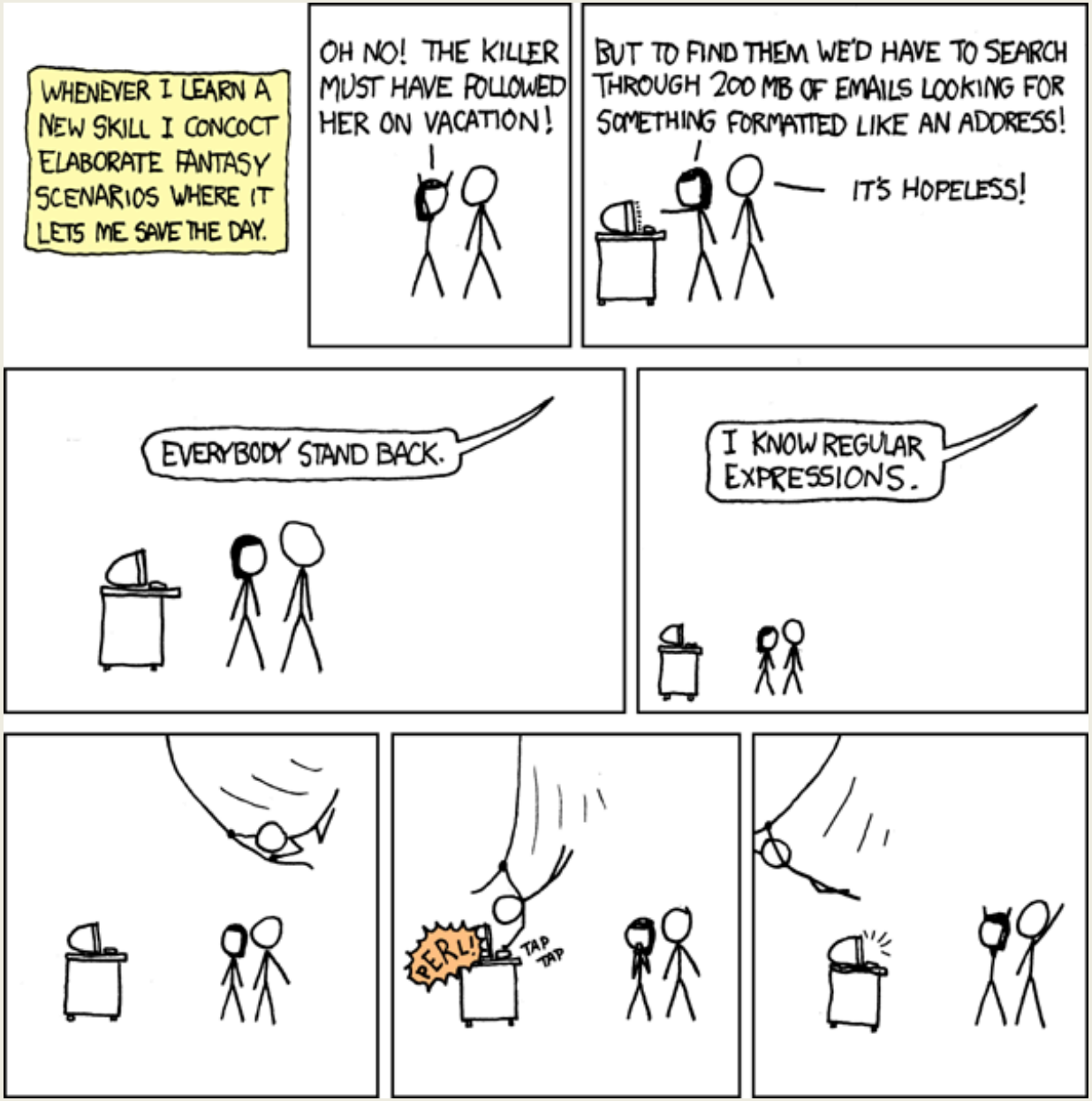
Introduction to Regular Expressions

An Intersect course

General Introduction

- Intersect http://www.intersect.org.au/
  - Who we are?
  - Your Trainer
- Your University IT Contacts
- General Housekeeping
  - Toilets
  - Coffee & Water Facilities
  - Emergency Exits



Find and Replace

- Most people will be aware of the **find** and **replace** options of programs such as **Word**.
- Often we use **find** to locate the occurrence of a particular **word** or **phrase** or **number**.
- *e.g. "realize", "cookie", "the Nothing itself noths", "3.1415927"*

Sometimes the objective is…

- just to find out **how many matches** there are.
- to locate each **match** and review in context.
- to **replace** or **substitute** that word for another.
- *e.g. 101 occurrences of "realize", "cookie" to "biscuit", "…noths" to "Heidegger quote", "3.1415927" to "π"*

Regular Expressions can be used to make **more sophisticated** matches and **more complex** substitutions

For instance, one might want to find

- all the **phone numbers** or **email addresses** in a document
- all the **#hashtags** in a collection of tweets
- all the words that start with **e** and end with **ed**, irrespective of length
- all words at the **end of a line** of text
- "honest" words, like "honor", "honour", "honesty", "honorable", "honourable", etc.

Note the leap from a *literal match* (#auspol) to matching a *pattern*

all things that look like a **#hashtag**. i.e. begin with a hash followed by any number of alphanumeric characters

Regexes are not an example of machine learning.

- You need to specify the pattern — the rule — which will match what you want and exclude what you don't want
- This is sometimes challenging.

Regexes are everywhere!

- Many text or "programmers" editors - TextWrangler, Notepad++, Jedit, Vim, ...
- Google Spreadsheets
- Microsoft Word has a take on them
- Open Refine
- Command line - sed, grep
- Programming languages - Perl, Python, Ruby, R...
- Online "sandpits"

Regex syntax has evolved...

- Many extensions since 1950s
- Some variations in syntax between implementations

Our objective, guided by these considerations...

To become familiar with what regular expressions are and how they might be useful to you...

…in a manner that is:

- not overly dependent on any platform
- provides enough background to learn how to apply regexes in your chosen platform
- is fun
- and leads to questions

Let’s get started…

Exercise 1

Avian Internet

- RegExr
- http://www.regexr.com/

- RFC2549
- http://bit.ly/1MLmg7C

Exercise 2

To die upon a kiss

- RegExr
- http://www.regexr.com/

- Full text of Othello
- http://bit.ly/1tKfAMW

Exercise 3

Random names

- RegExr
- http://www.regexr.com/

- Random name generator
- http://bit.ly/1MLmknO

Exercise 4

Tweets

- RegExr
- http://www.regexr.com/

- Virtual Community Cabinet Tweets
- http://bit.ly/1IlrRln

Exercise 5

Reformatting dates

- RegExr
- http://www.regexr.com/

- Dates in American History
- http://pastebin.com/Z7NSAnTL

Summing up

- We have seen how regular expressions can be used to match sophisticated patterns within text.
- This is really useful for analysing unstructured text.

Next steps

- Look up how to search using regular expressions in your favourite text editor or programming language.
- Do a search for "regular expression cheat sheet" and print out one you like.
- Regex101.com is an excellent resource. A tester, debugger, and reference guide.

Thanks for attending!

- Please complete our **course survey** at:
  - http://svy.mk/18c8dHa

Any **further questions**, contact us at

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