



Ministry of IT & Telecom

DIGITAL PAKISTAN

Digital Pakistan Cybersecurity Hackathon 2021



Ignite
NATIONAL TECHNOLOGY FUND

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Ministry of IT & Telecom

DIGITAL PAKISTAN

POWERED BY
Ignite
NATIONAL TECHNOLOGY FUND



Mobile Device and Application Exploitation

Operating Systems
Exploitation



System Application
Exploitation (including Web)



Network Attacks
and Exploitation



Speed Programming
(C++, C# and Python)



DIGITAL PAKISTAN CYBERSECURITY HACKATHON 2021

Pakistan's 1st Nationwide Cybersecurity Hackathon

This is a great opportunity for cybersecurity professionals/students to prove their mettle and to become National Champs!

Register at:

cyberhackathon.pk/register

For further updates, please visit our website.

CASH AWARDS OF Rs. 6 Million



✉ info@cyberhackathon.pk

cyberhackathon.pk

Launching of Cybersecurity Hackathon



Introduction

“
*There are 2,244
cyberattacks per day,
and 164 cybercrimes
reported every day.*”

University of Maryland &
ACSC

Despite the growing space and sophistication of cyber threats, there are not enough people equipped with the appropriate knowledge, skills and abilities to protect the information technology for strategic advantage. The global risk report 2021 (www.weforum.org/reports/the-global-risks-report-2021), World Economic Forum (WEF) calls cybersecurity one of the key threats of the next decade.

With the explosion of internet services, the world is more vulnerable to cyber threats and almost all major sectors have been attacked by malwares and trojans. Pakistan has an emerging modern digital infrastructure and with the emergence of 3G/4G, Pakistan's internet usage growth rate is 2nd highest in the SAARC countries.

Pakistan's Cyber space is at risk and it is in the list of countries experiencing most cyber-attacks. Currently, Pakistan has no real national platform to defend public and private organizations of the country from cyber-attacks. In order to overcome the threat to organizations and the emerging digital economy, it is high time to develop a strong cybersecurity capability.

Cybersecurity is a rapidly growing field with global shortage of 3-4 million cybersecurity professionals (cybersecurityventures.com/jobs). 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 to train the professionals by providing competitive environment where professionals can learn, test and complete in the areas of Cybersecurity.

In this regard, Ignite hold Pakistan's first Cybersecurity Hackathon 2021 which will enhance cybersecurity readiness, protection, and incident response capabilities of the country by conducting cyber drills in Capture The Flag (CTF) style in multiple cities.



The Challenge

“ Hack for a Purpose ”

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. They 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. The winning team or individual scored the most points at the 1st round qualified for the final round of the competition.



- ▶ **1176** teams registered



- ▶ **15+** Talks/Presentations and Workshops by Industry Experts



- ▶ **23** Teams from different universities participated in Quiz Competitions



- ▶ **800+** people joined for workshops, talks and panel discussions

There were 3 preliminary rounds in Islamabad, Lahore, and Karachi. Teams were competed in five categories including application exploitation, mobile device exploitation, network attacks and exploitation, operating systems exploitation, and speed programming.

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 hands-on workshops, 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.

1176 teams registered for the hackathon from all over the country out of which 475 teams were shortlisted for qualifier rounds in Karachi, Lahore, and Islamabad followed by the final competition in Islamabad. Cash awards of Rs. 6 million were given to the top 3 teams in 5 categories of the hackathon.

1ST PRIZE

PKR 600,000

2ND PRIZE

PKR 400,000

3RD PRIZE

PKR 200,000



Objectives

Ignite has achieved following Objectives:

- ▶ Ignite has taken the first step in building the cybersecurity community, budding talent based on tested skills
- ▶ Created Cybersecurity awareness and highlighted the importance of it through social media, engaged 23 universities and hacktivists
- ▶ Enhancing the awareness and the capability of countries to participate and to contribute to the development and deployment of a strategy for defeating a cyber threat.
- ▶ 3000 + individuals have registered to the Challenge
- ▶ Established Discord channel which has 500+ members
- ▶ Enhancing cybersecurity capacity and capabilities through regional collaborations and cooperation;

