

Professional Issues in IT

(~~Spring 2016~~, Spring 2017)

Laws for
Computer
Science

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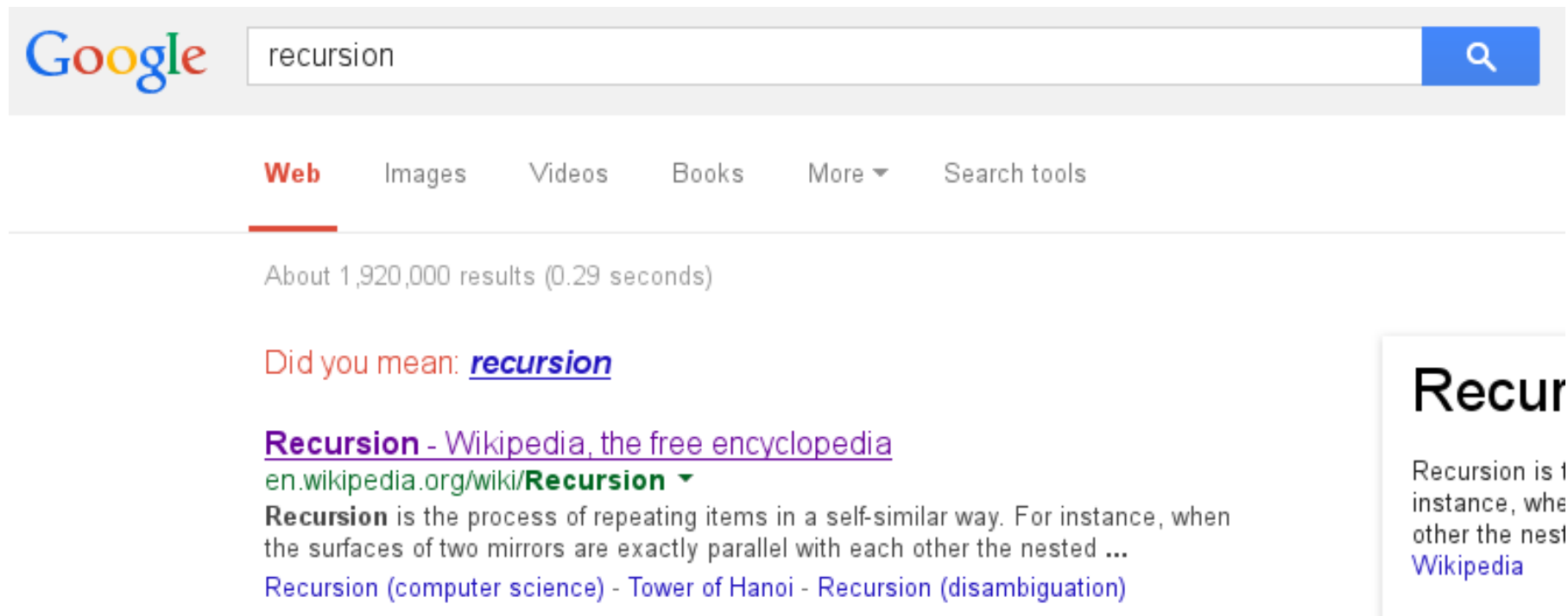
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Weird Laws (AJeeb)

- **Law of Recursion:** To understand Recursion, you need to understand Recursion
- **Brook's Law:** Adding more manpower to a late software project makes it more late. (Fred Brook, 1965) *Late project & Add a Manpower*
 - Software Engineering Principle. Reason: (1) New people must become educated with the project before actually working on it (takes time). (2) Communication over-head increases

