

PKI and Powerlifting!

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PancakesCon 6
2025-09-21

Agenda

- Powerlifting Primer
- Cryptography Primer
- Cryptography vs.
Powerlifting!



Get-ADUser -Identity ‘Jake Hildreth’

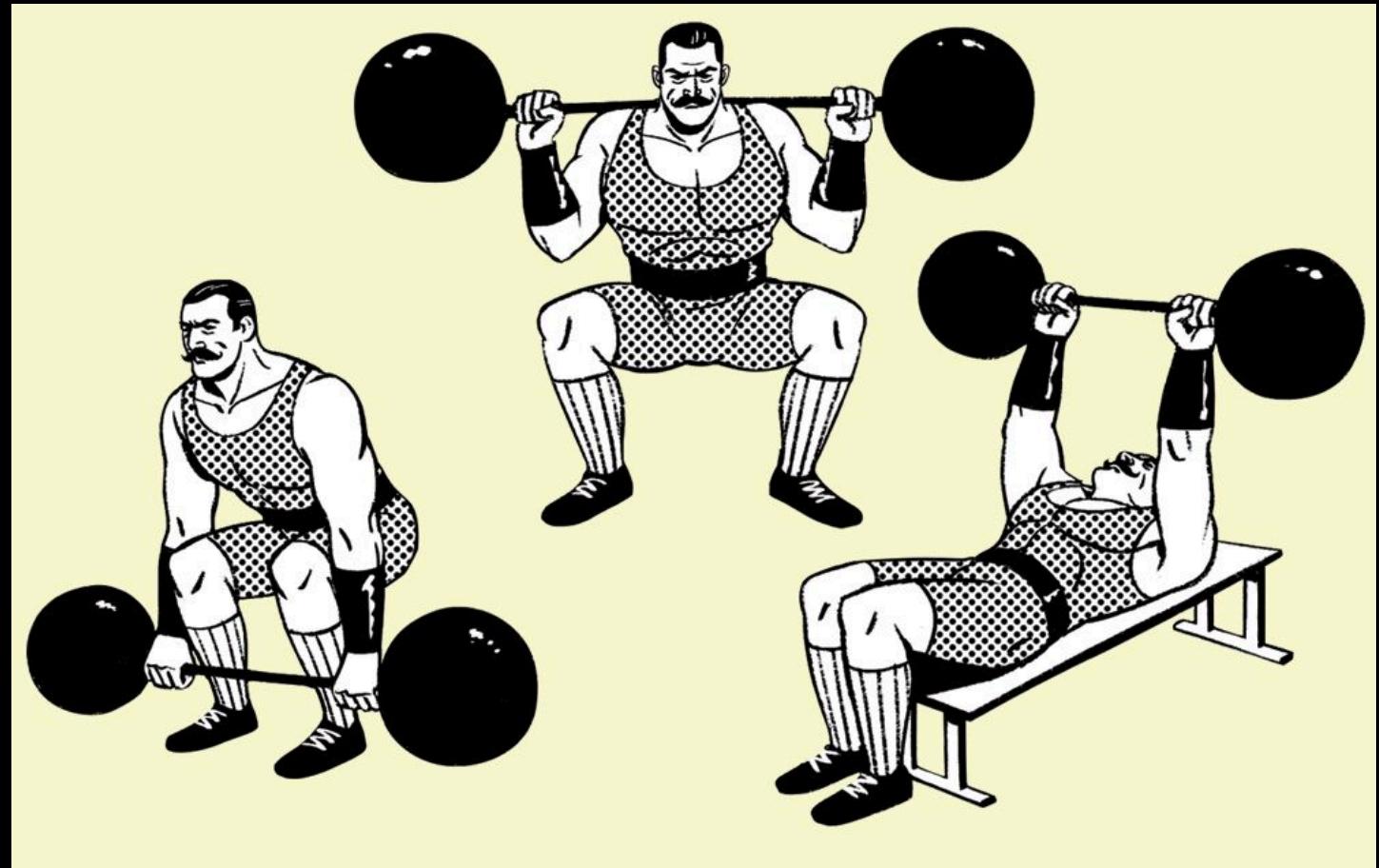
- Husband, Dad, Recovering Sysadmin
- Principal Security Consultant @ Semperis
- Open-source Toolmaker:
Locksmith, BlueTuxedo, PowerPUG!
- Microsoft MVP:
PowerShell + Identity & Access
- Wilks Score: 328



