Program: start!

The National Computer Science School for 2011 has officially kicked off with a great start, and a few claps of thunder. Students arrived from all over the country over the past two days, moving into the Women’s College on the University of Sydney campus for the next ten days which promise to be both exciting and intense. With around 75 students and nearly 30 tutors, the Menzies hall was filled with action over the course of the afternoon.

INTRODUCTORY LECTURES

James Curran, head of the NCSS, started off the day’s activities by giving an opening lecture to both the students and their parents, describing what the next ten days will entail. It sounds like there will be a lot of tired students and tutors at the end, but with lots of fun in store.

Next the students split into their two themed project groups - Python web design and embedded systems - to listen to an introductory outline lecture from Python tutor James and embedded tutor John. Both programs are packed with lots to learn and much to discover!

Once is not enough!

There must be something electro-magnetic about NCSS, because many participants can’t seem to stay away. Every year, a select number of students are invited to return to NCSS as “returning students”, or senior students, who both take part in new challenges and advise new students. Many of these students later even become tutors at the school!

Similarly, the large majority of tutors have been involved with NCSS for a few years, or in the case of James and Tara, getting close to fifteen years. That’s pretty amazing!

Students, tutors and sponsors, make sure you look out for updates on the NCSS front - new ideas and challenges are always being developed and sought for, and you can be part of this!

continued on page 2
GROUP SPOTLIGHT

What did each group have to say about their team’s newspaper tower assembly strategy?

**Group 1:** “... Still deciding!”

**Group 2:** “Cones - we have to make lots of cones.”

**Group 3:** “Jenga! We’ll roll paper and stack it high as possible.”

**Group 4:** “A supporting base around a tower of rolled up newspaper, that should be fairly strong.”

**Group 5:** “Triangular bundles stuffed with paper for rigidity and tied together - and then win!”

**Group 6:** “Ramshackled swordfish.”

Thanks Adam, Jarrad, Robert, Damon, Georgia, Tom, Xavier and everyone who offered insight!

AFTER DINNER THE GROUPS ASSEMBLED IN MENZIES TO GET TO KNOW EACH OTHER AND PUT THEIR ENGINEERING SKILLS TO THE TEST

The first half of the session involved each group taking over a corner of Women’s College and playing some getting-to-know-you games. We visited each group and saw zombies circling each other, truths and falsities mixed in together, a fair number of entangled arms, something about hand turtles and a whole lot of Johnny Whoops! Looks like all the groups are on their way to learning each other’s names by Tuesday afternoon! There were also quite a few “murders” taking place in the evening - close to twenty in total. Beware, those students and tutors who live on...

After this, teams reassembled in Menzies with piles of newspaper and the goal of constructing the highest tower that could also support a plush mushroom/Yoshi/Companion Cube. After ten minutes of careful planning, groups spent forty-five minutes working together to building the biggest, strongest throne for their mascots. With some interesting designs from all groups, it was a close race to the finish for Groups 4 and 5. James and his trusty broom ruled the heights too close to differentiate and it was a well-earned tie - and a much-needed break for the night!

### Tower Results

**How tall can a newspaper tower get?**

(pretty awesomely tall)

<table>
<thead>
<tr>
<th>Group</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>1.5 sin 45° m</td>
</tr>
<tr>
<td>Group 2</td>
<td>6’2” (and a bit)</td>
</tr>
<tr>
<td>Group 3</td>
<td>3 mm</td>
</tr>
<tr>
<td>Group 4</td>
<td>James + broom</td>
</tr>
<tr>
<td>Group 5</td>
<td>James + broom</td>
</tr>
<tr>
<td>Group 6</td>
<td>6’2”</td>
</tr>
</tbody>
</table>

### NUMBERS

- **percentage of arriving email that is spam**: 60%
- **number of exabytes of unique information produced by the human race (so far)**: 24
- **percent of statistics that are made up on the spot**: 43%
Yesterday's events in a nutshell and what to expect for today

The opening day of NCSS saw students arrive, register and get ready for ten days of intense programming fun. We had the opportunity to interact with both tutors and students, learning lots of interesting facts about their backgrounds and what brought them to NCSS - and why they do what they do.