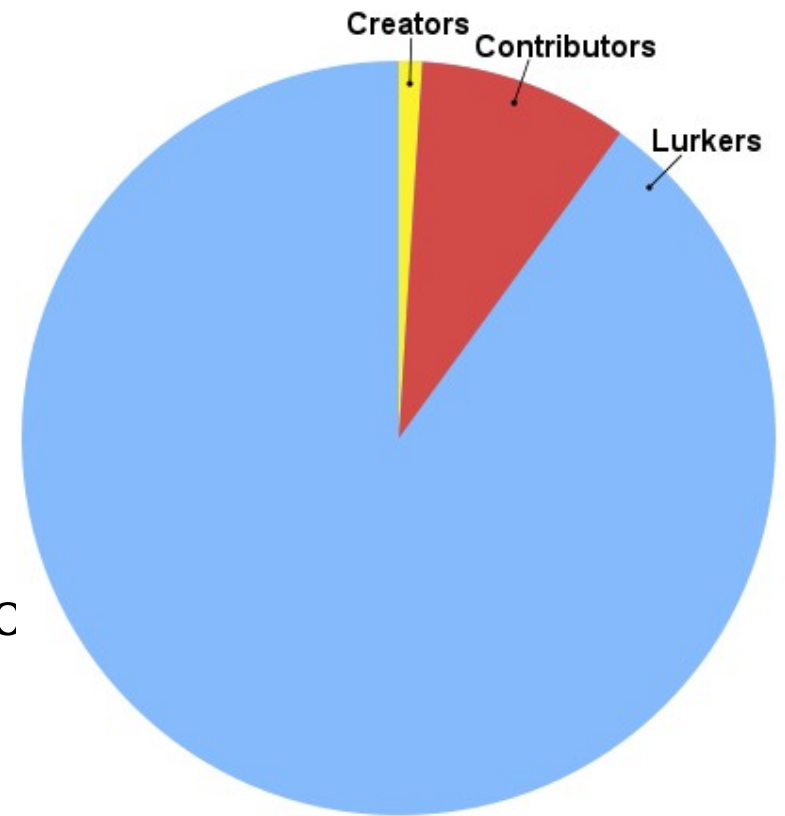


Weird Laws

- **Law of Credibility, or 99 % Rule:**
1st 90% of code accounts for 90% of development time.
Remaining 10% of code accounts for remaining 90% of development time.
 - John Bentley (1985) Communications of the ACM 28(9) 896-901
 - Projects don't complete on time !!!

Weird Laws

- **1% Rule:** Only 1% of users on a collaborative website actively create new content. Remaining 99% only lurk.
 - Variant: 1-9-90 Rule (Shown right)
- **Pareto's Principle:** 20% of group will produce 80% of activity (group can be defined)
 - 20% of pea pod's in Pareto's garden contained 80% of peas
 - Applied in Marketing: 80% sales cc from 20% of clients



Weird Laws

- **Wirth's Law:** Software gets slower faster than hardware gets faster (Niklaus Wirth, 1995)
- **Gates' Law:** Speed of software halves every 18 months (Bill Gates)
- **Moore's Law:** Hardware gets faster every 18 months (John Moore, 1960s)
- **Many More ...**

Laws

- From our perspective, we are not concerned with “ALL” legal concepts, but only specific laws/legislations related to IT/Computing/Software
- But certainly, knowing some legal concepts would be indeed helpful

Law



- ✓ • **“A set of Rules that can be enforced in Court”**
- Varies from country to country
- Many types, but examples concerning our profession:
 - **Data protection laws** (controlling rogue markets)
 - **Right to access of information Laws** (Punjab/Khyber Pakhtunkhwa started in 2013)
 - **Laws for Misuse of Computers** (FIA Cyber-crimes branch)
- Different Legal Systems (Different Courts, Jurisdiction Issues, Different Laws for Different territorial regions)