A Powerlifting Primer

"The Big Three"

- Squat
- Bench
- Deadlift



Squat

- Put a weight on your back
- **Squat** down
- Stand up



Bench

- Lay on a Bench
- Lower a weight to your chest
- Press the weight back up



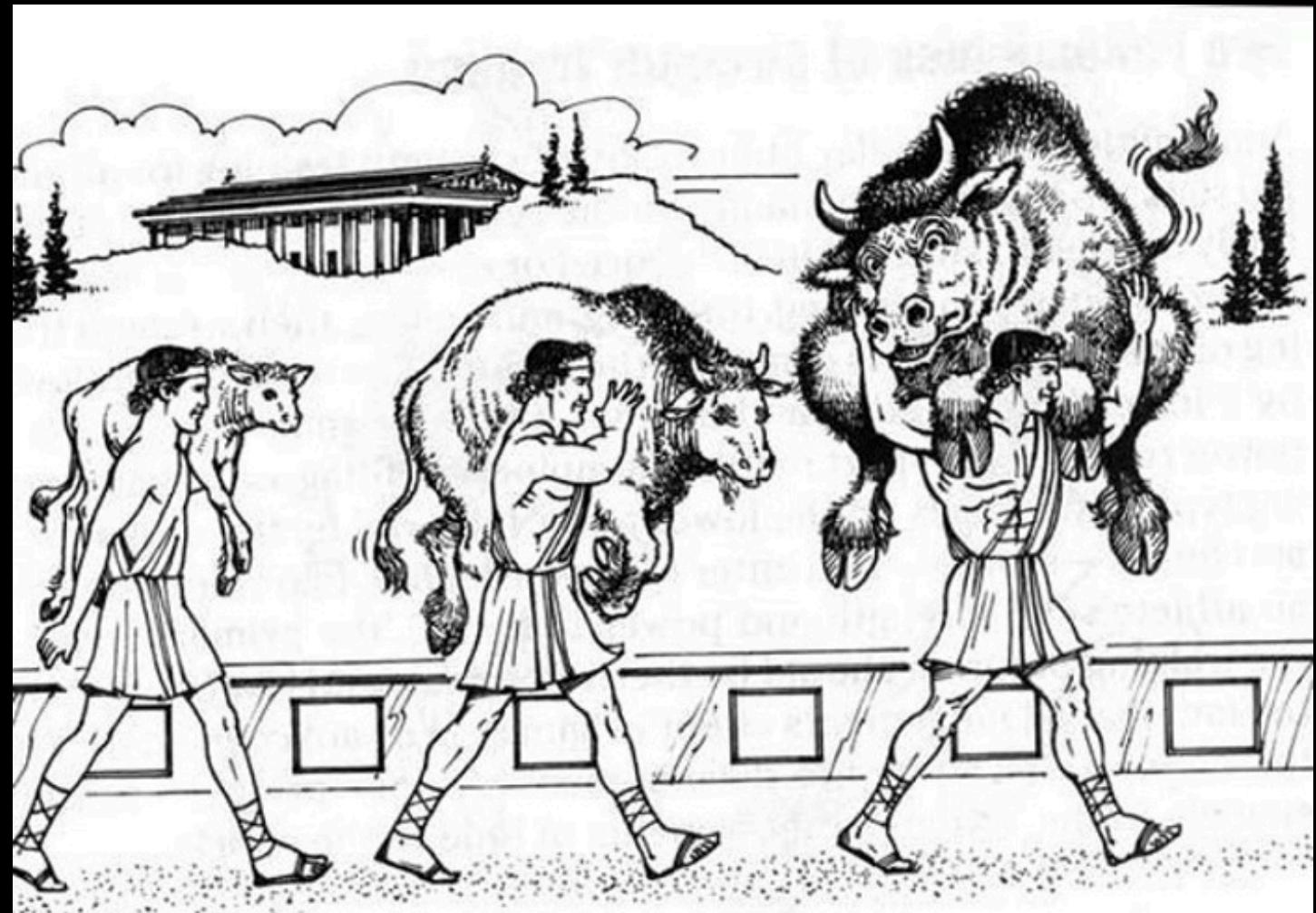
Deadlift

- Stand in front of a Dead weight
- Lift the weight until standing straight
- Lower the weight under control



