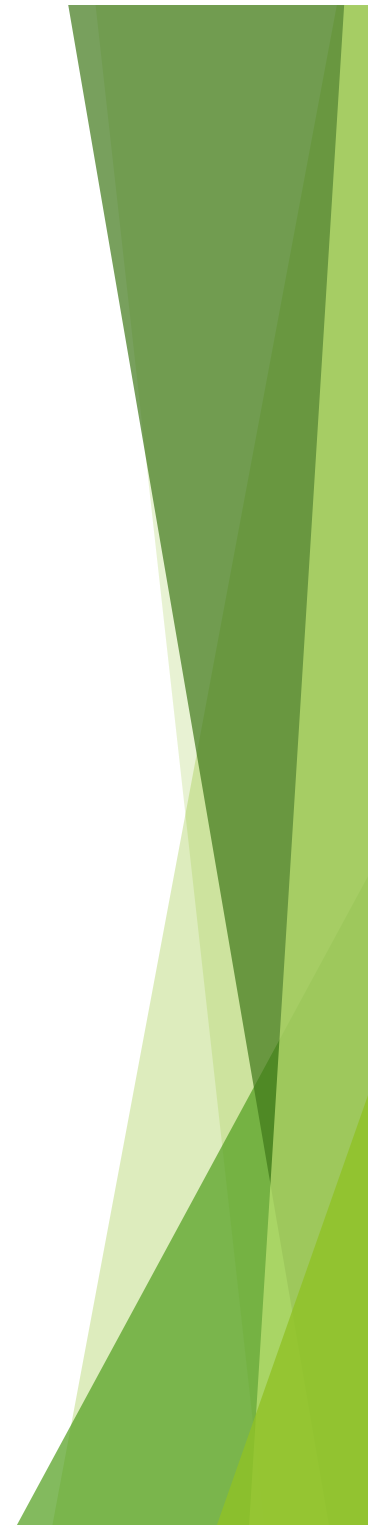


Electronic Communication

Lecture 5 - COMPSCI111/111G

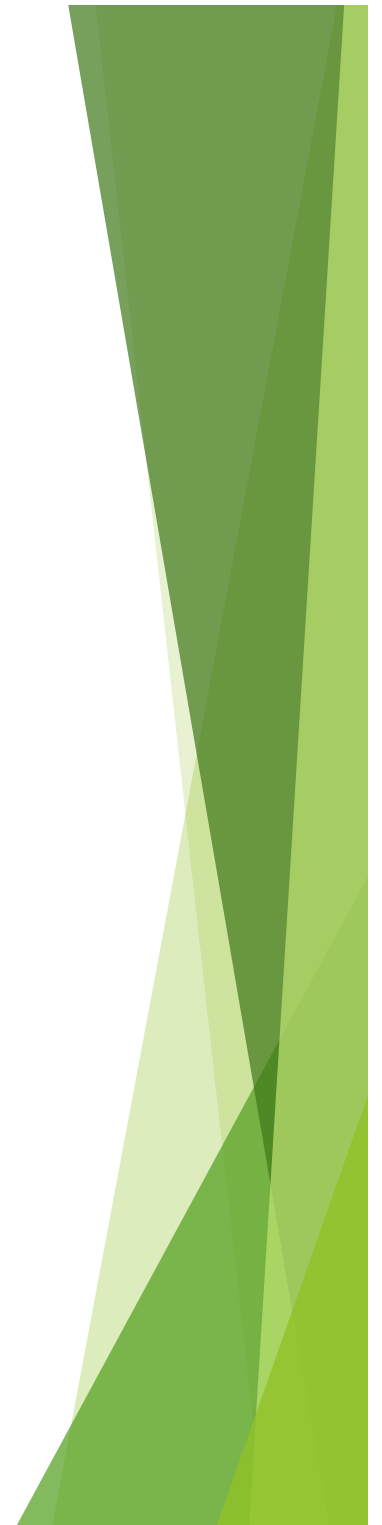
Today's lecture

- ▶ Looking at how different types of electronic communication work
 - ▶ Email
 - ▶ Instant messaging
 - ▶ Forums
- ▶ Issues with electronic communication
 - ▶ Spam
 - ▶ Netiquette
 - ▶ Security issues
 - ▶ Authenticating users



Email

- ▶ Electronic Mail; a system for sending and receiving messages over the Internet
- ▶ An asynchronous means of communication
- ▶ Necessary to know the address of the recipient in order to send an email message



Email - history


- ▶ 1960s: initially, people would leave messages for each other on a mainframe
 - ▶ However, there was no way to send messages to people using other mainframes
- ▶ 1969: ARPANET connected mainframes together, providing the foundation for email
- ▶ 1972: Ray Tomlinson sends the first email, with addresses using the @ symbol
- ▶ 1976: email makes up 75% of ARPANET's traffic