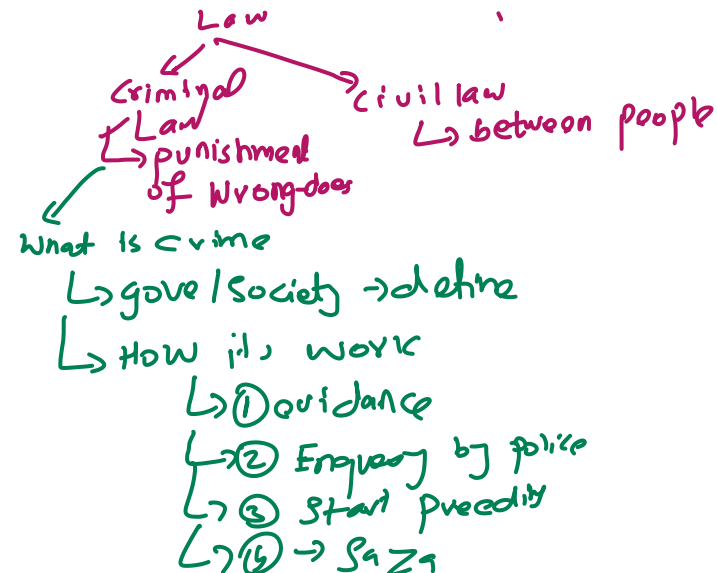
Broad Classification of Laws

- **CRIMINAL LAWS:**
Punishment of wrong-doers (using fines and/or imprisonment)
- **CIVIL LAWS:**
Settlement of Disputes between People (Arbitrations),
Victims can be compensated.

- What is a crime?
Society/government decides.
 - Murder, Assault, Narcotics, Fraud, Money Laundering, Customs, Domestic violence, Physical Abuse, Kidnapping, etc.
- Mechanisms to determine whether person guilty of crime is guilty/not-guilty
 - Pakistan Penal Code (1860 Act, British India)
- Range of punishments that can be awarded
 - Qisas, Diyat, Death, Life, Property Confiscation, Imprisonment (Hard,Soft), Fine

Criminal Law: How it works

- 1) Crime discovery by police, or reported by witnesses
- 2) Evidence collection by police for courts
- 3) State starts proceedings for prosecution of accused/defendant
- 4) If found guilty, accused will be sentenced



Criminal Law: Other Important Aspects

- Criminals dis-advantaged:
A criminal is innocent until proven Guilty,
But society **may** think otherwise
- Penalty should be sufficient to discourage others.
How much is “sufficient”?
- Keep criminals away from public.
But what can be done after they finish their sentences
- Rehabilitation:
Reforming criminals during sentence/jail-term
If a criminal is institutionally rehabilitated (in jail), should society accept them? Will the victim families accept that he is reformed?
- All above are ethical issues in legal perspective

Civil Law

- What it does:
 - Resolution of Disputes b/w people
 - Resolution of Disputes b/w companies/organizations after they are incorporated.
- Terminologies
 - ✓ – **Plaintiff** **فریادی/مدعی**: Person who feels he is wronged moves court Example: person A sues person B
Example: person A files “shufa” against person B
 - ✓ – **Litigation** **نالش**: Court proceedings ensued after court is moved
- Other applicable areas: Banking, Business, Company, Constitution, Corporate, Insurance, Labour, Succession, Tax, ...

Concept of Standard of Proof vs Burden of Proof

- **Standard of Proof**

- In Criminal Law:
Prosecution(استغاثه) must demonstrate that an accused is guilty (using witnesses, forensics, etc.)
- In Civil Law:
Plaintiff merely claims that the other party is guilty.

- **Burden of Proof:**

- Criminal Law:
Burden of presenting Proof lies on prosecution.
Defendant is Innocent until proven guilty.
- Civil Law:
Both plaintiff and defendant have the burden of presenting proof.

Examples of Crimes involving CS/IT (Cyber Crimes)

- Mobile Credit/Credit Card/ATM Fraud
- Threatening Calls through Mobile/Phones
- IP/Email Address Tracing (by non-govt persons)
- Threatening/Abusive Emails
- Hacking related attacks, Website Defacements
- Email scams, SMS Scams
- Electronic Money Laundering (Paypal ?????)
- Pornography, Gambling, Virus/Worm Attacks, Internet Time Theft, etc. .
- Anything else ?

