

Written by the Beta Team of CSESoc
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βETA

Free as in speech and our awesome BBQs.

Beta Issue # 85
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OPINION

Why L^AT_EX

A brief overview of the language

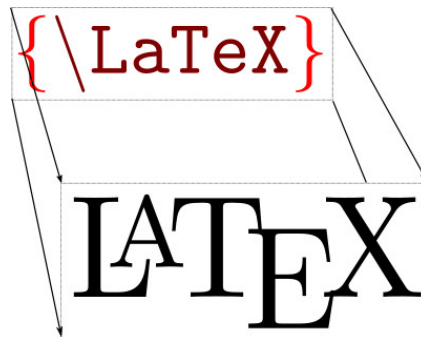
For those of you who are unaware, Beta is actually published and formatted using LaTeX. Now, why LaTeX and not some other normal publishing software? How do you even publish a magazine with black rubber? Those questions will hopefully be answered in the rest of this article.

What is a LaTeX?

A far cry from the more popular homograph latex, LaTeX is pronounced lay-tek, and actually refers to a document preparation system for typesetting. In other words, it is the equivalent of a document markup language. LaTeX is built on the TeX type setting program, which means that documents written in LaTeX must have a suffix of .tex in order to be a compiled. LaTeX files can be written in any text editor, but require the LaTeX system to be installed in order to produce a processed version of the document (eg a pdf file).

Since it is not a word processor, people who use LaTeX are meant to concentrate on the actual content of the document and

spend less time worrying about the layout and presentation. For example, instead of having to worry about the title sizes of each Beta heading, the title command in the LaTeX system will figure out what typesetting to use. Most of the formatting in LaTeX is designed to portray a sense of professionalism, ensuring that documents produced in LaTeX have a very clean and consistent presentation.

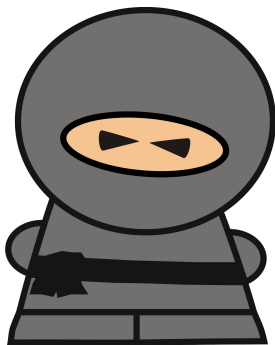


Doesn't that mean that your formats are restricted?

On the contrary. While LaTeX does have a default setting for all of its inbuilt macros, the system also allows you to customise macros and commands in the header section of the file. Similar to a #define in the heading of a C program, a change in the header will affect all of the following calls for that macro. In fact, some of the fixed titles in Beta (eg News in Brief) have been shortened to a single macro call. Admittedly, the header can get a tad messy with all this customisation going on.

In addition to the standard formatting options and your own customisations, there are plenty of other custom formats out there. Much like the library imports you would use in programming, these other customisations can be included into your document with the usepackage option.

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OPINION

Why L^AT_EX- contd.

You're making this sound more and more convoluted.

Not at all! If you are going to use the same formatting over and over again, all you have to do is spend a little bit of effort in the initial design of the headers, and then it's just a matter of copy and pasting your header. You can even go as far as to modularise your content, creating a separate header file that includes all of your content. In fact, this attitude is encouraged so you won't have to deal with multiple lines of formatting across a single massive file. Each article can have just a few commands for easier editing.

Where would you use LaTeX?

LaTeX is widely used in academia due to its ability to typeset complicated mathematical formulae, graphs, data tables and diagrams. In fact, you will most likely be required to use LaTeX to format your thesis reports in your final years. Those of you in a software engineering degree would have already come across it as it is your designated report writing language. You will notice that one of the many benefits of LaTeX is the easy customisation of tables, which is a good thing considering the how clunky the default design is.

Other than reports, LaTeX includes features for typesetting journal articles, books and even presentation slide. It is all a matter of what environment you chose to declare in your .tex file. Our resident crossword maker Oswyn Brent deserves his name dropped here; all of his crossword puzzles have been produced using the LaTeX puzzle environment. Hooray to him!

That sounds cool. But a standard publishing software sounds easier to

use.

While standard publishing software is designed to help you produce any document, LaTeX was designed to help you produce professional looking documents. In short, LaTeX is pretty like a suit, not a dress. LaTeX is also really easy to template, such that once you've written your first report, you can just copy and paste the header into your next report and the formatting will be exactly the same. Talking about copying and pasting, Beta is partially produced by an automater that converts Google Drive documents into a .tex file, which is only achievable because it is not committed to any publisher.