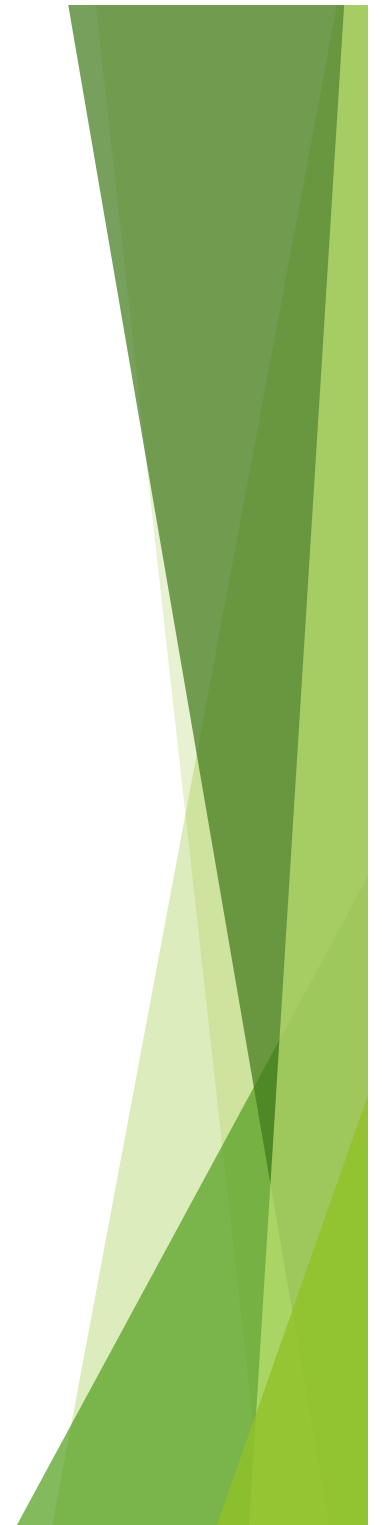


Email - addresses

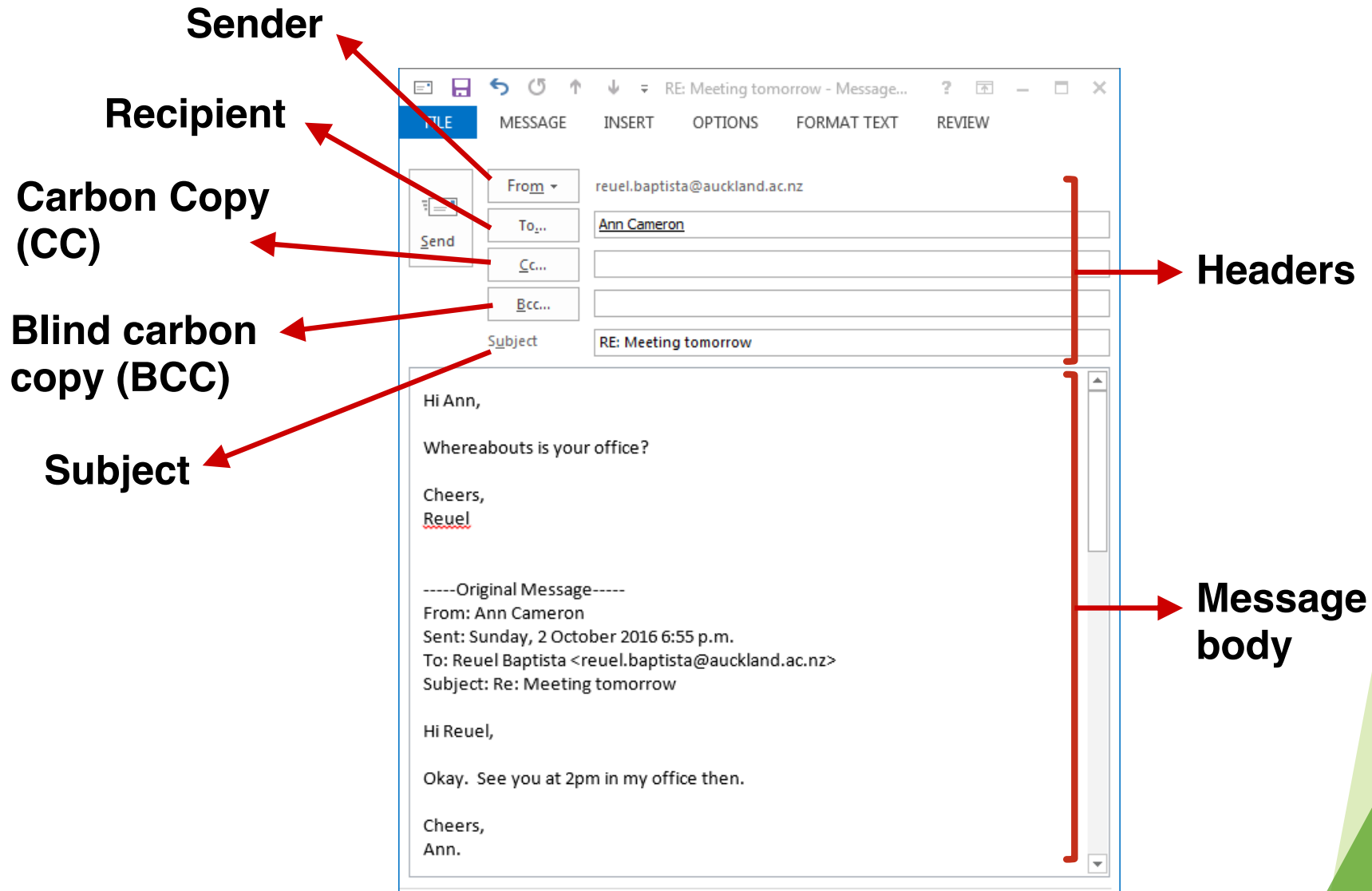
damir.azhar@auckland.ac.nz


**Local part of
the address,
often a
username**


**Domain name
of the email
server**

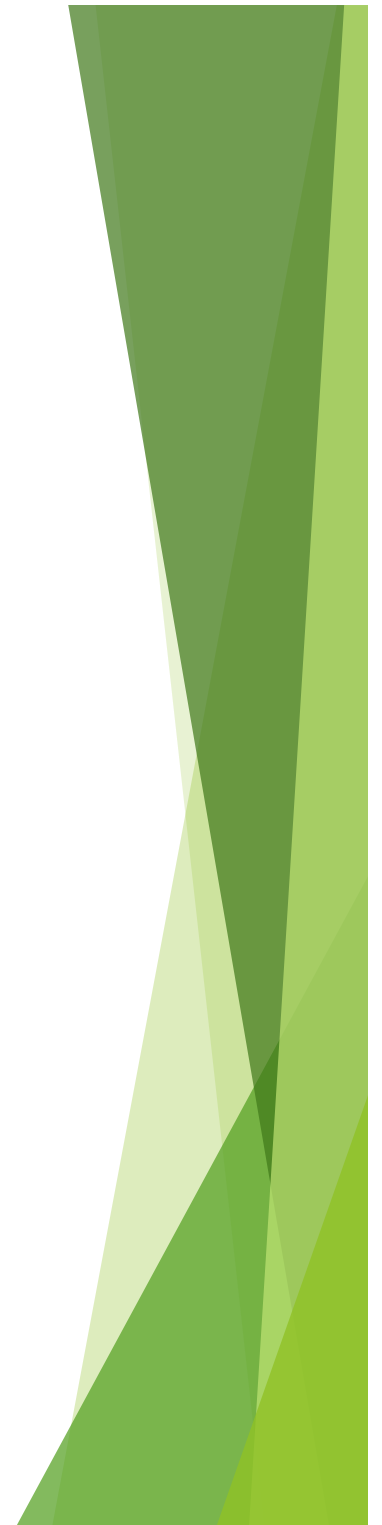


Email - composing



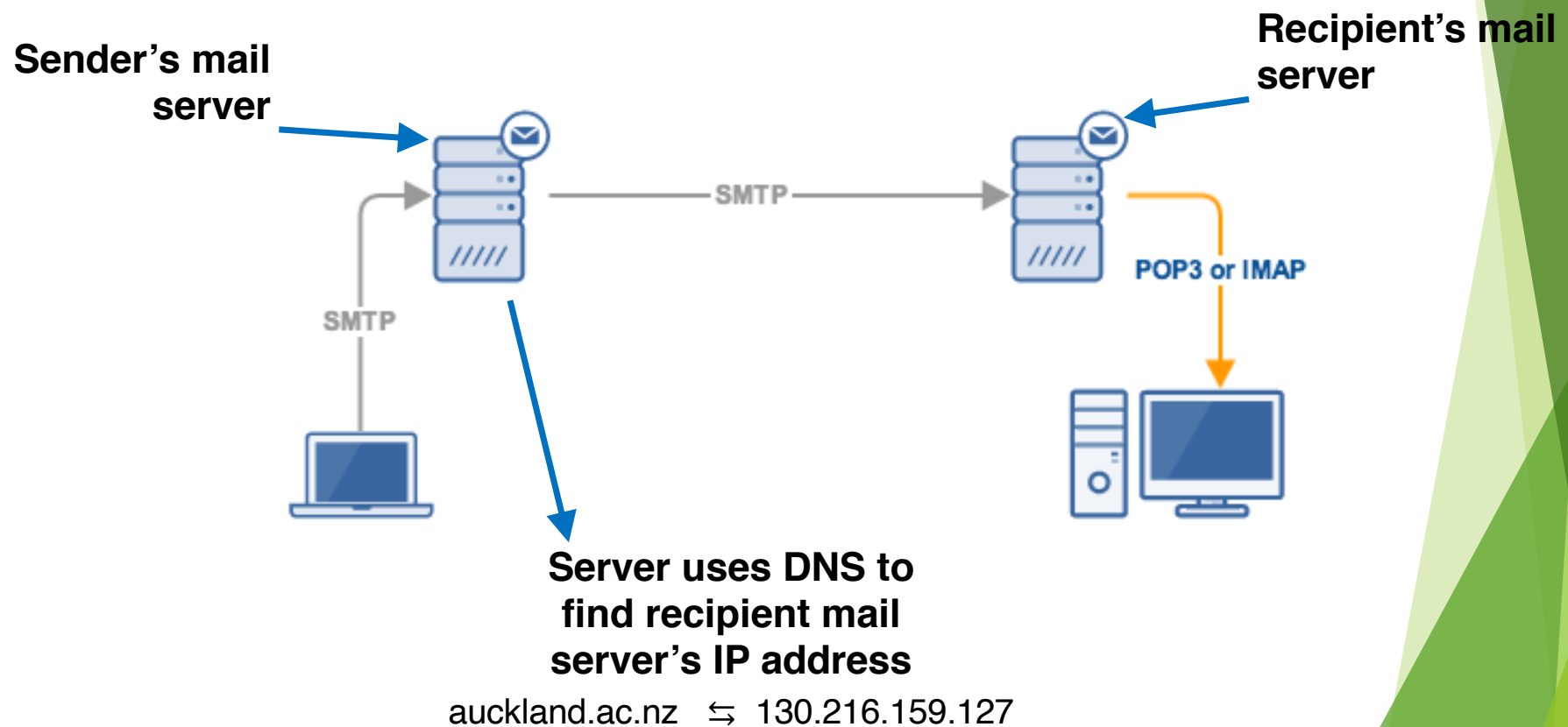
Email - protocols

- ▶ Protocol: a standard for communicating
- ▶ These email protocols are used by email clients (eg. Outlook, Apple Mail) to send and receive email
 - ▶ Webmail services such as Gmail and Hotmail use the same protocols
- ▶ We will discuss three protocols today:
 - ▶ One for sending emails - SMTP
