Cybercrime 1

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Cybercrime

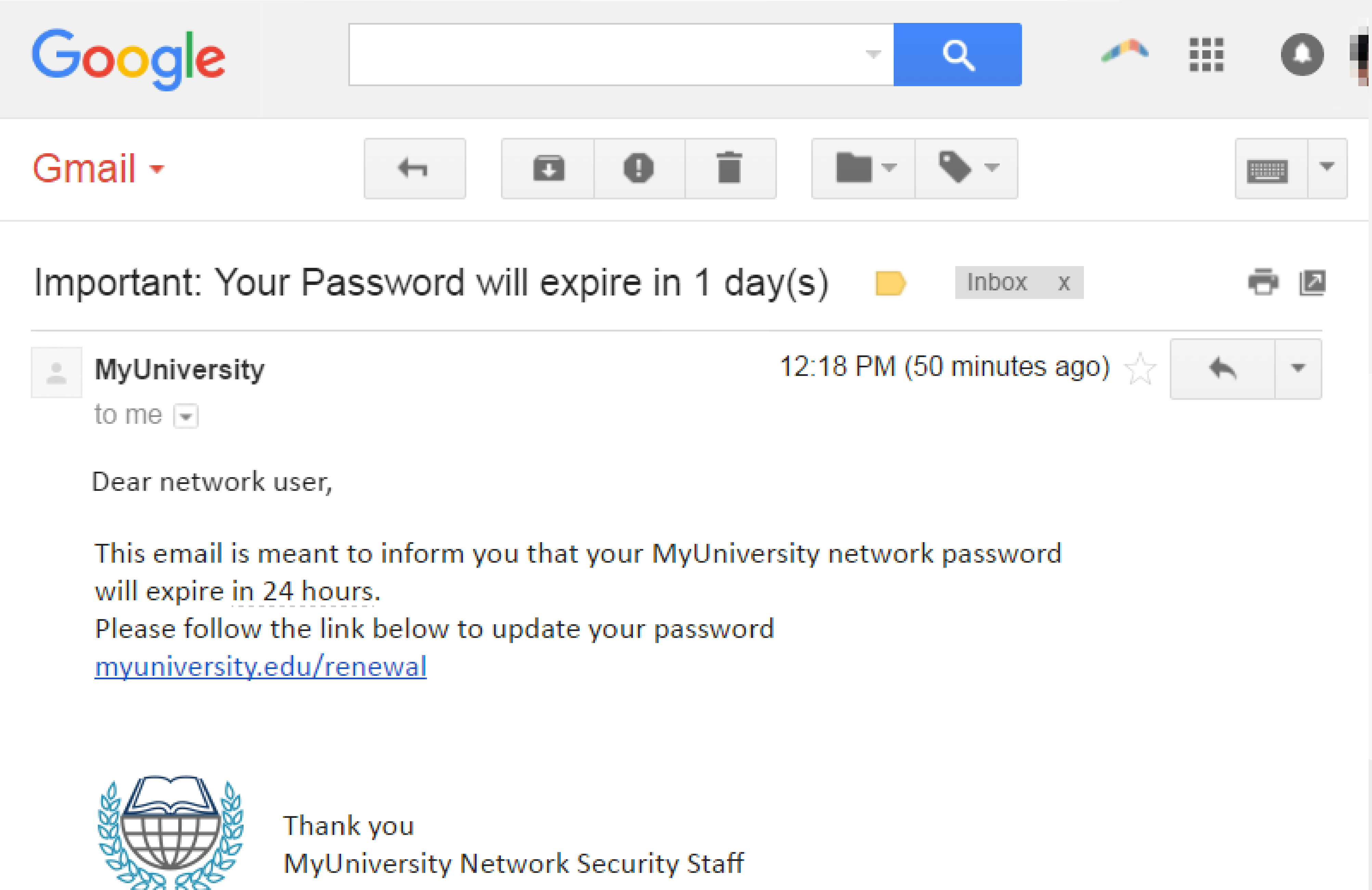
- crime which includes a network and a computer
  - is performed with a computer or against a computer
  - could be performed by individuals or organized groups
- some of the most common threats are **phishing**, **ransomware**, **DoS**, **botnet**, **keylogger**, **SQL injection**
- **malware** is a generic term for describing any software designed to cause trouble

