Cybersecurity Awareness: Internet Safety and Cybercrime Prevention

Presentation · December 2023

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University of Barisal
20 PUBLICATIONS **126** CITATIONS

Cybersecurity Awareness

Internet Safety and Cybercrime Prevention

Seminar Location

Auditorium, Sher-E-Bangla Medical College Hospital, Barishal, Bangladesh.
Organized by National Cyber Security Agency, ICT Division, Bangladesh.

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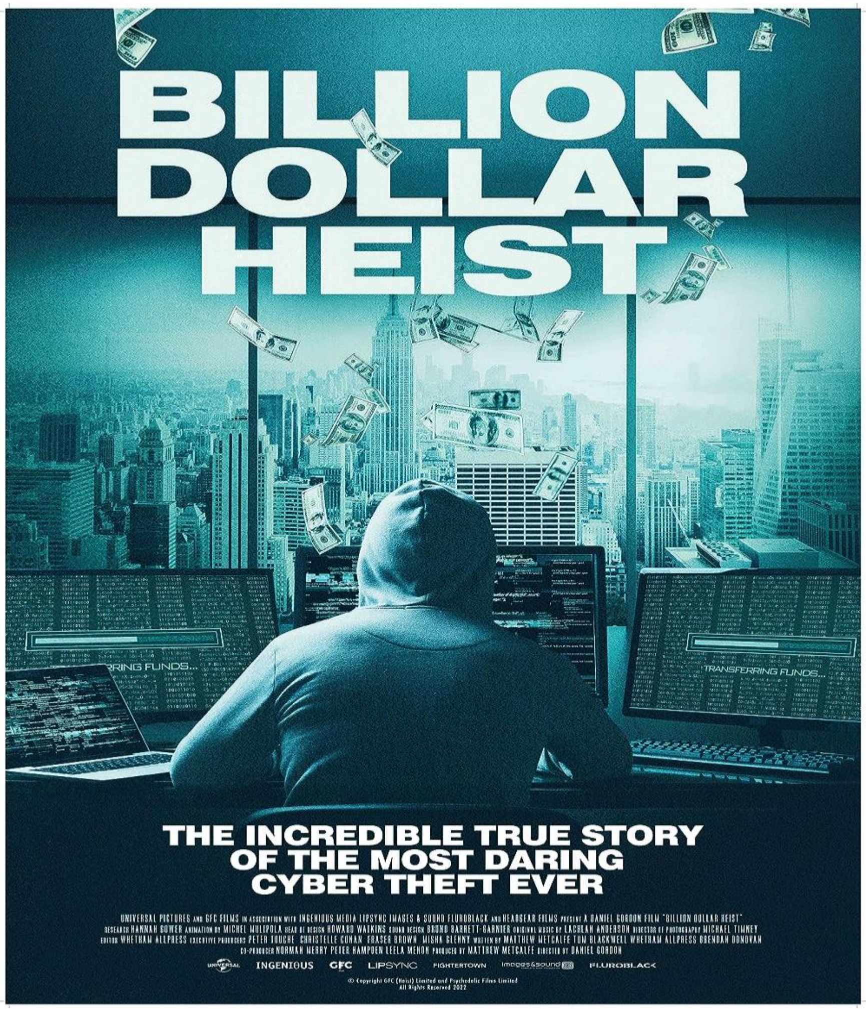
Date: December 7, 2023.

Contents

- Cybersecurity
- Importance of Cybersecurity Awareness
- Common Cyber Threats
- General Advice
- Cybersecurity Awareness Challenges
- Opportunity
- Conclusion

Bangladesh Bank Cyber Heist (Feb 2016)

- Thirty-five fraudulent instructions issued via SWIFT network


BILLION DOLLAR HEIST
RRING FUNDS...
TRANSFERRING FUNDS...
THE INCREDIBLE TRUE STORY OF THE MOST DARING CYBER THEFT EVER
UNIVERSAL PICTURES AND GFC FILMS IN ASSOCIATION WITH INGENIOUS MEDIA LIPSYNC IMAGES & SOUND FLUROBLACK AND HEADGEAR FILMS PRESENT A DANIEL GORDON FILM "BILLION DOLLAR HEIST"
RESEARCH HANNAH GOWER ANIMATION BY MICHEL MULIPOLA HEAD OF DESIGN HOWARD WATKINS SOUND DESIGN BRUNO BARRETT-GARNIER ORIGINAL MUSIC BY LACHLAN ANDERSON DIRECTOR OF PHOTOGRAPHY MICHAEL TIMNEY
EDITOR WHETHAM ALLPRESS EXECUTIVE PRODUCERS PETER TOUCHE CHRISTELLE CONAN FRASER BROWN MISHA GLENNY WRITTEN BY MATTHEW METCALFE TOM BLACKWELL WHETHAM ALLPRESS BRENDAN DONOVAN
CO-PRODUCER NORMAN MERRY PETER HAMPDEN LEELA MENON PRODUCED BY MATTHEW METCALFE DIRECTED BY DANIEL GORDON
UNIVERSAL INGENIOUS GFC LIPSYNC FIGHTERTOWN images&sound FLUROBLACK
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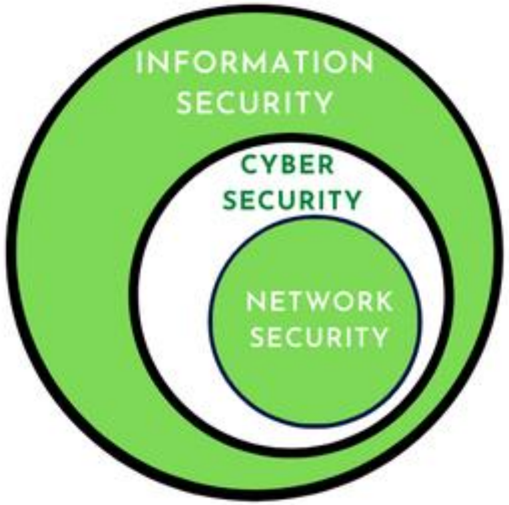
- Fly away with $81 million

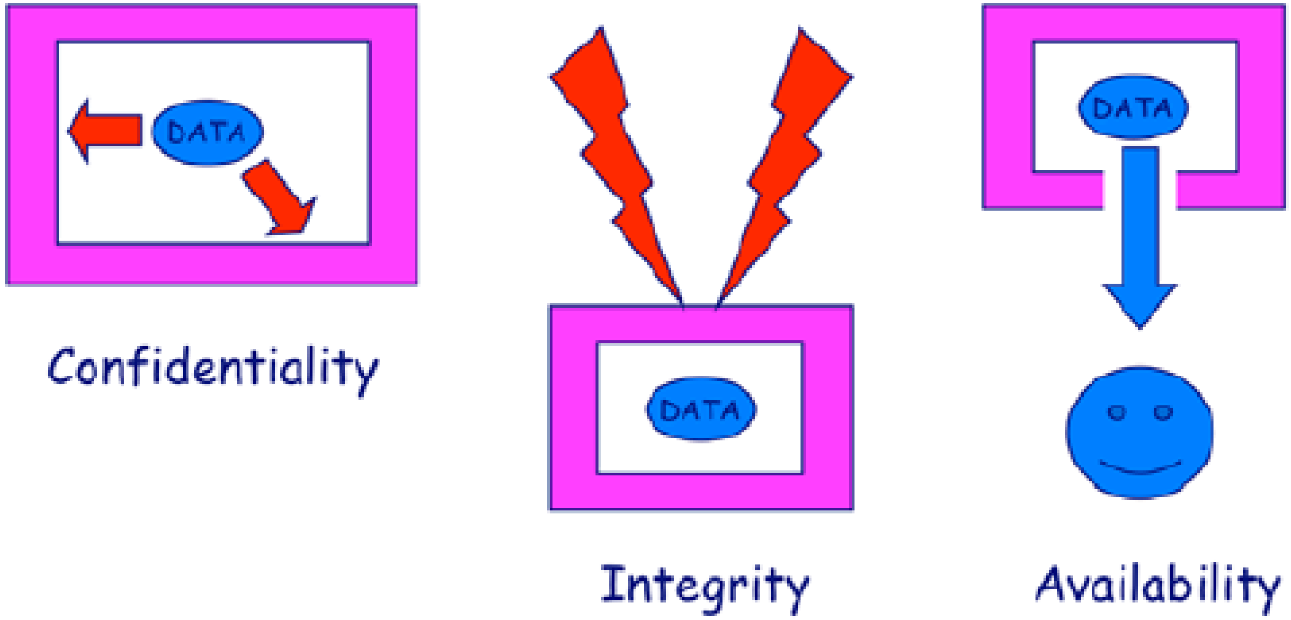
Cybersecurity?

- National Institute of Standards and Technology (NIST) https://www.nist.gov/
  - deal with protecting and preventing cyber-attacks