 - ▶ Two for receiving emails - POP3 and IMAP



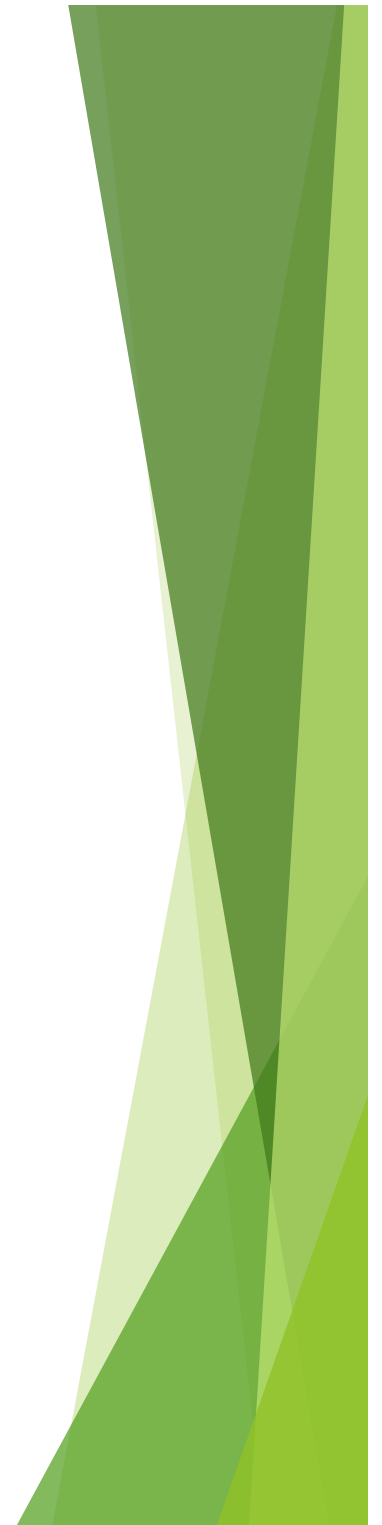
Email - protocols

- ▶ SMTP - Simple Mail Transfer Protocol:
 - ▶ Used to send emails from an email client via the email server



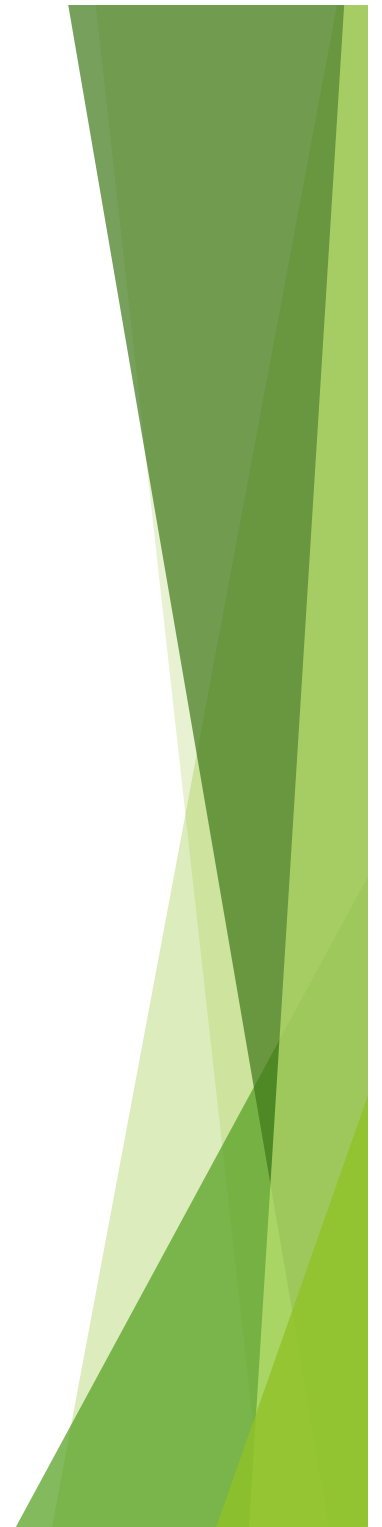
Email - protocols

- ▶ POP3 - Post Office Protocol v3:
 - ▶ Emails downloaded from the server to the email client. Emails are then deleted from the server
 - ▶ No Internet connection needed to read downloaded messages
 - ▶ Disadvantages:
 - ▶ If messages are deleted in the email client, then they are lost forever
 - ▶ Difficult to access your email from different devices