Besides that, a lot of the default typesetting options means that there is no need to worry too much about the layout of pictures. For example, the three photos on the front page of Beta are positioned with a simple use of the `beginsubfigure` environment. All you really have to do is specify the environment and the LaTeX system decides the rest.

Surely it can't be that good.

Well, LaTeX has some very stringent rules about spacing, which can make some customisations occasionally look awkward. Bear in mind that LaTeX is meant to produce professional looking documents where spacing is often a key component. While awkward spacing is a tad annoying, it is by no means hard to overcome (look up `hfill`). The default way it decides to hyphenate words also leaves a lot to be desired; again this is easily fixed up with a simple command in the header.

In the context of publishing a newsletter, possibly the most annoying thing is really the positioning of pictures in the middle

of an article. Generally the diagrams you would include in a standard report would take up the breath of an entire page, which is very easy to do in LaTeX. However, smaller, unimportant pictures are often included in Beta to break up the monotony of the article, which goes against the standard rules of professionalism. How was this problem fixed? If you guessed that a bad hack was involved, you guessed right. It just goes to show the options that LaTeX can offer if you persevere.

So, how do you LaTeX?

As mentioned before, you will have to install the LaTeX system onto your computer in order to compile the LaTeX document. After that, it's just a matter of breaking out a text editor, looking up a tutorial and starting to write. There are many features of LaTeX that are just a simple Google search away. Next time you have a report or an essay you have to write, maybe try writing it in LaTeX - you never know, you may even start to like it.

Some useful links:

All the documentation about the LaTeX project and the software you need can be found on this website:

<http://latex-project.org/>

If you need some help to get you started, Peter Ho has written a very useful overview about the kinds of features available in LaTeX, linked here:

<http://www.cse.unsw.edu.au/se1031/Resources/Docs/Fastlatex.pdf>

And naturally, there's a LaTeX wikibook:

<http://en.wikibooks.org/wiki/LaTeX>

WEN DI LIM



News in Brief

Sweeping Designs

Vacuum maker Dyson has recently filed a suit accusing Samsung of using their patented vacuum-steering system in Samsung's Motion Sync vacuum cleaner, labelling it a "cynical rip-off". Dyson has had a history of patent battles with rivals, including another patent case win against Samsung in 2009 when a court ruled Samsung had infringed on its super-powerful vacuuming mechanism. There hasn't been a reply from Samsung yet, but it seems they suck at original designs.

Delayed Job

A former robber has written to his victims, apologising and repaying what was stolen 11 years after the crime was committed. Last week, the owners of the Interasian Market and Deli in Nashville, Tennessee

received a handwritten letter along with \$700 for the case of beer and cash stolen on the fateful day. Perhaps the former drug addict was robbed of his dignity and felt he had to make amends.

Those Hogs!

A feral pig has gone on a bender in Western Australia, consuming 18 beers it stole from campsites east of the remote town of Port Hedland. Campers saw the pig stealing 3 six packs of beer before ransacking rubbish for food scraps. The incident has prompted rangers to warn campers to properly secure their food and drink. One camper also reported seeing the beer-guzzling pig get into an altercation with a cow, before sleeping it off under a tree nearby nursing a hangover. The pig is said to have also learnt a lesson

about being drunk and boarish.

A Ninja Proposal

A professor in Japan is pushing for hide and seek to become an Olympic sport when the Olympics come to Tokyo in 2020. Yazuo Hazuki, a graduate from Nippon Sport Science University, has said guile is a very important attribute in an athlete and he has set up the Japan Hide-and-Seek committee which is lobbying it to be included in the 2020 games as an exhibition sport. The committee has even put forward a set of competition rules to be used. We will certainly be keen to see if this proposal will hide or go seek the riches of the Olympic games.

PATRICK CHUNG

OPINION

The Code to Success is != Null

Computer literacy is more crucial than ever, but not enough is being done to ensure high school students are given the resources they need.

If you google "programming for Australian high schools", 2 results turn up; "National Computer School - high school computing" and "AIOC". While some universities (such as ours!) have programs that try to engage high school students with coding lessons/seminars to educate our highly commercial, technology driven society, the opportunities that are available for students to explore are actually quite limited. Perhaps the opportunities are there, but they are not widely advertised nor communicated between schools. In terms of government effort, the previous Labor government introduced (and poorly, might I add) laptops to public high school students, but no further encouragement was given for the students to explore actual programming.