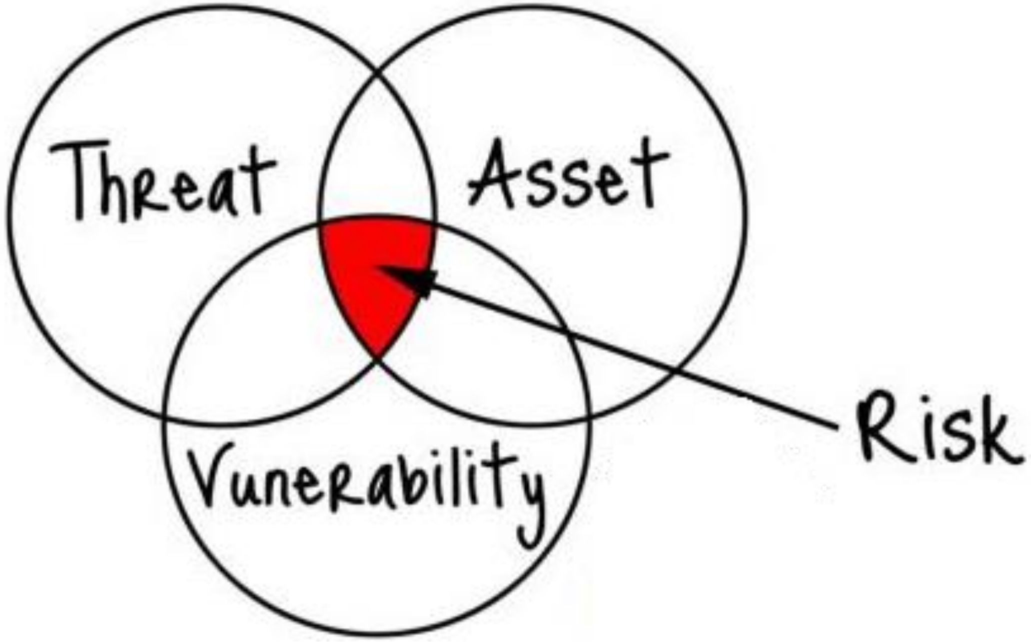


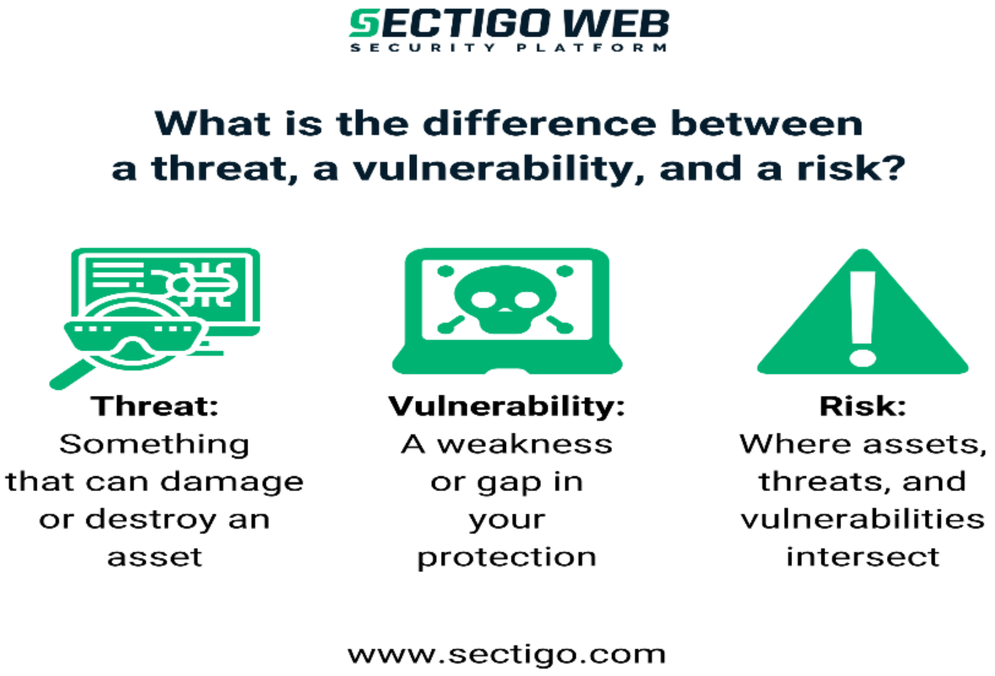
https://www.geeksforgeeks.org/cybersecurity-vs-network-security-vs-information-security/

Security Goal (CIA Triad)



Source: GUNTER





SECTIGO WEB
SECURITY PLATFORM

What is the difference between a threat, a vulnerability, and a risk?

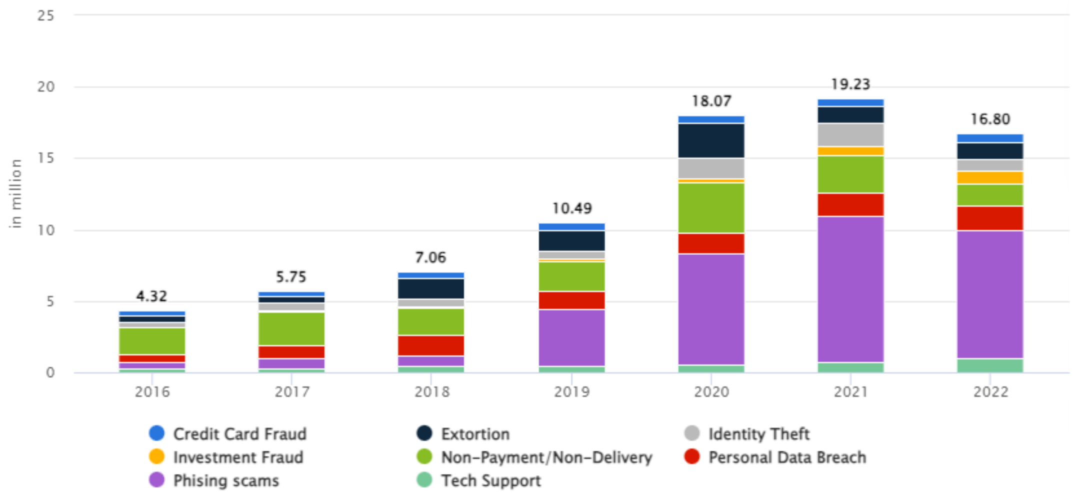
Threat: Something that can damage or destroy an asset

Vulnerability: A weakness or gap in your protection

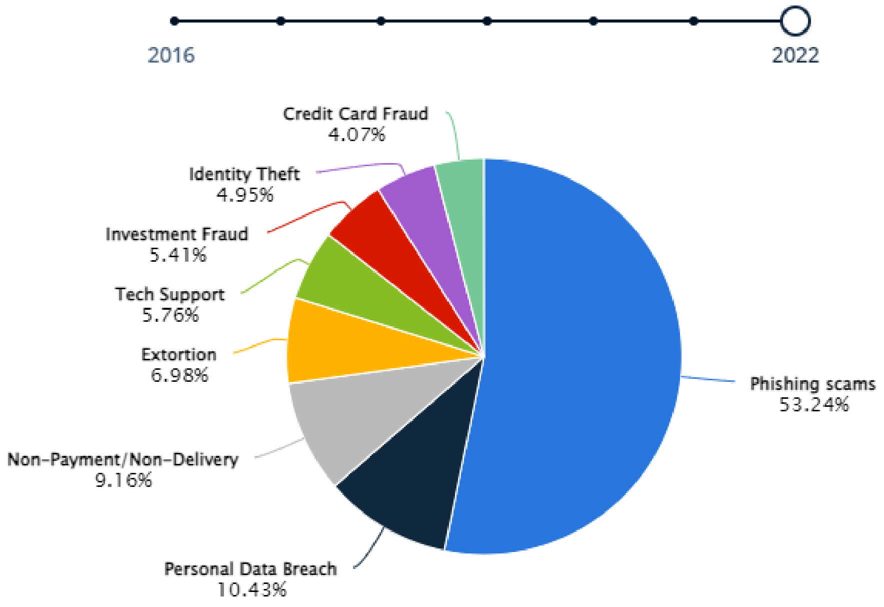
Risk: Where assets, threats, and vulnerabilities intersect