Achievements

- ▶ Provided opportunity to work cooperatively with others to obtain common goals in a game situation
- ▶ Promoted the literacy and competencies in cybersecurity area
- ▶ Provided opportunity to identify talented pool of resources
- ▶ Helped in preparing teams to compete in International Competitions

Highlights of the event:

- ▶ 1176 teams registered for the hackathon including university students, freelancers, professionals, and hackers from all over the country
- ▶ Qualifier rounds held in Karachi, Lahore, and Islamabad
- ▶ Talks / Workshops on latest trends in Cybersecurity by academicians and industry experts; attended by students, researchers and professionals
- ▶ Final competition held in Islamabad



Our Partners

This initiative would not have been possible without the support of key partners including Pakistan Telecommunication Authority, University of Engineering & Technology Lahore, COMSATS, Trillium, Trend Micro, Rapid Compute and many others.

“
Collaboration and partnerships have been one of the key pillars. This whole marathon proves this point that if we do the partnerships right, we can achieve great successes.”

Syed Junaid Imam,
 Member IT





Opening Ceremony

“
*Cybersecurity
Hackathon brings
experts together at
national level to
prevent and respond
to cyber-attacks.*”

The opening ceremony was held on 1st November 2021 at Karachi.

The Federal Minister for IT & Telecom, Syed Amin ul Haque inaugurated the event and stated that the purpose of organizing “Digital Pakistan Cyber Security Hackathon 2021” is to train cyber security experts in Pakistan under the country’s first cybersecurity policy issued by the Ministry of IT, and bring experts together at national level to prevent and respond to cyber-attacks.

In his welcome address, CEO Ignite Asim Shahryar Husain, stated, “Ignite is excited about hosting Pakistan’s first nationwide cybersecurity hackathon in collaboration with IT Ministry, PTA, SBP, NEPRA, and other partners. Our goal is to identify and reward cybersecurity talent in Pakistan.”

Member IT, Syed Junaid Imam, during his keynote address stated that securing the cyber space is more of a collaborative effort and the roots of cyber security for the government comes from the digital Pakistan’s vision. The vision of digital Pakistan is to empower the citizens and bring prosperity in the country, empowerment through access to education, access to information, access to equal opportunities. These digital platforms enable the citizens to engage with the government and the stakeholders.

A presentation on Cybersecurity Skills was also given by CERT Malaysia.



Federal Minister for IT & Telecom, Syed Amin ul Haque inaugurated the event in Karachi



Qualifier Round at Karachi

The event comprised of hands-on workshops, talks, panel discussions, quiz competition display of products and services offered by the industry. Talks and presentations were given by prominent experts on the following topics.



▶ **316** teams registered



▶ **145** teams qualified for first round

- ▶ Ethics in Cyber Security by Mr. Mehzaad Sahar, CISO Engro
- ▶ Talk by Jibrán Ilyas (Managing Director, Mandiant FireEye)
- ▶ Malware Analysis (Including Ransomware) by Asif Riaz, Consultant, Digital Arrays
- ▶ A practical Approach on Zero Trust Architecture by Ahmed Saeed, Senior Joint Director, SBP
- ▶ Cyber Security as Career by Syed Abdul Qadir, PricewaterhouseCoopers

A panel discussion on “National Preparedness of Cyber Security Challenges” was held. Panelists included Asad Afreen - Director IT, NED, Athar Ahmed - Habib Metro Bank, Asif Riaz - Founder, Digital Arrays, Farooq Naiyer - CISO UBL, Rafi us Shan, MoITT.

Hands-on Workshops on the following topics were also part of the 2-day event.

- ▶ Practical Hacking using OSINT Framework by Mohammad Munaf
- ▶ Introduction to Android Application by Ibaad Shah
- ▶ A day as an Analyst by Sana Zahra & Ayesha
- ▶ Responding to Cyber Threat in Hybrid Cloud Era

Quiz competitions were popular among students. 17 teams representing 8 Universities across Karachi were participated in the quiz.

