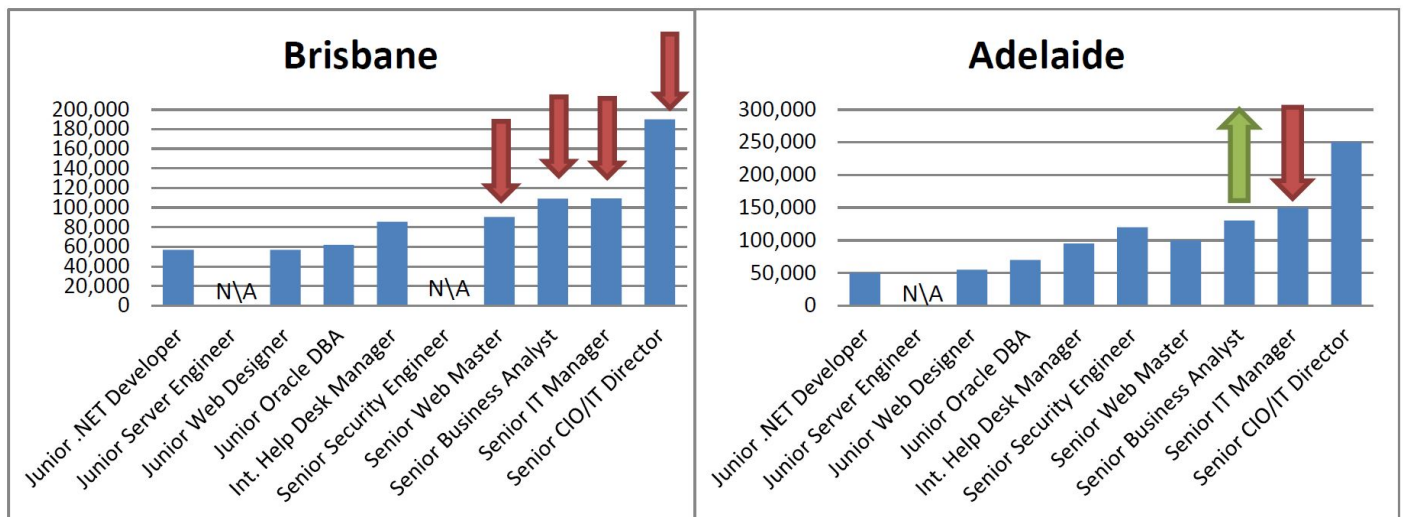## INFOGRAPHIC

Pay Rates for IT Roles across Australia

A recent quarterly survey of full time salaries of IT roles by recruitment firm Peoplebank has revealed that demand and pay rates are largely stable across Australia. However, you may not want to move to Brisbane if you're thinking about tackling more senior roles in your future, as Queensland salaries have fallen by about 5%. The charts below are created using figures of base salaries (so no super and extras). Figures with an arrow above them show either a rise or a fall in salaries since the last quarter. Peoplebank defines senior as more than five years experience, intermediate as three to five years, and junior as under three years in the role.

Data sourced from: http://www.lifehacker.com.au/2013/04/what-it-pro-roles-pay-across-australia/

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Pay Rates for IT Roles across Australia - Cont

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Bioshock Infinite Review [Spoilers!!!]

Firstly, major spoiler alert! DO NOT the next page if you have not yet played the game all the way through. With that out of the way...

Its been a long time since the August 2010 announcement of Bioshock Infinite, but it is finally here and playable!

Comparison with the original Bioshock
In terms of gameplay, one of the main differences is the combat system.

Instead of having multiple health packs and EVE Hypos, you now have a Halo-style shield and a single Vigor bar, meaning you have to really scrounge around the environment for recharges and to stay alive. This is not a game that rewards fast playthroughs.

The shield adds several interesting mechanics to the game, such as the increased need for cover (making the sniper rifle very useful). It also adds the rather unfortunate way that combat sometimes works - if a player has good cover, then they can win a fight without losing any health (due to the shield). To fix this, and break the player's shield, the developers seem to have added a large number of enemies that appear right at the start of a fight.

