



# **2022** Digital Pakistan

# Cybersecurity Hackathon



**Ignite – National Technology Fund** Ministry of Information Technology & Telecommunications Government of Pakistan

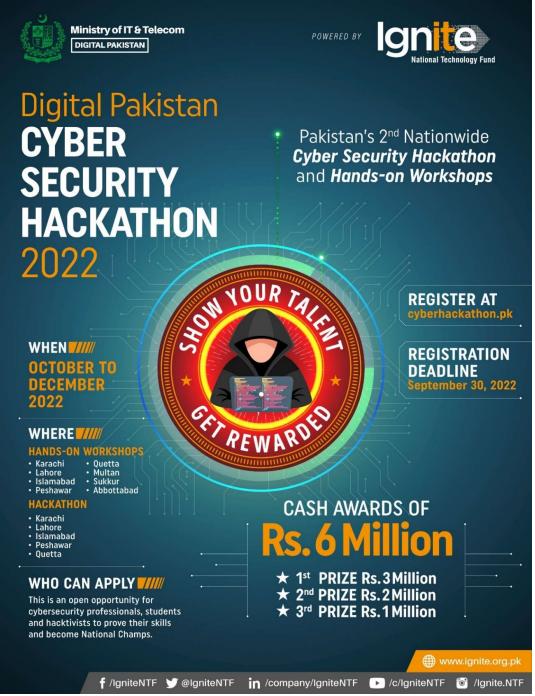
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Cybersecurity is a rapidly growing field with a global shortage of 3-4 million cybersecurity professionals. According to the World Economic Forum (WEF), the rate of growth of jobs in information security is projected at 29% by 2025—that's much faster than the average for all other occupations.

Pakistan can take a big share of this opportunity through training its graduates and professionals in tools and technologies related to cybersecurity. One of the techniques is to train the professionals by providing a competitive environment where professionals can learn, test and compete in the areas of cybersecurity.

The risk of cyberattacks grew with Pakistan's advancement towards digitalization, thus requiring a strategy to effectively counter threats and secure national data.

Dr. Arif Alvi, President of Pakistan



Launched on 16<sup>th</sup> September, 2022

# Contents

BACKGROUND	1
HANDS-ON WORKSHOPS	3
GLIMPSES OF TRAINING SESSIONS	6
DIGITAL PAKISTAN CYBER SECURITY HACKATHON 2022	8
OBJECTIVES	8
BENEFITS	9
FORMAT / SETUP	9
THE IMPACT	10
THE QUALIFIER ROUNDS	11
THE GRAND FINALE	27
THE AWARDS	29
THE PRESS	31

# BACKGROUND

Cybersecurity is a rapidly growing field with a global shortage of 3-4 million cybersecurity professionals. According to the World Economic Forum (WEF), the rate of growth of jobs in information security is projected at 29% by 2025—that's much faster than the average for all other occupations.

Pakistan can take a big share of this opportunity through training its graduates and professionals in tools and technologies related to cybersecurity. One of the techniques is to train the professionals by providing a competitive environment where professionals can learn, test and compete in the areas of cybersecurity.

Digitization is driving growth, creating jobs, increasing human well-being, and force-multiplying defense capability around the world and in Pakistan, whether it is Careem providing jobs and safe transport to women, Telenor mAgri increasing farmer incomes, Siemens controllers modulating electricity generation. Underlying these applications is foundational tech like telecom 3G/4G broadband networks, cloud infrastructure, NADRA NIC identification, and bank switches. Around the world, Governments are moving ahead to provide Government as a Platform — akin to an integration of the kind of data and services that NADRA, SECP, SBP, PRAL, and provincial IT boards and land record departments provide today in an isolated or "stove-piped" way.

Yet all these current and future tech advances are threatened by cyber-attacks, wilful or unintentional, that degrade or even destroy digital infrastructure as well as physical and biological assets that may be associated with it such as robots and sensors or wearables and implantable like Apple watches, etc. Smaller companies, which constitute 90% of all enterprises in Pakistan, are easy targets because they often lack resources and expertise to defend themselves.