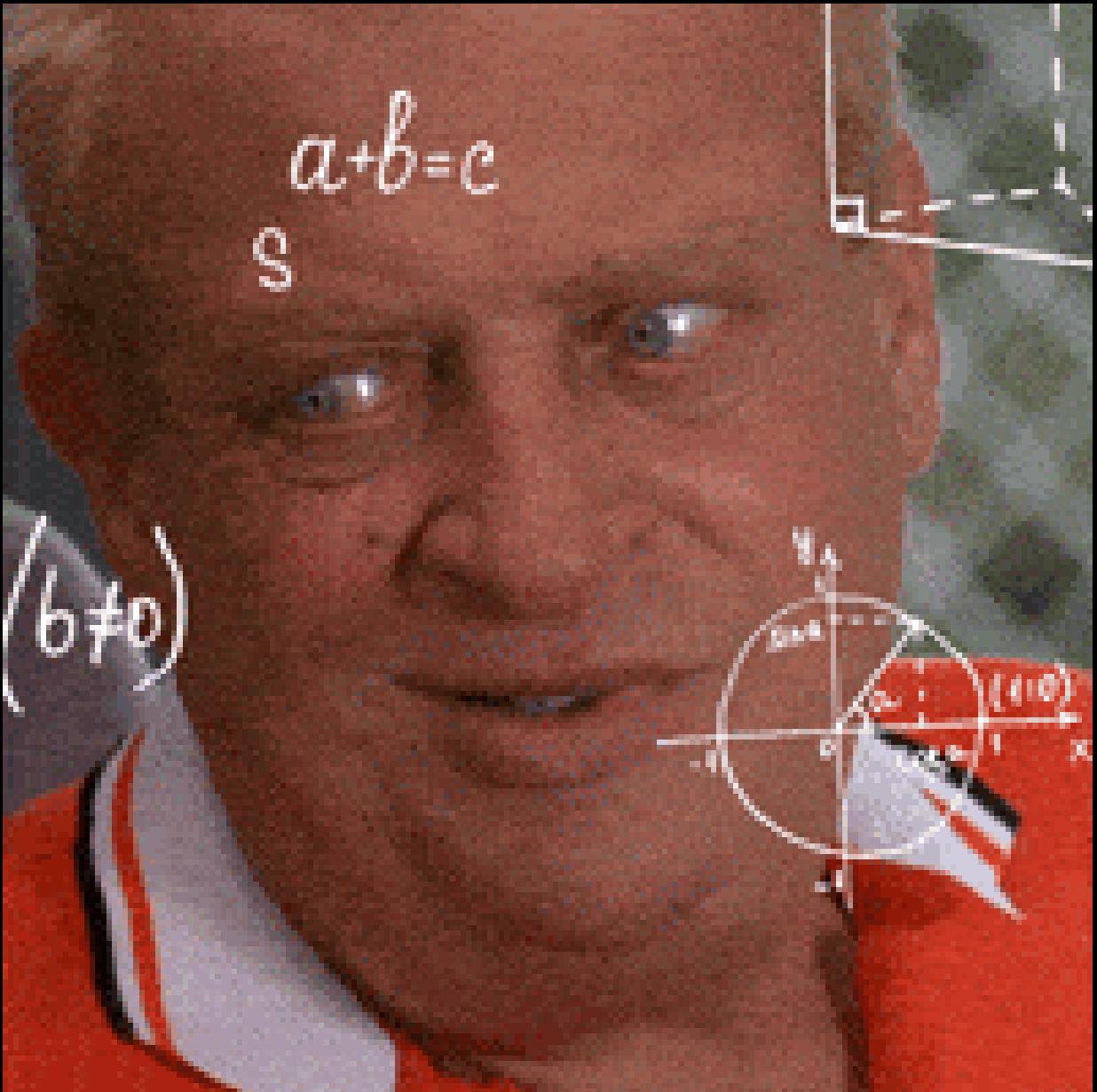
Training Principles

- Form > Weight
- Progressive Overload
- Periodization



Other Jargon

- Reps
- Sets
- PR
- Training Max
- Percentages



Training Methodologies

- Starting Strength

startingstrength.com

- 5/3/1

jimwendler.com

- The Cube Method

jtsstrength.com

- Westside/Conjugate Method

westside-barbell.com

Week One	Week Two
Day 1 - Squat 3 x 5 Bench 3 x 5 Deadlift 1 x 5	Day 1 - Squat 3 x 5 OHP 3 x 5 Power Clean 5 x 3
Day 3 - Squat 3 x 5 OHP 3 x 5 Power Clean 5 x 3	Day 3 - Squat 3 x 5 Bench 3 x 5 Deadlift 1 x 5
Day 5 - Squat 3 x 5 Bench 3 x 5 Deadlift 1 x 5	Day 5 - Squat 3 x 5 OHP 3 x 5 Power Clean 5 x 3