CATEGORIES:



**System Application
Exploitation**

▶ **23** teams



**Mobile Device &
Apps Exploitation**

▶ **22** teams



**Operating Systems
Exploitation**

▶ **28** teams



**Network Attacks
& Exploitation**

▶ **46** teams



**Speed
Programming**

▶ **26** teams



Panel Discussion in Karachi


WINNERS:

 **System Application Exploitation**

- 1) We need control
- 2) \$udoers
- 3) Red Crew

 **Mobile Device & Apps Exploitation**

- 1) RA-Torandos
- 2) Red Crew
- 3) Team DOS

 **Operating Systems Exploitation**

- 1) We need control
- 2) ASD
- 3) \$udoers

 **Network Attacks & Exploitation**

- 1) HS
- 2) l33tz
- 3) uqabi

 **Speed Programming**

- 1) Spartans
- 2) Geeky Fox
- 3) Sushi

A total of 316 teams were registered out of which 145 teams qualified for the round. Competitions for 5 categories were held among qualifying teams.

Capture the Flag (CTF) style contest was held among hundreds of hackers to exhibit their skills. Their skills were pushed to the limits by advanced real life cyber-attack scenarios prepared under the guidance of cybersecurity experts. Every stage with different levels of difficulty and complexity pushed the hackers to the limits while raising the excitement of the contest to the highest level.

A number of persons including experts from banks, ICT companies, students, and researchers from leading universities attended these events.

At the end of the qualifier round, certificates were distributed among the winners and runner-ups in five categories by the CEO Ignite to motivate the young participants. The winning teams were qualified for final round in Islamabad.



Teams' registration for Karachi



Qualifier Round at Lahore

The event was held on November 6-7, 2021 at University of Engineering and Technology Lahore.



▶ **413** teams registered



▶ **136** teams qualified for first round

CATEGORIES:



**System Application
Exploitation**

▶ **18** teams



**Mobile Device &
Apps Exploitation**

▶ **24** teams



**Operating Systems
Exploitation**

▶ **21** teams



**Network Attacks
& Exploitation**

▶ **27** teams



**Speed
Programming**

▶ **46** teams

CEO Ignite, Mr. Asim Shahryar Hussain, in his welcome address, briefed about the competition held in Karachi. He highlighted the purpose of the event and the importance of cyber security in today's world. He further added that there is a shortage of cybersecurity professionals globally. Hence, this is a great opportunity for Pakistan to train its IT work force in cyber security.

Keynote address was given by Dr. Waqar Mahmood, Director Al-Khwarizmi Institute of Computer Science Lahore. He stated that many countries are using this opportunity for education, social development and economic growth.

Syed Junaid Imam, Member IT stated that Pakistan introduced its first cyber security policy in July 2021 whose purpose is to secure the overall ecosystem of the country. He also stated the purpose of this hackathon is to create awareness in general public, on enterprise level and govt level as well. He further added that all the stakeholders must go together in order to secure the Cyberspace.

A talk By Ahrar Naqvi, CEO Ebryx, on Zero Trust Architecture was delivered on first day of the event. He talked about various threats and different levels of security. He also apprised the participants about history of Zero Trust Architecture and products developed in this regard.

A number of persons including experts from industry, students, and researchers from leading universities attended the event.



Talks in progress at Lahore

WINNERS:

 **System Application Exploitation**

- 1) Lexicans
- 2) Beluga
- 3) SafeCottage


A total of 413 teams were registered out of which 136 teams qualified for the round. Competitions for 5 categories were held among qualifying teams.

Capture the Flag (CTF) contest was held amongst the teams. Their skills were pushed to the limits by advanced real life cyber-attack scenarios prepared under the guidance of cybersecurity experts.

 **Mobile Device & Apps Exploitation**

- 1) OxNinjas
- 2) Lexicans
- 3) SafeCottage

At the end of the qualifier round, certificates were distributed amongst the winners and runners-up in five categories to motivate the young participants. The winning teams were qualified for final round to be held in Islamabad.

 **Operating Systems Exploitation**

- 1) DaemonsPK
- 2) Beluga
- 3) Local Host

 **Network Attacks & Exploitation**

- 1) Local Host
- 2) Team SSH
- 3) OxNinjas

 **Speed Programming**

- 1) CheckMate
- 2) Brogrammer
- 3) Team 7



Competition in progress at Lahore



Qualifier Round at Islamabad

A two-day event was held on November 13-14, 2021 at COMSATS University Islamabad.