With respect to preparedness, Pakistan stood 76<sup>th</sup> on the well-known Global Cybersecurity Index, GCI, of the International Telecommunications Union, ITU, in 2019. That should ring alarm bells because, while low rankings in ease of doing business, competitiveness, human development, transparency, and innovation are also concerned, inadequate cybersecurity means critical telecom, electricity, and banking networks can be compromised, and digital financial inclusion and eGovernment initiatives stifled.

"National Hackathon is such an energetic event which is bringing our young cyber warriors in limelight to produce high octane fuel required for any cyber warfare to eventually become cyber power country." Mehzad Sahar, Group Head Infosec, Engro Corporation



Cybersecurity preparedness can be divided into three strategic thrust areas: Legal, Organizational and Capacity Building. In some elements, headway has been made, while others are both nascent and important, demanding higher prioritization.

Keeping in view the Organizational and Capacity Building areas, Ignite has launched a National level Cybersecurity Competition to give hobbyists, hackers, students a chance to become part of the exciting challenge to earn accolades, win prizes, and build their knowledge base.

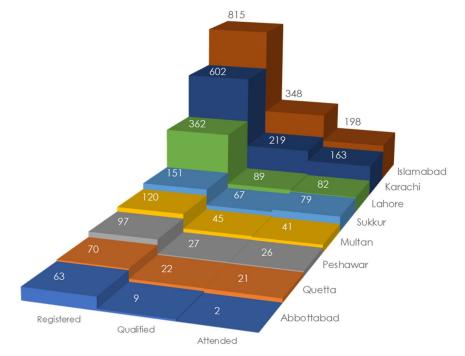
This challenge proves to be a great place to help start a career in Cybersecurity or raise an industry profile and eventually help recruiters and managers to spot budding talent and headhunt existing professionals.

#### HANDS-ON WORKSHOPS

One of the important components of the Hackathon is training of the participants. The objective of this activity is creating awareness and training of applicants for the Hackathon 2022.

In order to improve cybersecurity readiness, protection, and incident response capabilities, a series of hands-on workshops were held in major cities of Pakistan followed by Hackers' Competition in Karachi, Lahore, Peshawar, Quetta and Islamabad.

A total of 2,280 participants were registered for the training workshops including experts from banks, ICT companies, students, and researchers from leading universities. After an online test, 826 participants were selected out of which 612 attended the hands-on training workshops.



Hands-on training sessions were provided to the registered participants, including but not limited to the following contents.

- Cybersecurity Overview
- Introduction to CTF
- Environment Setup
- Introduction to Web Security
- Directory Brute-force / Traversal
- Injection vulnerabilities
- Digital Forensics
- Analysis Tools
- Steganography
- Network Tools
- Cryptography

- Ancient/Modern Ciphers types
- Hashing and Cracking
- Open Source INTelligence

Online training sessions were organized at Quetta and Multan while physical training sessions were organized at Sukkur, Karachi, Lahore and Islamabad.

#### Our prestigious partners for hands-on workshops:



IBA Sukkur University, Sukkur Facilitation in training venue and allied services.



Facilitation in training venue, online streaming and allied services.

NED University of Engineering & Technology, Karachi

Balochistan University of Information Technology, Engineering & Management Sciences, Quetta

Facilitation in training venue, online streaming and allied services.



Institute of Management Sciences (IMSciences), Peshawar

Facilitation in training venue and allied services.



Lahore Garrison University, Lahore

Facilitation in training venue, online streaming and allied services.



MNS University of Engineering & Technology, Multan Facilitation in training venue, online streaming and allied services.



COMSATS University, Islamabad

Facilitation in training venue and allied services.

#### **Endorsement by Participants:**

Training gave us the exposure of introduction and in-depth knowledge of the field. It has given us many future directions in which we can work and polish our skills.

Danish Hafeez, Sukkur

This was one of the great trainings I have attended so far, in terms of the contents and the instructors and the presentations of the contents. All hands-on is very helpful and the training add so values to my knowledge regarding cyber security. The best thing about the training was that the staff was cooperative and the content was updated. Shah Muhammad, Sukkur

Getting knowledge and experience based training, really added to polishing the skills and knowledge in a systematic way. The whole idea of bringing it to Peshawar and creating an ecosystem of cybersecurity by professionals is the most liked thing.