Phishing

- social engineering technique, consists of fraudulent message
- the message is trying to get sensitive user information by pretending to look like an official message from some service
  - user is redirected to fake website which looks exactly like the real one
  - if user inputs their credentials, the attacker will gain access to them, they could be then used to steal victim's account

HOW TO AVOID:

URL in message could have typo in it (e.g. youutube.com)



Important: Your Password will expire in 1 day(s)

MyUniversity

12:18 PM (50 minutes ago)

Dear network user,

This email is meant to inform you that your MyUniversity network password will expire in 24 hours.
Please follow the link below to update your password
myuniversity.edu/renewal

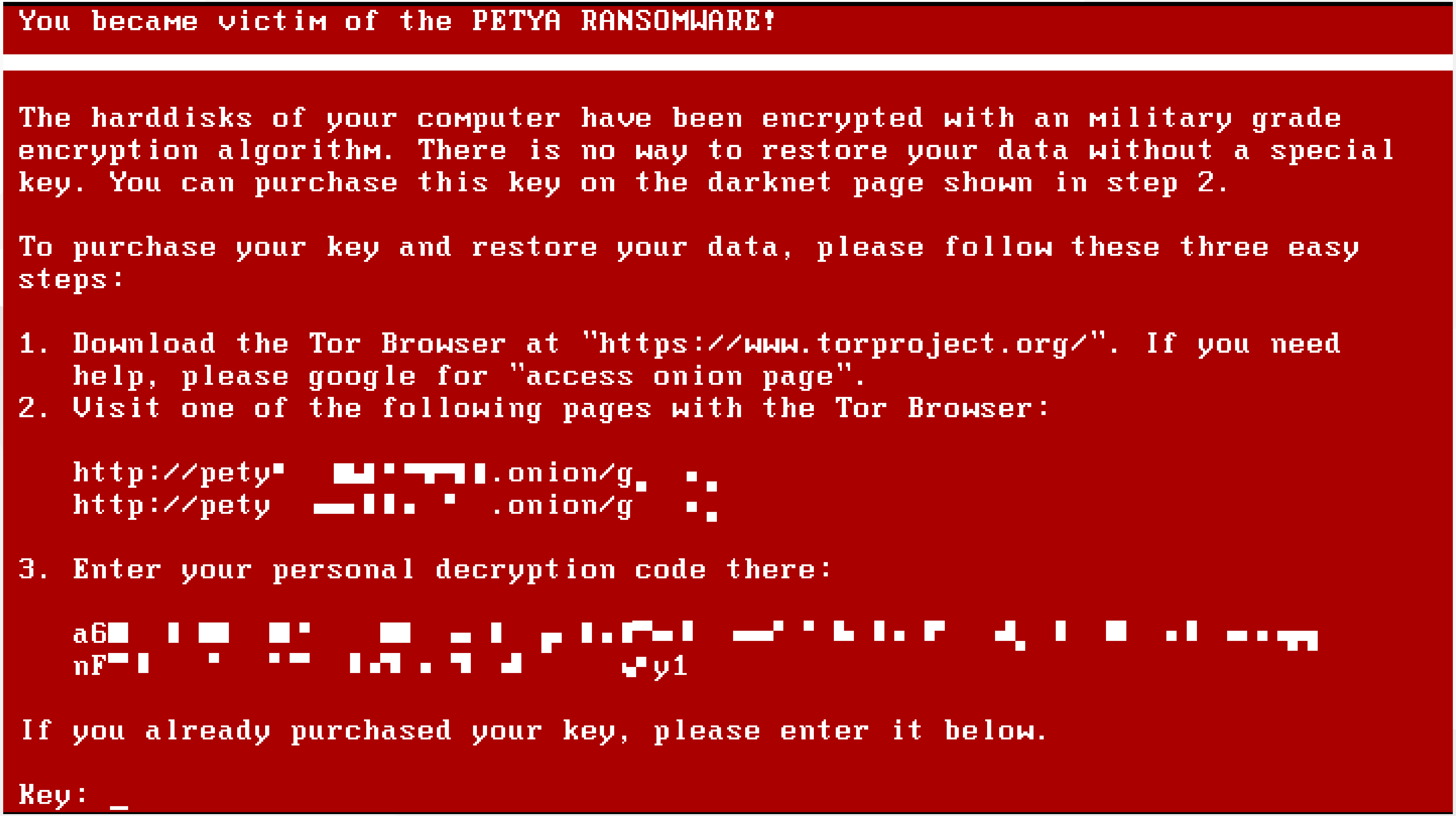
Thank you
MyUniversity Network Security Staff