What's coming up next?

Today begins the first set of lectures for both sets of students. The embedded group will head over to the IT building while the Python group will visit the very lovely Physics building, and the students will start learning the basics they’ll need to achieve the goals of their project.

Then tonight is trivia night! Bring it on!
Day 2: getting started

The first day of solid lectures got to a drizzly start sometime around 8am - we were amazed to see a group of maybe twenty students participating in the morning activities despite the early hour and the sudden change of weather!

After breakfast, students divided again into their groups (Python and embedded) for the first day where the lectures would be followed by tutorials directly applying the content of the lectures, involving taking basic steps towards the projects to come.

PYTHON GROUP
The Python group entered the world of strings, input, variables and if statements. After that, they logged onto the cool new NCSS challenge website and put their skills to the test, from “Hello, World!” to calculating fuel efficiency and beyond!

EMBEDDED GROUP
The embedded group learnt about the Arduino environment, which will be key to programming the boards that will soon control their Roomba robots. They used a short script to make their USB-connected boards blink, beep and even click!

Trivial highlights

The evening’s entertainment took the form of a trivia night, organised and run by the tutors. Groups 1-6 competed against each other and the tutors themselves in a series of trivia questions interweaved with what can only be described as “diverse” bonus rounds - hosted by the excellently attired Ben, Katrina and Kenni. A panel of tutor judges scored the efforts and passed on the scores to the Tron scoreboard team.

As well as normal trivia questions, we saw movies acted out in thirty seconds, a garbage bag fashion show, Invent-A-Pokemon, limericks dedicated to judging tutors and an epic Tron human-chain showdown in the carpet grid.

Congratulations to Group 4 for scooping victory by a shoulder and well done to all teams (and tutors!) for contributing to a great night!
**AROUND CAMPUS**

The Python group gets to work logging on to the NCSS challenge website, beginning a set of challenges that will teach them Python skills.

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**TUTOR SPOTLIGHT**

**Name:** Dominick Ng  
**Age:** 22  
**School:** University of Sydney

**What do you do?**  
Just finished a B. IT (Hons) with James working on interpreting natural language.

**Why NCSS?**  
I heard from friends that it was lots of fun and it is! I tutor at uni as well and take it seriously because it’s really important.

**Future plans?**  
I’ll be starting a PhD with James and also hopefully study overseas. I’m not 100% yet since there’s still lots of time.

**Explain the Jenga tower:**  
Parallelism - so everyone could be working on building the same basic block. Not unlike the general direction of IT!

**Treasure hunt tip:**  
Do all the challenges - there is a metapuzzle worth lots of points if teams can get to it!

---

**Q: WHAT WAS THE FIRST THING YOU EVER CODED?**

“It was in the HyperCard programming environment for Mac when I was 8, I made a 3D isometric platform with trees that you could move through.”  
— Will, NCSS tutor

“I made a webpage about myself in HTML on Geocities (since disappeared), with lots of pictures and colours.”  
— Tian, NCSS tutor

“I remember! It was a drawing pad when I was in Year 9, using Visual Basic.”  
— Kathryn, NCSS Python student

“I used Python to program a computer to self destruct in ten, nine, eight...”  
— Eric, NCSS embedded student
What’s been happening at NCSS?

Yesterday’s events in a nutshell and what to expect for today

The first day of lectures (and evening events) was a long one, stretching from as early as 8am to as late as 11pm (and later for some). Students had their first content-based lectures, learning basic commands that they’ll need in Python and C to work on their projects and completing their first tutorials in SIT.

It’s been really great to have a chance to interact with students and tutors, and a particular thanks to all those we surprised with mini-interviews today! The core of the NCSS is of course you guys and we hope to get to know more of you over the course of the school.

The trivia night was a lot of fun for all, putting teamwork and innovation to the test (as well as a bit of memory recall). An epic 3.5 hours of action!

WHAT’S COMING UP NEXT?

Today will follow a similar structure to yesterday, with more tutorials and lectures deepening knowledge and getting further into the material to be covered. The evening’s activity will be a campus-wide scavenger hunt - so get your treasure hunter gear on!