Important Cyber Crime Laws in Pakistan

- (1885) Telegraph Act
- (1933) Wireless Telegraph Act
- (1974) Federal Investigation Agency Act
- (1996) Pakistan Telecommunication Act
- (2002) Electronic Transactions **Act**
- (2007) Electronic Crimes **Ordinance**
- (2007) Payments & Electronic Fund Transfer Act

Application Areas of Electronic Transaction Act (2002)

- Criminal Access to Data/Computers
- Data/System Damage
- Electronic Fraud/Forgery
- Encryption Mis-use
- Cyber Stalking
- Virus Propagation
- Spamming/Spoofing
- Cyber Terrorism

Famous Cyber Criminals ?



Julian Assange
Wikileaks
Wanted for hacking
espionage(جاسوسی)
related crimes in many
countries



Kevin Mitnick
**Life in Prison, but
released after 5 years**
Most wanted computer
hacker in United States
Hacked IBM, Nokia, Sun
FBI, Pentagon, Novell
servers.
**Hired by companies to
setup secure systems.**



Adrian Lamo
Hacked New York Times,
Yahoo, Microsoft
servers.
**Arrested 2003
light sentence
but heavy fine.**
Relaxed after revealing
name of soldier who
leaked sensitive
diplomatic cables to
WikiLeaks

Famous Cyber Criminals ?

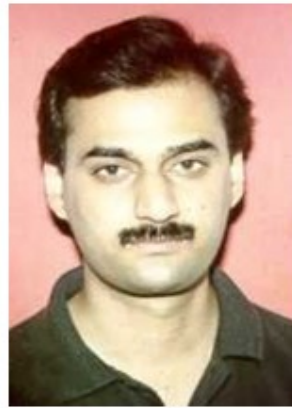


Gary McKinnon
Caused damage to
US Military Servers
(Pentagon + NASA)

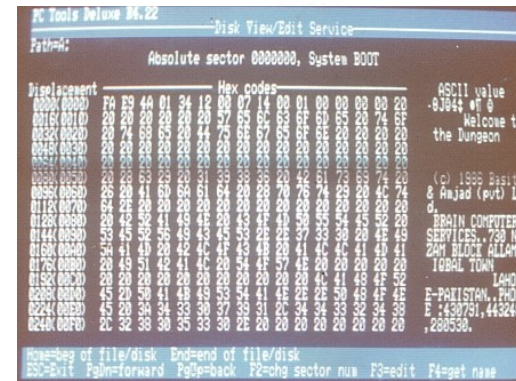
\$700,000

Can face 60 years in
prison if extradited from
UK to USA.
AUTISTIC

Amjad and Basit Farooq Alvi.



Amjad Farooq Alvi.



Basit Farooq Alvi.

Robert Soloway
Microsoft Sued him
\$ 7 Million in Damages.
Case still going
World's biggest Spammer
Tax evasion, Wire + Email
fraud, etc.

Brain Virus
Released January 1986
from Lahore, Pakistan
**considered 1st Virus
for MS-DOS**



Cyber Crime ?