REVIEW

Bioshock Infinite Review [Spoilers!!!] - Cont.

This can be overwhelming and chaotic, and while some people prefer this style of fighting, it has drawn criticism from many players.

The "boss fights", however, are exceedingly good and massively improved on the original Bioshock (which felt like the boss fight was blu-tacked on because they almost forgot). The variety of bosses is large, from the usual "man with an enormous gun" (Motorised Patriot) to enemies that require stealth and strategy (Boys of Silence).

Another rough parallel with the original game can be drawn between Gene Tonics and the new Infusions/Gear that can be found strewn around the map, in both obvious and hard-to-reach locations. One of the things different in Infinite is the choice you have - an Infusion can power up a shield, health or salt. There was more flexibility with gene tonics in the original game, but the gene tonics were less powerful than, the gear in Bioshock Infinite. On balance, the new system is better, but making a larger variety of gear available would have been nice.

On the other hand, something completely unparalleled with the original game is the much-talked-about "Elizabeth" mechanism. That is, the idea of an AI that can look after herself, and helps you out, is not something seen in the original game. That said, Irrational Games has done extremely well with this - Elizabeth is never annoying, the dialogue is believable, human and incredibly well voice-acted, and she adds another dimension to the game. A++++++ would buy again.

Travel is another improvement in Infinite - the original Bioshock had only walking as a mode of travel, excluding the train in between levels. The new sky-rails are enormously enjoyable and effective, and it is impossible to get tired of cavorting about on flying rails trying to head-shot people.

Hidden/cool stuff

No Bioshock Infinite rundown would be complete without a listing of the many easter eggs. There are some that almost everybody figured out, such as the band on the beach playing "Girls Just Wanna Have fun", but there are also some really subtle easter eggs and nods to the original Bioshock Infinite, which will be listed here.

One of the earliest is the radio in the food shop playing "Ain't She Sweet", released in 1927 (some 15 years after Bioshock Infinite is set). There are a host of other easter eggs in this vein, with random pieces of 1980s music like "Tainted Love", as well as some '60's Beach Boys. Possibly the most hidden of all the musical easter eggs is in the ambient noise the low-pitched rumbling is actually a song, slowed down 10x, and overlaid over itself twice.

Out of all the easter eggs, the coolest is possibly not even in Infinite - in the original Bioshock, you can hear the Songbird die in the scene where Sander Cohen kills the person playing the piano. There is some speculation as to whether this one is real, but given Ken Levines history with this sort of thing, it is unlikely to be an accident.

There are also a tonne of references to both the original game and real life, like the vending machines (listen closely to the things they say), and the characters at the start of the game talking about Saltonstall (a character in early previews who later got removed from the game). There is also a really neat reference to the game's IRL development, where you hear a lady talking about how "the latest version has been delayed three times!"

Plot explanation

People have been getting seriously confused by the plot, with questions like "Why do you have to drown?", "How can you also be Comstock?, and "Wtf just happened?". An explanation follows: in an alternate universe, Booker accepts the baptism at Wounded Knee and re-invents himself as Comstock. He meets Rosalind Lutece, and provides her with sufficient funds to continue her research into tears. Comstocks use of the tears leads to him seeing Columbia, and himself building it. However, he needs an heir to continue with his vision, but by this time his use of the tears has rendered him infertile.

So, he travels across to the universe where he refused the baptism, and finds a version of himself beleaguered by alcoholism and gambling debts. He offers for Booker to "bring us the girl and wipe away the debt", which Booker accepts. Booker immediately regrets his decision, and so the story begins (and ends).

As a result of all this, Booker agrees to let Elizabeth drown him before he can accept or reject the baptism, meaning he never turned into Comstock and Anna was never taken from him.

Criticisms

As much positive press and reviews as the game has received, it is not perfect. Things that should have been improved include the AI's eyes, which are not even remotely realistic and always look around you rather than at you. The "audio log" idea is getting old as well, though it is still preferable to pausing the game to read some multi-page journal. It would be better if Irrational Games could find a more innovative way to convey the sub-stories in the game (Dishonored did this well with the heart).

