

# Internet, Online Attacks and Vulnerabilities

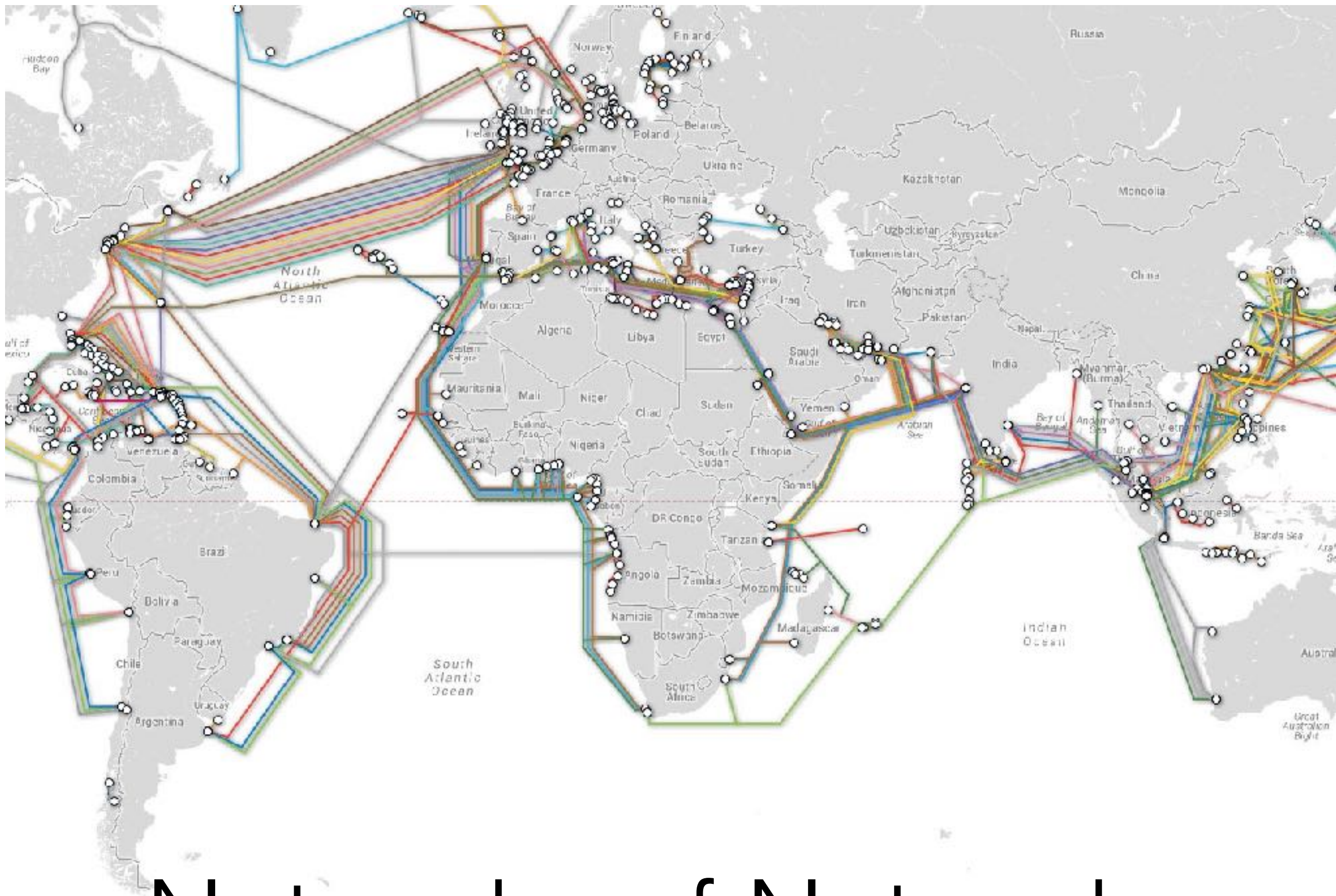
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Informant Networks



# Agenda

- Internet
- How does the Internet work?
- What is an attack?
- What are the different types of attack?
- What are vulnerabilities?
- A very basic attack
- Questions





# Networks of Networks

# Internet Service Providers

- Tier 1, Tier 2 and Tier 3
- Peering Agreements
- Large cables laid on the sea floor
- India has only one Tier 1 network. Tata Communications

# Attacks on Networks

- Denial of Service
- Man in the Middle
- Eavesdropping

# Attacks on Networks

- Denial of Service
  - Large amounts of traffic sent
  - Choke the capacity to handle requests
  - Cause loss in business due to unavailability
- Man in the Middle
- Eavesdropping

# Attacks on Networks

- Denial of Service
- Man in the Middle
  - You connect to google.com
  - Someone else makes you feel they are google.com
  - They intercept everything you send to google.com
  - HTTPS also does not help
- Eavesdropping

# Attacks on Networks

- Denial of Service
- Man in the Middle
- Eavesdropping
  - Very common with open WiFi networks
  - Connect to the WiFi and listen for data
  - Find valuable data sent without encryption



Thats all fine.