Email - protocols

- ▶ **IMAP - Internet Message Access Protocol:**
 - ▶ Downloads a copy of emails to the email client and keeps emails on the server
 - ▶ Emails can only be read when online, although most email clients can store a copy for offline access
 - ▶ Provides other helpful features such as folders
 - ▶ Designed to allow users to access their emails from multiple devices



Email - privacy

- ▶ Email is not a very secure means of communication
 - ▶ Can be read in transit
 - ▶ Can be read by the mail server administrator or stolen from the mail server
- ▶ Email in employment
 - ▶ Generally, employers reserve the right to read your emails on the company's email system
- ▶ Making email more secure
 - ▶ Email encryption tools such as PGP
 - ▶ Some email clients have encryption functionality
 - ▶ Keep your account details secure and use 2FA



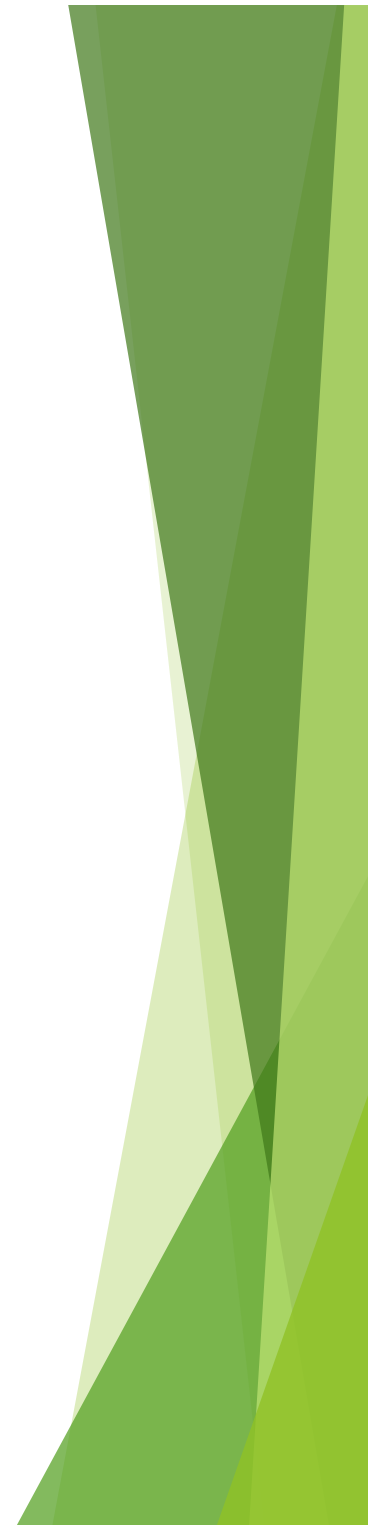
Email - spam

- ▶ Unsolicited, bulk email containing promises of money, fame, free prizes etc.
 - ▶ Name comes from the Monty Python *Spam* [sketch](#)
- ▶ A major problem; in 2010, approx. 80% of emails were spam
- ▶ Some spam emails contain attachments or links that can infect a computer with malware
- ▶ Most email providers have spam filters that divert spam emails to the Junk folder

<input type="checkbox"/> ☆ Pa dre	>> Congratulations, Your_Future! << - Believe me! This message coming from above wi	Nov 22
<input type="checkbox"/> ☆ 📧 Chris 📧	★ ★ Read your 📧 message 📧 before it gets deleted ★ ★ - Hi Reuelb Read your m	Nov 22
<input type="checkbox"/> ☆ Thank You ✨	★ We Have been - Trying_To_Reach_You ★ »» ✨ PLEASE RESPOND! ✨ - Check	Nov 22

Email - spam

- ▶ Unsolicited Electronic Messages Act 2007
 - ▶ Aim: reduce the harm caused by spam, require an unsubscribe feature and deter people from sending spam
- ▶ The Act regulates **commercial electronic messages**; any message that promotes a good or service
 - ▶ **Electronic message** is any message sent using a telecommunications service (eg. email, fax, txt)
- ▶ The Act applies to anyone who lives or does business in NZ



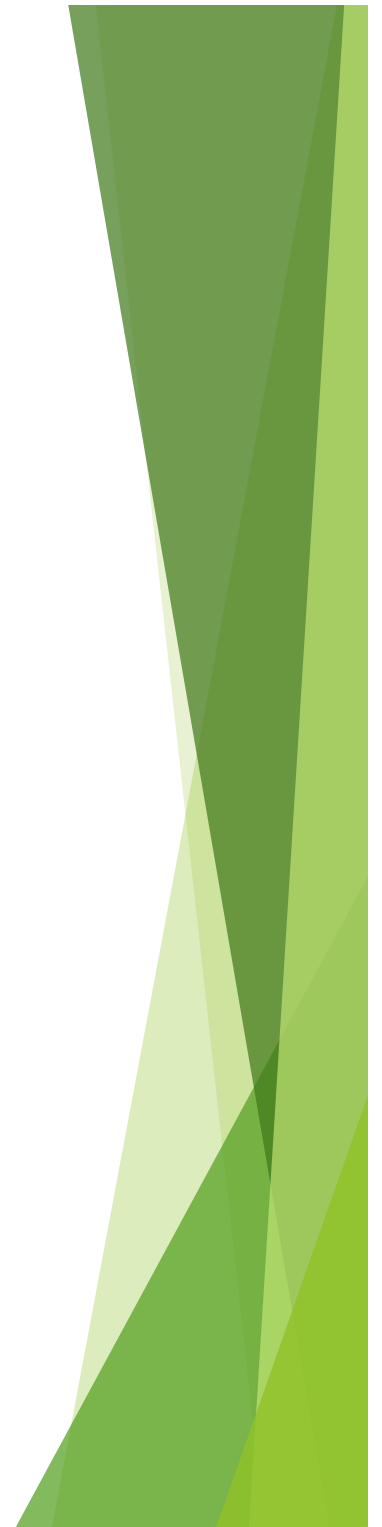
Email - spam

- ▶ The Act prohibits:
 - ▶ sending an unsolicited commercial electronic message with a NZ link
 - ▶ sending a commercial electronic message without sender information
 - ▶ sending a commercial electronic message without an unsubscribe function
- ▶ Penalties include:
 - ▶ Fines of up to \$200,000
 - ▶ Payment of compensation to people affected by the spam



