing system, which is used by many CS workshops/conferences
- There are three different instantiations of HotCRP, reachable from course website
 - 1) Bidding for papers to present
 - 2) Submitting paper reviews
 - 3) Submitting presentation reviews

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Bidding for Papers

- Papers are listed on the course website and in the bidding system
- I have created an account in the bidding system for all students registered in the course
 - Email me if you have not registered but are going to
- Go to the bidding system and retrieve your password
 - Use your <userid>@uwaterloo.ca email address
- Log in, click on "Review Preferences", and bid for papers; instructions are in the system
- The bidding deadline is **Sept 11, 11:59pm**; students who submit their bids late may not get their preferred papers

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Course Project

- Goal: novel research in the area of user authentication
- Might lead to workshop/conference submission
- Possible topics will be discussed later
- Typically, in groups of two
- Proposal: **Oct 19**
- Presentation: **Nov 30 and Dec 5**
- Write-up: **Dec 16**
- See course website for details

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Next Steps

- Submit your bids for the papers that you would like to present by **Sept 11, 11:59pm**
 - Email me if you have not registered but are going to
- Non-CS students need my permission to register
 - Send me email with your student ID
 - Briefly explain why you would like to take this course
- Sign up for the course on Piazza and look out for announcements

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