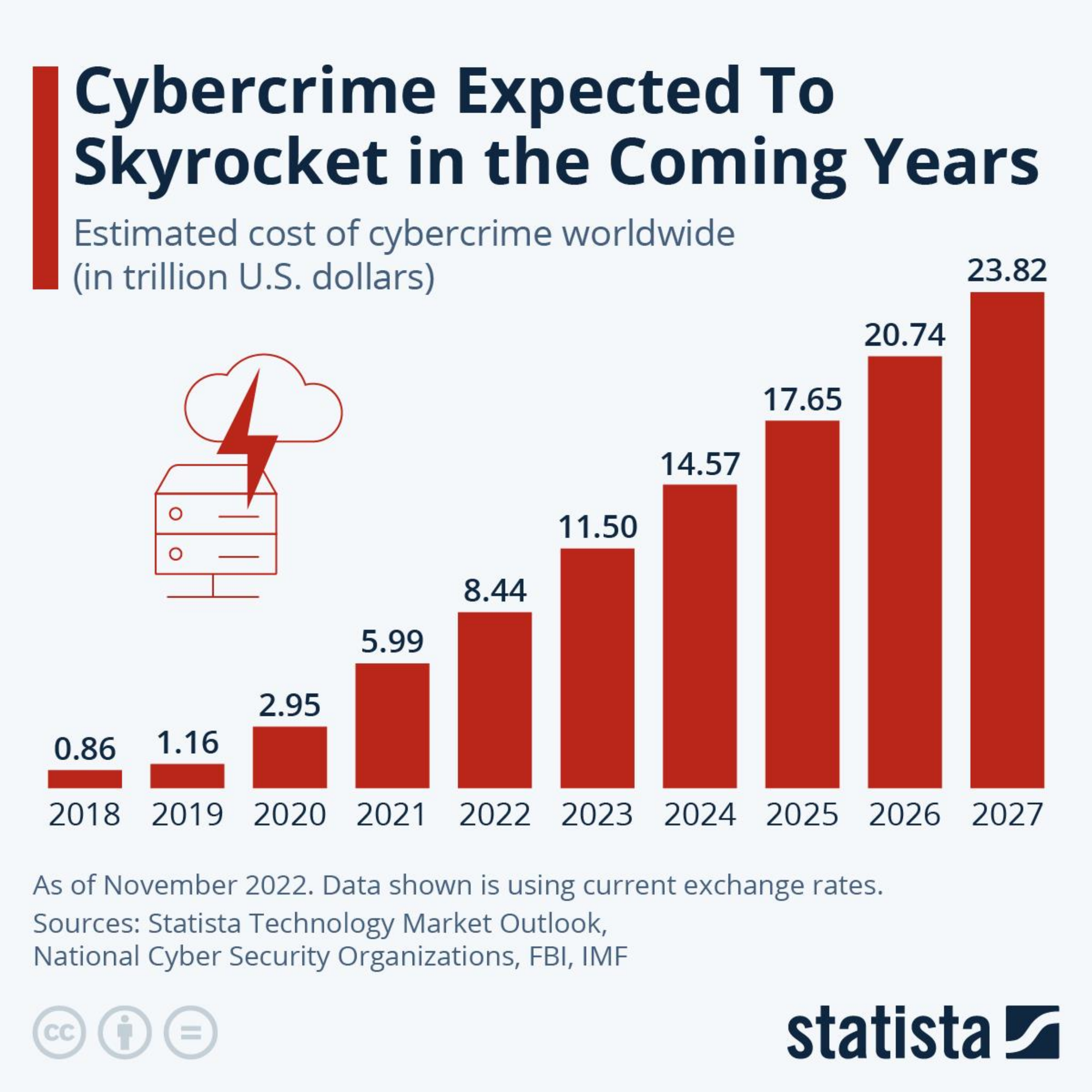
www.sectigo.com

Cybercrime Statistics By Statista



Most recent update: Sep 2023



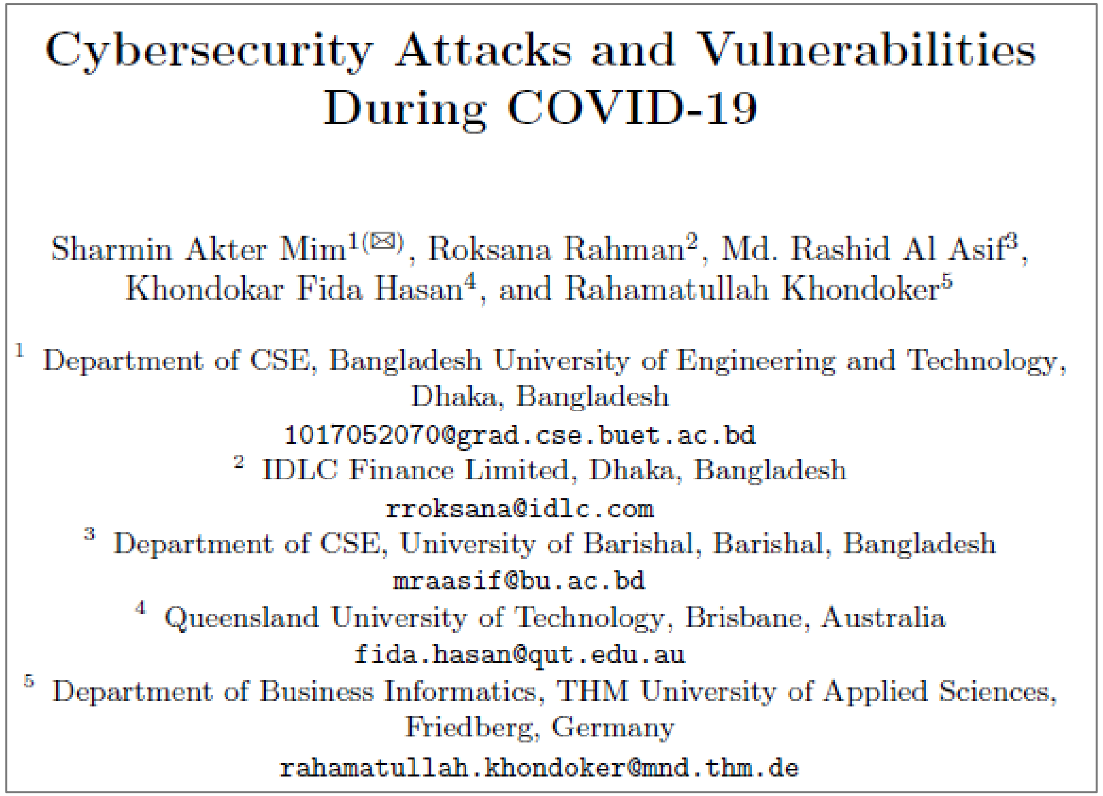


Cybercrime Expected To Skyrocket in the Coming Years

Estimated cost of cybercrime worldwide (in trillion U.S. dollars)

As of November 2022. Data shown is using current exchange rates.

Sources: Statista Technology Market Outlook, National Cyber Security Organizations, FBI, IMF



Cybersecurity Attacks and Vulnerabilities During COVID-19

Sharmin Akter Mim[1](✉), Roksana Rahman[2], Md. Rashid Al Asif[3], Khondokar Fida Hasan[4], and Rahamatullah Khondoker[5]

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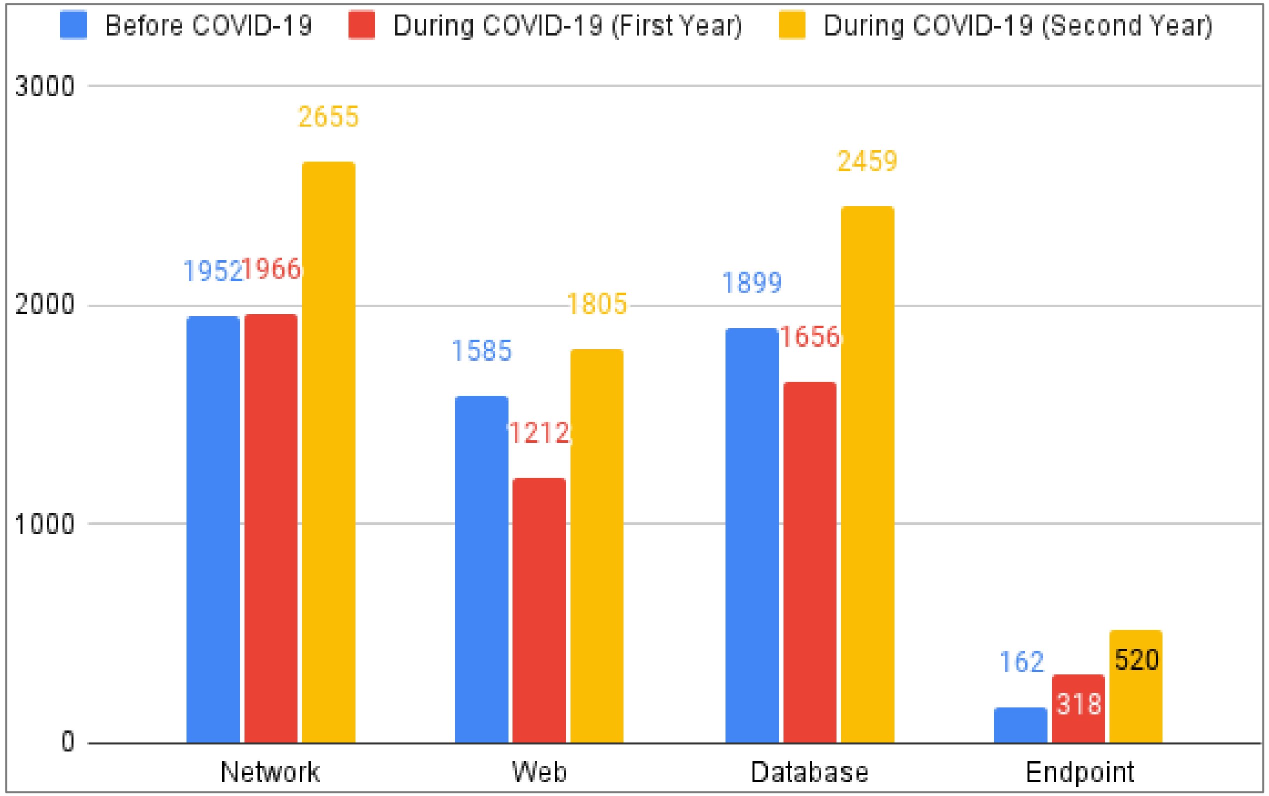
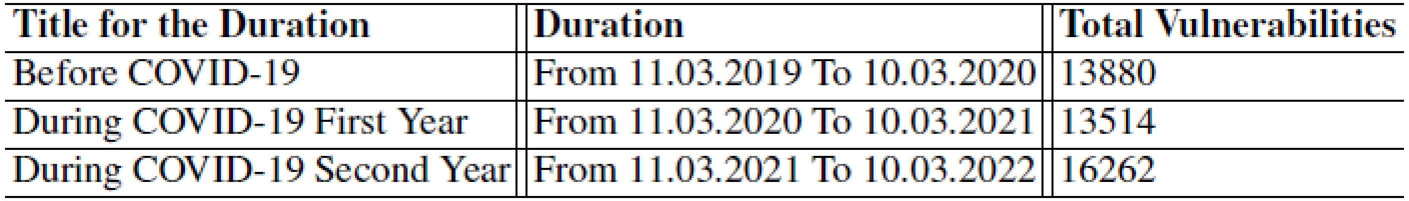
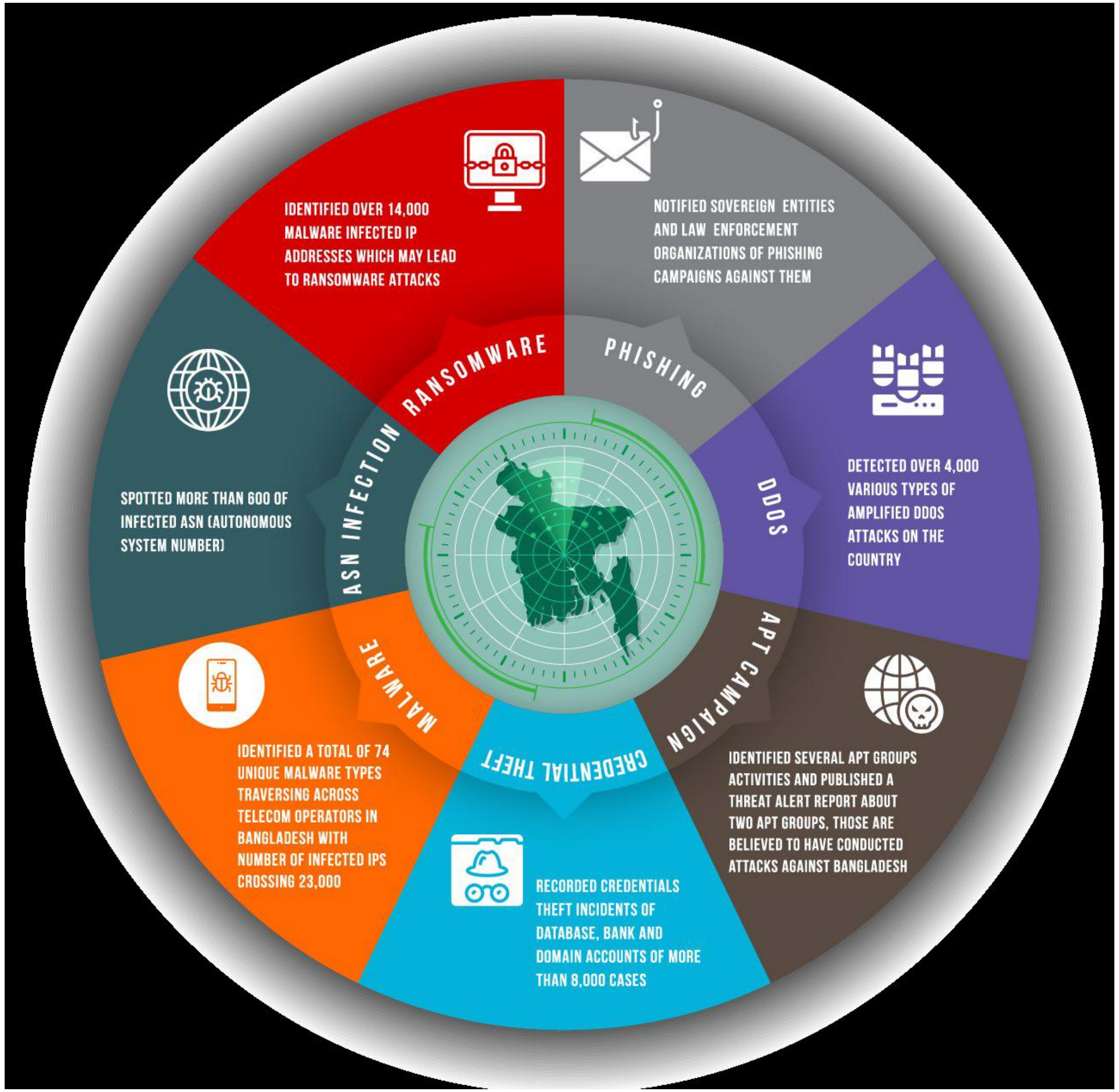




