Assignment-2

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2014053

Q1

US based Companies

Apple: - George Stathakopoulos (Vice President of Corporate Information Security)

- Experience
  Vice President of Information Security, Amazon (6 years 2 months)
  GM of Product Security, Microsoft (8 years 9 months)
  Engineer, Microsoft Corporation (5 years 5 months)
- Some of the top skills
  Information Security, Cloud Computing, Security; Computer Security, Scalability, Distributed System etc.
- Responsibility
  Protecting corporate assets, such as the computers used to design products and develop software, as well as data about customers.

Apple Inc, amid a pitched battle with the U.S. government over law enforcement's desire to crack into iPhones, has hired a new security executive to oversee its corporate digital defenses.

Profile Link: - https://www.linkedin.com/in/george-stathakopoulos-85173020

Microsoft: - Bret Arsenault (Corporate Vice President and Chief Information Security Officer)

- Experience
  Seasoned executive with 25+ years of security experience in multiple technology disciplines. Bret has designed, implemented and led the information security organization for a multinational, Fortune 50 technology company for over a decade.
- Some of the top skills

Security, Information Security, Cloud Computing, Leadership, Risk Management, Leadership, Networking Engineering

- Responsibility
  Enterprise-wide information security, compliance and business continuity efforts. Leads a global team of security professionals with a strategic focus on information protection, assessment, awareness, governance and enterprise business continuity.

  Profile Link: -https://www.linkedin.com/in/bret-arsenault-97593b60

Amazon: - Stephen Schmidt (Vice President, Security Engineering & Chief Information Security Officer)

- Experience
  Rescue Operations Lieutenant, Sterling Volunteer Rescue Squad (12 years)
  General Manager, Technical Services, Amazon (2 year 2 month)
  Section Chief, Federal Bureau of Investigation (10 years)
  Vice President, American Information Systems, Inc (5 years)
  And do have many patients on his name
- Some of the top skills
  Security, Information Security, Computer Security, Program Management, Cloud Computing, Security Clearance
- Responsibility
  Privacy and Data Security of Amazon AWS

  Link: - https://aws.amazon.com/blogs/security/privacy-and-data-security/

  Profile Link: - https://www.linkedin.com/in/stephenschmidt1

India based Companies

HCL: - Manoj Sarangi (Chief Information Security Officer)

- Experience

Group CISO & Head- Technology, Aditya Birla Group (3 years)
Director, Enterprise Risk Services, Deloitte (1 year)
Member, Certification Advisory Board, IAPP (1 year)
Chief Privacy and Security Officer, India & South Asia, IBM (4 year)
Program Lead, Hewlett-Packard (4 year)

- Some of the top skills
  Information Security, Business Continuity, Security, Risk Management, Security Management
- Responsibility
  Information Security, Cyber Security, Data Privacy, Risk Management, Business Continuity,
  IT Service Delivery, Organizational Transformation, Security Metrics and Measurement

  Profile Link: -
  https://www.linkedin.com/in/manojsarangi?authType=name&authToken=a_vz&trk=prof-sb-browse_map-name

Infosys Ltd: - Vishal Salvi (CISO)

- Experience
  Salvi has 15 years of industry experience having worked in Crompton Greaves, Development Credit Bank, Global Trust Bank, Standard Chartered Bank before taking on the role of Chief Information Security Officer & Senior Vice President at HDFC Bank. Prior to joining HDFC Bank, he has worked in Standard Chartered Bank for eleven years and played variety of roles in IT Service Delivery, Governance and Risk Management and Information Security. At HDFC Bank, Vishal heads the Information Security Group and responsible for driving Information Security strategy and its implementation across the Bank & its subsidiaries.
- Some of the top skills
  Security Strategy and its implementation, Information Security, Risk Management
- Responsibility
  Vishal Salvi, one of the most recognizable names in the information security world, according to two executives familiar with the development.

Salvi will be the company's new chief information security officer (CISO), filling a position that's been lying vacant since company veteran Prabhakar Mallya retired from Infosys in July 2014.

Flipkart: - Ganapathi Subramaniam (Director - Information Security)

- Experience
  Chief Security Officer, Microsoft India (1 year 5 months)
  Global IT Security Lead, Accenture (5 years 10 months)
  Head of IT Security Group - Global Compliance and Monitoring, PricewaterhouseCoopers LLP (1 year)
  Head of Information Security & Risk, HML (5 years)
  Senior IT Audit Consultant, Skipton Building Society (2 year)
  Senior IT Consultant, Ernst & Young (1 year)
  Manager - Information Systems Audit**,** Thomas Cook (1 year)
  Systems Officer, Hindustan Petroleum Corporation Limited (6 years)
- Some of the top skills
  Information Security, IT Audits, Security, IT Management
- Responsibility
  Ensuring the security of the company in all aspects

COMPARISON

The profiles of US based companies seems to have more experience that the Indian profiles and not only the experience, the companies that they have worked for before were also the top companies among the world (top 5 fortune companies).This may be because in India security don't seems to be the most important issue as compared to US because they have suffered and still suffering from various security attacks. And Indian profiles do lack in skills and popularity too. So conclusion; US wins the race in terms of security.