Ransomware

- attacker blocks and encrypts user's data
- then blackmails the user and demands money for decrypting data
    - attacker can also threaten to publish data (if they're sensitive)
- typically spreads using trojan horse in some malicious software downloaded by user
- the payment required by the attacker is usually using cryptocurrencies (to avoid being tracked)

HOW TO AVOID:

do not download content from suspicious sources

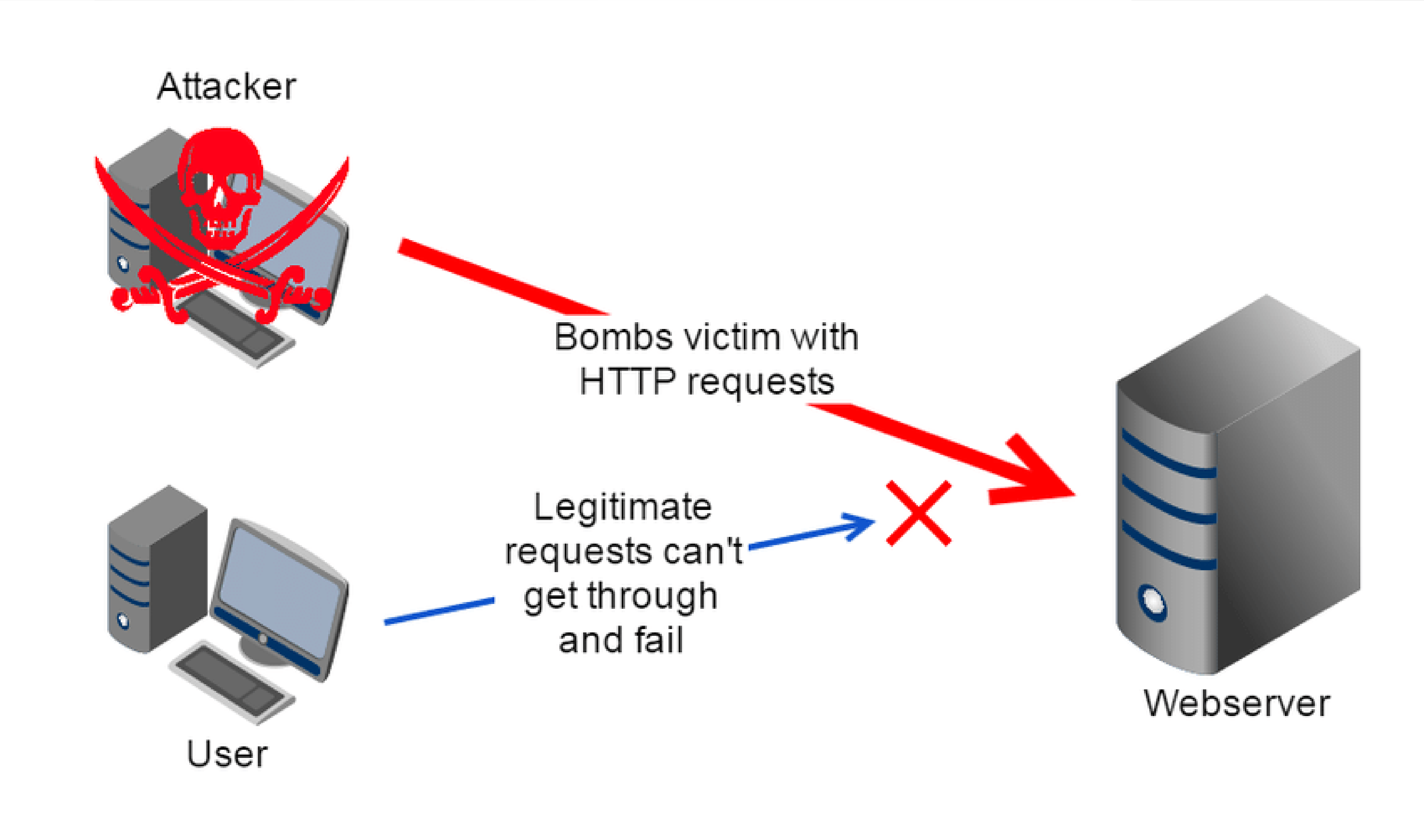


```
You became victim of the PETYA RANSOMWARE!

The harddisks of your computer have been encrypted with an military grade
encryption algorithm. There is no way to restore your data without a special
key. You can purchase this key on the darknet page shown in step 2.

To purchase your key and restore your data, please follow these three easy
steps:

1. Download the Tor Browser at "https://www.torproject.org/". If you need
   help, please google for "access onion page".
2. Visit one of the following pages with the Tor Browser:

   http://pety[redacted].onion/g[redacted]
   http://pety[redacted].onion/g[redacted]

3. Enter your personal decryption code there:

   a6[redacted]
   nF[redacted]y1

If you already purchased your key, please enter it below.

Key: _
```