Title for the Duration	Duration	Total Vulnerabilities
Before COVID-19	From 11.03.2019 To 10.03.2020	13880
During COVID-19 First Year	From 11.03.2020 To 10.03.2021	13514
During COVID-19 Second Year	From 11.03.2021 To 10.03.2022	16262

https://link.springer.com/chapter/10.1007/978-3-031-28694-0_50



RANSOMWARE

IDENTIFIED OVER 14,000 MALWARE INFECTED IP ADDRESSES WHICH MAY LEAD TO RANSOMWARE ATTACKS

PHISHING

NOTIFIED SOVEREIGN ENTITIES AND LAW ENFORCEMENT ORGANIZATIONS OF PHISHING CAMPAIGNS AGAINST THEM

DDOS

DETECTED OVER 4,000 VARIOUS TYPES OF AMPLIFIED DDOS ATTACKS ON THE COUNTRY

APT CAMPAIGN

IDENTIFIED SEVERAL APT GROUPS ACTIVITIES AND PUBLISHED A THREAT ALERT REPORT ABOUT TWO APT GROUPS, THOSE ARE BELIEVED TO HAVE CONDUCTED ATTACKS AGAINST BANGLADESH

CREDENTIAL THEFT

RECORDED CREDENTIALS THEFT INCIDENTS OF DATABASE, BANK AND DOMAIN ACCOUNTS OF MORE THAN 8,000 CASES

MALWARE

IDENTIFIED A TOTAL OF 74 UNIQUE MALWARE TYPES TRAVERSING ACROSS TELECOM OPERATORS IN BANGLADESH WITH NUMBER OF INFECTED IPS CROSSING 23,000

ASN INFECTION

SPOTTED MORE THAN 600 OF INFECTED ASN (AUTONOMOUS SYSTEM NUMBER)

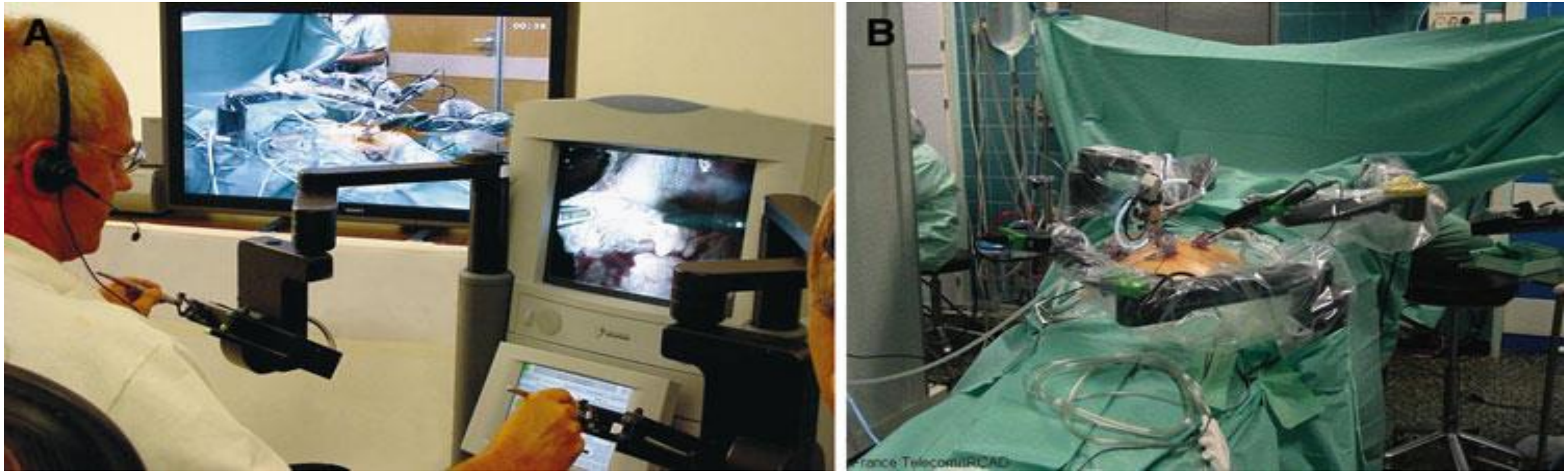
Source: BANGLADESH CYBER THREAT LANDSCAPE 2022

Top Cyber Threat Facts, Figures, and Statistics

- The global average cost of a data breach is **USD 3.92 million**
- Cybercrime breaches to increase by **76%** by 2024
- Over **50%** of all global data breaches to occur in the United States by 2023
- The average cost of a data breach to a US company is **USD 7.91 million**
- The average number of days to identify an incident in 2019 was **206 days**
- **2 billion records** were exposed due to data breaches in the first half of 2019
- A business will fall victim to a ransomware attack every **11 seconds** in 2021
- Cyberattacks on IoT devices increased by **300%** in 2019
- Cyberthreat complaints increased by **400%** in the US amid the coronavirus pandemic

Source: https://www.stealthlabs.com/blog/cyber-security-threats-all-you-need-to-know/

Lindbergh: The First Complete Telesurgery



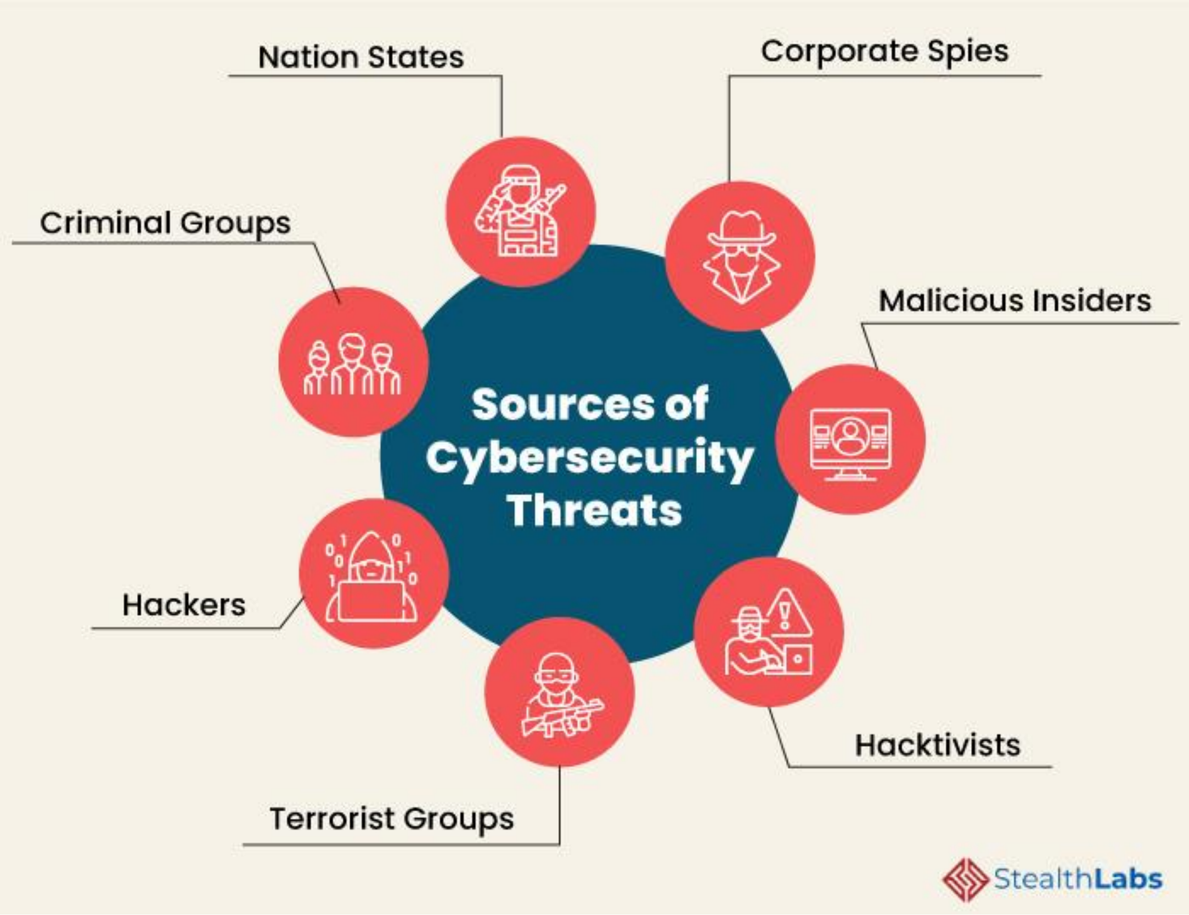
A: The surgeon’s console of the Zeus robot during the first transatlantic robot-assisted cholecystectomy in 2001. Marescaux (Institut de Recherche contre les Cancers de L’Appareil Digestif - IRCAD) performed the operation from New York (photo: IRCAD)

B: The patient and the slave robotic arms were in Strasbourg, France, approximately 7,000 km from the surgeon’s site. The operation was uneventful (photo: IRCAD)

Why Cybersecurity Awareness Important?