Clearly, there are some efforts to propagate computing literacy in students. The laptop program guaranteed the necessary hardware, and AIOC competitions provide some incentive for students to explore the diverse nature of technology. But there is still a major gap. For example, the average year 11

or year 12 student in Vietnam has the comparable computing capability of a first year computing student in Australia. On the other hand, there is a sheer amount of first year students who don't have any programming experience prior to COMP1917.

Sure YouTube has online tutorials, but they are not regulated and are poorly organised. Such resources are ineffective if relevant information cannot be easily found and structured. And while AIOC and non-government organisations can celebrate the successes of their programs, they cater to a very tiny minority.

In my opinion, introducing computing as a compulsory HSC subject would be a place to start. Even better, make it compulsory for high school, or even primary school. Emphasising the importance of computing and technology at an early age would allow schools to accommodate a curriculum that includes computing. At the very least, there should be a form of regulation between schools for computing subjects such as SDD (Software Design and Development) and IPT (Information Processes and Technology).

The existing HSC computer-related

subjects are heavily flawed, infamous for their untrained teachers. No school would employ a maths teacher who wasn't proficient in maths, yet just this happens in computing. Due to this, introducing more subjects would not be an effective solution. Rather, the focus should be on improving the quality and proficiency of computing teachers. Perhaps increased teacher meetings or seminars could be a good step in this direction?

Regional schools face even more barriers; lack of internet access or resources for buying tech supplies adds to the list of odds stacking up against potential computing students. Not to mention, the current government seems hell bent on limiting the internet speeds that we should be able to access in the cities - doesn't that seem to imply a lack of support for just computing in general?

We may not have famous celebrities such as Mark Zuckerberg to create some sort of public awareness about the importance of technology but that doesn't mean it should be ignored. Technology is a strange but powerful thing, and we cannot stay in the dark ages forever.

JESSICA MUNIT

OPINION

You know what gets my bits a bunch?

SQL

Inevitably, at some stage in your university life or career, you're going to be introduced to this friendly-looking fellow SQL. He's a query language that helps you request information from relational databases, and he's at the front of almost any database you're ever likely to encounter.

At first he seems nice, with his english-like syntax and powerful data combinators, but after spending enough time with SQL you start to notice a few oddities: you find that even the most simple conversations can take a very long time; you begin to get frustrated and impatient; you find that SQL misunderstands you completely, even when you've explained something quite clearly; and when you ask SQL to fetch the jam, he flings himself out your living room window, walks back in through the front door and crawls under the kitchen table before finally opening the pantry.

If SQL were a person you might be able to slap some sense into him, or perhaps palm him off to a psychiatric hospital, but he is not, and SQL is going to stick around: making your life hell.

My biggest problem with SQL is that its performance is completely unpredictable for anything beyond a simple SELECT statement and at most one JOIN. Even if you set up the correct indexes on the correct columns to make sure that SQL can perform every action that it needs to in a good amount of time, its query engine will galavant off and spend an eon performing polynomial time calculations in places you never expected. It's like trying to encourage an over-excited puppy to follow a path through a park by placing

tasty treats in the right locations, only to have it run off and hump someone's leg for a while, pissing on every tree it sees along the way, before finally arriving at the desired destination. The problem lies in the fact that SQL only allows you to describe the desired result of the query, not the implementation. This is great for people who aren't developers because they can still make use of a database in complex ways without having to understand how they did it, but is both frustrating and borderline insulting for developers who know exactly how they want the data to be processed, and who need to have fine control over the implementation in order to achieve the performance they need.

SQL may be designed for the uninformed, but they didn't make it easy for people to learn. Initially, the syntax appears simple, but as you delve deeper you start to notice how messed up the language actually is: string concatenation is performed with || instead of something sensible like +, wildcards in searches are performed with the % symbol for some unknown reason, and each type of statement has its own unique set of keywords that you have to remember and state in a particular order to get the statement to work. If they were trying to make the language seem similar to English, they sure did a great job of mimicking how convoluted and complex it is.

Even if you get the syntax right, the statements themselves behave in crazy and unpredictable ways: if you wanted a list of people who were within 1 year of the oldest member, you might write:

```
SELECT *
```

```
FROM people
WHERE age > max(age) - 1;
```

Only to discover that you get the ever so informative message:

```
SQL error: misuse of aggregate
function max()
```

What you actually did wrong is use the word WHERE instead of HAVING, which is exactly the same as WHERE except that if you use an aggregate function in the condition clause, you can't use WHERE. How intuitive.