Hacked By Pakistan Cyber Army

https://www.centralbankofindia.co.in/site/

Google

أشهد أن لا إله إلا الله وأشهد أن محمداً رسول الله

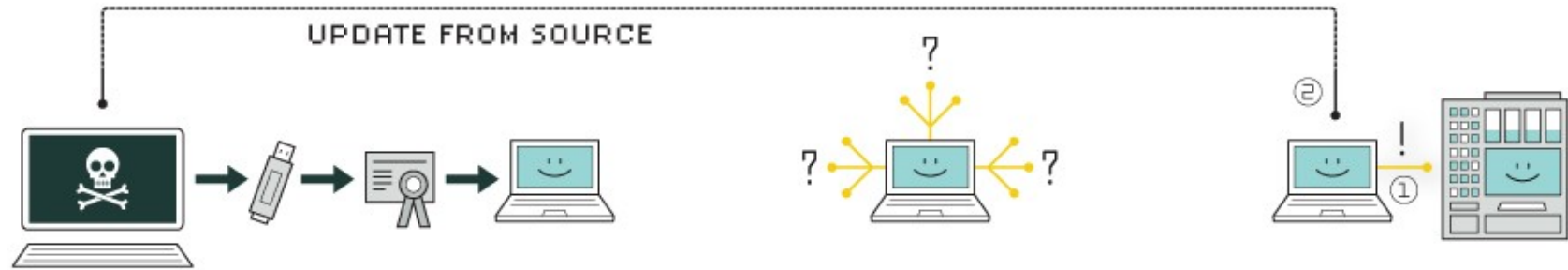
Hacked By Pakistan Cyber Army



Oooopsss ! WTF ? Central Bank of India HaCked ?

Cyber Crime ?

HOW STUXNET WORKED



1. infection

Stuxnet enters a system via a USB stick and proceeds to infect all machines running Microsoft Windows. By brandishing a digital certificate that seems to show that it comes from a reliable company, the worm is able to evade automated-detection systems.

2. search

Stuxnet then checks whether a given machine is part of the targeted industrial control system made by Siemens. Such systems are deployed in Iran to run high-speed centrifuges that help to enrich nuclear fuel.

3. update

If the system isn't a target, Stuxnet does nothing; if it is, the worm attempts to access the Internet and download a more recent version of itself.



4. compromise

The worm then compromises the target system's logic controllers, exploiting "zero day" vulnerabilities—software weaknesses that haven't been identified by security experts.

5. control

In the beginning, Stuxnet spies on the operations of the targeted system. Then it uses the information it has gathered to take control of the centrifuges, making them spin themselves to failure.

6. deceive and destroy

Meanwhile, it provides false feedback to outside controllers, ensuring that they won't know what's going wrong until it's too late to do anything about it.

Who makes Laws?

• آئین کے تناظر میں !!!

- Pakistan:

- Based on Legal system of British India
- Influenced by Shariah Law (Federal Shariat Court)
- Local Laws/FCR (FATA/PATA)

- Great Britain

- Common Law: Not written, determined by judge judgments over centuries (Precedence Rule)
 - Applicable to Commonwealth Countries
- Statute Law: Acts of Parliament (Legislation)

Who makes Laws?

- National Assembly (Lower House) Legislation Types:

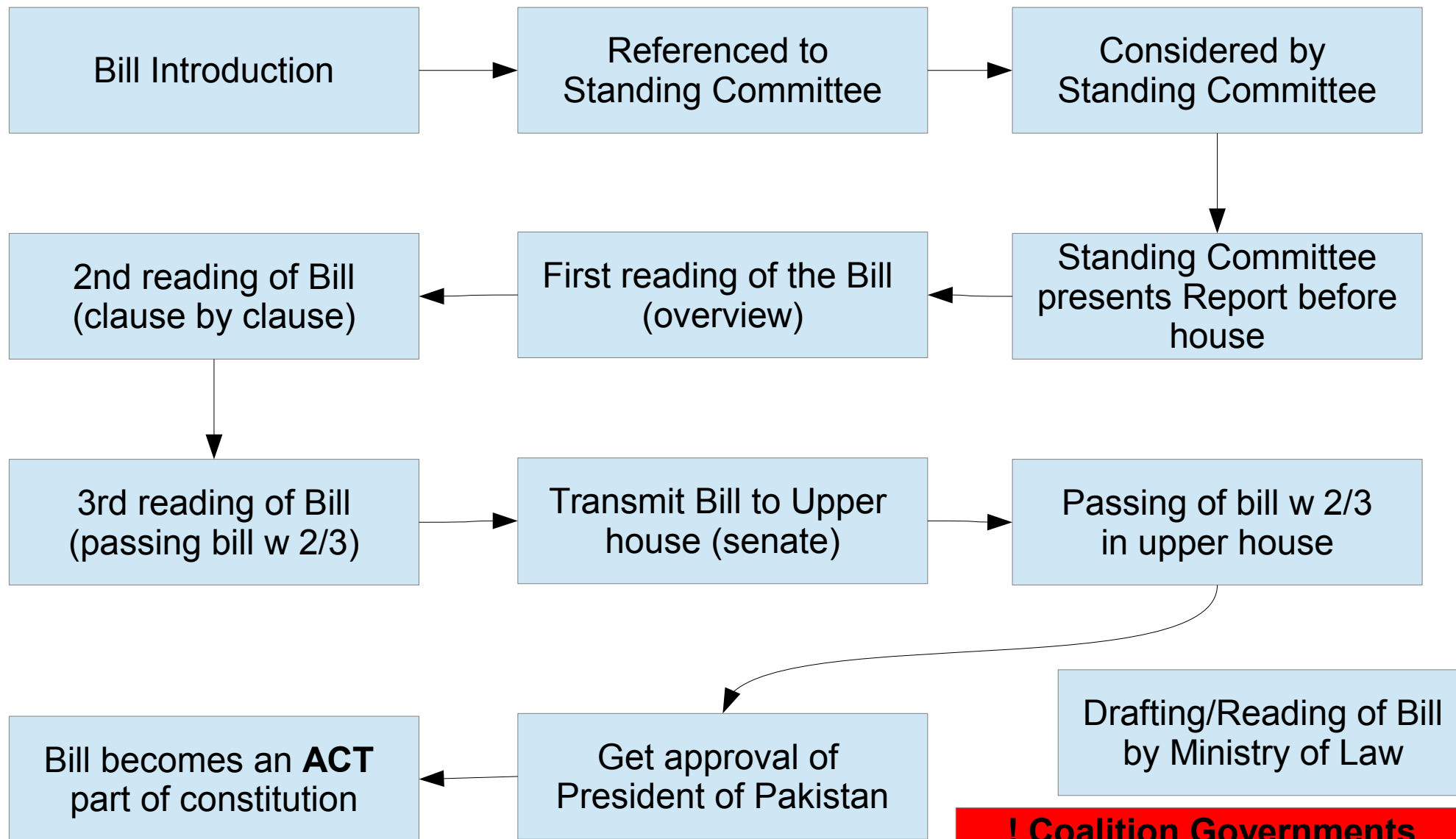
- Government Bills
- Private Member's Bills



- Provincial Assembly Legislation:

- Only if not in concurrent Lists

Pakistan: Process of Passing a Bill



Info: Imtiaz Yusuf, Ministry of Law, Govt of Pakistan

! Coalition Governments
! Military takeover
! Parliamentary capacity

Other Countries: Case of UK

(Legislation by Parliament)

- **House of Commons**

(elected members: MP)

(PM, Exchequer, Foreign Secretary,
Home Secretary from here)



- **House of Lords**

(Appointed, Hereditary Peers,
Lords, Barons, etc.)



- **Passing a Bill:**

1) Government Introduces Bill in
House of Commons

2) Upon approval, passed to House of Lords.

3) Upon approval, becomes “**Act of Parliament**”.

4) Passed to Queen for final approval (Queen cannot Refuse), and then becomes law.

Other Countries: Case of USA

(Legislation by Congress)

- Senate (elected for 7 years, 2 senators per state)
- House of Representatives (Congressmen, elected for 2 years, 1 congressman per state)
- Passing a Bill:
 - 1) Legislation passes through Senate, and then forwarded to Congress
 - 2) Legislation debated in Congress, and then passed to President for Approval.
 - 3) President gives final approval, but has veto rights.
 - Supreme Court: Can veto law passed by congress + president if it is UN-constitutional