Muhammad Asif Shams, Peshawar

Although I'm not a complete beginner but still the event was constructive and learned a few more tools that could potentially help me enhance my skills I believe the gathering of professionals was something that I liked the most. Jawad Ali, Peshawar



# GLIMPSES OF TRAINING SESSIONS



Training Session at IBA, Sukkur



Training Session at NED University, Karachi



Training Session at MNS University, Multan



Training Session at LG University, Lahore

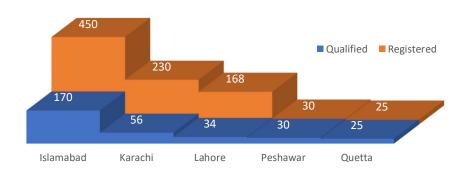


Training Session at BUITEMS, Quetta

#### DIGITAL PAKISTAN CYBER SECURITY HACKATHON 2022

Ignite has launched second National level Cybersecurity Competition to give hobbyists, hackers, students a chance to become part of the exciting challenge to earn accolades, win prizes, and build their knowledge base.

The competition was held in Islamabad, Karachi, Lahore, Peshawar and Quetta. A large number of teams consisting of students and professionals related to cyber security area were registered in the competition.



ONYOUR

Teams' Participation in Cyber Security Hackathon 2022

#### OBJECTIVES

Objectives of cybersecurity competitions or cyber drills as described by ITU (International Telecommunication Union) are as follows:

- Enhancing cybersecurity capacity and capabilities through regional collaborations & cooperation;
- Enhancing the awareness, the capability of countries to participate, to contribute to the development & deployment of a strategy for defeating a cyber threat;
- Strengthening international cooperation between member states to ensure continued collective efforts against cyber threats;
- Enhancing member states' incident response capabilities and communication;
- Assisting member states to develop and implement operational procedures to respond better to various cyber incidents, identify improvements for future planning and CIRT processes and operational procedures.

#### BENEFITS



security researchers and academics can use the attack data and network traffic generated during competitions as case studies to help model, predict and prevent real-world security incidents



improved practical knowledge and confidence in information security skills



pathway for cybersecurity workforce to understand strengths and weaknesses in knowledge, skills and abilities

# FORMAT / SETUP

The Cybersecurity Hackathon is a capture the flag (CTF) contest for cybersecurity experts organized in the form of a game, in which the participants solve computer security problems. The platform was accessible through a URL. Appropriate security controls and protection such as DDoS protection, WAF, etc. were implemented. Penetration testing of the platform had been performed as well, to check for any security weaknesses / vulnerabilities. Various CTF challenges for regional rounds were designed and deployed in the platform.

The participants must either capture (attack/bring down) or defend computer systems in a CTF environment. The competition has attracted a diverse range of participants, including students, enthusiasts, and professionals.

There were 5 qualifier rounds in Quetta, Peshawar, Islamabad, Lahore, and Karachi. It was a timed competition in which the fastest responses win the round. Each problem solved earned them points to move closer to winning the round and moving forward towards grand finale.

The event comprised of talks, panel discussions, quiz competition, display of products and services offered by the industry. Talks and presentations were given by prominent experts from industry and academia.

### THE IMPACT



Enhanced awareness amongst cybersecurity workforce to understand strengths and weaknesses in knowledge, skills and abilities



- ▶ 903 teams registered for the hackathon from all over the country
- 315 teams were shortlisted for qualifying rounds



▶ 18 Teams from different universities participated in Quiz Competitions



- 800+ talented resources identified
- 80% impact on jobs' creation and promotion



- 600+ participants from Abbottabad, Quetta, Peshawar, Multan, Sukkur, Lahore, Karachi, Islamabad attended hands-on training
- ▶ 10+ Talks/Presentations and Workshops by Industry Experts
- 1000+ people joined for workshops, talks and panel discussions

# THE QUALIFIER ROUNDS





The qualifier round was held at National Incubation Center, Quetta on 19<sup>th</sup> November 2022.

A total of 25 teams participated from various parts of Balochistan province. Participants were given eight CTF challenges to complete in eight hours. Based on the fastest responses, three teams were qualified for the final round.