Q2

a. Recently a massive DDOS attack was made on the Dyn servers.Dyn is a major DNS service provider and some of its customers are Twitter,Spotify etc. The attackers this time attack the DNS service provider instead of a particular website ,so this time the data on the companies server were secure but the link that connect user to the website was under attact.The attack was made through bots (malicious programmes),The attackers exploiter the IOT's vulnerability and over the month implanted these bots into the insecure IOT devices and they made multiple request at the Dyn servers due to which the server got shut and were not able to convert users requests into IP's; names were not converted into IP's and vice versa. Because of this half of the internet was down.

b. The blame for this attack has been firmly placed on IoT devices and as a supplier of connectivity to IoT and M2M devices. So securing these IOT's is the technical mitigation to these attacks. The device should run a number of monitoring functions that look for potentially malicious interactions from unknown IP addresses. This will prevent a bot from trawling the internet and repeatedly trying to guess the username and password. The device needs to be regularly updated and its security analysed. Leaving a device unsupported for any length of time raises the potential of the device being compromised. As a manufacturer or designer of a connected device you cannot rely on the end user securing the device for you. Setting a unique username and password in the factory is the bare minimum, preferably you should insist these are changed when the device is first powered on (whether this is completed by the end user or remotely by the management company). A mistake common in the compromised devices was that the web interface username and password were separate to the command line versions; even the most security conscious end users wouldn't have been able to secure the devices.
Secondly apart from securing the IOT's ,when these kind of attack happen user could still access the website using the Tor browser or connect through VPN's. Because the server near the region are not able to server

the request but we if we could redirect the traffic to servers that are place in some other region the user will be able to access the websites as these DNS are relayed all around the world.

c. There should be some laws that these IOT’s manufacturing company should follow and insure some of the basic security to their devices so that they can’t be exploited .The IOT’s manufacturer’s should hire some good penetration testers and should launch their product after complete testing of the product .They should follow secure designing principles while developing to prevent the future sue of them.Gov. should ban the devices that are not secure and penalize the companies that are not following the laws (security principles).