These strange behaviours aren't only frustrating, but can also pose security problems: string comparisons ignore trailing spaces, so the strings "a" and "a " actually come out as identical. Yes, seriously. This hurt Wordpress a while ago when people discovered that signing up as ädmin" with a tonne of spaces at the end actually gave you admin privileges, because of how their authentication worked in SQL.

I could go on to talk about how messed up the plethora of confusing data types are and how inconsistent SQL syntax is across its many, many implementations, but if I haven't convinced you already that SQL is a poor excuse for a language then I have no choice but to assume you are a lost cause. Unfortunately for us, SQL has seated itself as the unanimous default choice for database querying, and the other options aren't going to be overtaking SQL any time soon since, unfortunately, they require you to actually use your brain. I weep for the world of databases.

LUKE TSEKOURAS



ANNOUNCEMENT

Beta Wants You!

Beta is looking for people to contribute articles, images, puzzles or random facts.

There are many different parts to your weekly newsletter; in addition to articles each of our sections requires research, writing and proof-reading. Heres how you can help:

If you find some news throughout the week that is interesting, email us the link.

csesoc.beta@cse.unsw.edu.au

See any really cool pictures lately or take one yourself?

Send it to us.

csesoc.beta@cse.unsw.edu.au

Do you like coming up with puzzles or know of a really interesting one?

Let us know.

csesoc.beta@cse.unsw.edu.au

Ever wanted to write an article?

Nows your chance - email us.

csesoc.beta@cse.unsw.edu.au



ENTERTAINMENT

Puzzlers

Congratulations to Benjamin Pinto who successfully (and very comprehensively) answered the last puzzlers! Kudos to him for actually sending the pseudo code solution to me.

1. One summer, five couples went on a cruise together for their vacations. The trip lasted for a week and the couples spent most of their time together. Each morning they would meet for breakfast and decide what to do for the day. On the fourth morning however, the ship stopped at a tropical island resort and the couples discovered that everyone wanted to do something different.

At length, they decided to split up for the day and meet back on the ship for supper to share their adventures with each other. Being tourists, each couple gave into their urge to bring back a souvenir and by luck, they all brought back something different. Using the clues and the grid below, determine the first and last names of each couple, what they did for the day, and what souvenir they brought back.

1. The couple who went scuba diving didn't buy the homemade candies but loved what Bob and Judy bought.
2. Jake, whose last name isn't Horner, was disappointed by his golfing scores. Peter, who isn't married to Tracy, wanted to go sight seeing with Bob Gallop but he went surfing with his wife instead.
3. Each couple is represented by the following: Mr. and Mrs. Peel, homemade candies, Cindy, Bob, golfing.
4. Mike is not Tracy's husband and Jane is not Ed's wife. Ed didn't go hiking.

5. The couple who went sight seeing bought a beautifully carved wood dolphin at one of the local attractions. The dolphin and Sarah's model ship were voted the best of the souvenirs.
6. Ed, who is not married to Cindy, liked the shirts that Jake Bremmer bought. Mike, whose last name is not Elmwood, bought the postcards.

2. Is it possible to plant 9 trees in a yard such that there are 10 rows of 3 trees each? If so, how would you do it? The shape of the yard is irrelevant.

3. A black cow is crossing a road. A truck is speeding towards it, with its lights turned off. The street lamps are also off and there's no moonlight. When the truck is about to hit the cow, the driver hits the brakes and manages to stop just a few centimetres from it. How did the driver see the man?

4. A snail is at the bottom of a well that is 20 meters in depth. Every day the snail climbs 5 meters upwards, but at night it slides 4 meters back downwards. How many days must elapse till the snail reaches the top of the well?