Exploration punishes the player a bit too much - the likelihood of there being a bunch of enemies in, say, a public toilet is a bit too high and makes it feel like the player should not explore the world of Infinite, which is a shame given how richly detailed it is.

The game is also a bit too combat-heavy (not to mention the shield problem!), not leaving enough time for exploration and trying to understand the story - the player ends up missing some details because they were bookended by fights.

And in true Bioshock Infinite style, Im going to leave the conclusion of this article to you, dear reader.

WILL KORTELAND

ANNOUNCEMENT

Redback Racing

Redback Racing is a student run Formula SAE team. Each year the team designs and builds a new car to compete against other universities in the Asia-Pacific region. The team is open to all UNSW students and currently has members from a wide range of faculties working on everything from business proposals to force analysis on composite materials.

This year the team is looking at how technologies such as simulation, launch control and collaborative tools can give us an edge over the competition.

What is Formula SAE?

Formula SAE is an international initiative of the Society of Automotive Engineers (SAE) for students to design and build a performance formula racing vehicle. A set of design rules are established to allow students the freedom to develop innovative and creative design solutions, within the real-world constraints of a racing vehicle.

Simulation

Building a car takes time, so you want to get it right the first time. Every component of the car is carefully modelled and calculated for the best performance to weight ratio.

This year the team is developing a live simulation rig with physical feedback to give the team the opportunity to test and tune the car without going out on track. Having the ability to practice a competition track before the event could take seconds off driver's lap times.

The team's current lap simulator outputs acceleration, down force and fuel usage but without an accurate model of everything from tyre data to vehicle kinematics its uses stand far from its potential.

Version Control

Imagine working with twenty colleagues to design a car, but only keeping a model on one computer. Keep your fingers crossed and hope it all fits together.

The team has come a long way in the past 18 months to develop a simple web based version control system to back up, document and distribute over 900 components. The system has made a huge impact on communication within the team, and we're only just getting started.

RB12

The RB12 is the team's latest and lightest iteration, which competed in the 2012 Formula SAE Australasian Competition.

The RB12 is based on the team's signature lightweight hybrid chassis design, and is motivated by an Aprilia SXV 550 V-twin engine, tuned by students at UNSW with MoTeC Software.

The RB12 also introduced a new Self-Reinforced Polymer, and an innovative unequal length 'A' control arm geometry in the front suspension.

History

Redback Racing came into being in late 1999. The team succeeded in winning first place, establishing UNSW as a leading team in SAE racing at the inaugural Australasian region competition in 2000.

In the 2012 Formula SAE Australasian Competition, the team of 35 dedicated UNSW students earned an impressive overall rank of 6th place, with placing 1st in Vehicle Cost and Manufacturing Event and 4th place in the Vehicle Design Event.

Interested in joining the team?

Redback is keen to take on any students who want to build on their technical skills, and have fun doing so. Redback gives you the opportunity to put everything you've learnt into practice, and see the impact it makes. It also provides fantastic business and leadership experience and gives you a way to set yourself apart from the average student.

If you're interested in getting involved, or just learning more about the team please get in touch with us at **info@redbackracing63.com**

Specs

Weight	171kg
Power	48kW @ 9500RPM
Torque	58Nm @ 6500RPM
0-100km/h	Under 4.3s
Top Speed	155km/h