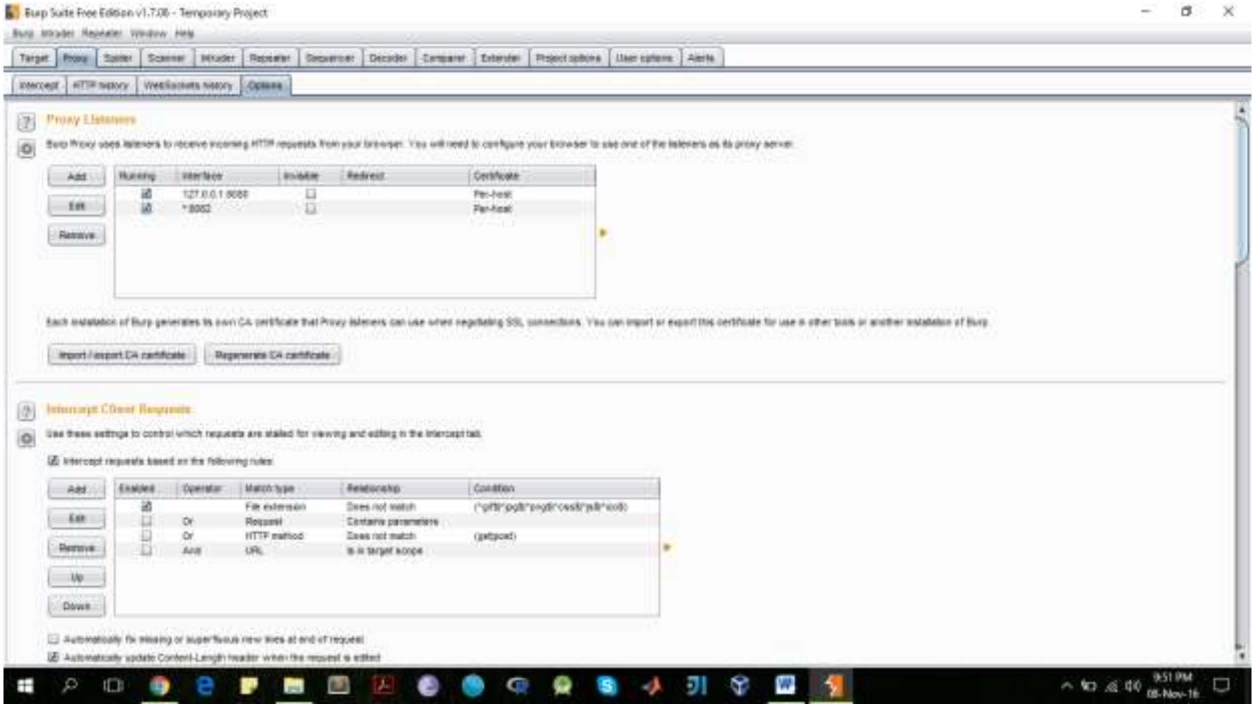
Q4

Security/privacy related vulnerabilities: -

Through Burp we can see/monitor all the traffic going to www.facebook.com , we can see all the packets, cookie, sessions that are send and receive from Facebooks sometimes we can see the access tokens and Facebooks graph api through which developer use to read and write the user's data, Facebook don’t allow the deletion of pictures but if we use it through mobile we can delete these pictures.

Apart from that we can see how the graph api which is also used by Facebook is communication while we are opening, deleting or scrolling over the page.

And through these request and responses we can sometimes see the access tokens, these access tokes are part of PII’s .If we can someone’s access tokens we can query to get data from Facebook, and what if we get multiple such tokens we can make a DDOS attack over Facebook server’s and make Facebook down without getting caught as these tokes will be registered on various accounts.



Burp Suite Free Edition v1.7.06 - Temporary Project
Burp Intruder Repeater Window Help
Target Proxy Spider Scanner Intruder Repeater Sequencer Decoder Comparer Extender Project options User options Alerts
Intercept HTTP history WebSockets history Options
Add
Edit
Remove
Import / export CA certificate
Regenerate CA certificate
Up
Down
9:51 PM
08-Nov-16

Proxy Listeners

Burp Proxy uses listeners to receive incoming HTTP requests from your browser. You will need to configure your browser to use one of the listeners as its proxy server.

Running	Interface	Invisible	Redirect	Certificate
☑	127.0.0.1:8080	☐		Per-host
☑	*:8082	☐		Per-host

Each installation of Burp generates its own CA certificate that Proxy listeners can use when negotiating SSL connections. You can import or export this certificate for use in other tools or another installation of Burp.

Intercept Client Requests

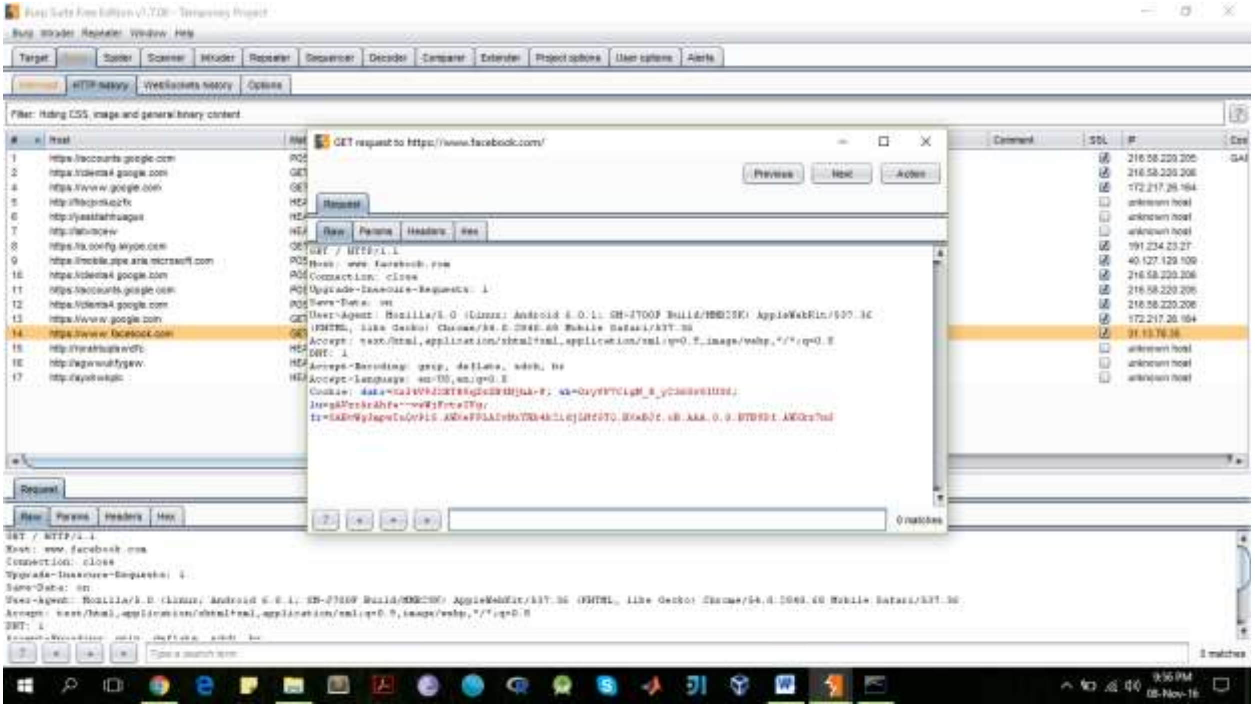
Use these settings to control which requests are stalled for viewing and editing in the Intercept tab.