DoS / DDoS

- Denial of Service / Distributed Denial of Service
- attack aimed at servers, trying to make them unavailable for users
    - the goal is not to take control over the service
- performed via sending huge amount of data to the server and overwhelming it
- DDoS is organized DoS using lots of computers all sending data to one target

HOW TO AVOID:
using DDoS protection on your server to check incoming requests

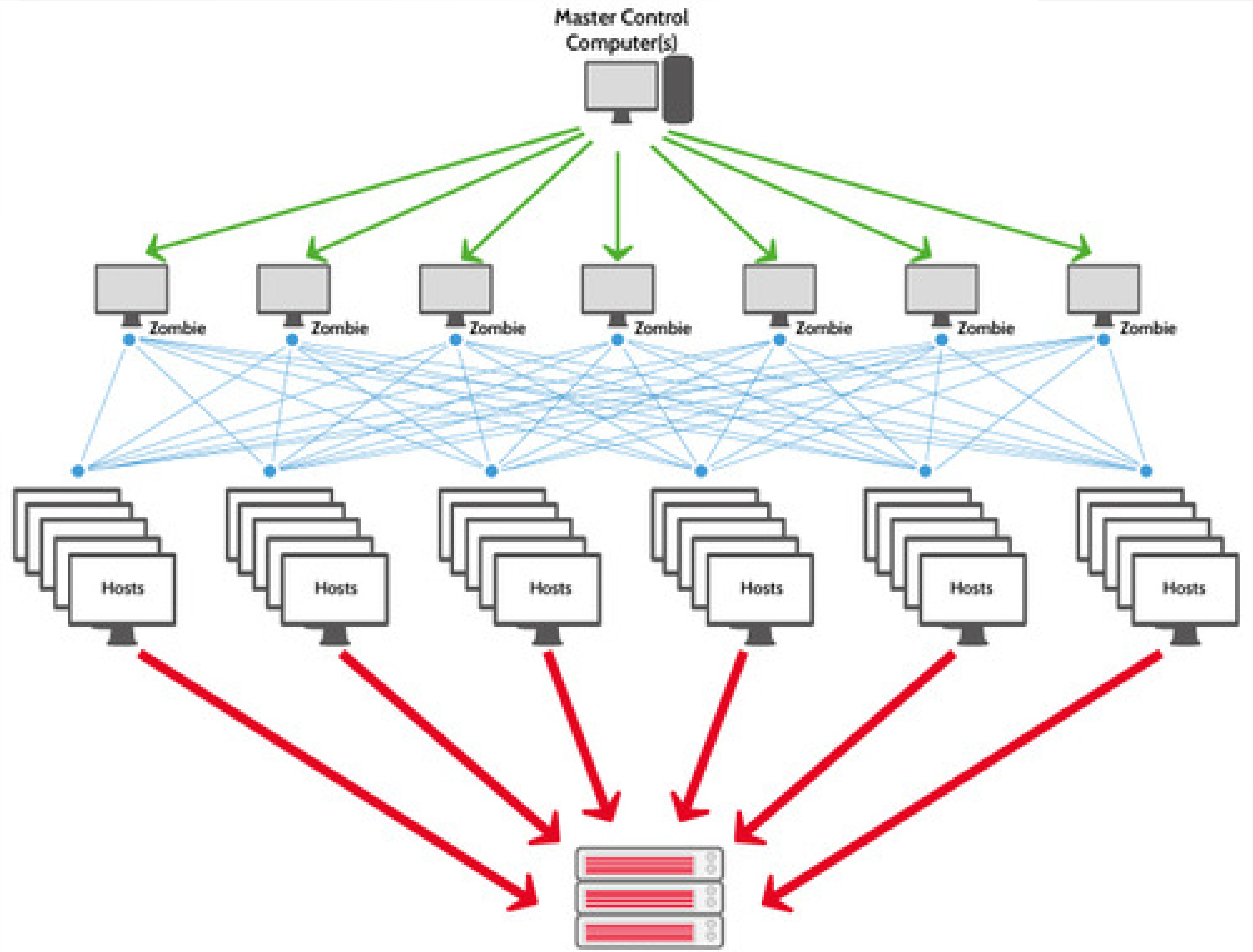

Attacker
Bombs victim with HTTP requests
Legitimate requests can't get through and fail
User
Webserver