Week 1	Week 2	Week 3	Week 4
75% x 5 reps	80% x 3 reps	75% x 5 reps	40% x 5 reps
80% x 5 reps	85% x 3 reps	85% x 3 reps	50% x 5 reps
85% x 5 or more reps	90% x 3 or more reps	95% x 1 or more reps	60% x 5 reps

Week	Monday	Wednesday	Friday	Sunday
1	Heavy Deadlift: 80%x2x5	Repetition Bench: 70%x8-12x2-3	Explosive Squat: 65%x3x8	Bodybuilding Day
2	Explosive Deadlift: 65%x3x8	Heavy Bench: 80%x2x5	Repetition Squat: 70%x8-12x2-3	Bodybuilding Day
3	Repetition Deadlift: 70%x8-12x2-3	Explosive Bench: 65%x3x3	Heavy Squat: 80%x2x5	Bodybuilding Day
4	Heavy Deadlift: 85%x4x3	Repetition Bench: 80%x4-8x2-3	Explosive Squat: 70%x2x6	Bodybuilding Day
5	Explosive Deadlift: 70%x2x6	Heavy Bench: 85%x3x2x3	Repetition Squat: 80%x4-8x2-3	Bodybuilding Day
6	Repetition Deadlift: 80%x4-8x2-3	Explosive Bench: 70%x2x6	Heavy Squat: 85%x2x3	Bodybuilding Day
7	Heavy Deadlift: 90%x2, 92.5%x1, 95%x1, 80%x1+	Repetition Bench: 85%x3-5x2-3	Explosive Squat: 75%x2x5	Bodybuilding Day
8	Explosive Deadlift: 75%x2x5	Heavy Bench: 90%x2, 92.5%x1, 95%x1, 80%x1+	Repetition Squat: 85%x3-5x2-3	Bodybuilding Day
9	Repetition Deadlift: 85%x3-5x2-3	Explosive Bench: 75%x2x5	Heavy Squat: 90%x2, 92.5%x1, 95%x1, 80%x1+	Bodybuilding Day
10	Meet Week			

Accessories not listed; % x reps x sets notation

The Westside Barbell Method				
Week 1	Max Effort Lowerbody Monday	Max Effort Upperbody Wednesday	Dynamic Effort Lowerbody Friday	Dynamic Effort Upperbody Sunday
Week 1	Squat Variation: 90%+x1x3-5 Assistance: Hamstrings, Low Back, Abs 3-5 exercises, 3-5 sets of 8-20 reps each	Bench Variation: 90%+x1x3-5 Assistance: Triceps, Shoulders, Lats, Biceps 3-5 Exercises, 3-5 sets of 8-20 reps each	Squat with Bands/Chains: 50%x2x12 Assistance: Hamstrings, Low Back, Abs 3-5 exercises, 3-5 sets of 8-20 reps each	Bench with Bands/Chains: 50%x3x8 Assistance: Triceps, Shoulders, Lats, Biceps 3-5 Exercises, 3-5 sets of 8-20 reps each
Week 2	Goodmorning Variation: 90%+x1x3-5 Assistance: Hamstrings, Low Back, Abs 3-5 exercises, 3-5 sets of 8-20 reps each	Bench Variation: 90%+x1x3-5 Assistance: Triceps, Shoulders, Lats, Biceps 3-5 Exercises, 3-5 sets of 8-20 reps each	Squat with Bands/Chains: 55%x2x12 Assistance: Hamstrings, Low Back, Abs 3-5 exercises, 3-5 sets of 8-20 reps each	Bench with Bands/Chains: 55%x3x8 Assistance: Triceps, Shoulders, Lats, Biceps 3-5 Exercises, 3-5 sets of 8-20 reps each
Week 3	Deadlift Variation: 90%+x1x3-5 Assistance: Hamstrings, Low Back, Abs 3-5 exercises, 3-5 sets of 8-20 reps each	Bench Variation: 90%+x1x3-5 Assistance: Triceps, Shoulders, Lats, Biceps 3-5 Exercises, 3-5 sets of 8-20 reps each	Squat with Bands/Chains: 60%x2x10 Assistance: Hamstrings, Low Back, Abs 3-5 exercises, 3-5 sets of 8-20 reps each	Bench with Bands/Chains: 60%x3x8 Assistance: Triceps, Shoulders, Lats, Biceps 3-5 Exercises, 3-5 sets of 8-20 reps each