Inbox Zero

- ▶ A smart way of managing your email
- ▶ More productive
- ▶ Reduces stress



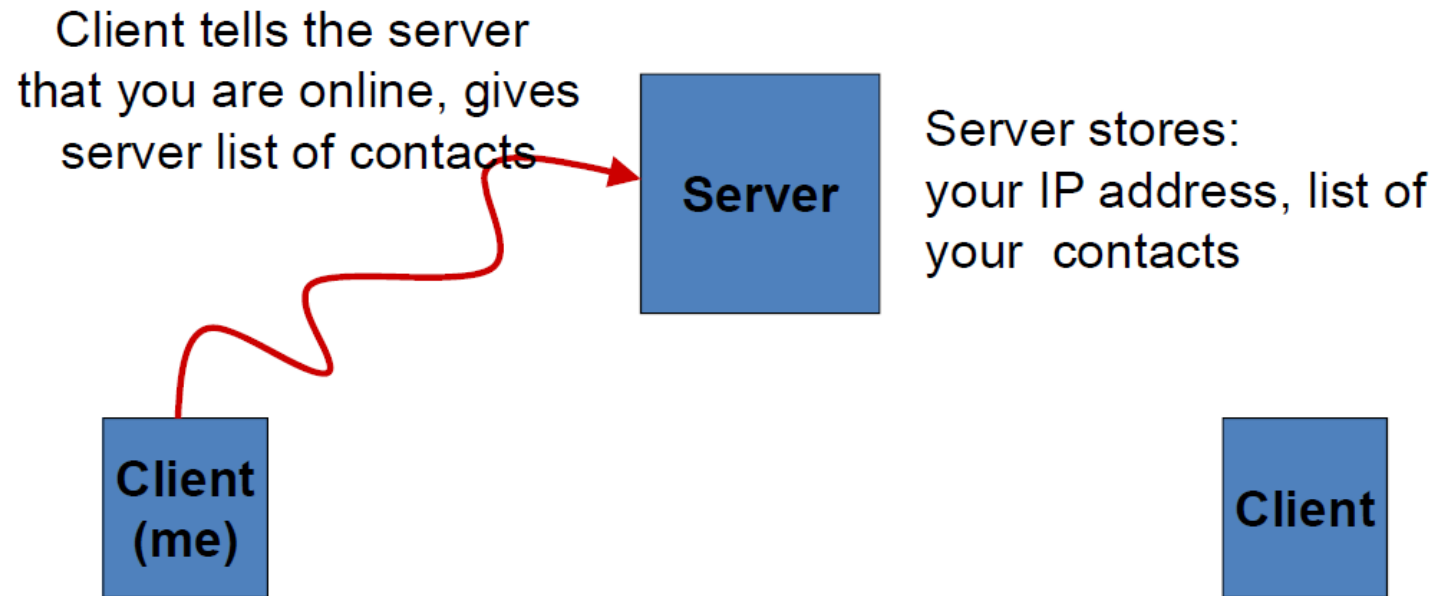
Instant messaging

- ▶ Instant Messaging (IM) is a way of immediately sending messages over the Internet
- ▶ A synchronous means of communication
- ▶ In 2015, there were around 3.2 billion IM accounts. Whatsapp and FB Messenger were the most popular IM apps
- ▶ Some IM apps offer end-to-end encryption for conversations (eg. Telegram, FB Messenger)