But how does it affect me?

# Popular attacks

- Phishing
- Exploits
- Malvertisement
- False Advertising

# Popular attacks

- Phishing
  - Prince of Nigeria
  - Lure to send money
- Exploits
- Malvertisement
- False Advertising

# Popular attacks

- Phishing
- Exploits
  - Vulnerabilities in code
  - Take advantage to execute something on victim computers
  - Install keyloggers, malware, etc..
- Malvertisement
- False Advertising

# Popular attacks

- Phishing
- Exploits
- Malvertisement
  - “You have 116 unread emails”
  - “Click here to win a lottery”
- False Advertising



# Popular attacks

- Phishing
- Exploits
- Malvertisement
- False Advertising
  - “You have been infected by a virus, Click here to clean”
  - “Download free Adobe Photoshop Crack”

# Vulnerabilities

In computer security, a vulnerability is a weakness which allows an attacker to reduce a system's information assurance.

Vulnerability is the intersection of three elements:

- a system susceptibility or flaw,
- attacker access to the flaw, and
- attacker capability to exploit the flaw

# Lets talk Vulnerabilities

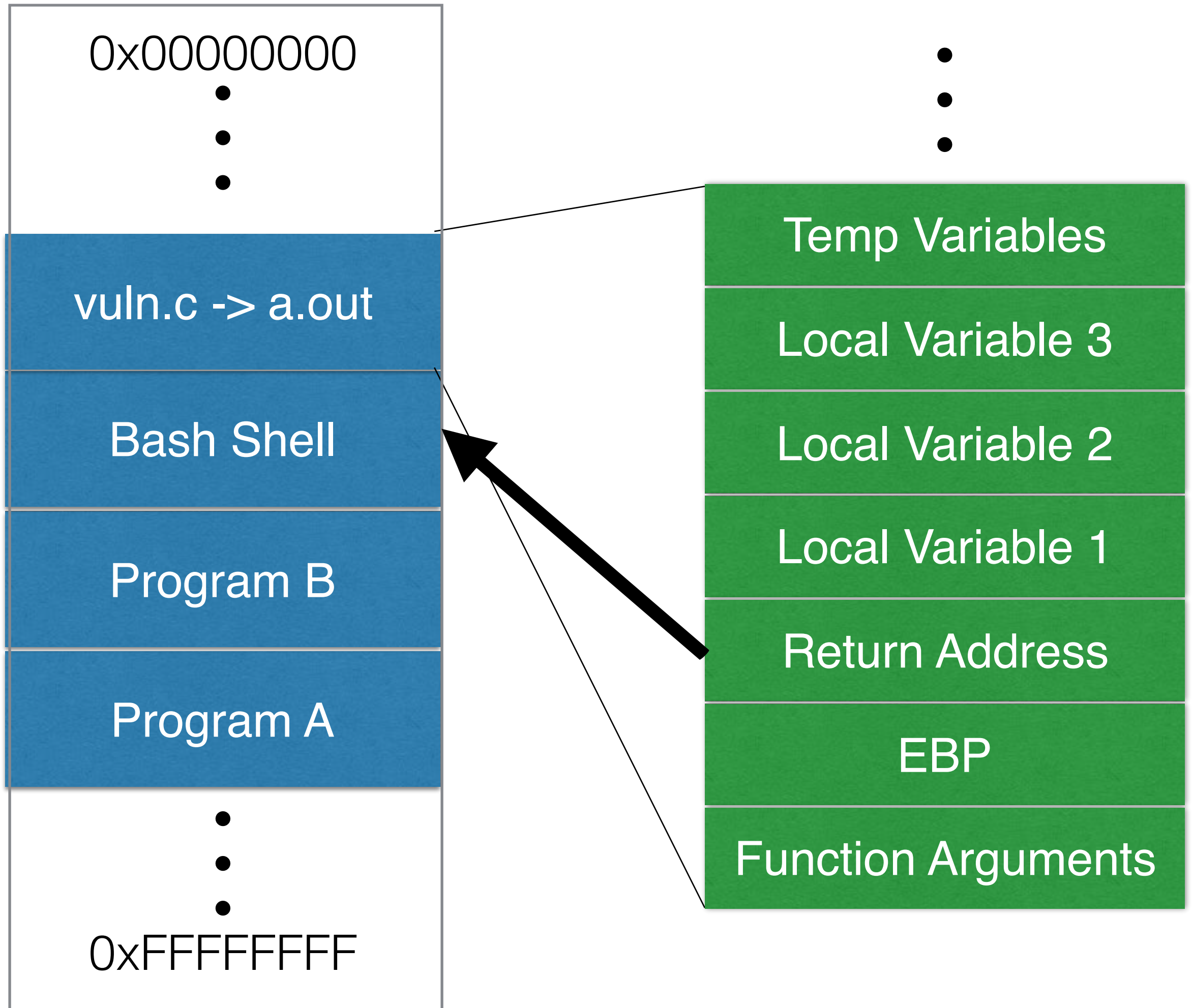
- Problems in software
- Introduced by Developers who don't keep security in mind
- Mostly introduced by not considering how a user might use the program