- Cyber crime is a growing trend
- Raise awareness of threats
- As with most crimes the police can’t tackle this problem alone
- To encourage reporting

Cyber Threat Actors

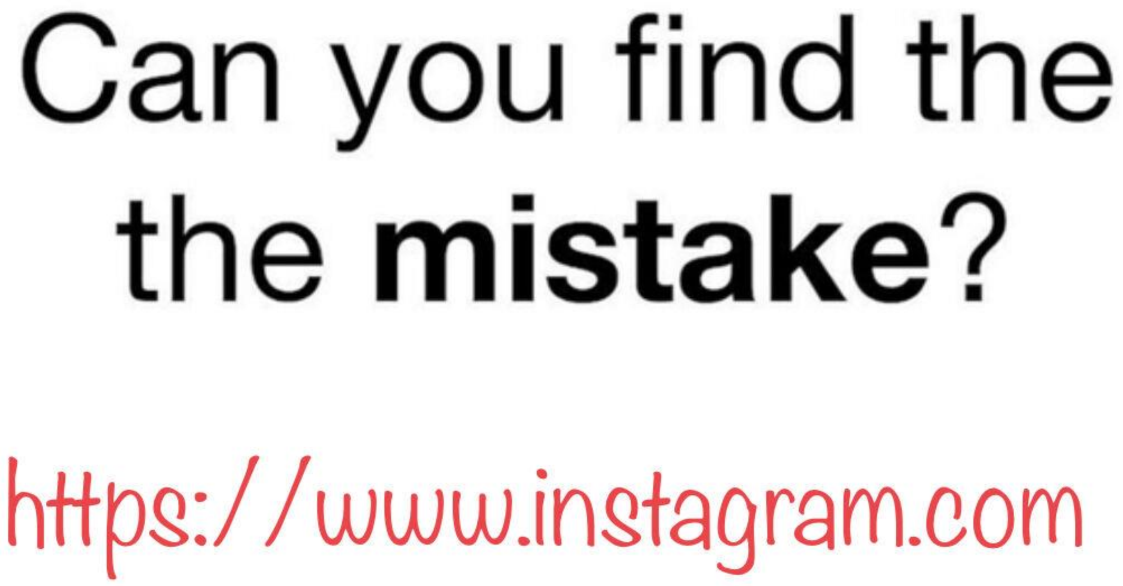


https://www.stealthlabs.com/blog/cyber-security-threats-all-you-need-to-know/

Common Cyber Threats

- Social engineering
- Ransomware
- Brute force
- …

Social Engineering



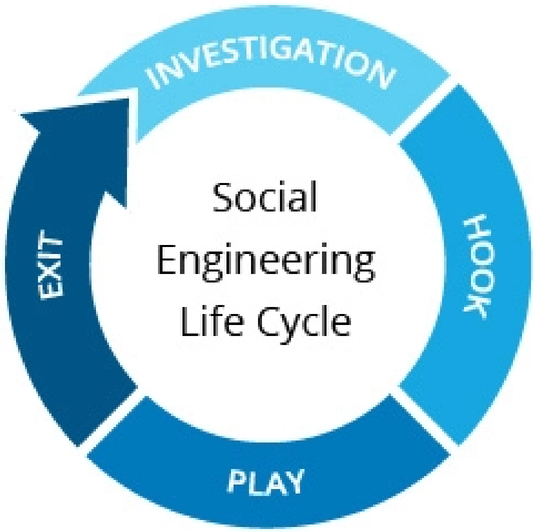
Can you find the the **mistake**?

https://www.instagram.com

- Distraction and Misdirection

Preparing the ground for the attack:

- Identifying the victim(s).
- Gathering background information.
- Selecting attack method(s).



Deceiving the victim(s) to gain a foothold:

- Engaging the target.
- Spinning a story.
- Taking control of the interaction.

Obtaining the information over a period of time:

- Expanding foothold.
- Executing the attack.
- Disrupting business or/and siphoning data.

Closing the interaction,
ideally without arousing suspicion:

- Removing all traces of malware.
- Covering tracks.
- Bringing the charade to a natural end.

https://www.imperva.com/learn/application-security/social-engineering-attack/

Phishing

When Scammers **fool you** to think they are someone you trust in order to make you **do something**.

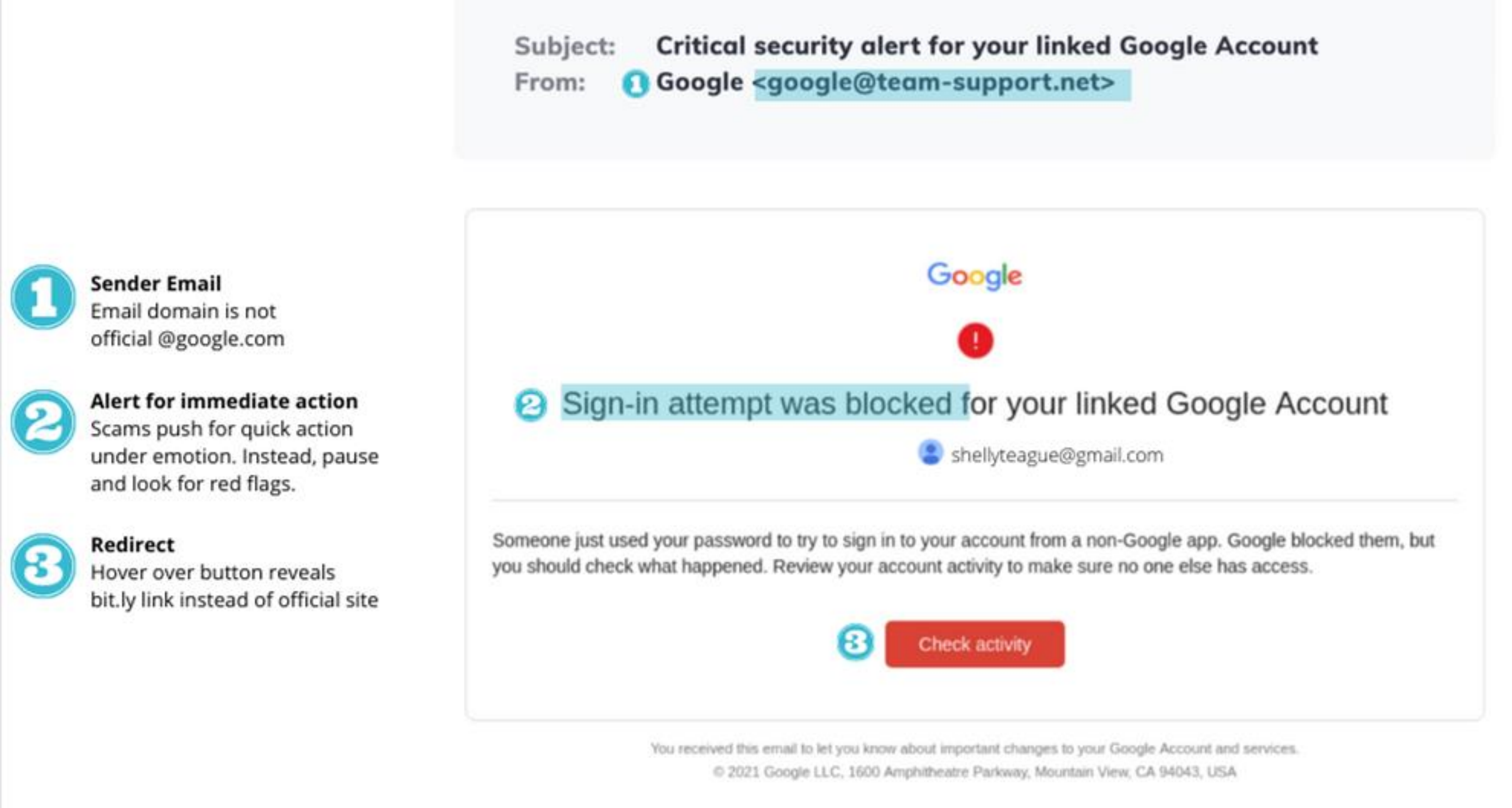
Credit: Wizer Training

7 Types of Phishing Scams You Should Know About

Credit: Wizer Training

Email Phishing Scams

It may look like an email from your bank, Paypal, Google, Amazon, or even your CEO.



Sender Email
Email domain is not official @google.com

Alert for immediate action
Scams push for quick action under emotion. Instead, pause and look for red flags.

Redirect
Hover over button reveals bit.ly link instead of official site

Subject: **Critical security alert for your linked Google Account**
From: **Google <google@team-support.net>**

Google

Sign-in attempt was blocked for your linked Google Account

shellyteague@gmail.com

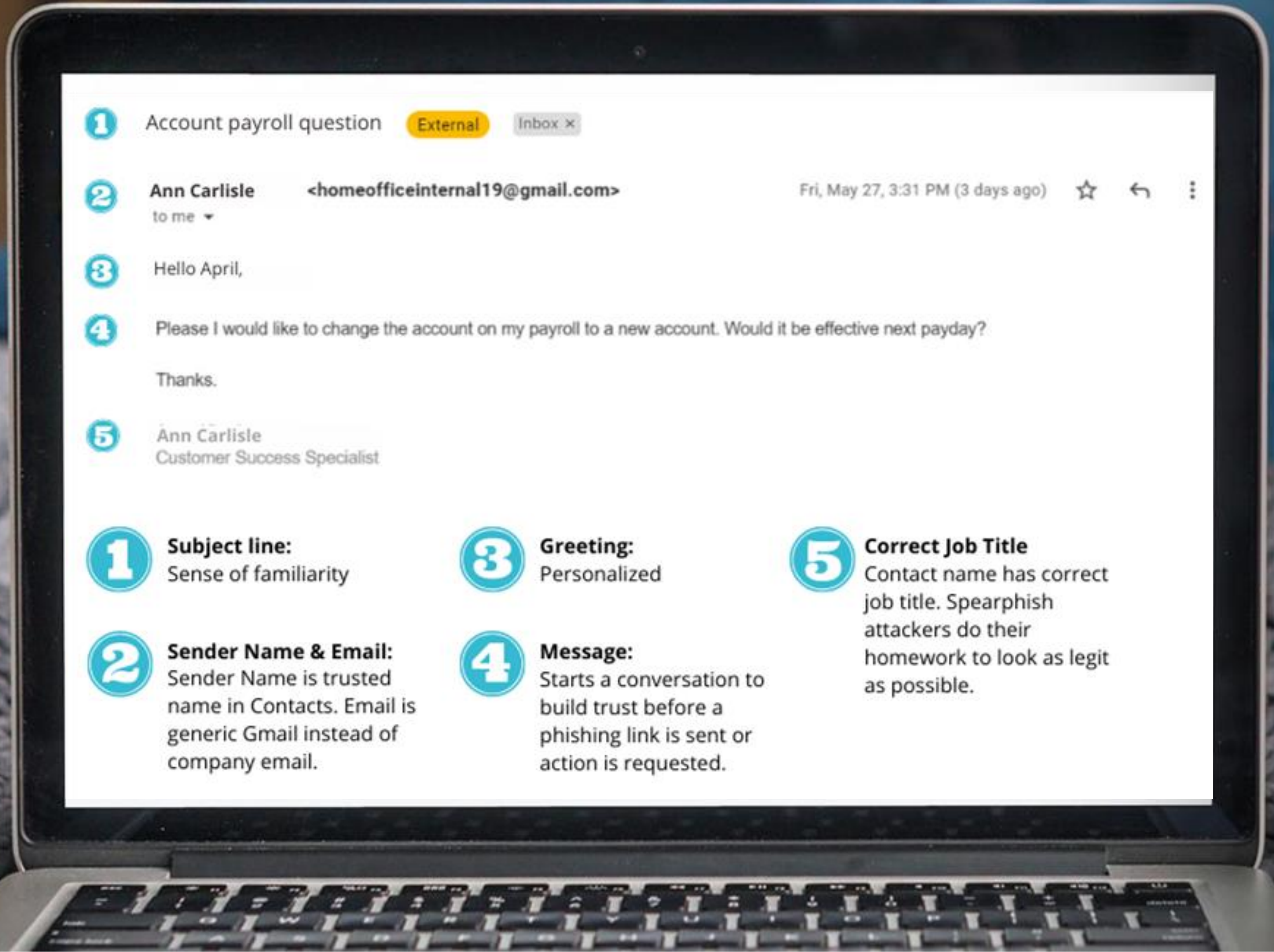
Someone just used your password to try to sign in to your account from a non-Google app. Google blocked them, but you should check what happened. Review your account activity to make sure no one else has access.