IAN CRAIG
DEPUTY TEAM LEADER
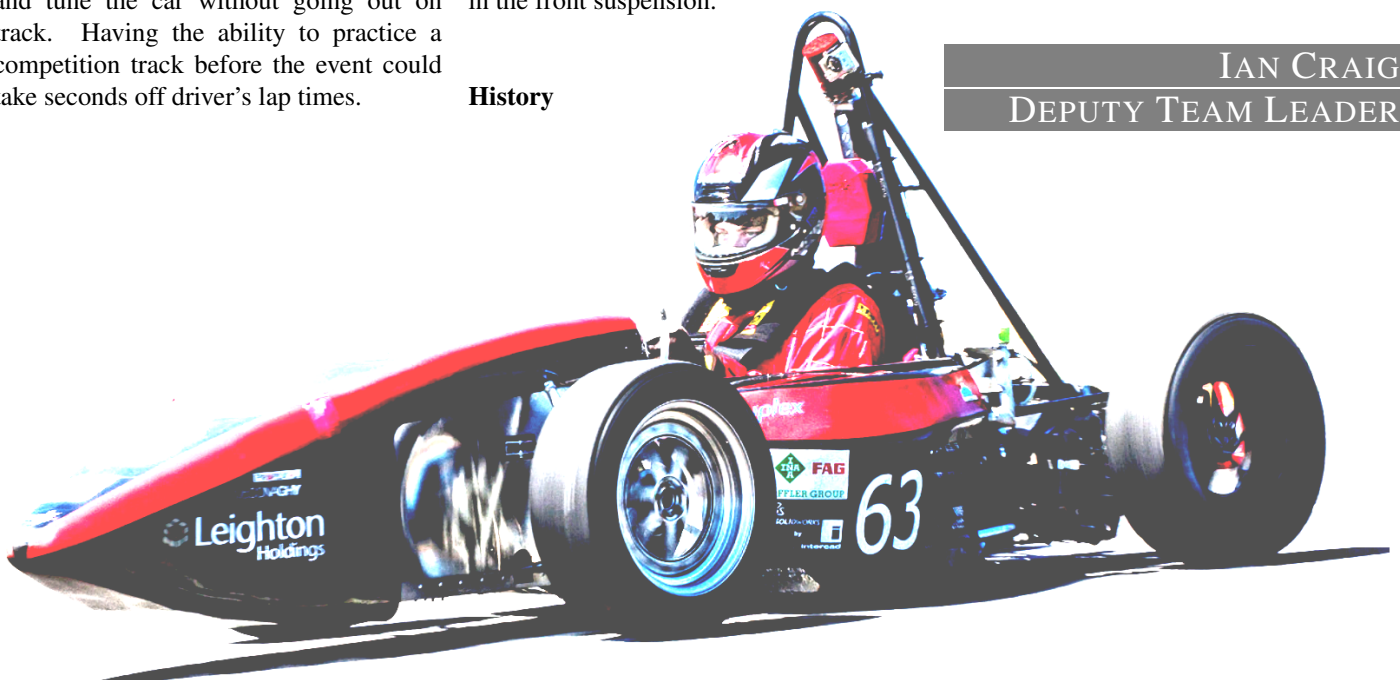
OPINION

You know what really gets my bits in a bunch?

Java

Yeah, you heard me. Java, one of the most commonly used languages in the classroom and enterprises alike, is not only a poor language, but one that is surely responsible for many an airborne computer monitor and mutilated keyboard. Sure, it's a step up from C or C++ since you can't bugger yourself by messing about with low-level functions, but that doesn't mean Java needs to be a belligerent dictator by enforcing poor code monkeys everywhere into wild and sadistic rituals. In a (poor) attempt to be a very strictly typed and structured language, Java makes itself such a horror to write that people cannot even tolerate using it without an IDE to practically write the code for them. Let's take an abridged look at the things that suck most about Java.

NullPointerException

Strict typing is nice, especially in large projects, because it allows you to make safe assumptions about the integrity of your application's data. Riddle me this then. In a language where everything is strictly typed, why can any goddamn Object in the whole goddamn application have the value "null" assigned to it, and in doing so break every single assumption that Java ever tempts you into believing?

If a function returns a String, I should be able to assume that I can call .split() on it, for example, without a care in the world. Instead, Java decides to plant the seeds of deception within its language, watch the programmer quietly as they make false assumptions, and then come down with the mighty force of a 100 line NullPointerException stack trace, watching them weep as they add yet another if (variable != null) { } or @Nullable to their already unreadable and convoluted code.