#### **Top Teams:**





National Incubation Center, Quetta Hosted the Competition



Competition in Progress

Competition in Progress



Competition in Progress

Competition in Progress



Winner: Team Hundred Thieves | First Runner-up: Team 404 Found | Second Runner-up: Team Ex 2





Lahore Garrison University hosted the qualifier round for Lahore on  $26^{th}$  November, 2022.

From the Punjab province, a total of 168 teams were registered in the event while 34 teams qualified for the competition. Participants were given fourteen CTF challenges to complete in eight hours. Based on the fastest responses, six teams were qualified for the final round.

#### Top Teams:





Registration in Progress



Competition in Progress



Panel Discussion Moderated by Mahir Mohsin, CEO Trillium

Panelists: Muhammad Ahmad, Head Information Security FINCA | Prof. Dr. Ghalib Asadullah, KICS, UET Lahore | Ali Manzer CISO Bank of Punjab



Address by Maj. Gen Shahzad Sikandar HI (M) Retd. VC Lahore Garrison University



Address by Asim Shahryar Husain CEO Ignite



Winner: Team Sudoers



First Runners up: Team Local Host



Second Runners up: Team Lexicans



Certificates of Appreciation





The qualifier round was held at Pearl Continental Hotel, Karachi on  $1^{st}$  December, 2022.

From the Sindh province, a total of 230 teams were registered in the event while 56 teams qualified for the competition. Participants were given sixteen CTF challenges to complete in eight hours. Based on the fastest responses, six teams were qualified for the final round.

#### **Top Teams:**





Registration in Progress



Competition in Progress





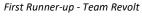
Competition in Progress



Winner - Team Control



Second Runner-up: Team asd



The competition was built around realworld scenarios aimed at attracting talented individuals. Many of the winners were offered several job opportunities on the spot.

Rafay Baloch, A Pakistani Ethical Hacker





Quiz Competition Winners First: PNEC Nust Alpha | Second: Code Slayers | Third: PNEC Nust B



Panel Discussion on Indigenous Capability & Emerging Technologies



Panel Discussion on Cyber Threats and Protection Approaches



Introduction by Dr. Zain ul Abdin GM SEED Ignite



Address by Mr. Mohsin Mushtaq , Additional Secretary (Incharge) IT & Telecommunication



CEO Ignite

Keynote Address on Smart InfoSec Strategy by Mr. Mehzad Sahar, Group Head InfoSec Engro Corp





Mr. Mohsin Mushtaq , Additional Secretary (Incharge) IT & Telecommunication interacting with the Participants





Institute of Management Sciences (IMSciences) hosted the qualifier round for Peshawar on 7<sup>th</sup> December, 2022.

From the Khyber Pakhtunwa province, a total of 30 teams were registered in the event for the competition. Participants were given eight CTF challenges to complete in eight hours. Based on the fastest responses, three teams were qualified for the final round.

#### **Top Teams:**





Registration in Progress



Address by Prof. Dr. Usman Ghani Director IMSciences

Address by Dr. Zain ul Abdin, GM SEED Ignite



Peshawar Qualifier Winners First: Thunderstrom | Second: Hack\_PAK | Third: warrior





The qualifier rounds were held at COMSATS University, Islamabad on  $10^{\rm th}$  and  $11^{\rm th}$  December, 2022.

A total of 450 teams were registered in the event while 170 teams qualified for the competition. Due to large number of participating teams, the competition was spanned over two days. Participants were given sixteen CTF challenges to complete in eight hours. Based on the fastest responses, fifteen teams were qualified for the final round.

#### **Top Teams:**





Registration in Progress



Participants competing at Day-1 of Islamabad Qualifier



Address by Dr. Zain ul Abdin GM SEED Ignite



Address by Mr. Idrees Awan Project Manager Ignite



Closing Ceremony of Day-1 of Islamabad Qualifier



Winner: Team Maverick



Second Runners Up: Team Griffyn



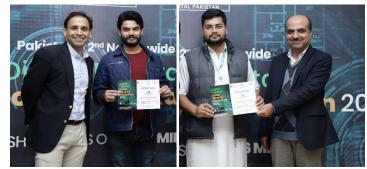
Participants competing at Day-2 of Islamabad Qualifier



Glimpses of Day-2 of Islamabad Qualifier



Winner: Team Vlack Bigo



First Runners Up: Team Vap0r



Second Runners Up: Team Security Breakers

#### THE GRAND FINALE



After a marathon of qualifier rounds, the final round was held on 17<sup>th</sup> December 2022 at COMSATS University, Islamabad. The top 33 teams from Quetta, Peshawar, Karachi, Lahore and Islamabad were put into final round of the competition. The participating teams solved computer security problems by capturing (attack/bring down) or defending computer systems and scoring most points for winning the challenge.