Monday’s schedule (03.01)

Morning
Lecture/tutorial

Afternoon
Lunch at Women’s College
Lecture/tutorial

Evening
Dinner at Women’s College
Trivia night at Women’s Menzies

Today’s schedule (04.01)

Morning
Lecture/tutorial

Afternoon
Lunch at Women’s College
Lecture/tutorial

Evening
Dinner at Women’s College
Treasure hunt around campus

Thank you to our awesome sponsors!

NEWSLETTER CREDITS
Editor: Vanessa Moss
Layout: Vanessa Moss/Thomas Kanold
Photography: Thomas Kanold
Day 3: project beginning

Following a similar structure as yesterday, students had an early breakfast (and from what we hear, morning games also took place) and then headed off to the Physics and IT buildings for lectures and tutorials.

PYTHON GROUP

Two lectures in the morning covered website design (taught by Will) and then further Python skills. The students worked through the NCSS Challenge site in the morning to build on their Python knowledge, and then were introduced to the templates they’ll use in their project during the afternoon. Each group will create a social website, with each module assigned to different students. At the end they will have a working social network!

EMBEDDED GROUP

The robots rolled out today for the embedded group, who used the Arduino environment to load demos onto their robots and watch as they traced out loops on the floor. There were quite a few exclamations of how cute the robot was. In the afternoon, the students learnt to send commands from their boards to the robots, which will be pivotal for their project goals.

Treasure hunt results

<table>
<thead>
<tr>
<th>Team Name</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Cheat</td>
<td>875 pts</td>
</tr>
<tr>
<td>Team Android</td>
<td>865 pts</td>
</tr>
<tr>
<td>Team Grow Up Mushroom</td>
<td>855 pts</td>
</tr>
<tr>
<td>Team Poop</td>
<td>845 pts</td>
</tr>
<tr>
<td>Team Pink Yoshi</td>
<td>840 pts</td>
</tr>
<tr>
<td>Team Tux</td>
<td>835 pts</td>
</tr>
<tr>
<td>Team Domokun</td>
<td>-180 pts</td>
</tr>
<tr>
<td>Team Hepatitis</td>
<td>800 pts</td>
</tr>
<tr>
<td>Team 1-Up</td>
<td>795 pts</td>
</tr>
<tr>
<td>Team Zombie</td>
<td>785 pts</td>
</tr>
<tr>
<td>Team Crab</td>
<td>735 pts</td>
</tr>
<tr>
<td>Team Blue Yoshi</td>
<td>675 pts</td>
</tr>
<tr>
<td>Team Cube</td>
<td>640 pts</td>
</tr>
</tbody>
</table>

MAKING WEBSITES Will introduces the Python students to basic HTML structure, which they will use in conjunction with Python to create their social network.

CIRCLING ROBOTS Mike demonstrates one of the vacuum robots in action, and everyone watches as it traces out a figure-eight on the lecture room floor.

READY SET... Tara and James mentally prepare for their annual guest appearance in the treasure hunt, as Dominick announces the rules.
Challenges for a treasure hunter

We spoke to Dominick about the scavenger hunt, and followed groups around as the treasure hunt went down. Each challenge was scattered around the campus, with a bit of clustering near the main quad of the university - seven main challenges in total!

Hokey Pokey in the quad
Teams perform the Hokey Pokey in the main quadrangle of Sydney uni, on the front lawns. The challenge was that the song was not allowed to match the action which required group coordination. Quite entertaining to watch groups complete this, and we know cameraman Eddie got some good footage!

Tile crossing
Teams have to get their tutor across a series of red tiles near the Chemistry building. The trick is that the tutor is in the middle of a line of students and blindfolded. We saw half of Group 3 do well at this by using their arms to lead their tutor Lisa in the right direction.

Chalk mascots
Teams must draw a satisfactory chalk drawing of their mascots. Judges Katie and Alan decide whether the drawing is up to standard. There were some awesome pictures here! We quite liked the cartoon of Domo-kun. Team Zombie innovatively drew their zombie mascot in pieces...

Digits of \(e\)
Teams work together to memorise several of the digits of \(e\) and then recite it. James and Tara had a rough time with this challenge but we saw teams complete it quickly and quite efficiently. We left the challenge to the distant echoes of Steve and Ben's e-reciting insanity...