You received this email to let you know about important changes to your Google Account and services.
© 2021 Google LLC, 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA

Credit: Wizer Training

Credit: Wizer Training

Spear Phishing Scams



1 Account payroll question External Inbox ×

2 Ann Carlisle <homeofficeinternal19@gmail.com> Fri, May 27, 3:31 PM (3 days ago)
to me

3 Hello April,

4 Please I would like to change the account on my payroll to a new account. Would it be effective next payday?

Thanks.

5 Ann Carlisle
Customer Success Specialist

1 **Subject line:** Sense of familiarity

2 **Sender Name & Email:** Sender Name is trusted name in Contacts. Email is generic Gmail instead of company email.

3 **Greeting:** Personalized

4 **Message:** Starts a conversation to build trust before a phishing link is sent or action is requested.

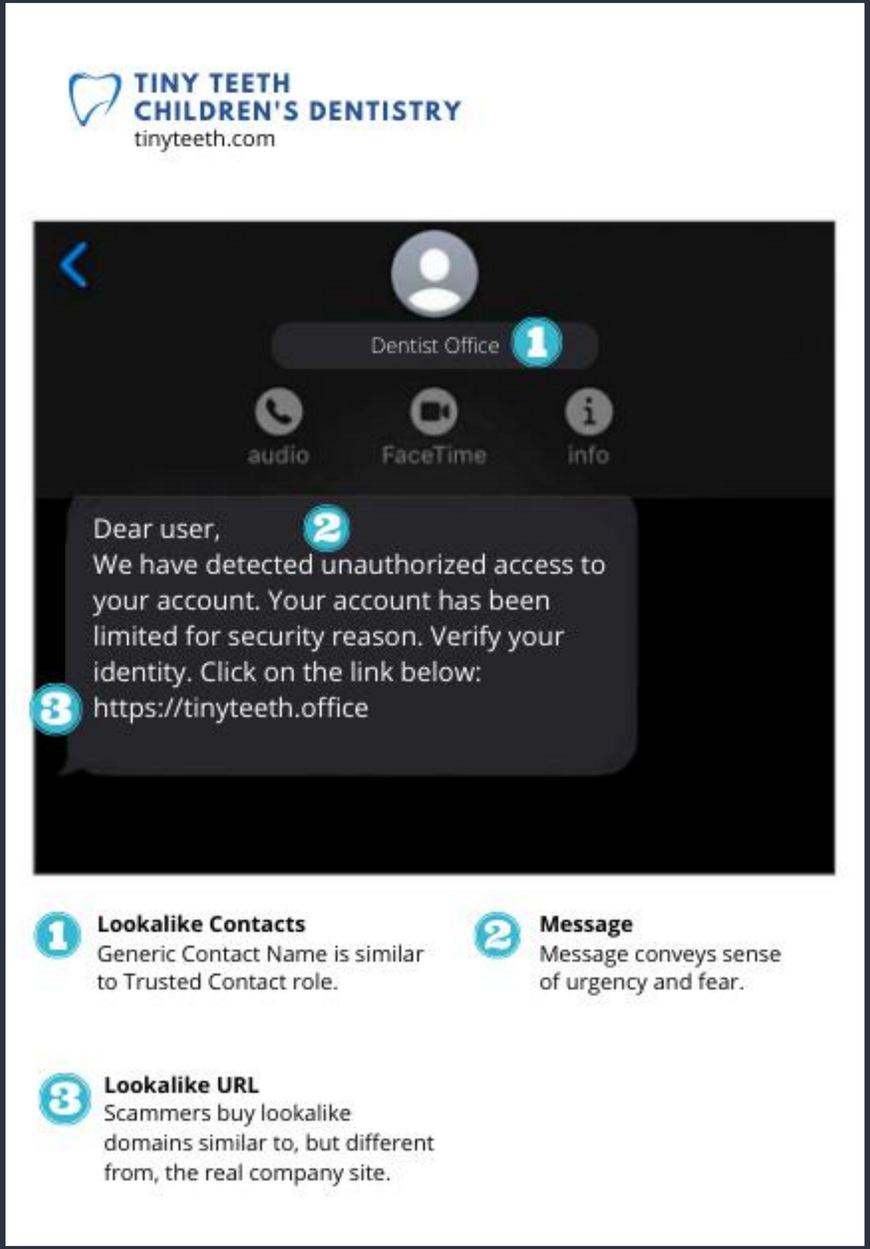
5 **Correct Job Title** Contact name has correct job title. Spearphish attackers do their homework to look as legit as possible.

This is when they target you specifically. They have researched you, they know your family members, where you work, and who is your boss. The chances of fooling you are higher.

Smishing

Scams

These are text message phishing scams. Criminals know people respond to text and instant messages faster than email.



TINY TEETH
CHILDREN'S DENTISTRY
tinyteeth.com

Dear user,
We have detected unauthorized access to your account. Your account has been limited for security reason. Verify your identity. Click on the link below:
https://tinyteeth.office

1 **Lookalike Contacts**
Generic Contact Name is similar to Trusted Contact role.

2 **Message**
Message conveys sense of urgency and fear.

3 **Lookalike URL**
Scammers buy lookalike domains similar to, but different from, the real company site.

Credit: Wizer Training

Google Search

Scams

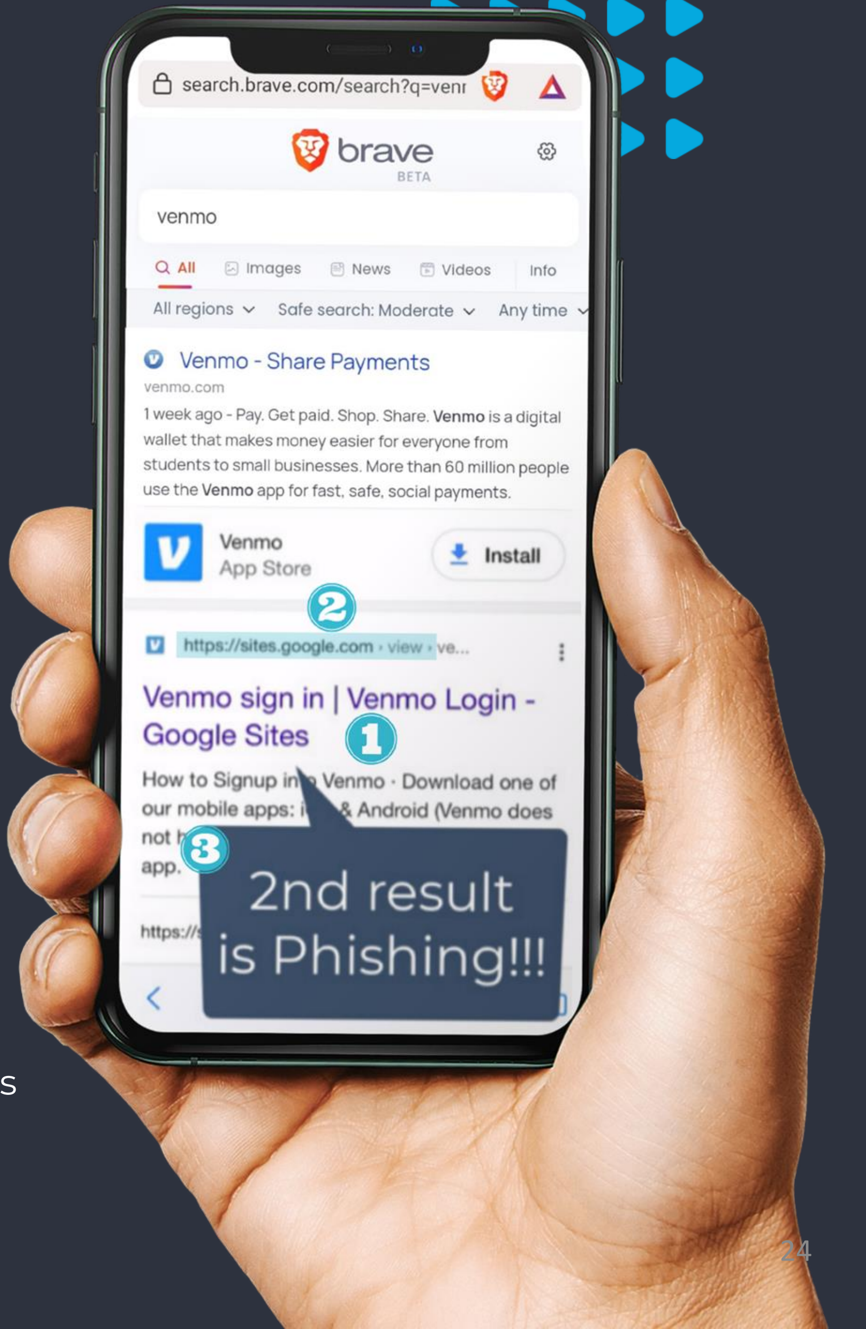
You may be surprised, but some
of the top search results in Google are phishing links.