Botnet

- lots of infected computers (zombies) are controlled from one device to perform different cybercrimes (most often DDoS)
- users typically do not have a clue about their computer being infected
- bot master has to limit number of requests to avoid being caught by ISP

HOW TO AVOID:

you can check your network traffic to find some suspicious requests

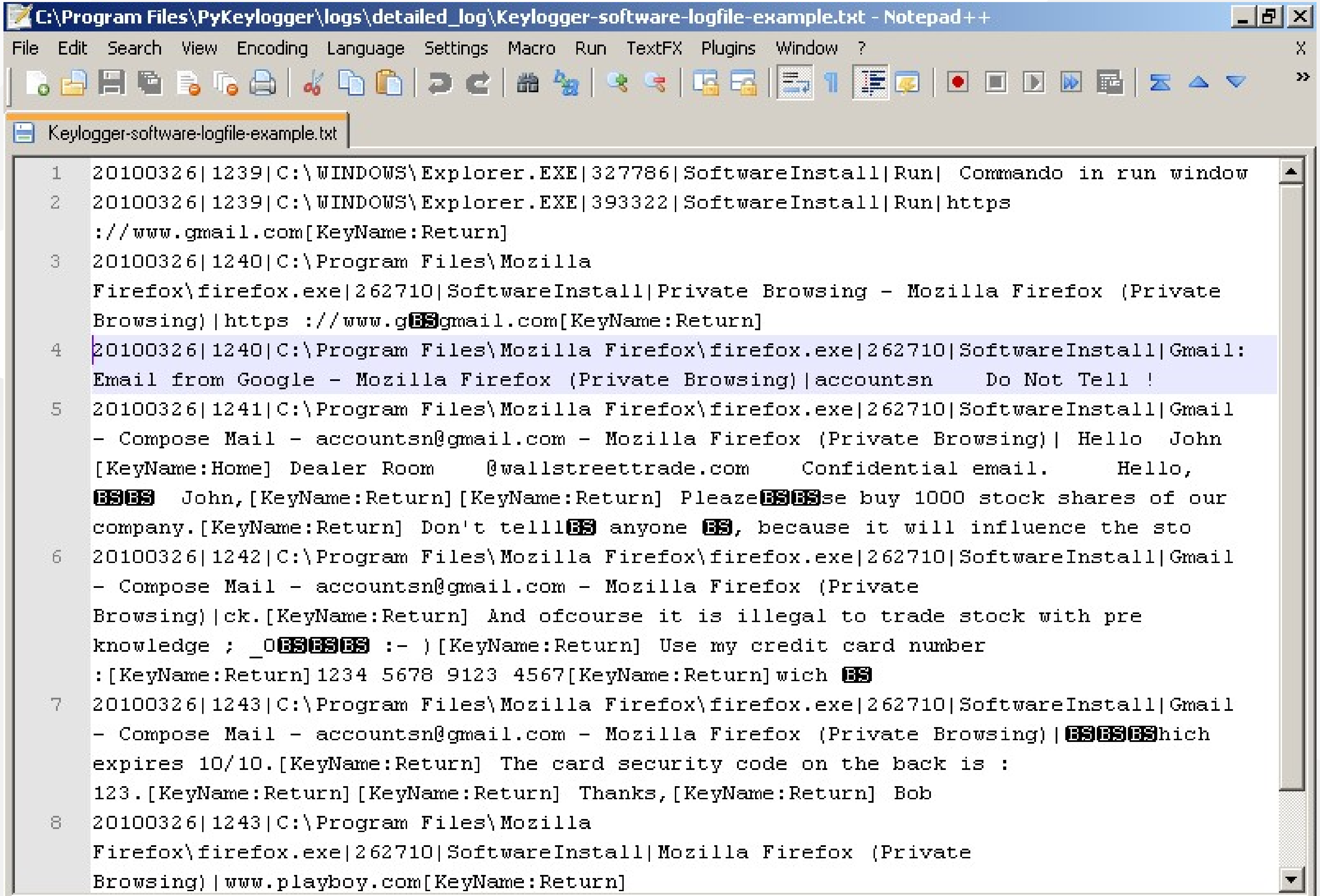

Master Control
Computer(s)
Zombie
Zombie
Zombie
Zombie
Zombie
Zombie
Zombie
Hosts
Hosts
Hosts
Hosts
Hosts
Hosts