The final round was spanned over 12 hours. In the first half of the round, an Attack & Defense style competition was held among the teams while in the second half, teams had to solve jeopardy style CTF challenges. Based on the fastest responses, three teams were selected as winners of the Digital Pakistan Cybersecurity Hackathon 2022.

#### The Winners:



17 December 2022

We had a great experience and enjoyed the challenges that were presented during the event. We would like to commend you on the excellent design of the CTF challenges. They were well-crafted and provided a great learning experience for our team. The challenges were engaging and provided a realistic test of our skills and knowledge in the field of cyber security. Thank you again for organizing such a fantastic event and providing us with an opportunity to participate. Team Lexicans

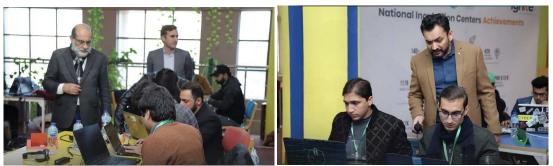
It was a good competition, really enjoyed it a lot, learned many new things and met many new people. Obviously, we got to apply our skills to solve the challenges where we were able to self-assess where we lack, which of our skills are good and which things to learn for the future. Team SafeCottage

Cyber Security Hackathon 2022 was very well organized with excellent facilities and support provided to all participants despite having a huge number of participants. Through our participation in the hackathon, we gained valuable experience and knowledge in different categories of cyber security, enhanced our understanding of reverse engineering, in particular. This event provided an excellent opportunity for participants to learn and develop new skills and helped to build a more robust and secure digital landscape for everyone.

Team Sudoers







Competition in Progress

# THE AWARDS

Keeping in view the global shortage of cybersecurity professionals Ignite has continued to its 2<sup>nd</sup> Digital Pakistan National Cybersecurity Competition in 2022 to give hobbyists, hackers, students a chance to become part of the exciting challenge to earn accolades, win prizes, and build their knowledge base.

The overwhelming response can be gauged from the fact that over 900 teams had registered to the Hackathon 2022 out of which over 300 teams were shortlisted through online filtering to participate in the regional qualifier rounds of Quetta, Peshawar, Karachi, Lahore and Islamabad.

Top 33 teams from these 5 regional qualifiers competed in the grand finale that was held on 17<sup>th</sup> December 2022 at COMSATS University, Islamabad. These competing teams solved computer security problems by capturing (attack/bring down) or defending computer systems and scoring most points for winning the challenge.

After the 12-hour long marathon grand finale, "Sudoers" emerged as winner clinching Rs. 3 million, "Lexicans" were declared 1<sup>st</sup> runner-up bagging Rs. 2 million and "SafeCottage" became 2<sup>nd</sup> runner-up receiving a cash award of Rs. 1 million.





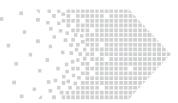
Winners with Ignite Team

Speaking on the occasion Mr. Asim Shahryar Husain, CEO Ignite said that cybersecurity is a rapidly growing field with a global shortage of 3-4 million cybersecurity professionals. According to the World Economic Forum (WEF), the rate of growth of jobs in information security is projected at 29% by 2025—that's much faster than the average for all other occupations.

He further dilated that Pakistan can take a big share of this opportunity through training its graduates and professionals in tools and technologies related to cybersecurity. One of the techniques is to train the professionals by providing a competitive environment where professionals can learn, test and compete in the areas of cybersecurity. Mr. Asim Shahryar Husain, CEO Ignite congratulated the winners and appreciated them for their acumen.