▶ **447** teams registered



▶ **297** teams qualified for first round

CATEGORIES:



**System Application
Exploitation**

▶ **50** teams



**Mobile Device &
Apps Exploitation**

▶ **61** teams



**Operating Systems
Exploitation**

▶ **47** teams



**Network Attacks
& Exploitation**

▶ **89** teams



**Speed
Programming**

▶ **50** teams

CEO Ignite, Mr. Asim Shahryar Hussain, briefed about the activities and initiatives undertaken by Ignite. He informed the participants that Pakistani Startups have raised 330 million dollars through E-commerce, logistics, retail tech and healthtech etc. He further added that every year, Pakistan trains over 2000 Cybersecurity professionals with different tools and technologies and this Hackathon will create awareness about Cybersecurity in Pakistan.

Mr. Jawad Khalid, CISO Askari Bank delivered a talk on Cybersecurity Industry and Way Forward. He was delighted to see such beautiful future of Pakistan. He added that this is the time of Cyber warfare and we must empower our resources to overcome this challenge.

Mr. Osama Ashraf, Territory Manager Trend Micro, during his talk on Cloud Security Frameworks apprised the efforts of Ignite for holding the event. He emphasized the opportunity to build skillset in this area and work globally as there is a huge shortage of professionals in Cybersecurity.



CEO Ignite addressing the participants

WINNERS:



System Application Exploitation

- 4) Ice Cold
- 5) Security Breakers
- 6) Shell Shockers



Mobile Device & Apps Exploitation

- 4) Team MCS
- 5) Double E
- 6) TheNorthCodes



Operating Systems Exploitation

- 4) Survivors
- 5) Hackterize
- 6) RISE



Network Attacks & Exploitation

- 4) AirOverFlow
- 5) vap0r
- 6) UNPR3D1C7ABL35



Speed Programming

- 4) AirOverFlow
- 5) Cyber Bots
- 6) UZH

A total of 447 teams were registered out of which 297 teams qualified for the round. Competitions for 5 categories were held among qualifying teams.

Capture the Flag (CTF) contest was held among hundreds of hackers to exhibit their skills. Their skills were pushed to the limits by advanced real life cyber-attack scenarios prepared under the guidance of cybersecurity experts.

At the end of the qualifier round, certificates were distributed among the winners and runners-up in five categories. The winning teams were qualified for final round held in Islamabad.

A number of persons including experts from industry, students, and researchers from leading universities attended the event.












Competition in Islamabad

Final Round

After a marathon of qualifier rounds, the final round was held on November 20-21, 2021 at COMSATS University, Islamabad. The winning teams from Karachi, Lahore and Islamabad were put into final round of the competition. The finalists were competed for five categories in Capture the Flag (CTF) style challenges. The participating teams solve computer security problems by capturing (attack/bring down) or defending computer systems and scoring most points for winning the challenge.

On first day of the final round, competitions were held in three categories, 'Speed Programming', 'Network Attacks and Exploitation' and 'Operating System Exploitation'. The final round for 'Mobile Application & Exploitation' and 'System Application Exploitation' was held on second day. An exciting contest was witnessed between participating teams.

	 SYSTEM APPLICATION EXPLOITATION	 MOBILE DEVICE & APPS EXPLOITATION	 OPERATING SYSTEMS EXPLOITATION	 NETWORK ATTACKS & EXPLOITATION	 SPEED PROGRAMMING
FINALISTS					
	We need control \$udoers Red Crew	RA-Torandos Red Crew Team DOS	We need control ASD \$udoers	HS I33tz uqabi	Spartans Geeky Fox Sushi
	Lexicans Beluga SafeCottage	OxNinjas Lexicans SafeCottage	DaemonsPK Beluga Local Host	Local Host Team SSH OxNinjas	Check Mate Brogrammer Team 7
	Ice Cold SecurityBreakers Shell Shockers	Team MCS Double E TheNorthCodes	Survivors Hackterize RISE	AirOverFlow vap0r UNPR3D1C7ABL35	AirOverFlow Cyber Bots UZH
THE WINNERS					
	Lexicans SafeCottage Shell Shockers	TheNorthCodes OxNinjas Lexicans	\$udoers Local Host We need control	vap0r AirOverFlow Local Host	Spartans Sushi AirOverFlow

Journey of Teams to the Final Competition

Cash awards of PKR 6 million were given to the top 3 teams in 5 categories in a grand finale at Islamabad where the President of Pakistan, Dr. Arif Alvi, gave awards to the winners of the hackathon.