☑ Intercept requests based on the following rules:

Enabled	Operator	Match type	Relationship	Condition
☑		File extension	Does not match	(^gif$\|^jpg$|^png$\|^css$|^js$\|^ico$)
☐	Or	Request	Contains parameters	
☐	Or	HTTP method	Does not match	(get|post)
☐	And	URL	Is in target scope	

☐ Automatically fix missing or superfluous new lines at end of request

☑ Automatically update Content-Length header when the request is edited



Burp Suite Free Edition v1.7.06 - Temporary Project
Burp Intruder Repeater Window Help
Target Proxy Spider Scanner Intruder Repeater Sequencer Decoder Comparer Extender Project options User options Alerts
Intercept HTTP history WebSockets history Options
Previous
Next
Action
Request
Raw Params Headers Hex
Type a search term
9:56 PM
08-Nov-16

Filter: Hiding CSS, image and general binary content

#	Host	Met	Comment	SSL	IP	Coo
1	https://accounts.google.com	POS		☑	216.58.220.205	GAI
2	https://clients4.google.com	GET		☑	216.58.220.206	
4	https://www.google.com	GET		☑	172.217.26.164	
5	http://fttecpmkqzfx	HEA		☐	unknown host	
6	http://yasstahhuagax	HEA		☐	unknown host	
7	http://latvrxcew	HEA		☐	unknown host	
8	https://a.config.skype.com	GET		☑	191.234.23.27	
9	https://mobile.pipe.aria.microsoft.com	POS		☑	40.127.129.109	
10	https://clients4.google.com	POS		☑	216.58.220.206	
11	https://accounts.google.com	POS		☑	216.58.220.205	
12	https://clients4.google.com	POS		☑	216.58.220.206	
13	https://www.google.com	GET		☑	172.217.26.164	
14	https://www.facebook.com	GET		☑	31.13.78.36	
15	http://vnrahsubtawdfc	HEA		☐	unknown host	
16	http://egwwsuhfygew	HEA		☐	unknown host	
17	http://ayoxvskqlc	HEA		☐	unknown host	

GET request to https://www.facebook.com/

```
GET / HTTP/1.1
Host: www.facebook.com
Connection: close
Upgrade-Insecure-Requests: 1
Save-Data: on
User-Agent: Mozilla/5.0 (Linux; Android 6.0.1; SM-J700F Build/MMB29K) AppleWebKit/537.36
(KHTML, like Gecko) Chrome/54.0.2840.85 Mobile Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
DNT: 1
Accept-Encoding: gzip, deflate, sdch, br
Accept-Language: en-US,en;q=0.8
Cookie: datr=[illegible]; sb=[illegible];
lu=[illegible];
fr=[illegible]
```

0 matches

```
GET / HTTP/1.1
Host: www.facebook.com
Connection: close
Upgrade-Insecure-Requests: 1
Save-Data: on
User-Agent: Mozilla/5.0 (Linux; Android 6.0.1; SM-J700F Build/MMB29K) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/54.0.2840.85 Mobile Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
DNT: 1
Accept-Encoding: gzip, deflate, sdch, br
```

1 matches

Q5

Difference b/w Bell-LaPadula and Biba Model

Bell-LaPadula Model

About Information Confidentiality

The model formally represents the long tradition of attitudes about the flow of information concerning national security.

It has 3 properties: -

- Simple; no read up
- Simple (*); no write down
- Strong (*); read and write at same level

Bell-laPadula star property rule means "no write down" -confidentiality

Biba Model

About Information Integrity

This model is based on the flow of information where preserving integrity is critical.