Instant messaging

- ▶ Sender's IM client connects to the server

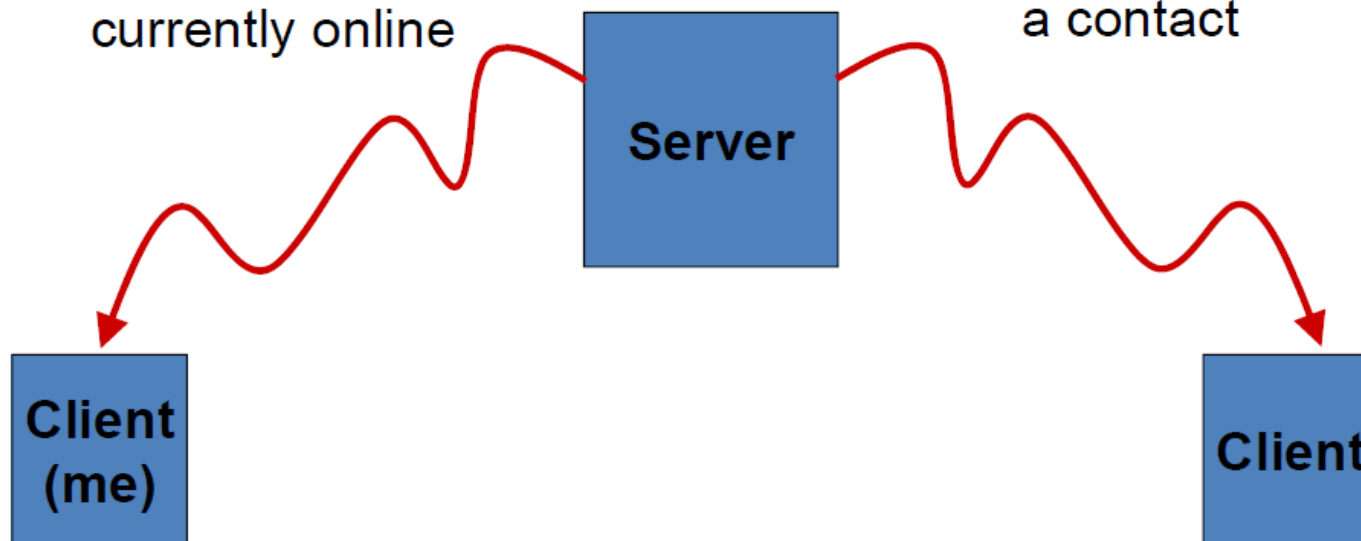


Instant messaging

- ▶ Server helps clients to exchange IP addresses

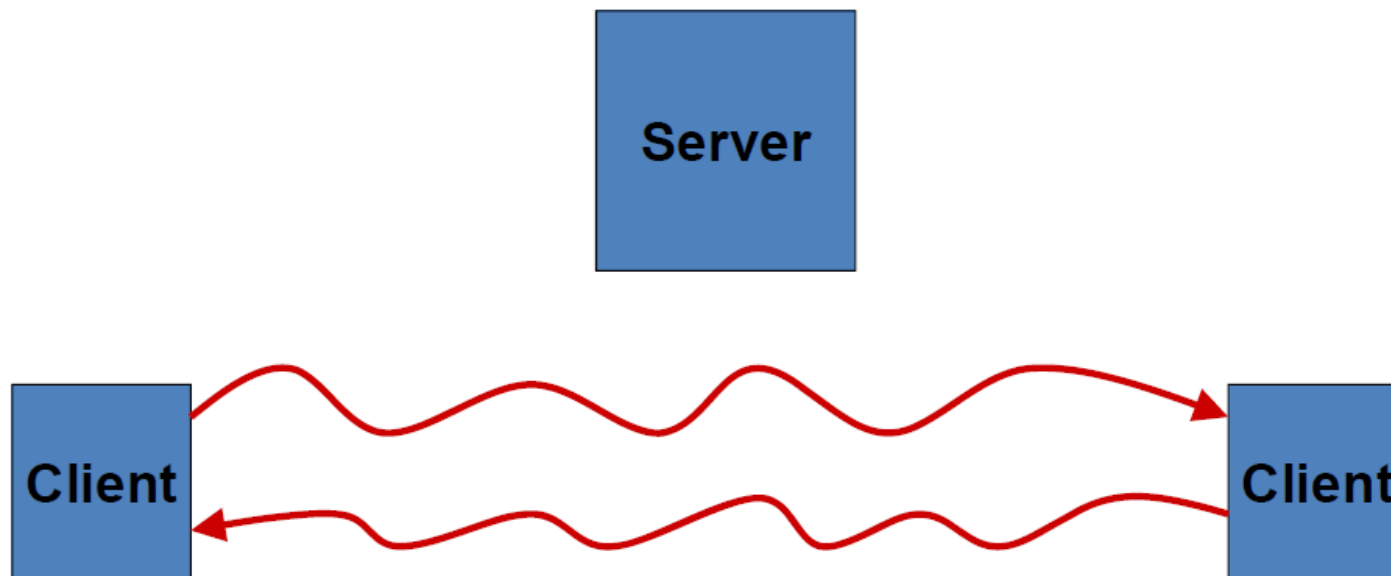
Server sends IP addresses
of all your contacts that are
currently online

Server sends your IP address
to anyone that lists you as
a contact



Instant messaging

- ▶ Once connected, sender and recipient can chat without needing the server



Forums

- ▶ Forums are an online discussion group about a particular topic
- ▶ A form of asynchronous communication
- ▶ Different kinds of forums:
 - ▶ Class forums for courses
 - ▶ Apps have forums where users can help each other (eg. OpenOffice [forum](#))
 - ▶ Forums for discussing different topics (eg. forum on [airplanes](#))



Computer Science & Software Engineering Forums
<http://www.cs.auckland.ac.nz/>

[FAQ](#) [Search](#) [Register](#) [Profile](#) [Log in](#)

The time now is Wed Nov 30, 2016 3:28 pm [View unanswered posts](#)

Forum Index

Forum	Topics	Posts	Last Post
General			
Demonstrators	5	5	Wed Feb 23, 2011 4:49 pm afer023
Stage 1			
COMPSCI 101 S2 C 2016 Principles of Programming	51	292	Wed Nov 02, 2016 2:46 pm afer023
COMPSCI 111 S2 C 2016 Mastering Cyberspace: An Introduction to Practical Computing	10	498	Thu Sep 08, 2016 10:20 am hpat401

Parts of a forum

How are you finding the course?

Goto page [1](#), [2](#), [3](#) ... [31](#), [32](#), [33](#) [Next](#)

[[Post new topic](#)] | [[Reply to topic](#)] [Forum Index](#) -> [COMPSCI 111 S2 C 2016](#)

View previous topic :: View next topic	
Author	Message
Ann acam001 Staff	<input type="checkbox"/> Posted: Sat Jul 23, 2016 8:08 pm Post subject: How are you finding the course? quote How are you finding the course so far? Have you learnt anything new yet? What topics, if any, are you looking forward to? Have you made any new friends yet? Back to top
yshi101	<input type="checkbox"/> Posted: Thu Jul 28, 2016 2:00 pm Post subject: How are you finding the course? quote The course is great, I am learning a lot of new things! also it is a lot more demanding and needing dedication and commitment as well. Back to top

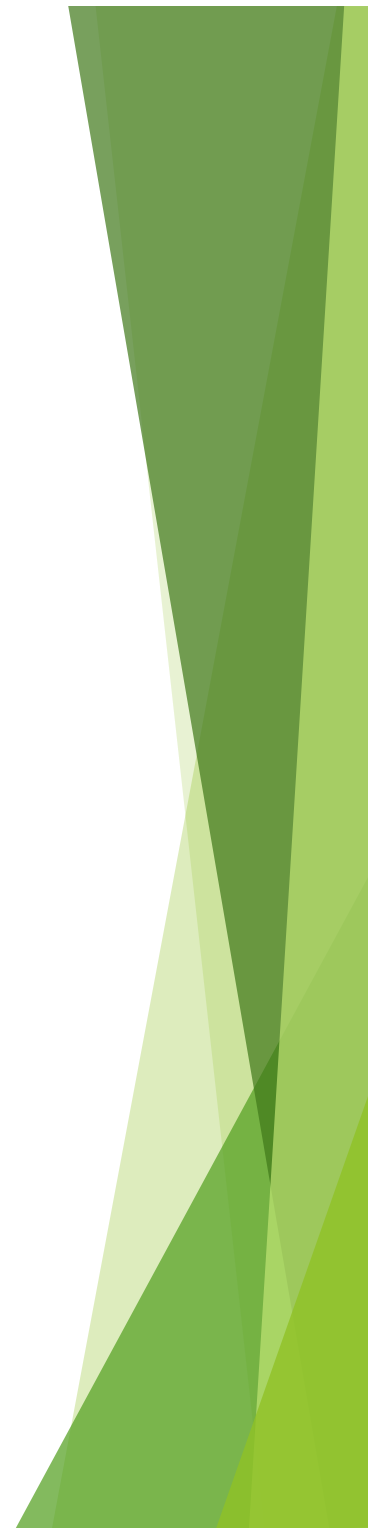
Topic (aka thread)

Quote button

Post

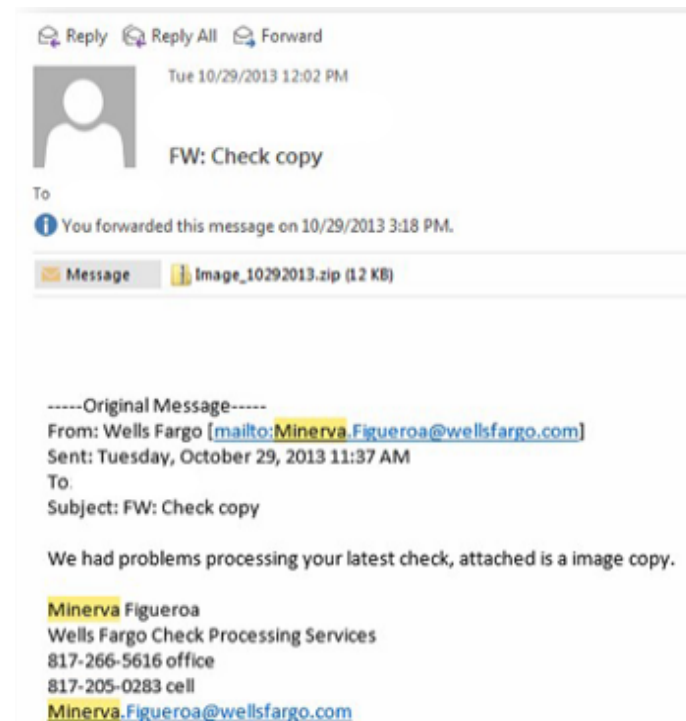
Parts of a forum

- ▶ Moderator: a forum user who can edit, delete or move posts or threads to help keep the forum tidy and organised