Keylogger

- malware which records keys you press and sends them to the attacker
- attacker can gain your credentials using this method
- hardware keyloggers can be harder to detect than software ones
- your antivirus should usually detect the keylogger before it installs

HOW TO AVOID:

by deleting it if you identify keylogger in your running tasks



C:\Program Files\PyKeylogger\logs\detailed_log\Keylogger-software-logfile-example.txt - Notepad++
File Edit Search View Encoding Language Settings Macro Run TextFX Plugins Window ?
Keylogger-software-logfile-example.txt

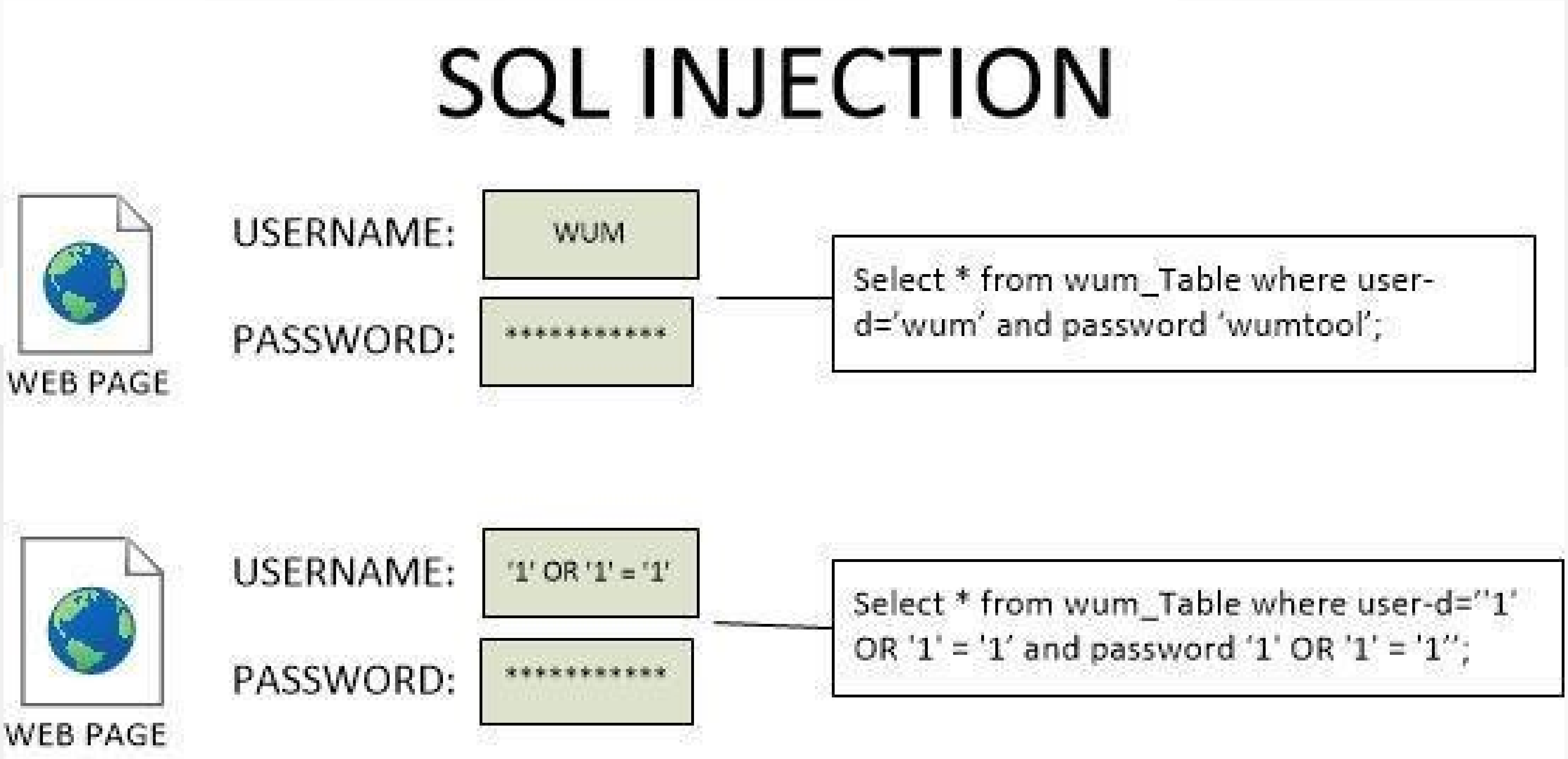
```
20100326|1239|C:\WINDOWS\Explorer.EXE|327786|SoftwareInstall|Run| Commando in run window
20100326|1239|C:\WINDOWS\Explorer.EXE|393322|SoftwareInstall|Run|https
://www.gmail.com[KeyName:Return]
20100326|1240|C:\Program Files\Mozilla
Firefox\firefox.exe|262710|SoftwareInstall|Private Browsing - Mozilla Firefox (Private
Browsing)|https ://www.gBSgmail.com[KeyName:Return]
20100326|1240|C:\Program Files\Mozilla Firefox\firefox.exe|262710|SoftwareInstall|Gmail:
Email from Google - Mozilla Firefox (Private Browsing)|accountsn    Do Not Tell !
20100326|1241|C:\Program Files\Mozilla Firefox\firefox.exe|262710|SoftwareInstall|Gmail
- Compose Mail - accountsn@gmail.com - Mozilla Firefox (Private Browsing)| Hello  John
[KeyName:Home] Dealer Room   @wallstreettrade.com   Confidential email.    Hello,
BSBS  John,[KeyName:Return][KeyName:Return] PleazeBSBSse buy 1000 stock shares of our
company.[KeyName:Return] Don't telllBS anyone BS, because it will influence the sto
20100326|1242|C:\Program Files\Mozilla Firefox\firefox.exe|262710|SoftwareInstall|Gmail
- Compose Mail - accountsn@gmail.com - Mozilla Firefox (Private
Browsing)|ck.[KeyName:Return] And ofcourse it is illegal to trade stock with pre
knowledge ; _OBSBSBS :- )[KeyName:Return] Use my credit card number
:[KeyName:Return]1234 5678 9123 4567[KeyName:Return]wich BS
20100326|1243|C:\Program Files\Mozilla Firefox\firefox.exe|262710|SoftwareInstall|Gmail
- Compose Mail - accountsn@gmail.com - Mozilla Firefox (Private Browsing)|BSBSBShich
expires 10/10.[KeyName:Return] The card security code on the back is :
123.[KeyName:Return][KeyName:Return] Thanks,[KeyName:Return] Bob
20100326|1243|C:\Program Files\Mozilla
Firefox\firefox.exe|262710|SoftwareInstall|Mozilla Firefox (Private
Browsing)|www.playboy.com[KeyName:Return]
```