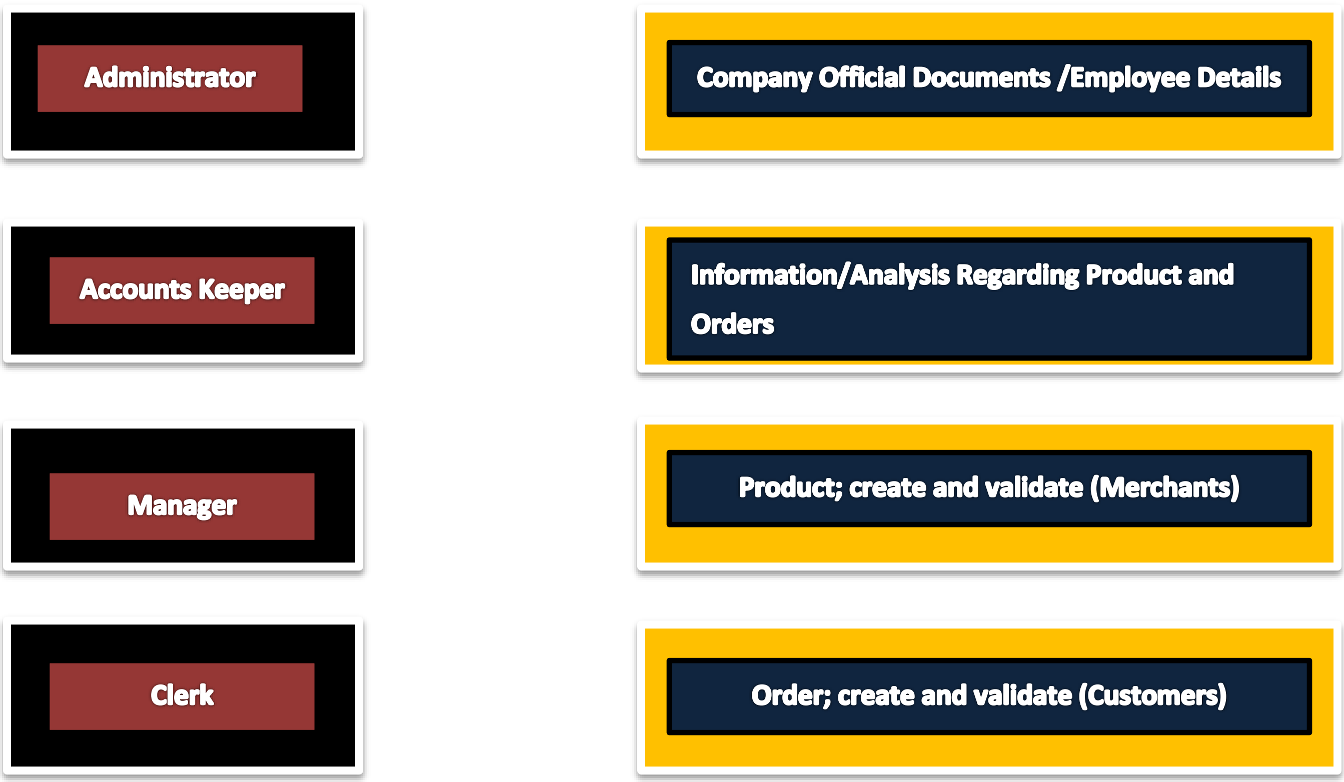
Preserves integrity, no limit access

Dual of Bell-LaPaudal model

Only one variant: - no read down, no write up and no execute up.

It uses invocation property.

BIBA start integrity axiom means "no write up" – integrity



Subjects

Administrator

Accounts Keeper

Manager

Clerk

Objects

Company Official Documents /Employee Details

Information/Analysis Regarding Product and Orders

Product; create and validate (Merchants)

Order; create and validate (Customers)

Biba:

No Read Down

No Write Up

No Execute Up

Clear; can write/read the order and read the above but can’t write

Manager; can write/read the products, can’t read the order but can write them and read the above but can’t write.

Similar is the case for Accounts Keeper and Administrator.

Bell-Lapadula:

Strong* property: Read or write at the same level

+

Simple Security Property: No read up but can read below

We will use a modified version which will consist of both the above mentioned property.

We can read and write at the same level with that we can give an extra privilege to read the below records as the Administrator should have write to access to all ;at least read all if now write.

Which One Is Better?

A: I think the second one that is Bell-Lapadula version is better as only the same level have access to write to the object in front of it as in this case if can thing goes wrong we can immediately capture the culprit as object are writing inly to the subjects that are at the same level and since the above one can read they can monitor too and report to the concerned authority regarding the person who is involved in that.