Scammers also invest in search engine optimization and work hard to rank their scam sites in the top search results.

1. **Search Result Shows Brand**
   Title displays correct brand name

2. **URL Mismatch**
   Title says Venmo but URL is a generic sites.google.com

3. **2nd Result for Organic Search**
   Even top search results can be manipulated for fake sites



search.brave.com/search?q=venr

brave BETA

venmo

Venmo - Share Payments
venmo.com
1 week ago - Pay. Get paid. Shop. Share. Venmo is a digital wallet that makes money easier for everyone from students to small businesses. More than 60 million people use the Venmo app for fast, safe, social payments.

Venmo
App Store
Install

https://sites.google.com › view › ve...

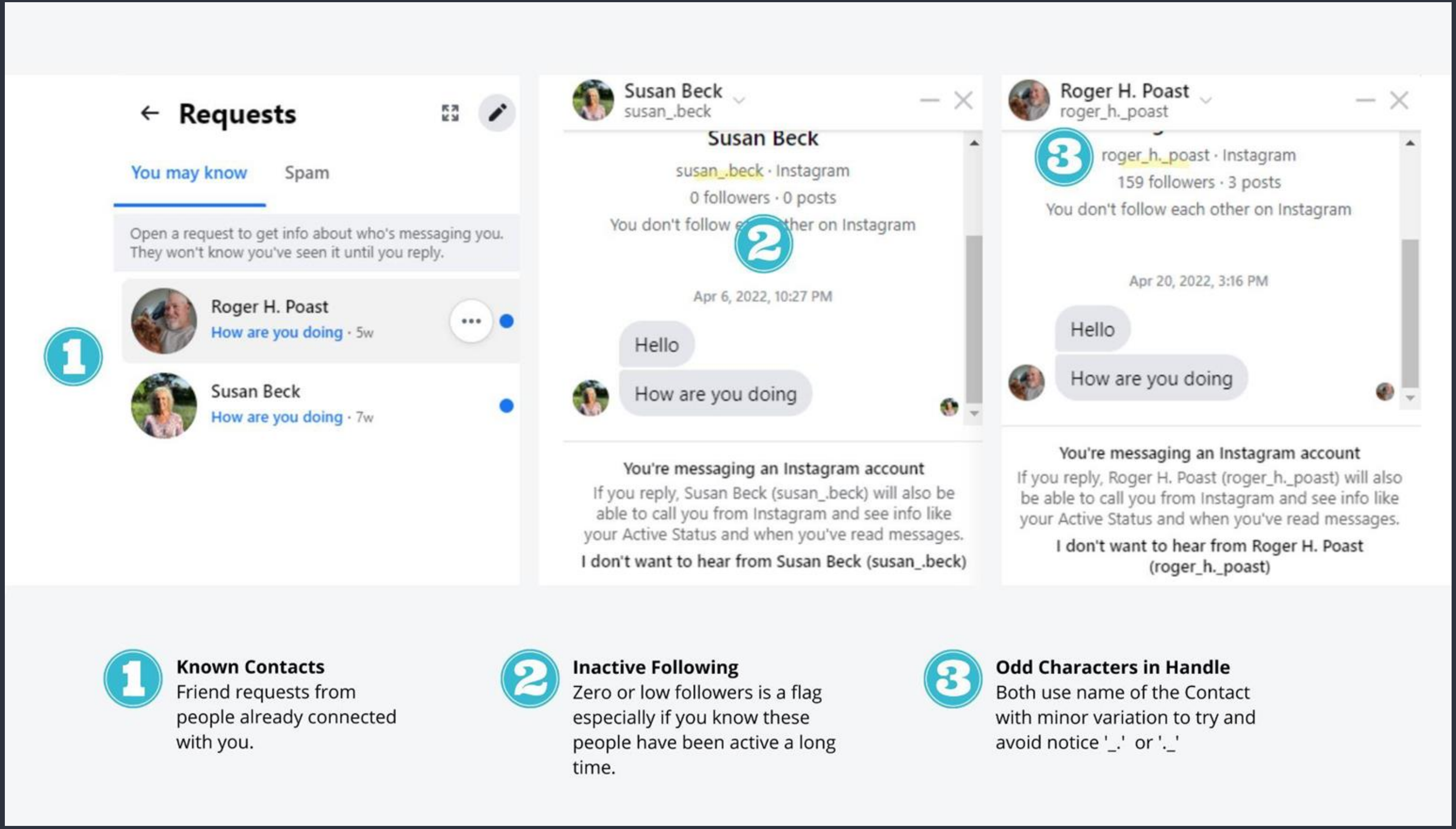
Venmo sign in | Venmo Login - Google Sites
How to Signup in Venmo · Download one of our mobile apps: i & Android (Venmo does not h app.

https://

Credit: Wizer Training

Social Media Scams

Social media is full of fake accounts.
It could also be a fake account with the same name and photo as one of your real friends that will later try to scam you.



Requests

You may know | Spam

Open a request to get info about who's messaging you. They won't know you've seen it until you reply.

Roger H. Poast
How are you doing · 5w

Susan Beck
How are you doing · 7w

Susan Beck
susan_.beck

Susan Beck
susan_.beck · Instagram
0 followers · 0 posts
You don't follow e ther on Instagram

Apr 6, 2022, 10:27 PM

Hello

How are you doing

You're messaging an Instagram account
If you reply, Susan Beck (susan_.beck) will also be able to call you from Instagram and see info like your Active Status and when you've read messages.
I don't want to hear from Susan Beck (susan_.beck)

Roger H. Poast
roger_h._poast

roger_h._poast · Instagram
159 followers · 3 posts
You don't follow each other on Instagram

Apr 20, 2022, 3:16 PM

Hello

How are you doing

You're messaging an Instagram account
If you reply, Roger H. Poast (roger_h._poast) will also be able to call you from Instagram and see info like your Active Status and when you've read messages.
I don't want to hear from Roger H. Poast (roger_h._poast)

1 **Known Contacts**
Friend requests from people already connected with you.

2 **Inactive Following**
Zero or low followers is a flag especially if you know these people have been active a long time.

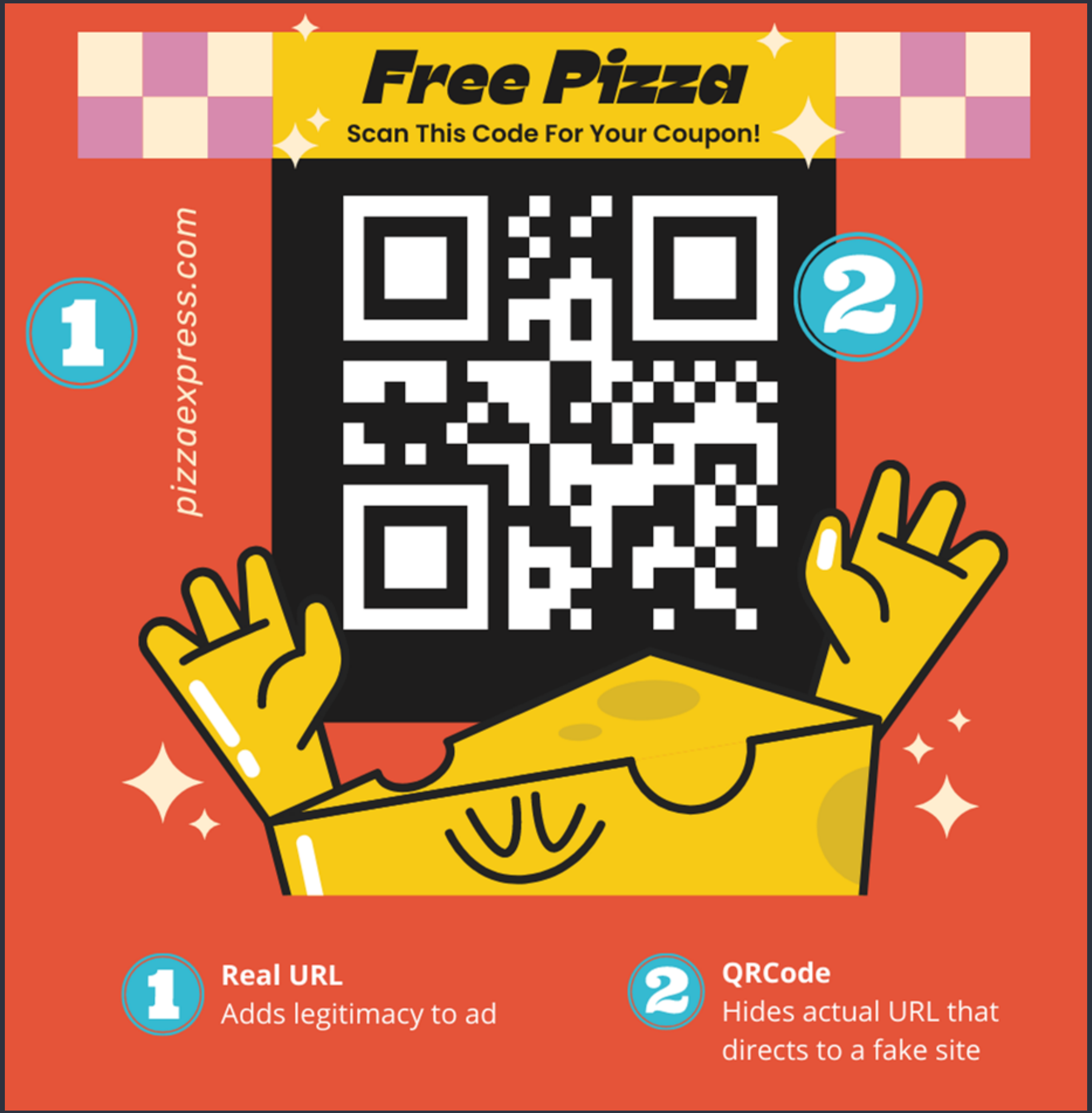
3 **Odd Characters in Handle**
Both use name of the Contact with minor variation to try and avoid notice '_.' or '._'

Credit: Wizer Training

QR Code Scams

Who thought a QR code could be dangerous?