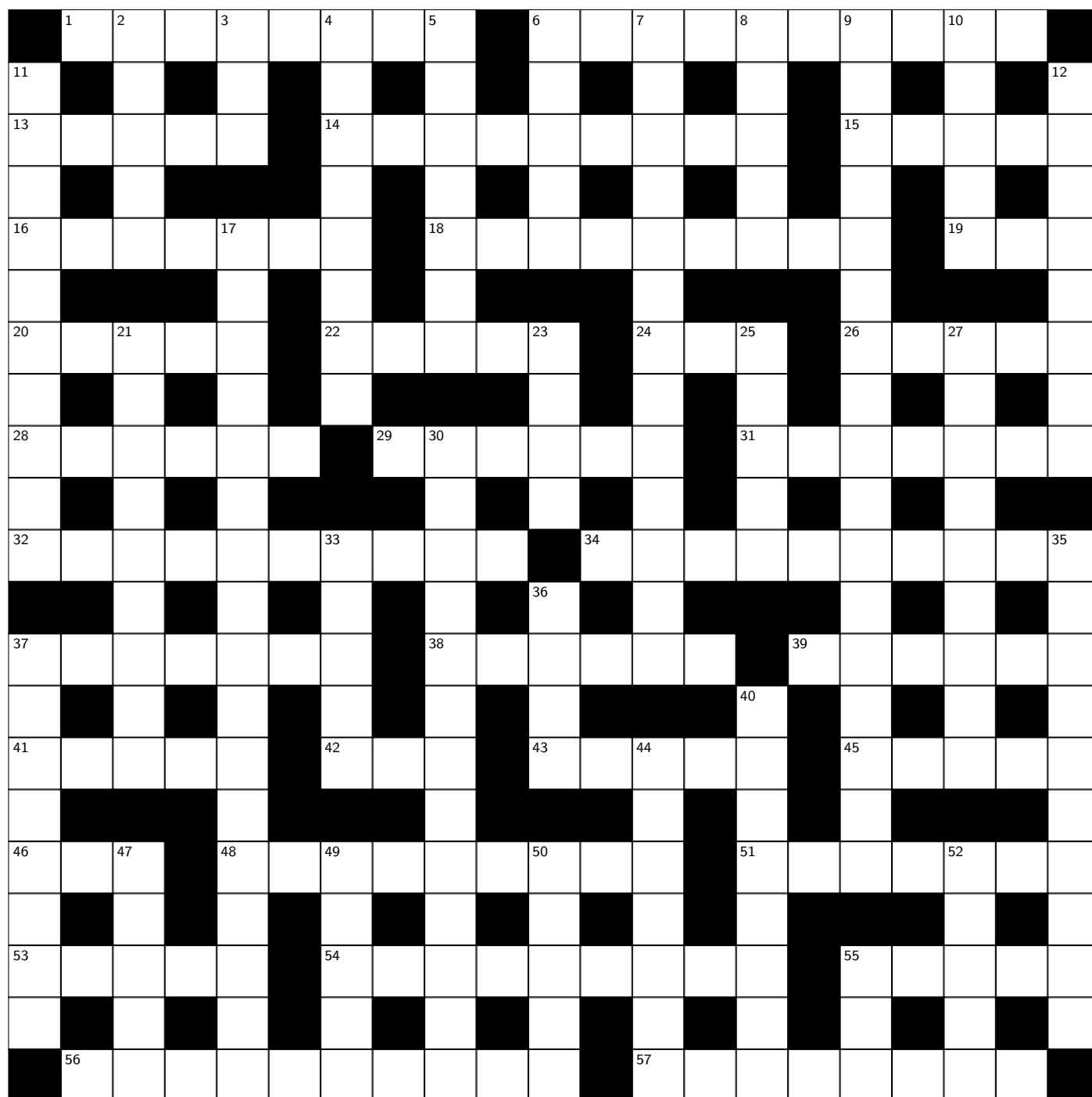
Don't forget to email your solutions to:
beta.puzzles@cse.unsw.edu.au

THE BETA TEAM

ENTERTAINMENT

Crossword

This week we have a special 21x21 crossword from our resident crossword maker. He would be so very pleased if someone manages to complete it and inform him about it. He assures everyone that there are plenty of easy answers and that you should all have a go at solving it!