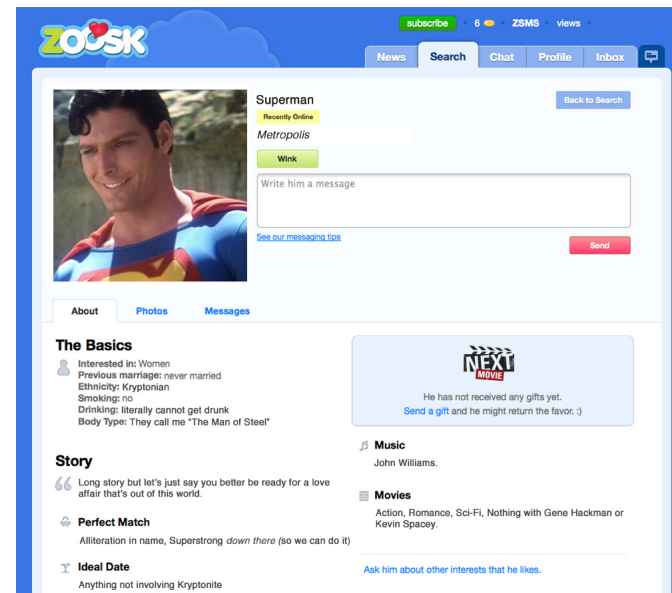
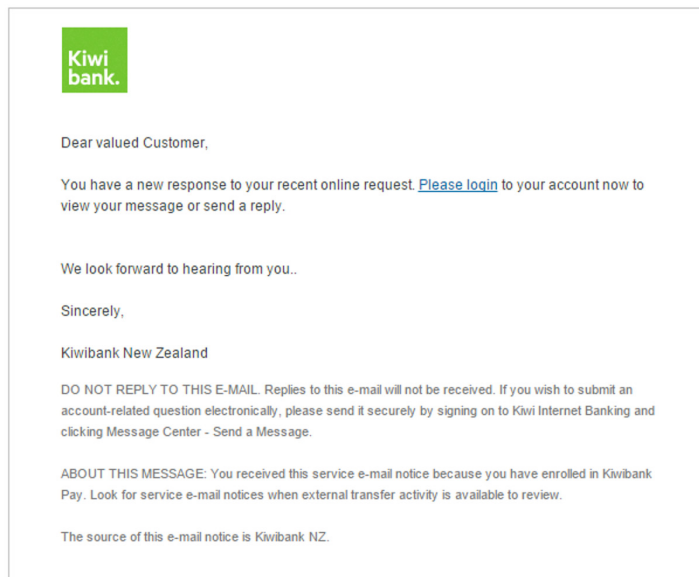
Issues - attachments

- ▶ An attachment is a file that is included within an email message, IM message or even a forum post
- ▶ Attachments may contain malicious content so never open an attachment unless you are sure it is from a reliable source
 - ▶ Another precaution is to scan the attachment using an anti-virus program
- ▶ Attachments have been the main way that Cryptolocker ransomware has spread



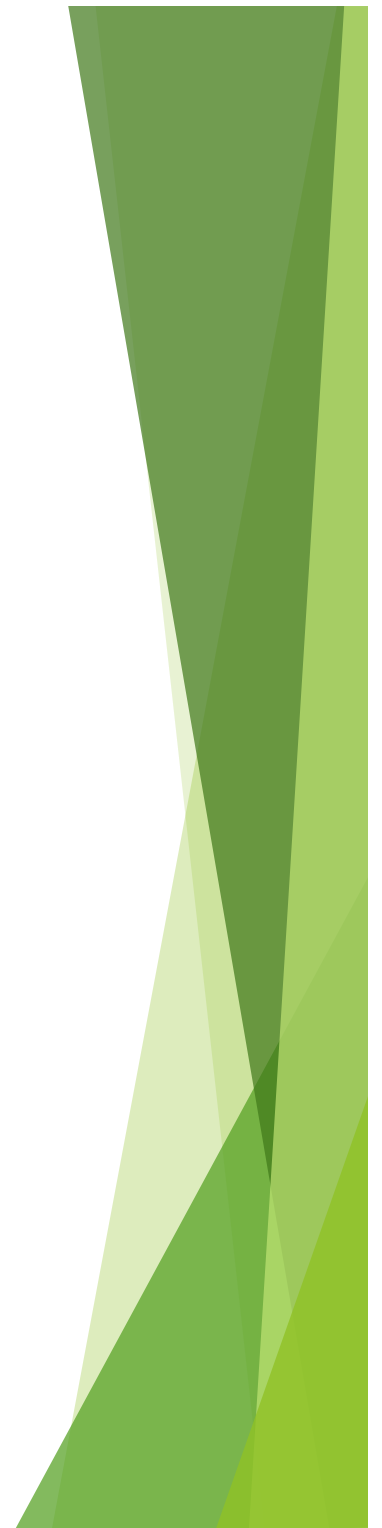
Issues - misrepresentation

- ▶ People can misrepresent themselves using electronic communication
 - ▶ Phishing emails claiming to be from your bank
 - ▶ False profiles on dating apps and social media
- ▶ Always worth double-checking a message with the purported sender if you're suspicious