Logic puzzle
Without reproducing it here, teams had to find the heaviest bag of jellybeans given a set of circumstances. We were super impressed with how quickly we saw teams do this!

Wheelbarrowing
Teams work together in a line to transport balls over and under themselves with their eyes closed, until they reach the edge of the field. Most teams had done this by the time we got there but we saw two teams speedily complete the challenge - up the hill as well!

Replica photos
Teams have to track down locations on campus from photos taken by the tutors, and replicate the photo in them. Being a University of Sydney student would certainly help with this! Apparently one team got 33 photos of the university sport sign.
STUDENT SPOTLIGHT

Name: Joel Stankiewicz
Age: 17
School: UN Essential (NSW)

What do you do?
I’m in Year 12 doing my HSC this year. Some of my subjects are music, PDHPE, multimedia, D&T. Unfortunately computing is not offered!

Why NCSS?
I am interested in programming and games, and also video editing. My multimedia project is creating a music video to a song by Breaking Benjamin.

Future plans?
Hopefully programming and website design, using Python.

You’re still “alive”?
Sure am! I’m playing it cool, you know, just waiting for the right opportunity. I also happen to know who my killer is...

Treasure hunt strategy:
No idea, we’ll find out!

Best bit of NCSS so far?
The people. And the food is pretty good too.

FROM THE EDITORS

Re: Free Day photos
Hi everyone! Hope you have been enjoying the newsletter so far :) This is mainly directed at the students - tomorrow you guys have a lecture free time to do some sightseeing, so if you take any nice photos and would like to see them appear in the newsletter, please send them to: ncssmedia@gmail.com
You might see them here!
Yesterday’s events in a nutshell and what to expect for today

Students have now reached the end of the non-project part of the school, having learnt the basics they’ll need to program their robots and create social networks.

The Python group has learnt Python skills through the NCSS challenge website and the embedded group has picked up the C skills they will use to code in the Arduino environment and send commands to their robots.

The treasure hunt was great fun for all and well-organised with cool challenges and lots of running around campus. We enjoyed watching source-code tunes and the Hokey Pokey as well as looking out for NCSS balloons missed by students!

WHAT’S COMING UP NEXT?

Today the students will visit sponsor Altium in the morning, returning later for a series of Masterclasses that take the place of normal lectures and tutorials. After lunch is the allocated city free time, where students can take a break and explore Sydney city.

The next newsletter will come out on Friday, summing up Wednesday and Thursday.

Thank you to our awesome sponsors!
Days 4 & 5: action on and off campus!

The last two days took on a different structure as students had a break from programming and visited some of the sponsors supporting the NCSS every year.

On Wednesday morning (very early!) students visited Altium (covered on page three) and returned to the college for Masterclasses on six different computing topics:

- An Introduction to Language Technology
- Building Games with Flash
- Google App Engine for Fun & Profit
- Cellular Automata and the Game of Life
- Exploring 3D Medical Imaging
- Computational Divination

The rest of the day was designated free time, in which students were allowed to explore Sydney or relax at the college. Many students spent the evening hanging out and playing games like Jungle Speed and Mafia.

Thursday involved visiting sponsors Macquarie Group, Atlassian and Google, which will be written up with photos in following newsletters. It was a busy but definitely exciting day as students got an insight into these organisations and were allowed to ask questions directly.

Finally, the official NCSS dinner took place on Thursday night and was attended by students, tutors and sponsors. Everyone was able to interact over dinner and collaborate together to solve James’ posed piano tuner challenge - a great night in the Women’s College!

Official NCSS dinner

The formal dinner of NCSS was held Thursday night at Women’s College. Pre-dinner drinks were followed by a multi-course meal which included spring rolls, chicken and creme caramel.

Representatives from various sponsor companies attended both the drinks and dinner and were able to interact with students in a more personal and individual way. Students in turn were able to talk to sponsors from different companies and get an important insight into what it’s like to be working in the IT industry.