They are everywhere, especially in restaurants. Criminals can place their own sticker over the legitimate one. So that when you scan it, you will be redirected to a fake site.

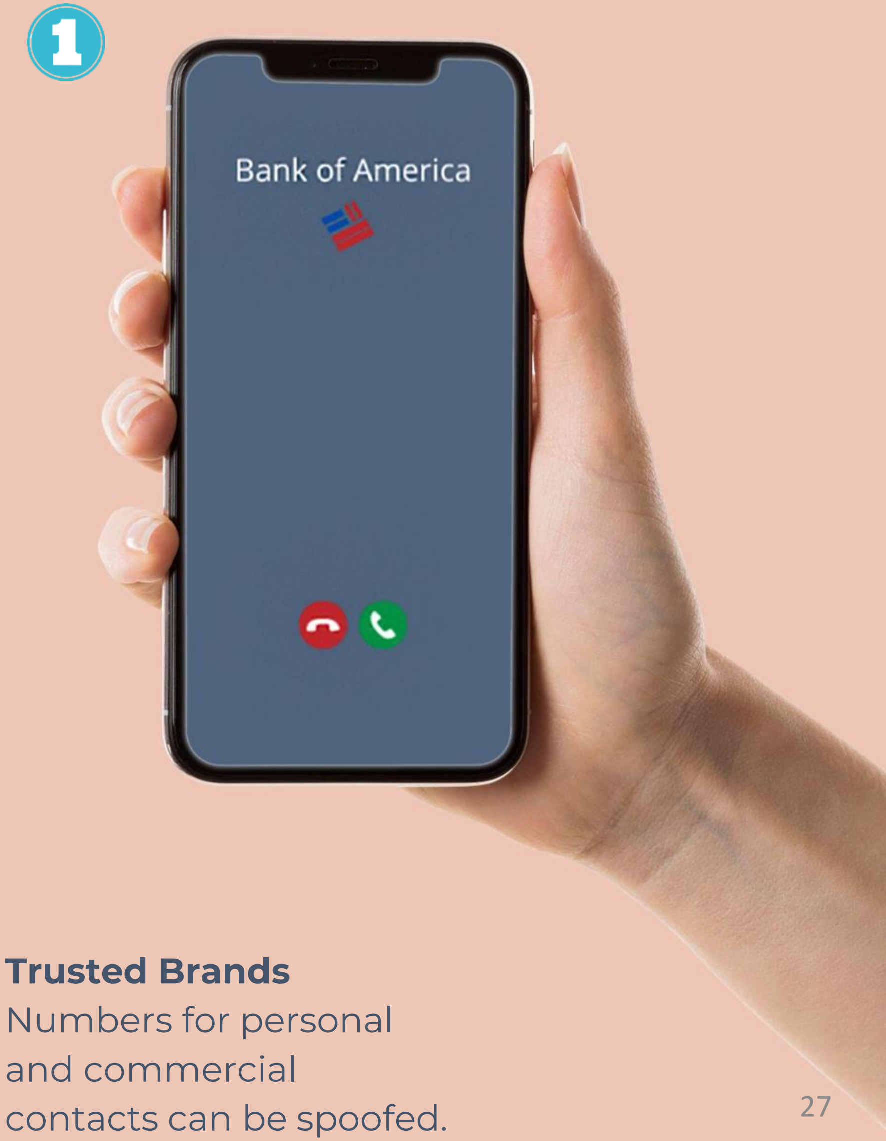

Free Pizza
Scan This Code For Your Coupon!
pizzaexpress.com
1
2
1 Real URL
Adds legitimacy to ad
2 QRCode
Hides actual URL that directs to a fake site

Credit: Wizer Training

Vishing Scams

Vishing (voice phishing) is a type of phishing attack made over the telephone.

Scammers can spoof a phone number that looks identical to a known number, like your bank.



1 **Trusted Brands**
Numbers for personal and commercial contacts can be spoofed.

Credit: Wizer Training

What Helps Protect You From Phishing Attacks?

- If it’s urgent, don’t let the emotions cloud your judgment
- Call and verify! - Verify that you are talking to the correct person
- Check the address - Always check the email address and URL for spelling mistakes
- Enable Multi-Factor Authentication
- Look at the style of the message
- Ask questions

Credit: Wizer Training

Ransomware

When criminals hack your computer or network, lock you out, and demand a ransom to let you back in.

Credit: Wizer Training

How to Avoid Ransomware

- **Don’t download** files from random websites
- **Beware** of phishing emails with attachments (See phishing section)
- **Don’t use** your company email or password for personal stuff
- **Don’t store** password in text files or spreadsheets

Credit: Wizer Training

How to use USB Safely

- **Avoid** public charging stations. They may be compromised.
- **Don’t plug** any USB that isn’t yours into your device
- **Encrypt** the data on the USB device in case you lose it or it gets stolen.

Credit: Wizer Training

Personal Privacy

- Public Wi-Fi
- Passwords
- Internet of Things (IoT)
- …

Password Advice

- Passwords need to be long!
- Use combination of Capitals, special characters and numbers
- Use a phrase (NO personal info like your name or B-Day)
- Don’t reuse passwords!

Sometimes strong password is not enough in case of data breach

- Use multi-factor authentication
- Most common is text based (SMS), but it’s the least secure
- It’s better to use authenticator apps like Google or Microsoft Authenticator
- Or even better yet, a physical USB key

Source: https://www.istockphoto.com/

Advice

- In the physical world we’re good at protecting ourselves and our property, we need to replicate this in the digital world.
- 80% of cyber-crime is preventable.
- Update and migrate
- Activate your firewall
- Staff awareness
- Data encryption
- User accounts privileges i.e., admin
- Cyber insurance
- Prepare Plan

You are the best defence!

- Technology is only a small part of Cyber Defence
- **You** are the most important person – protect yourself
- Organizations can use cybersecurity standards and frameworks
- The most important and best defence is Cybersecurity Awareness Training

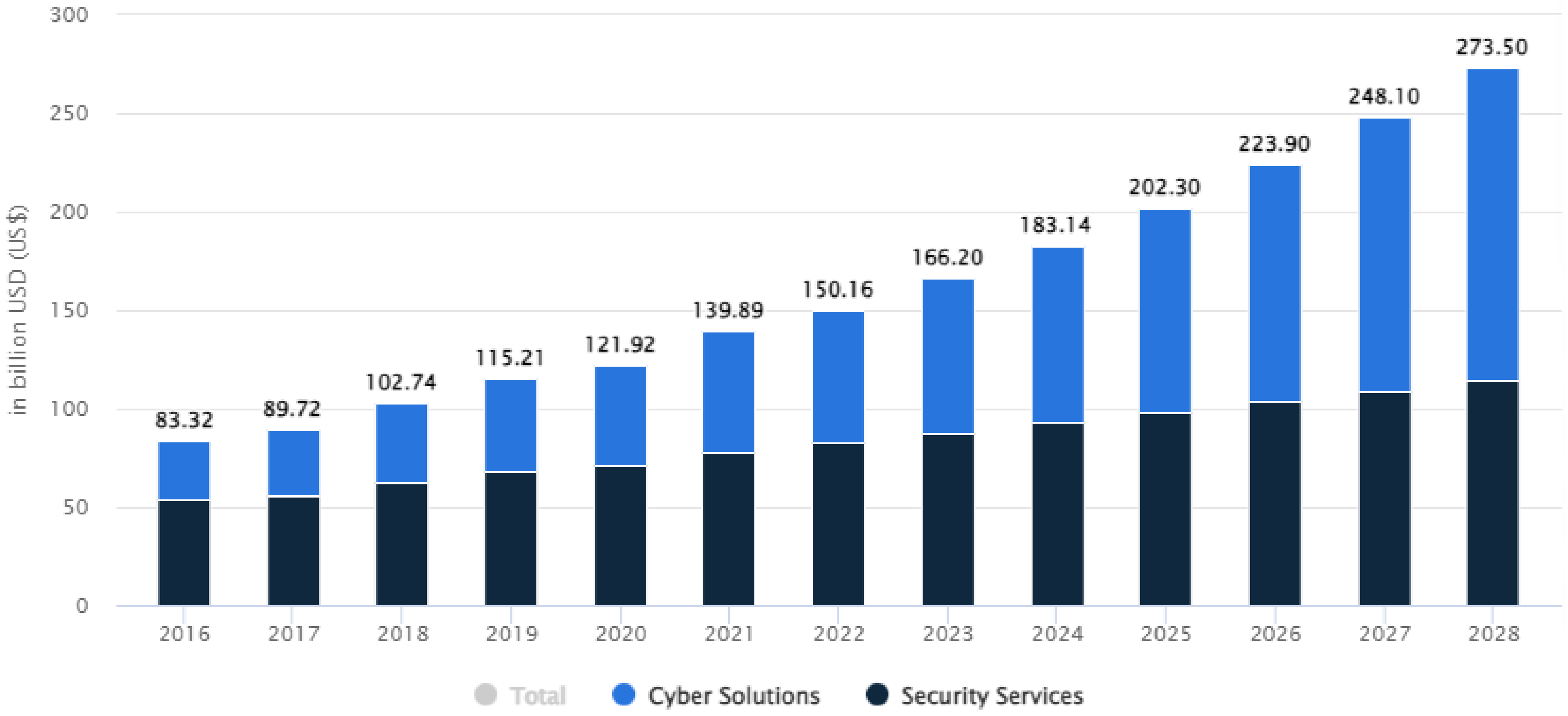
Always be aware!
Always be on your guard!

Cybersecurity Awareness Challenges

- Cybercriminals constantly come up with new attack methods
- Catching up with new trends and updating training programs is harder than it sounds
- This also makes cybersecurity training materials rapidly outdated since the knowledge and skills that worked today may not be sufficient for tomorrow's threats
- To generate interest and engage employees. Repetitive curriculum, too much information, duration of the course and complexity can discourage employee participation

Source: https://spanning.com/blog/cybersecurity-awareness/

Cybersecurity Revenue By Statista



Last But Not Least

- **Cybercrime Reporting**
  - Law Enforcement Agency (Cyber Unit/Cell)
  - CYBER THREAT REPORT (https://www.cirt.gov.bd/cyber-threat-report/)
- **Cyber Security Awareness/Countermeasure**
  - Workshop/Training by all stakeholders
  - Know about cyber security act

References

- If not otherwise indicated, "*google image*"
- Internet resources
- Textbook resources

THANK YOU

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Research Interest: Cybersecurity (Internet of Things, Automotive)