I/O

IO in Java is clunky and flaky. If you're not very, very careful, IO errors might leave you with unclosed streams, and on top of that it's impossible to read. I'm going to let the code speak for itself. Let's perform the simple task of reading the lines of a file into a list, with **proper** error handling.

```
List<String> lines = new ArrayList<String>();
FileReader fileReader = null;
BufferedReader bufferedReader = null;

try {
    fileReader = new FileReader("somefile");
    bufferedReader = new BufferedReader(fileReader);
    String line;
    while ((line = bufferedReader.readLine()) != null)
        lines.add(line);
    }
} catch (IOException e) {
    // deal with exception
} finally {
    try {
        if (fileReader != null)
            fileReader.close();
        if (bufferedReader != null)
            bufferedReader.close();
    } catch (IOException e) {
        // deal with exception
    }
}
```

Meanwhile, back in a language that doesn't have sadistic tendencies:

```
open F, "somefile";
my @lines = <F>;
close F;
```

Generics

Generics in Java are a mess. Not<Only<Do, You>, Get<Generic, Types<That<Are, Nightmare<Worthy>>>>>, but in order to maintain bytecode backwards compatibility with Java 1.4, the imperial overlords at Sun implemented Generics via "Type Erasure", which basically means that all generic types are a dirty, dirty lie and mean absolutely nothing at runtime. Here's a simple example:

```
List<String> list = new ArrayList<String>();
list.add("a string");
((List<Integer>)(Object)list).add(42);
System.out.println(list);
```

Not only does this compile, but it also runs. And it prints "[a string, 42]". Real good for a "strictly typed" language.

TL;DR: Java is akin to wading through a sea of slush to get to land.

LUKE TSEKOURAS

News in Brief

As You Were
Prime Minister Julia Gillard's Gonski reforms have been knocked back by the state governments, with none of the states signing off on the proposed education funding reforms. The Gonski reform, which is based on the Gonski report, will overhaul funding for the education sector, with the expected outcome of more funding going towards public schools. The federal government has until June 30 to get every state to agree to the changes before Gonski will become Goneski.

The Future of... Underpants?
The bright tech team at Durex, the world's largest condom manufacturer, have invented the next thing in underwear. Dubbed "Funderwear", it consists of underwear, boxers for him and knickers and bra for her, which are fitted out with a series of vibrators. By using the touch screen app, they can send signals to each other via the internet from one phone to another, which activates the vibrators. Only time will tell if it will grope its way into the future as a staple piece of tech.

Sharing Might Be Caring
After two days of deliberation, the U.S. House of Representatives have passed the Cyber Intelligence Sharing and Protection Act (CISPA) in a vote on Friday. The act will allow sharing of information between the Government and certain technology and manufacturing companies. The bill has often criticized by advocates of Internet privacy such as the Electronic Frontier Foundation and Fight for the Future, arguing that there are too few limits on how and when the government may monitor a private individual's internet browsing information. In response to this, Anonymous have called for popular websites to stage a blackout on the 22nd of April in protest. We are very much in the dark about which websites will participate in the demonstration.

Ballin'
The 2012-13 National Basketball Association regular season wrapped up on Wednesday, with all the teams finishing their last game of the season. The defending champs, Miami Heat, have finished first overall in the league and will have home court advantage throughout the playoffs. Fan favourites, Los Angeles Lakers, sneaked into the playoffs, clinching 7th in a hotly contested Western Conference with an overtime win over 8th place Houston Rockets. The ball got rolling with the playoffs yesterday.

Another Day, Another Planet
A mysterious world approximately 130 light years away has been discovered and lovingly named HR8799C. With an estimated age between 30 million and 100 million years old, it is considered a planetary youngster. Using a study involving the splitting of HR8799Cs reflected light into different wavelength, scientists have determined it has an atmosphere of water vapour and carbon monoxide. However, chances of finding life there are low due to a lack of methane, a gas which many organisms emit on Earth. Well that's a stink.

PATRICK CHUNG

ENTERTAINMENT

Puzzlers

Congratulations to Timothy Tsui for an awesome attempt and to Victor Tan who got last week's puzzlers right!

1. What letter, when added to the beginning of a word meaning distance or limit, produces a type of fruit? T, O, R, or G?

2. The king wants you to marry one of his three royal heirs! What an opportunity!

(Read these as princes or princesses, to taste) The eldest is sensible, so always tells the truth. The youngest is rebellious, so always lies. The middle child is kinda twisted, and will lie or tell the truth on a whim.

