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**A Partnership  
To Secure Your Future**

# Overview of Security Principles

# Security Principles

- **Authentication**
- **Authorization**
- **Data Integrity**
- **Confidentiality**
- **Non-repudiation**

# Authentication: Familiar Examples

- Reliably verifying the identity of someone or something

In Writing



President's signature



I'm Diane...your attorney.

In Person



Hello...this is Mary.



Hi Mary...it's John.

Over the Phone

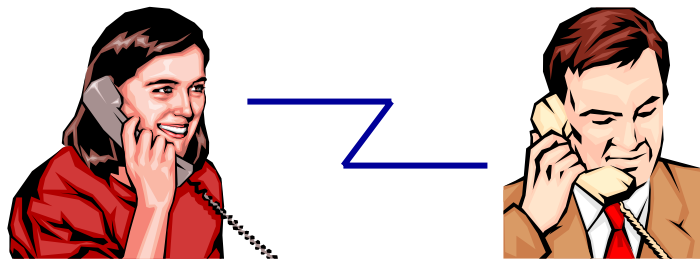
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# Why Authenticate?

- To rely on information
- To ensure information is delivered to the correct source(s)



New company policy signed by the President



Mary...I've got good news for you.

Hi Diane...Let me tell you about my case.



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# Authentication in a Networked Environment (Examples)

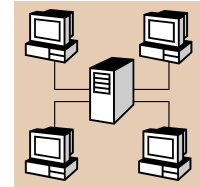
- Who or what sent this email?



- Who or what is accessing my web services?



- Who or what has access to my database?



- Who or what has access to my files?



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# Authorization: Familiar Examples

- Management of privileges, and mapping of those privileges against resources and processes



The President is authorized to sign off on new company policy



I'm promoting you to Vice President of Operations.

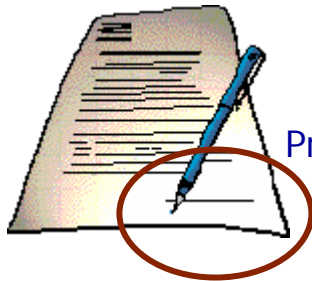
The information you've provided is strictly attorney-client privileged information.



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# Why Have Authorizations?

- To ensure against the occurrence of unauthorized events



This can't be new company policy if the President doesn't sign it.

I cannot share that information with you because it is part of another case, and attorney-client privileges are invoked.



Mary...from now on, only you can authorize these events in Operations.

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# Authorization in a Networked Environment (Examples)

- **Who or what has the privilege to access my database?**
- **Who or what has the privilege to access my files?**
- **Who has the privilege to view private content on the web?**
- **Who has the privilege to execute this e-business transaction?**



# Data Integrity: Familiar Examples

- Ensuring that information has not been accidentally or maliciously altered



An original of the new company policy signed by the President.



I have an original recording of a conversation that will greatly help our case.



John...thanks for calling and personally delivering the good news.

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# Why Have Data Integrity?

- To ensure information is accurate
- To respond appropriately



This copy of the new policy looks like it has been modified. Can I see the original?

Unfortunately, we have a copy of the recorded conversation, and there is some question to its authenticity. We'll have to be careful how we use this evidence.

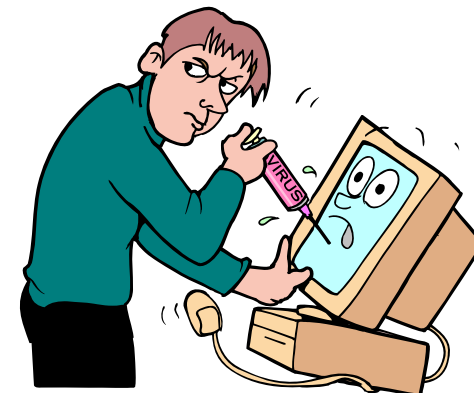


John...this is great news.  
Thanks for the promotion!

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# Data Integrity in a Networked Environment (Examples)

- Can I rely on the information in this email?
- How do I know my database is not corrupted?
- How do I know this file is not corrupted?
- Is the information presented on this web site accurate?



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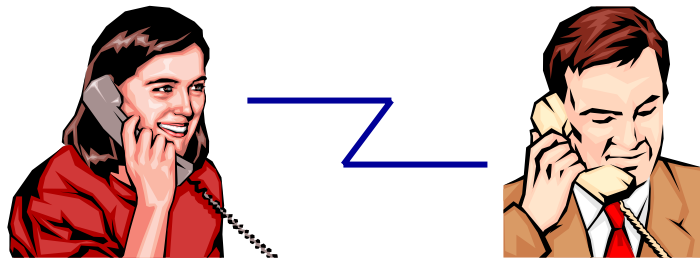
# Confidentiality: Familiar Examples

- Ensuring that information is kept secret



The new company policy will be rolled out next quarter. Until then, it stays confidential amongst the corporate staff.

Like I said, this information is strictly attorney-client privilege, and it will not be disclosed outside of you and me.

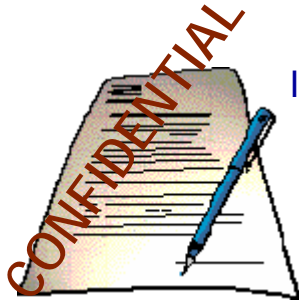


Mary...outside of your family, I'd like you to not advertise this promotion until I've had a chance to talk to the current VP of Operations.

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# Why Have Confidentiality?

- Three words: “Need To Know” – Not everyone has a “need to know” certain information



If the staff found about this new policy before next quarter, rumors may start spreading.

I'm just worried that some of this information could ruin my personal reputation.



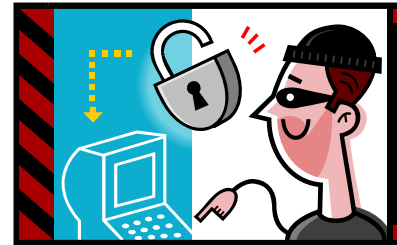
If word got out now about your promotion, it could cause a stir amongst some of your peers.



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# Confidentiality in a Networked Environment (Examples)

- **Who can read my email?**
- **Who can see the private portions of our database?**
- **Who can open and read my files?**
- **Who can see my personal information when I shop on the web?**



# Non-repudiation: Familiar Examples

- Ensuring that someone cannot falsely deny the validity of information



It must be new policy since the President signed off on it.



John...I can trust this information knowing that it came from you.



I believe your testimony on the stand today went very well. I think we have a great chance of winning the case.

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# Why Have Non-repudiation?

- To apply proper liability
- To have recourse when disputes occur



Someone forged the President's signature?  
This policy is not enforceable.



John...what do you mean you never told me I was promoted. We just spoke about this last week!

Are you saying you lied on the witness stand? Do you realize you perjured yourself?



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# Non-repudiation in a Networked Environment (Examples)

- **Can I store this electronically signed document and retain legal effect?**
- **Can I be liable for an email I send?**
- **How do I know that someone was logged in at a particular time?**
- **How can I be sure a consumer won't deny ever purchasing an item?**



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# Summary

- **Know the fundamental security principles before beginning the implementation of a security solution**
- **Assess your environment using these security principles**
- **Use these principles to develop sound security policies and architectures before developing or procuring specific security technologies**