Workshops on emerging trends were held to create awareness and interest between participants.

- ▶ "Threat Intelligence and Hack Back" by Salman Khan
- ▶ "Digital Forensics & Cyber Crime" by Dr. Fateh ud Din
- ▶ "Open-Source Intelligence (OSINT)" by Waseem ud Din

Talks on different topics were delivered by prominent speakers including Dr. Shoaib A Khan from SSCIT Islamabad, Dr. Haneef Durad from PIEAS and Dr. Majid Iqbal Khan from COMSATS.

Experts from industry, students, and researchers attended these events.

A quiz competition was also held between teams from 9 universities. After exciting rounds of questions, team from Sir Syed CASE Institute of Technology (SSCIT), Islamabad won the quiz competition. Goody bags, sponsored by TrendMicro and Trillium, were distributed among participants.

Young CyberSecurity Warriors shared their views regarding the Hackathon and acknowledged Ignite's efforts in providing them the opportunity to find their potential hidden talent in the field of cyber security.



The Awards Ceremony

The event started in the morning with a welcome address by CEO Ignite, Asim Shahryar Husain, who stated that the hackathon has been a marathon which had been announced in August and concluded after three months in November. The goal of the hackathon was to create awareness about the growing importance of cybersecurity in the country as well as to identify and reward the young cybersecurity talent of Pakistan.

The event was attended by officials of the IT ministry, Ignite, Chief Information Security Officers, cybersecurity experts, and professionals from industry, academia, winning teams, and the youth with an interest in cybersecurity.

Other speakers of the morning program included Syed Junaid Imam, Member IT, MoITT; Glen Barclay, Anomali Australia; Mehzaad Sahar, Group Head Engro; Ammar Jaffri, ex-ADG FIA; Ashar Faisal, CEO Commtel; Tauseef Aslam, CISO Telenor; Jawad Khalid, CISO Askari Bank; and Dr. Mehreen Afzal from Air University. They spoke on the rising importance of cybersecurity and the steps government, academia, and industry can take to train IT graduates and professionals to guard its cyber networks in the future.

The afternoon program started after the President's arrival. Ignite showcased a documentary on the complete journey of the hackathon in different cities of Pakistan which was very much appreciated by the audience.

This was followed by feedback from different participants about the quality of the hackathon and how it has helped them prove their cybersecurity skills. President Arif Alvi emphasized in his address that the risk of cyberattacks grew with Pakistan's advancement towards digitalization, thus requiring a strategy to effectively counter threats and secure national data. He said that data had become the most valuable commodity globally and stressed that Pakistan direly needed to produce millions of graduates in the field of cyber security to guard against cyberattacks.

Themed as 'Hackers Ignited – Journey of young cybersecurity warriors', the Hackathon was organized by Ignite and the Ministry of Information Technology & Telecom. President Alvi said that throughout the world including Pakistan, the infrastructure was of vital importance such as banking system, credit card data, telecommunication, electricity and dams, hospitals, etc., and pointed out that anything linked with the internet or cloud was "susceptible to cyber or ransomware attacks".

He said the recent cyber attacks on the systems of the Federal Board of Revenue and National Bank of Pakistan drew attention towards improving the security of such systems. He said that with changing concepts of security, the country's defense was linked with enhanced awareness and capabilities to develop and deploy a proper mechanism.

He said that a paradigm shift in cybersecurity was needed with both an offensive and defensive strategy. Instead of traditional brick-and-mortar educational facilities, the short-term online and virtual courses could also prepare the human resources for the market, he added.



Winning Teams with President Dr. Arif Alvi

Dr. Alvi expressed confidence that the hackathon would help find talent to improve the country's cybersecurity readiness and incident response capabilities. He said he had been constantly encouraging the vice-chancellors of universities to work towards producing a large number of graduates in the field of cybersecurity.

He further mentioned that the government was offering 50,000 scholarships for students in different academic disciplines with a fifty percent disbursement allocated for girls.

Federal Secretary for IT & Telecom, Mohammad Sohail Rajput, stated that cybersecurity had become a critical domain globally, particularly in the scenario of frequent cyberattacks on national institutions recently. He said that the IT Ministry was working on an ecosystem fulfilling the needs of safe cyberspace in the country. The hackathon, he said, greatly helped in the identification of talented youth with expertise in hacking and cybersecurity.