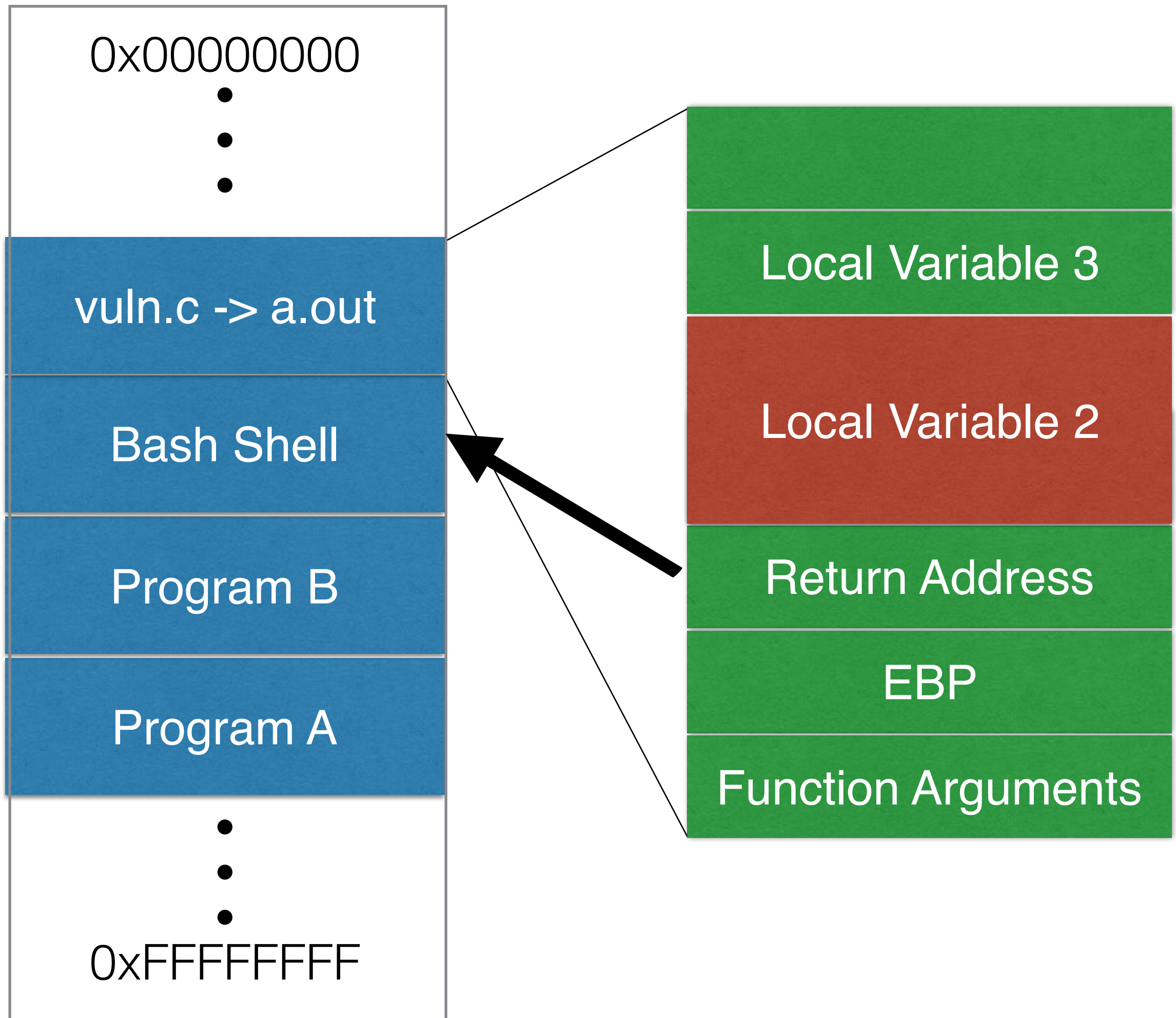
# Buffer Overflows

```
main() {  
    char buf[6];  
  
    gets(buf);  
  
    printf("You typed: %s", buf);  
}
```



What happens when  
you give large input?