### THE PRESS





December 3, 2022

# Ignite conducts Karachi Qualifier Round of Digital Pakistan Cybersecurity Hackathon 2022 Chitral Times Report

KARACHI: Continuing its journey of Digital Pakistan Cybersecurity Hackathon, Ignite National Technology Fund, a public sector company with Ministry of IT & Telecom, conducted its qualifier round of Digital Pakistan Cybersecurity Hackathon 2022 in Karachi after conducting qualifier rounds at Quetta and Lahore. The Cybersecurity Hackathon aims to improve cybersecurity readiness, protection, and incident response capabilities of the country by conducting cyber drills at national level and to identify cybersecurity talent for public and private sector organizations. Dr. Zain ul Abdin, General Manager Ignite stated that Ignite is excited about organizing Pakistan's 2nd nationwide cybersecurity hackathon in five cities this year.

The purpose of the Cyber Security Hackathon 2022 is to train and prepare cyber security experts in Pakistan. Speaking on the occasion, Mr. Asim Shahryar Husain, CEO Ignite said, "The goal of the cybersecurity hackathon is to create awareness about the rising importance of cybersecurity for Pakistan and also to identify and motivate cybersecurity talent which can be hired by public and private sector organizations to secure their networks from cyberattacks.

There is a shortage of 3-4 million cybersecurity professionals globally. So, this is a good opportunity for Pakistan to build capacity of its IT graduates in cybersecurity so that they can boost our IT exports in future." Chief guest, Mr. Mohsin Mushtaq, Additional Secretary (Incharge) IT & Telecommunication said, "Digital Pakistan Cybersecurity Hackathon is a step towards harnessing the national talent to form a national cybersecurity response team. Ignite will continue to hold such competitions every year to identify new talent. I would like to congratulate CEO Ignite and his team for holding such a marathon competition across Pakistan to motivate cybersecurity students and professionals all over the country". Top cybersecurity experts were invited for keynote talks during the occasion including Mr. Moataz Salah, CEO Cyber Talents, Egypt and Mr. Mehzad Sahar, Group Head InfoSec Engro Corp who delivered keynote address on Smart InfoSec Strategy.

Panelists from industry, academia and MoITT officials participated in two panel discussions on "Cyber Threats and Protection Approaches" and "Indigenous

Capability & Emerging Technologies" during the event. The event also included a cybersecurity quiz competition in which 17 teams participated from different universities. The top three teams of the completion were awarded certificates. 41 teams competed from Karachi in the Digital Pakistan Cybersecurity Hackathon 2022. Top three teams after the eight-hour hackathon were "Team Control" (Winner), "Revolt" (1<sup>st</sup> Runner-up) and "ASD" (2<sup>nd</sup> Runner-up). These top teams will now compete in the final round of the hackathon in Islamabad later this month.



Ignite Conducts Karachi Qualifier Round of Digital Pakistan Cybersecurity Hackathon 2022



Ignite National Technology Fund, a public sector company with the Ministry of IT & Telecom, conducted the qualifier round of Digital Pakistan Cybersecurity Hackathon 2022 in Karachi on 1<sup>st</sup> December 2022 after conducting qualifier rounds at Quetta and Lahore.

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"There is a shortage of 3-4 million cybersecurity professionals globally. So, this is a good opportunity for Pakistan to build capacity of its IT graduates in cybersecurity so that they can boost our IT exports in future," he added.

Chief guest, Mr. Mohsin Mushtaq, Additional Secretary (Incharge) IT & Telecommunication, said, "Digital Pakistan Cybersecurity Hackathon is a step towards harnessing the national talent to form a national cybersecurity response team."

"Ignite will continue to hold such competitions every year to identify new talent. I would like to congratulate CEO Ignite and his team for holding such a marathon competition across Pakistan to motivate cybersecurity students and professionals all over the country," he added.

Top cybersecurity experts were invited for keynote talks during the occasion including Moataz Salah, CEO Cyber Talents, Egypt, and Mehzad Sahar, Group Head InfoSec Engro Corp, who delivered the keynote address on Smart InfoSec Strategy.

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41 teams competed from Karachi in the Digital Pakistan Cybersecurity Hackathon 2022.

The top three teams shortlisted after the eight-hour hackathon were: "Team Control" (Winner); "Revolt" (1<sup>st</sup> Runner-up); and "ASD" (2<sup>nd</sup> Runner-up).

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