Note: Westside often performs up to 10 GPP, Conditioning, Mobility, and Restorative workouts each week, they typically last no longer than 30 minutes a piece.

A Cryptography Primer

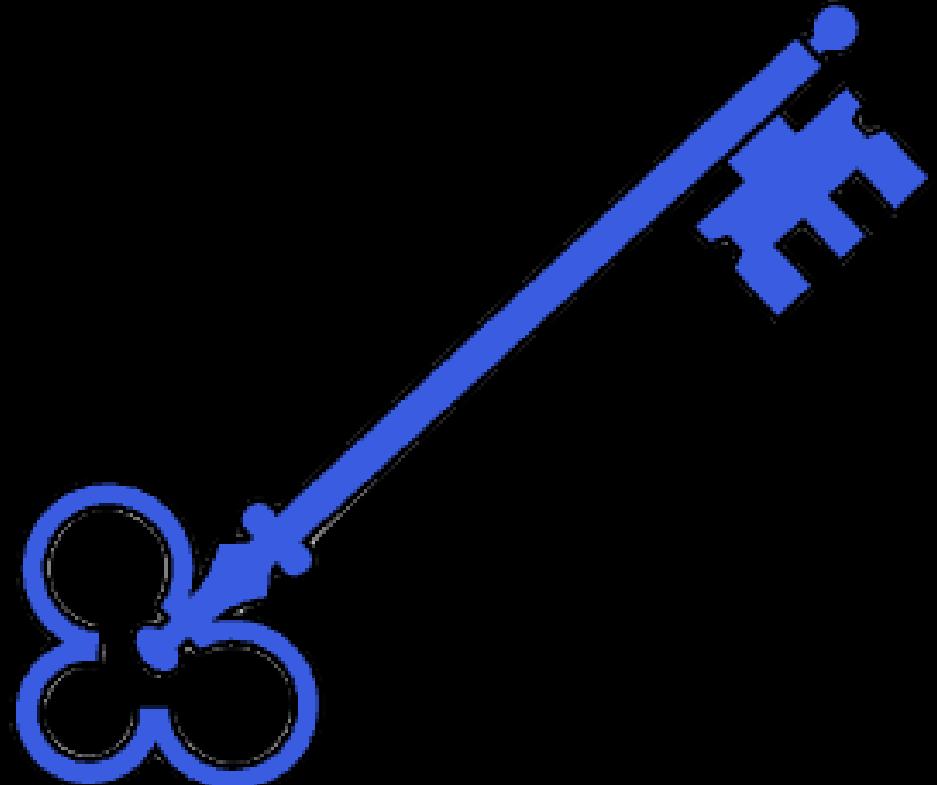
Encryption

- Converting "cleartext" to "ciphertext"
- Protects confidentiality/privacy
- Information is preserved
- Intended to be *decrypted*



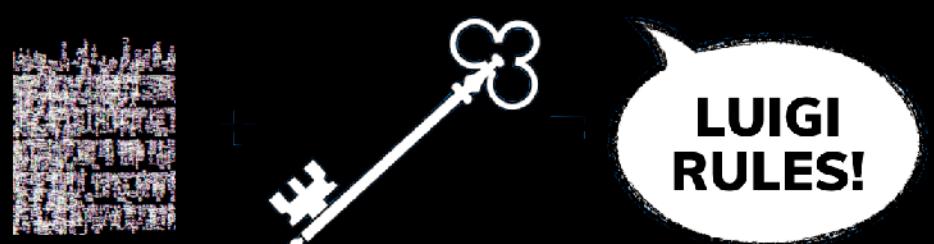
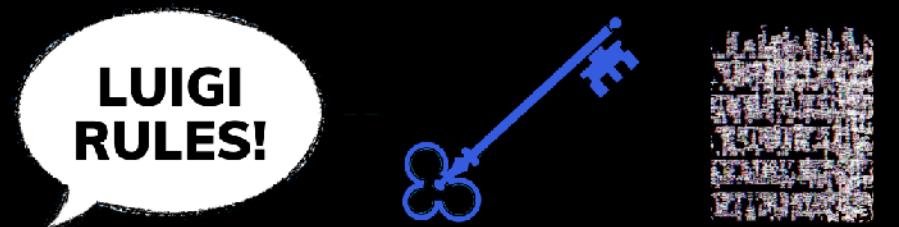
Keys