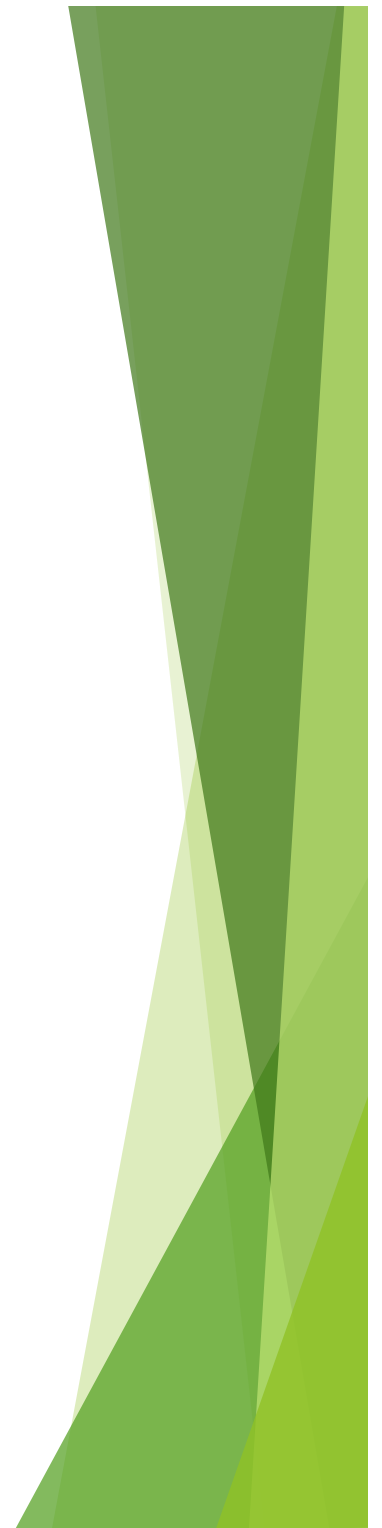
Issues - Netiquette

- ▶ Etiquette on the Internet; what is socially acceptable when communicating online
- ▶ Examples:
 - ▶ Having a greeting and signature in your emails
 - ▶ Not using your cellphone in libraries and quiet spaces
- ▶ Some reading:
 - ▶ <http://www.101emailnetiquettetips.com/>
 - ▶ <http://www.faqs.org/rfcs/rfc1855.html>
 - ▶ <http://www.albion.com/netiquette/>



Exercises

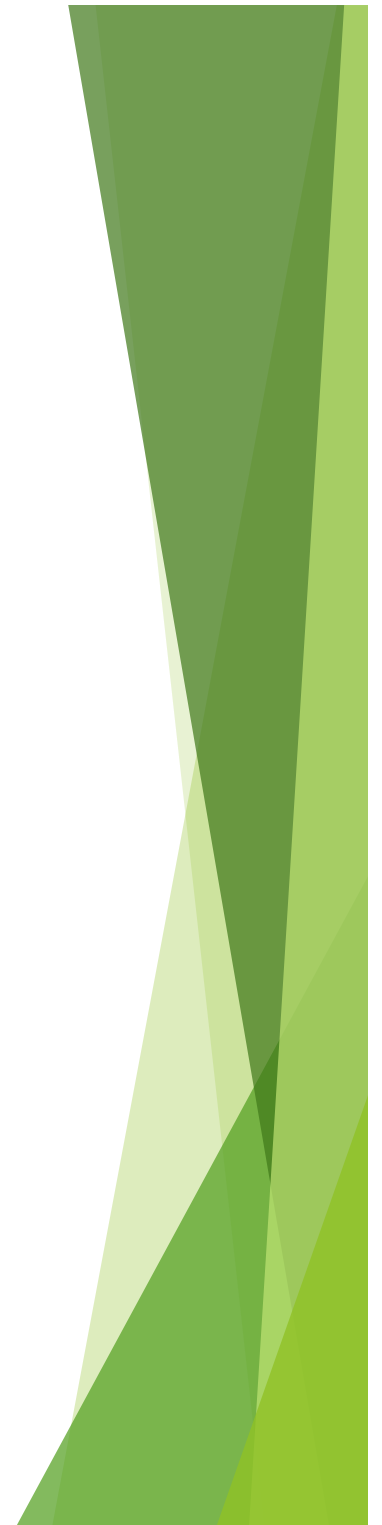
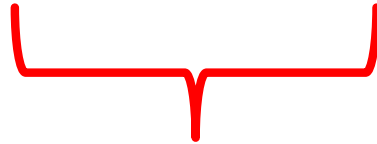
- ▶ What protocol should I choose on my email client if I want to access my emails using multiple devices?
 - ▶ **IMAP**
- ▶ What is the difference between synchronous and asynchronous communications?
 - ▶ **Synchronous communications means the recipient receives the message immediately but asynchronous means the recipient gets the message after some time**



Exercises

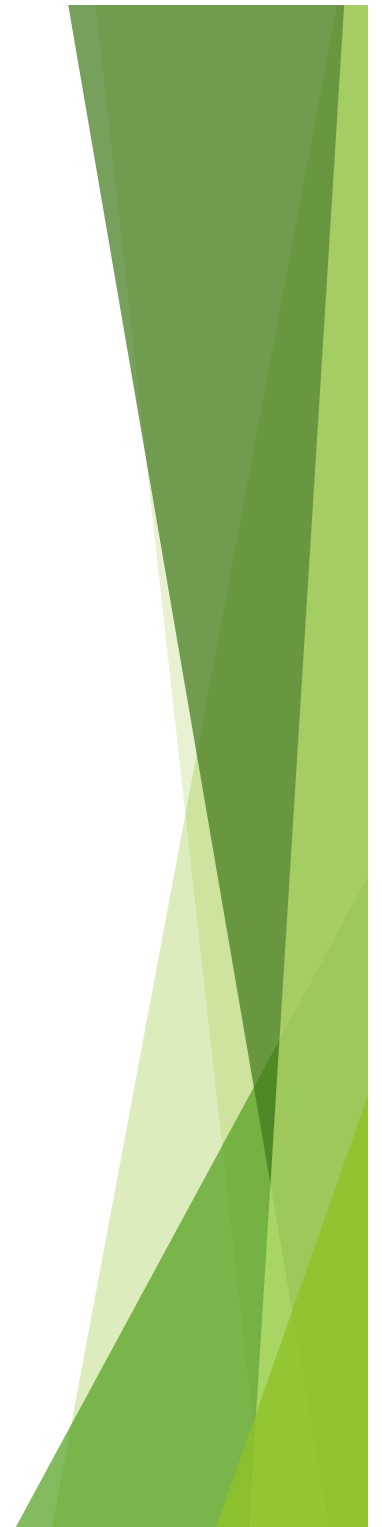
- ▶ On a forum, what is a reply to a topic or thread called?
 - ▶ Post
- ▶ What is the domain name in this email address?

customer.help@pizza.co.nz



Answers to Questions

- ▶ IPv6 has 2^{32} addresses ~ 4.3 billion
- ▶ Auckland student email - might be private
- ▶ Vram and Ram are usually specified separately in computer specifications, but both are volatile
- ▶ Speed of electromagnetic waves ~ 50%-99% the speed of light



Summary

- ▶ Email was invented in 1972. Three main protocols: POP3, IMAP, SMTP
- ▶ IM and forums are other forms of electronic communication
- ▶ Issues with electronic communication:
 - ▶ Spam
 - ▶ Attachments containing malware
 - ▶ Senders misrepresenting themselves
 - ▶ Securing communications using encryption, protecting account details, 2FA
 - ▶ Netiquette