You want to marry either the eldest or the youngest, because you will at least know where you stand in terms of truth/lies. But you don't know which is which!

You may only ask one question of one unidentified sibling, in order to determine which you will marry.

What do you ask, and how does the answer determine your choice?

3. If a clock takes 2 seconds to strike 2 o'clock, how long will it take to strike 3 o'clock?

4. Two sons are born to the same woman at the same time of the same day of the same year. But they're not twins. How is this possible?

5. The Kingdom of Cigol is being menaced by a dragon. The princess wants to get rid of this dragon, so she challenges him to a drinking contest: At midday tomorrow, they will each give the other a glass of water, and each must drink what's given them.

Now, the princess owns ten magical wells, numbered 1 to 10. Drinking from a well poisons the drinker, who will die within a day. However, another drink from any well with a lower number will cancel this spell. So Well 1 can cure any well from 2 to 10, and Well 10 can be cured by any well.
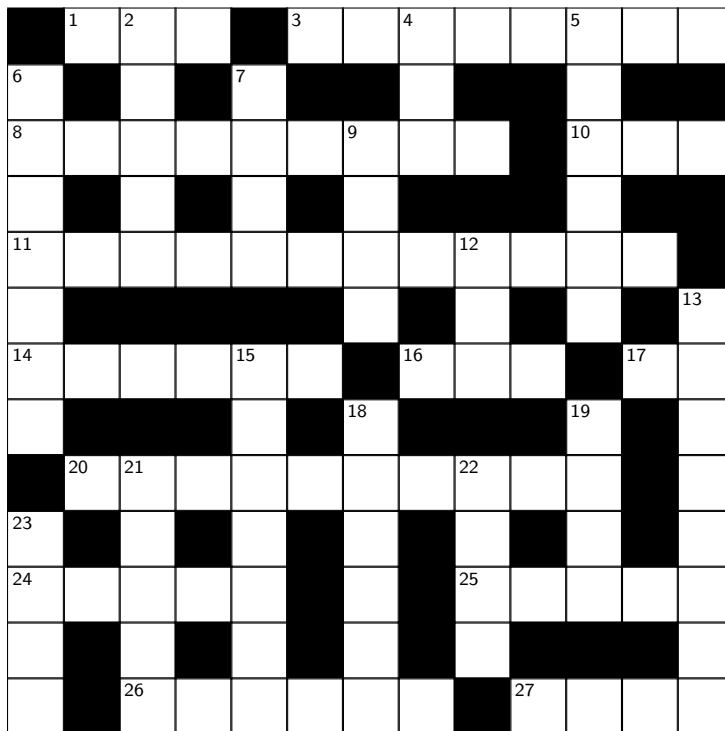
But the dragon plans to use Well Zero! This well follows the rules of all the other wells. Zero can cure any other, and has no cure. How can the princess **a)** poison the dragon, and **b)** not be poisoned herself?

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

EWAN SCOTT

ENTERTAINMENT

Crossword

Down

2. The first electronic general-purpose computer
4. A container, also a file format
5. British computer scientist, father of computer science
6. British mathematician, conceptualised 20, 26 across
7. A single entitty
9. Slightly open
12. Unlocks things
13. Without missing parts
15. Present participle - split into two equal parts
18. Soviet dictator
19. Small, jumping, blood-sucking insect
21. A distinct, generally small, part of a market
22. Reddit's favourite animals
23. Mythological snake, lends its name to a computer mouse