SQL injection

- SQL is language used to manage databases
- this attack targets poorly secured forms on websites
- by typing part of the SQL query directly into the form input, the query would execute and cause trouble in database
- attacker can either try to remove data from the database or to gain access to secured data like passwords

HOW TO AVOID:

by securing your SQL query or database



SQL INJECTION

USERNAME: WUM

PASSWORD: ***********

```
Select * from wum_Table where user-d=’wum’ and password ‘wumtool’;
```

USERNAME: '1' OR '1' = '1'

PASSWORD: ***********

```
Select * from wum_Table where user-d=’’1’ OR '1' = '1’ and password ‘1' OR '1' = '1’’;
```

Encryption

- process of securing data by encoding them using various algorithms

Hash

- data are encrypted using complex mathematical functions
- there is no way to get original data back (used to store passwords)

Cypher

- data are encrypted using an algorithm with a decryption key
- this key is secure and can be used to decrypt data back

Questions

1) Have you ever been a victim of some cybercrime?

2) What protection are you using to prevent downloading malware?

3) How do you make your password secure?

4) How do you identify that message is phishing?

Phrases

- fraudulent
- SQL query (Structured Query Language)
- URL (Uniform Resource Locator)
- ISP (Internet Service Provider)
- hash
- cryptocurrencies
- log file