- Really BIG numbers
- Symmetric: one key
 - Same key encrypts & decrypts
- Asymmetric: two keys
 - Encrypt with one
 - Decrypt with the other



Public Key Cryptography

- Public key can be shared
- Private key *should not* be shared
- To send a confidential message from Mario to Luigi:
 - Mario encrypts message with *Luigi's* public key
 - Luigi decrypts message with his own private key



Hashing

- Creates a representation of the original message
- Original message is not recoverable
- Not intended to be decrypted
- Used to confirm integrity



**LUIGI
RULES!**

**C06A4312301DD240F6
4B2F8CDB182CE962442
58E71437723CC681ED7
C76F7544**

Signing

- Mario creates a hash of a message
- He encrypts the hash with his private key
- Mario sends the original message + encrypted hash



Signing

- Luigi creates a hash of the received cleartext message



**LUIGI
RULES!**

**C06A4312301DD240F6
4B2F8CDB182CE962442
58E71437723CC681ED7
C76F7544**

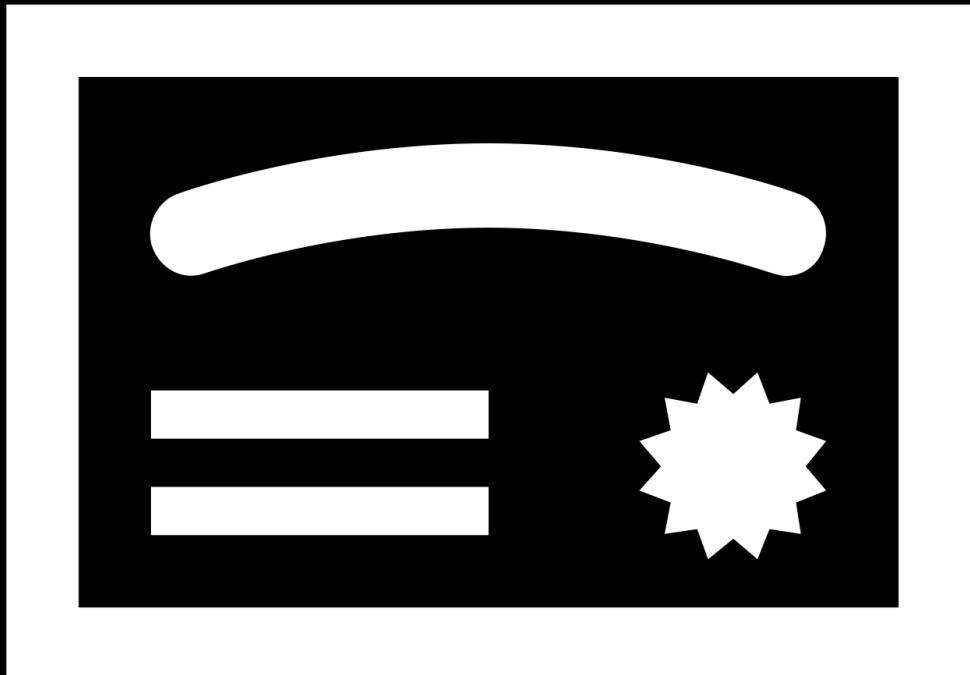
Signing

- Luigi decrypts the encrypted hash with Mario's public key
- If Luigi's hash matches Mario's, message is 