ENTERTAINMENT

Crossword - clues

Across

1. Rectangular arrays
6. Main component of vinegar (6, 4)
13. Molten rock
14. Lineages
15. Common character encoding scheme
16. Resistance to change in motion
18. Makes longer
19. Long-haired asian bovid
20. Snow shelter
22. Greek story teller
24. Expression of awe or surprise
26. Spiral-like curve
28. To introduce gradually
29. Greatest or highest values
31. Shiny metallic highlights
32. Scientific magnifying instrument
34. Acronym: AD (4, 6)
37. Suddenly jumped upon
38. Prime Minister of Australia
39. Element: Na
41. Inactive state of animals
42. Observe
43. Synthetic fibre
45. Incapable
46. Tooth on a gear
48. Quality of being unreactive
51. Period after a war (4-3)
53. Title character of Shakesperean play
54. Highly corrosive mixture of acids (4,5)
55. Small icy celestial body
56. Complete stop
57. Having a pH above 7

Down

2. Simple photosynthetic organisms
3. Ribonucleic acid
4. Lying within the same geometric plane
5. Horse riding equipment (pl.)
6. Noble gas
7. Magnet made through an electric current
8. Topic for debate
9. Science of administering anaesthetics (pl.)
10. Having an itching sensation
11. Theory of knowledge through sensory experience
12. Digging tools
17. The Southern tropic (6,2,9)
21. Futile effort (4,5)
23. American computer scientist
25. Prefix: sun
27. Insecticide targeted against larva
30. Binary star close to the solar system (5,8)
33. Rules for converting data
35. Incomplete or young state
36. Black
37. Souvenir piece of cardboard
40. Sturdy bag
44. Piece of pasta
49. Tests
50. Formally register
52. Female human
55. Sheet used for traditional animation

OSWYN BRENT

Last week's solution:

C	O	M	A		M	I	R	A	C	L	E	S
O		U		Q				L		E		E
C	O	M	P	U	T	E		P	S	A	L	M
A		M		E				H		T		I
C	R	Y	P	T	O	G	R	A	P	H	Y	
O				Z		U		B		E		E
L	A	W		A	W	A	K	E		R	A	T
A		A		L		V		T				H
	T	R	A	C	T	A	B	I	L	I	T	Y
B		L		O				S		V		L
A	R	O	M	A		A	W	E	S	O	M	E
S		R		T				D		R		N
S	I	D	E	L	I	N	E		T	Y	P	E



ENTERTAINMENT

Overheard

As usual, many questionable comments are often overheard at our CSESoc BBQ...

Guy 1: "Your sausage is looking a bit crooked."

Guy 2: "I wasn't aware that you could see my sausage."

Guy 1: "Why are the sausages all covered with sticky substances?"

Guy 2: "Get your sticky substances off the sausages!"

Guy: "What can you do for more than four hours?"

Girl: "I know what! I can breathe for more than four hours!"

Guy: "Impressive skill."

K17 people to the defence!

Guy: "So guess what my girlfriend calls the K17 basement. The nerd fortress."

Girl: "I guess that makes sense. They hole themselves up in there and complain

loudly when other people poach on their territory."

Sometimes you walk in on conversations that are just strange. Share these funny moments by sending your overheard conversations to beta.overheard@cse.unsw.edu.au

THE BETA TEAM

CSE EVENTS & SOCIETIES

Upcoming Events

CSESoc Weekly BBQ

Every Tuesday, 11.30am - 12.30pm

Physics Lawn

Don't forget to bring your friends and come by for your free sausage! Hash browns also available as a vegetarian alternative.

Accenture Workshop

Tuesday, September 17th, 2 - 3pm

K17 Seminar Room

It's a tech workshop, yay! Come along to learn about what Accenture does, the exciting opportunities they have and win some amazing prizes!

CSESoc Goes to CSE Revue

Wednesday, September 25th, 7.30 - 10pm

UNSW Science Theatre

\$9 when booked with CSESoc

CSE Revue is an annual sketch comedy show incorporating dancing, singing, sketches, videos and all things funny!

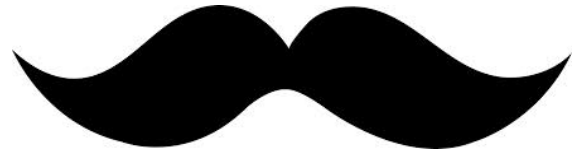
Bring your friends, kick back and get ready for a night of hilarious comedy and flashy special effects!

AGM

Tuesday, October 8th, 2pm

K17 Seminar Room

It's coming around to the time of year when we have a sit down and a good chat about CSESoc, and also open nominations for next year's exec positions.



Soctail Save the Date

Saturday, November 2nd, 7pm

Hotel CBD Club Bar

Theme: Moustaches

Early bird ticket prices: 40\$ (until the start of midsem break)

You are cordially invited to CSESoc's end of year cocktail party. Please attend with your most dapper mo.

EVELYN CHENSEN

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