

# Muhammad Ehsaan Khaliq

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## Summary

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My interests lie in strengthen the digital realm, aiming to contribute to the ongoing enhancement of digital security practices. Research revolves around Cyber Security and Network Security, particularly in the exploration and exploitation of vulnerabilities. Passionate and dedicated Cyber Security enthusiast with a strong foundation in security principles and practices.

## Education

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<b>Punjab University College of Information Technology</b> Bachelor of Science - Information Technology <ul style="list-style-type: none"><li>CGPA: 3.18/4.0</li></ul>	October, 2020 – June, 2024 Lahore, Punjab, Pakistan
<b>Superior College Burewala</b> HSSC - Pre Engineering <ul style="list-style-type: none"><li>Grade: A+</li></ul>	September, 2018 – July, 2020 Burewala, Punjab, Pakistan

## Professional Experience

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<b>Teaching Assistant (Operating System)</b> PUCIT - University of the Punjab <ul style="list-style-type: none"><li>Covered Topics</li><li>Basic Shell Commands, Software Installation, I/O Redirection, IPC, Signals, Process and Task Scheduling, File System Architecture, File Permissions, Linux Log Files, Booting Process etc.</li><li>Designed exam papers for the lab.</li><li>Assisted students in the lab + other TA responsibilities.</li></ul>	August, 2023 – June, 2024 Lahore, Punjab, Pakistan
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## Skills

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**Programming Languages:** C/C++, Java, Javascript, Python, x86-64 Assembly  
**Tools:** GDB, IDA, Git, Radare Cutter, Tcpdump, Wireshark  
**OS:** GNU/Linux, Windows + WSL  
**Cloud:** EC2, IAM, VPC, S3, AWS Fundamentals

## Final Year Project

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<b>Linux Kernel Exploitation for Container Escape</b> PUCIT - University of the Punjab <ul style="list-style-type: none"><li>Supervisor: Dr. Muhammad Arif Butt</li><li>Formulated the idea and initiated the research project.</li><li>Worked on reversing binaries using IDA Freeware.</li><li>Worked on Stack &amp; heap based memory errors in binaries.</li><li>Linux Kernel Internals &amp; kernel Level Security Mitigations.</li><li>Analyzed and Exploited CVE-2022-0185 (Heap based Buffer Overflow in Linux Kernel).</li></ul>	C, Python, x86-64 Assembly August, 2023 – Present
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## Projects

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### Exploits Scripts

Python, x86-64 Assembly

<https://github.com/meharehsaan/bufferoverflow>

- Basic Stack Overflow & Shellcode Injection
- Buffer Overflow with Mitigations
- Basic scripts that I have written while learning how to solve exploitation challenges.

### Linux Utilities

C

<https://github.com/meharehsaan/linux-utilities>

- ls utility
- more utility
- An attempt to write initial versions of utilities to deep dive in working of them.

### Socket Programming

Python, Java

<https://github.com/meharehsaan/socketprogramming>

- In java sockets Simple java sockets are implemented using streams in java.
- In Python sockets File Transfer Protocol (FTP), Stop and Wait and Go-back-N protocols are implemented in UDP sockets.

### Basic Android App

Java, XML

<https://github.com/meharehsaan/android-dev>

- Its a term project implmenting basic app features including recyclerView, retrofit Api, roomdb, fragments,View Binding, Data Binding, Dialog Box, Notifications.

### Term Projects

Python, Java

<https://github.com/meharehsaan/miniprojects>

- Secure Feedback System (**Github**)
- Servlet State Managemnet in java
- Spam Mail Prediction Using Python
- Pandas Data Manipulation (Internet Movie Database)
- Each project focuses on a specific topic or problem and has its own set of files and resources.

## Extracurriculars & Volunteering

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### Study Coordinator

PUCIT - University of the Punjab

Helping Hands - unofficial PUCIT Society

December, 2023 – Present

- Organized Study Sessions and webinars
- E.g. Problem Solving and FYP guidance etc

### Collaborative Workshop Organizer

PUCIT - University of the Punjab

with GDSC (Google Developer Student Club)

December, 2023 – Present

- Tech workshops E.g. Memory Corruption and Buffer Overflows etc
- <https://github.com/meharehsaan/cybersec-workshop>

## Courses and MOOCs

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- **Computer Systems Security:** [pwn.college](https://pwn.college), [tryhackme](https://tryhackme)
- Networking Fundamentals
- Cisco CCNA 200-301 – The Complete Guide
- AWS Academy Cloud Foundation
- AWS Academy Cloud Security Foundation

## Certificates

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- PWN CTF Participation PUCON '24 (**verify**)
- CTF Participation NASCON '24 (**verify**)
- Coordinator Shield Mini Olympics '24 (**verify**)