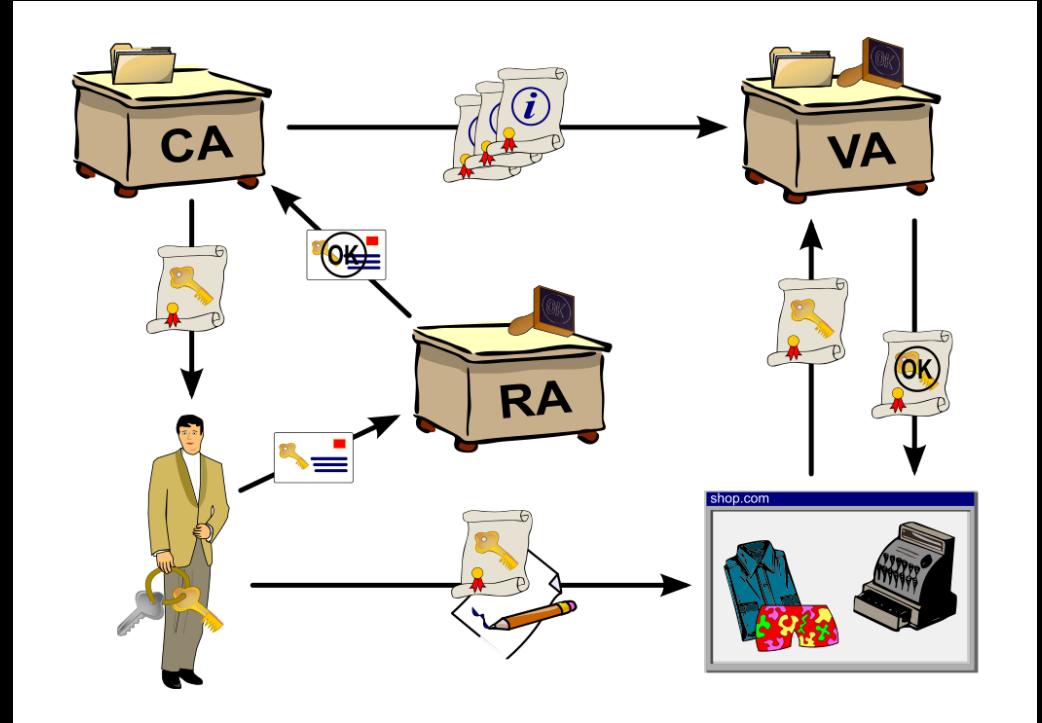
Certificate

- Public key + attributes, signed
- **If you trust the signer, you can trust the certificate**



Public Key Infrastructure

- Provides a "root of trust" all parties trust
- A mix of software, hardware, policies, procedures
- Solves many problems with PKC
- Introduces many other problems



Cryptography vs. Powerlifting!

Symmetric Encryption vs. Starting Strength

Symmetric Key	Starting Strength
Simple Implementation: One key	Simple Implementation: Add weight every workout
Understandable: Only one operation	Understandable: 5 lifts divided into 2 workouts that alternate
Transmitting keys between parties securely is a hard problem!	Milo and the bull is great story but not real life

Asymmetric Encryption vs. 5/3/1

Public Key	5/3/1
Two keys: public & private	Two changes: add <i>and remove</i> weight/reps
Flexible: Order of operations becomes important	Flexible: workout templates provide a more nuanced approach using percentages, training maxes, and accessory lifts
Scales much better than symmetric key, but key management eventually becomes an issue	Scales well for general population but not powerlifting-specific enough to become advanced

Certificates vs. The Cube Method

Certs	The Cube
Multiple operations involved: hashing, encrypting, decrypting, attribute checking	Multiple operations involved: Adding/removing weight, different lifts each week, different goals each week
Not easy for a lay person to understand	Not appropriate for beginners or most intermediate lifters
Trust becomes critical	Recovery/Supplementation becomes critical

Public Key Infrastructure vs. Westside Barbell

PKI	Conjugate Method
Super complex: hardware, software, policies, procedures	Super complex: bands, chains, exotic rep schemes
Can be scaled globally but requires expertise and almost occult knowledge	Used by some of the most elite lifters but requires almost occult knowledge
A complete ecosystem, not just a set of tools	A complete lifestyle, not just a methodology
If wielded incorrectly can result in complete system failure	If wielded incorrectly can result in complete system failure

Is it Cryptography or Powerlifting?

- Gradual Learning =
Progressive Overload
- Re-reading =
Reps
- Changing Your Focus =
Periodization



Thanks!

- My wife and daughter for putting up with fostering my special interests
- Lesley
- PancakesCon staff
- You!



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Everything Else	jakehildreth.com