The dinner took place in the dining room with seating strategically coordinated such that all students had the chance to interact with sponsors. We had the chance to speak to CEO Matt Barrie and Greta Stojanovic from Freelancer about the success of the company, and to Peter Beadle who is involved with a number of diverse technology projects.

James posed a challenge to all: How many piano tuners are there in Sydney? This problem-solving question is designed to make people think about how to estimate and put limits on what they know. We discovered that the answer is (according to NCSS) somewhere between 36 and over 9000, but most likely around 50 or 160 depending on how you calculate.

Overall the dinner was a great success and we saw many intent discussions taking place all around the dining room. Thank you again to the sponsors for attending and for supporting NCSS!
OFFICIAL NCSS DINNER
NCSS students visit Altium HQ

Early on Wednesday morning, students were transported to the headquarters of Altium, located north of Sydney. Once there, they enjoyed a delicious breakfast of bacon and egg rolls and then assembled to hear some brief presentations about Altium’s role in the IT industry. Their goal, summed up by a student as “creating software for making hardware”, has seen them produce software for companies such as NASA, Boeing, and Fujitsu.

After the talks, students were toured around different parts of the Altium workplace and were able to ask any questions they had of their tour guides. We followed a group led by Raj, who showed everyone his work environment and explained why he enjoyed working for Altium.

Students also had fun playing a brief computer game guiding a chip around a perilous obstacle course in only 20 seconds. The highest scores were close to and over 4000 and the lucky winner with 4013 was Niel, who received a very cool NanoBoard. Overall the students really enjoyed visiting Altium and got a fantastic and useful insight into their company.

VISITING ALTIUM

AROUND CAMPUS: STUDENT FREE-TIME

“Just in time!”
Yesterday's events in a nutshell and what to expect for today

It's been a busy couple of days and a notably different program. The students took a break from learning Python and C in order to visit sponsors and explore the city of Sydney.

Visiting the sponsors was certainly a highlight in the program and students really seemed to enjoy getting an insider's perspective into companies they may consider working for one day. The Masterclasses also provided a change of topic and pace, with some really interesting topics being covered! The official dinner was enjoyed by all and we all learnt a bit more about piano tuning.

WHAT'S COMING UP NEXT?

Students return to a more regular program tomorrow, with lectures and tutorials throughout the day. Mentors from sponsor companies visit the students in order to practice job interviews which will be a very useful experience.

The programming competition, a series of problems for students to solve, will take place in the evening and looks to be lots of fun!

Thank you to our awesome sponsors!

Edition 1.3 brought to you by:

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NEWSLETTER CREDITS
Editor: Vanessa Moss
Layout: Vanessa Moss/Thomas Kanold
Photography: Thomas Kanold/Edmund Tse

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Day 6: project focus and job interviews

After the schedule of site visits, students will move on from their learning stage into applying their skills for their projects. Python students work on projects while embedded students continue to build skills for the final challenge next week. The morning also involved practice job interviews with visiting sponsor mentors, described on the next page.

In the evening the NCSS programming competition was held which was lots of fun for all and put their logic to the test.

PYTHON GROUP
Each Python group will create a working social network as their project. To begin with, groups studied existing social sites, planned the structure of their own sites and divided up the different tasks they will work on during the development.

EMBEDDED GROUP
The embedded group learnt to make their robots dance today, programming music of their choice into their code and learning to use the light sensor to control the robot's response. The robot dance party was definitely a highlight of their day!

Programming showdown

Dinner in the Women's College was followed by the annual NCSS programming competition, which partners small groups of students with an industry mentor or tutor to compete against each other in answering a series of challenging problems about everything from logic puzzles to code standards.

Students assembled in the IT building and were arranged in groups ranging from Awesome to Zany (and a few interesting words in between), before getting started on the two hour challenge. We were amazed to see how rapidly teams got through the questions!

Team Quick lived up to their reputation, snatching up a speedy (and complete!) victory, followed by Prodigious and Brilliant with 12 points each. Congratulations to all teams and kudos to everyone who made the night so epic!