The Impact



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



- ▶ **1176** teams registered for the hackathon from all over the country including Gilgit, Peshawar, Abbottabad, Mardan, Haripur, Swabi, Kamra, Wah Cantt, Rawalpindi, Islamabad, Jhelum, Wazirabad, Gujranwala, Lahore, Bahawalnagar, Multan, Khanewal, Nawabshah, Hyderabad, Karachi, Quetta etc.
- ▶ **475** teams were shortlisted for qualifying rounds
- ▶ Top 3 teams in 5 categories qualified from Karachi, Lahore, and Islamabad competed in the final round



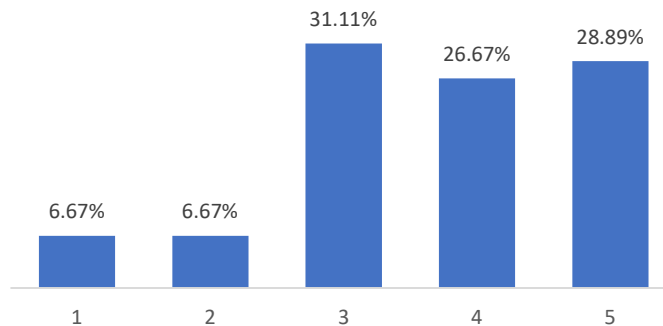
- ▶ **23** Teams from different universities participated in Quiz Competitions



- ▶ **1200+** talented resources identified
- ▶ **80%** impact on jobs' creation and promotion



- ▶ **15+** Talks/Presentations and Workshops by Industry Experts
- ▶ **800+** people joined for workshops, talks and panel discussions



Survey results (How did it help you to grow your skills, job and community building?)

The Gallery



CEO Ignite, Asim Shehryar Husain, speaking at the Grand Finale



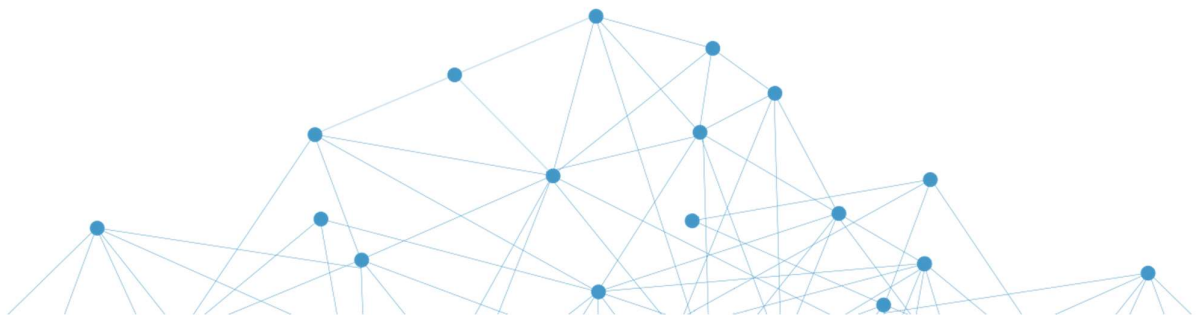
Member IT, Syed Junaid Imam, speaking at the Grand Finale

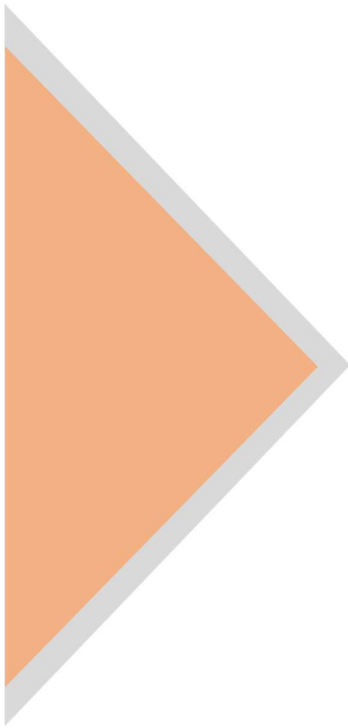


President of Pakistan, Dr. Arif Alvi, speaking at the awards ceremony



Secretary, MoITT, Muhammad Sohail Rajput, speaking at the awards ceremony





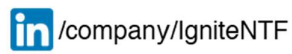
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