# Problems

- Value of Variable 2 can change the value of variable 1
- If there is any condition that checks variable 2. That can be bypassed via value of Variable 1
- You are forcing the program to take inputs that were not intended

```
#include <stdio.h>
#include <string.h>

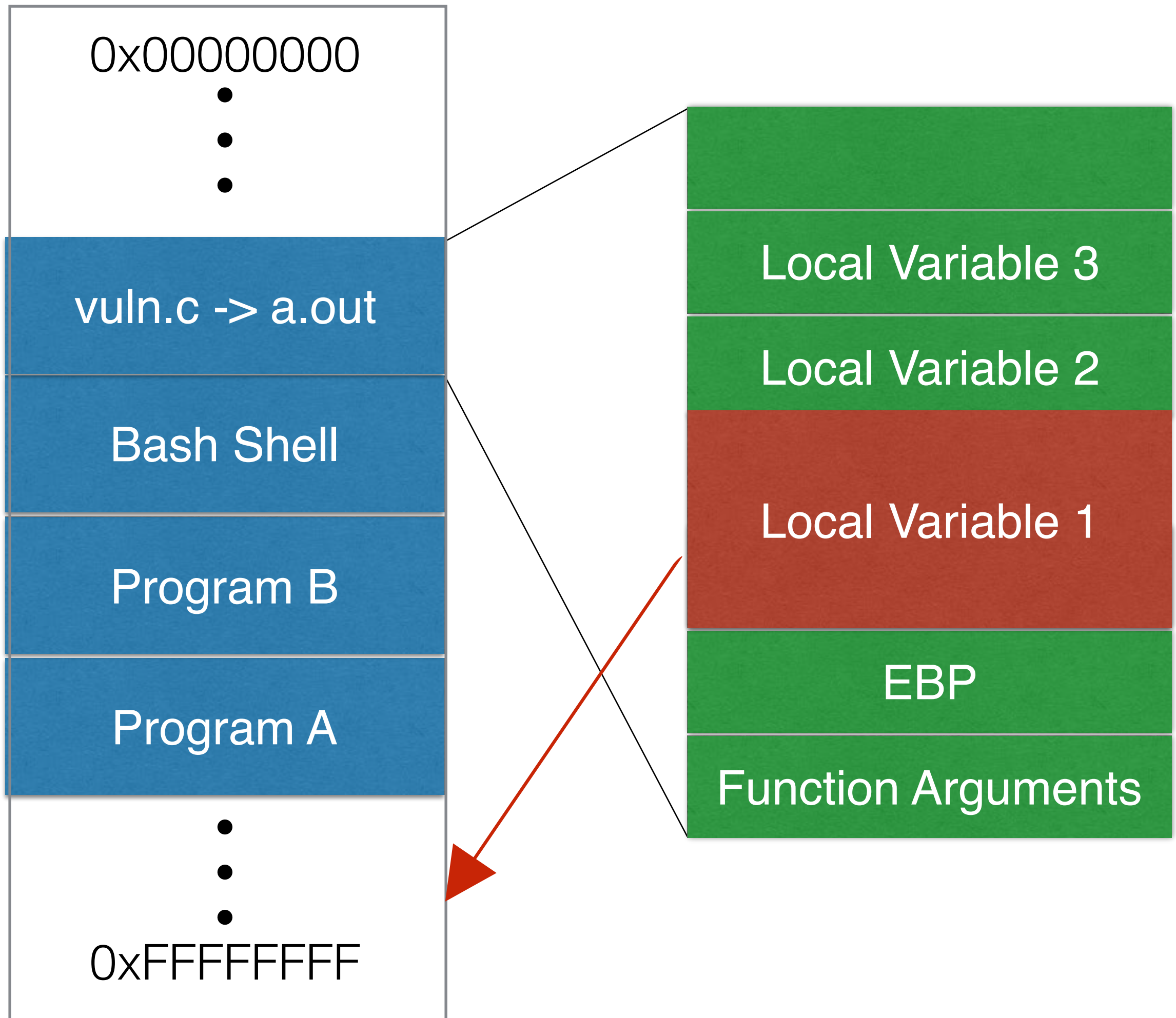
main() {
    char buf[10]; # Some buffer
    int pass = 0; # Flag for password check

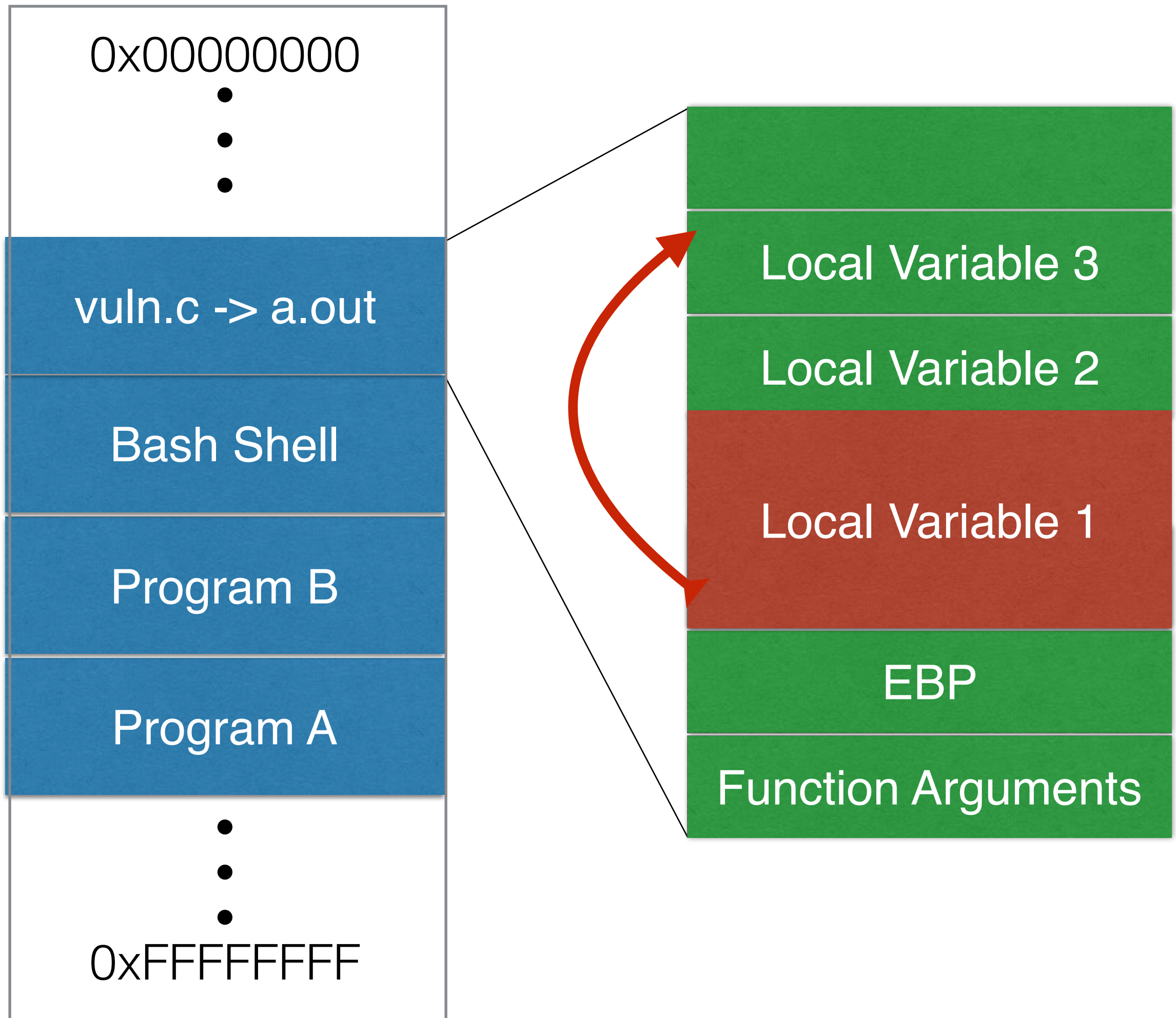
    printf("\nEnter a password: ");
    gets(buf); # get a password from user

    # Check if password is correct
    if(strcmp(buf,"jaincollege")) {
        printf("\nWrong Password\n");
    }
    else {
        printf("\nCorrect Password");
        pass = 1; # Set flag if password is correct
    }

    if(pass) {
        # Grant extra access if password flag is set
        printf("\n**You have been granted special access**\n");
    }
}
```







# Zero Days

- Problems unknown to software maker
- Can be used to compromise anyone who uses the software
- Remote exploits that entirely defeat the security of an Android or Windows Phone device go for as much as \$100,000 (65 Lakh Rs)
- Very very very difficult to find

# Questions

What do you want to know?