OSWYN BRENT

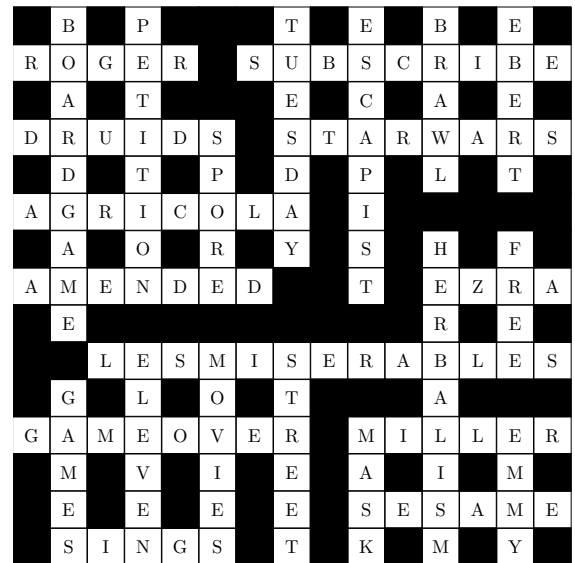**Last week's solution:**

Across

1. A computer in Pratchett's Discworld, also a malicious spell
3. Dutch computer scientist famous for a graph algorithm
8. Company known for assembling gaming computers
10. With 25 Across, Single iteration of a technique used to simulate light in CG (3,5)
11. Smart brute force algorithm, which builds partial candidate solutions
14. Representations of sets of objects, connected by links
16. Common cereal grain
17. Google general purpose programming language
20. With 26 Across, mechanical computer that was never produced (10, 6)
24. Standardised character-encoding scheme
25. See 10 Across
26. See 20 Across
27. A link in 14 Across

ENTERTAINMENT

Overheard

Posted on UNSW Love Letters:
"To that couple that can't keep their hands to themselves in my Operating Systems lecture, either stop or let me join in. It's a computing course, that's just harsh to everyone else!"

At the BBQ:
Guy 1: "Damn we can't steal free drinks before."
Guy 2: "The drinks were never free."
Guy 3: "They weren't? ...Damn."

That did not come out right:
"It's called gayscale...I mean grayscale!"

No you can't take it back:
Guy 1: "This is the first time you've shown your back to the public? Well then you've just lost your back virginity."
Guy 2: "...Give it back!"

Everyone has those words of "wisdom" that make you just want to facepalm. **Send your overheard conversations to beta.overheard@cse.unsw.edu.au**

CSE Events & Societies

Upcoming Events

CSESoc Weekly BBQ
Every Monday, 12:30pm - 1:30pm
Physics Lawn FREE FOOD! Same time, same location, we will be there no matter rain or shine.

CSESoc Poker Night
Tuesday, April 23rd, 6:30p till late
k17 Seminar Room
Do you enjoy hanging out with friends? Do you like chips? Would you like to eat chips while playing with chips and hanging out with friends!? Then poker night is for you!
This isn't a cash game, the buy in buys everyone food, drink and merriment. Remember to arrive before 7:00pm for buy in.

CSERevue Writing Blocks
Tuesday, April 23rd, 6:00pm - 7:00pm
k17 B02
Weekly Writing Blocks are starting this week. Come along and get those creative juices flowing, have lots of laughs and make some friends. Don't worry if you've never picked up a pen before - you can always start now!

CompClub Intro to Programming
Sunday, April 28th for 12 weeks (Online courses begin)
Classes will be held on every second Wednesday 4-6pm, starting May 8th
Online course with classes held at UNSW
CompClub is running a new Intro to Programming course for HS students only. If you have friends/family that might be interested let them know! Starts in a week! For further details, register @ **www.compclub.com.au**

CSERevue Best Of Screening
Tuesday, April 30th, 6:30pm till late
k17 Seminar Room
We are screening Coders Odyssey: the Best Of CSE Revue. Combining the best sketches from the first 10 years of CSE Revue, Best Of is guaranteed to be a blast! Come by to reminisce at good old times, be wowed at the wonderful diversity of talent or just have a laugh at our punchlines.

Deloitte Innovation WorkShop
Thursday, May 2nd, time pending
k17 Seminar Room
Are you lacking innovation? Would you like to learn more about how to make yourself innovative? Do you even know what "innovation" means? Deloitte are coming by in a fortnight to present a workshop on innovation. It should be a really fun, educational and innovative session.

GDS Game Mechanics and Dynamics Workshop
Week 8, time and date pending
Level 3, Mechanical Engineering Building
Game mechanics are a core concept of game design and are the techniques and methods developers use to evoke emotion and feeling in games (Dynamics). This workshop is targeted at aspiring game developers and will explore the various techniques game developers use to make their games more than "just a game".

CSESoc Social Head

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