FROM THE EDITORS
Re: Photos and articles
Hi again! Thanks everyone for your comments regarding the newsletter, it's great to hear that you are enjoying reading it - and we're having fun making it too! We are looking for student-taken photos and student-written articles so please feel free to send us anything at all: ncssmedia@gmail.com
Thanks for your contributions!
**STUDENT SPOTLIGHT**

Name: Niel van der Westhuizen  
Age: 16  
School: Fraser Coast Anglican College (QLD)  

**What do you do?**  
I will be starting Year 12 this year, doing the equivalent of the HSC in Queensland. My subjects are a lot of maths, physics, music and possibly computing.

**You play an instrument?**  
Yeah, I play the saxophone and also the piano. I'm considering taking music extension as well.

**Why NCSS?**  
I've been to a lot of informatics camps, and heard the NCSS was pretty cool - and it is pretty cool!

**Future plans?**  
After I finish high school I'm hoping to do computer science at UNSW - there is a large informatics community there.

**Why informatics?**  
Informatics in general tends to be more about algorithms rather than projects, and I really enjoy that kind of computing. I've been in quite a few informatics olympiads and am hoping to compete globally this year!

**Altium game strategy?**  
I noticed there was a large line of particles near the start, and also heard there were power-ups - I managed to find two of them!

**NanoBoard plans:**  
It's similar to the Arduino board, yes, but 9001x more complex. So I'm not entirely sure yet.

**Best bit of NCSS so far?**  
Being able to meet and talk to IT industry people via the sponsors has been really great!
**VISITING MACQUARIE**

Trisha Harding from Macquarie encouraged students and tutors to step out of their comfort zones and shake hands with the people next to them.

Sarah Williams gives an opening speech introducing the company, her role and what they do.

NCSS students visit Macquarie Group @ Shelley Street

Students took two buses into the city to the famous Shelley Street building of Macquarie Group for the first of the site visits on Thursday. The unique architecture of the building was admired by many students as they were led inside to one of the conference rooms.

An introduction to Macquarie Group and the importance of IT was given by Sarah Williams who has worked in the business for around twenty years. She emphasised that everything Macquarie does relies on IT and computing. This was followed by a talk on the building and philosophy of the environment by Trisha Harding, showing how Shelley Street is extremely different to traditional workplaces. The students were also shown how Macquarie Edge works in terms of components.

Students enjoyed morning tea with Macquarie representatives and were able to find out more about what Macquarie does and why IT is so important, as well as having tours of the building. This site visit certainly made a big impression on many students, some of who may have come to realise just how diverse an IT career can be!

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**TUTOR SPOTLIGHT**

**Name:** Nicky Ringland  
**Age:** 25  
**School:** University of Sydney

**What do you do?**  
I'm in my second year of doing PhD with James, working on integrated named entity structures.

**Why NCSS?**  
Participating in NCSS is such an awesome opportunity, because it's taught and attended by passionate like-minded people. You'll find that most tutors either attended NCSS themselves or would have killed for the opportunity to do so. Tutoring is lots of fun and very rewarding.

**Future plans?**  
I'm aiming to finish my PhD, and after that...? Let's go with world domination, most likely via the interwebs!

**You know German?**  
My grandparents knew six languages because of various circumstances (Romanian, German, Russian, English, Italian, French) and I picked up some German from my oma. I found it so fun and easy at school that I studied it and also studied German overseas.

**German music helped?**  
Definitely! I listened to all kinds of German music, I love the clever wordplay of the lyrics. Listening to music helps with picking up accents!

**Fave German phrase?**  
NCSS ist ja geil! (Guess where I studied!)
Yesterday’s events in a nutshell and what to expect for today

It might have seemed that things would quiet down after the busy days of site visits, but the program has instead intensified. Although students returned to a more regular timetable with lectures and tutorials in the lab, they have quickly developed their skills and are moving on to more difficult challenges every day.

The mentor interviews in the morning provided a useful opportunity for students to practice their interview skills in a relaxed and constructive environment and most students gained much from the experience.

The programming competition was a great chance for the students to work together as a team and apply their knowledge, as well as working with an industry member or tutor to guide their approach to solving problems.

WHAT’S COMING UP NEXT?
Business continues as usual over the weekend with a similar timetable of lectures, tutorials and project work. The evening’s activity will be the crypto challenge, and from what we hear it should be quite entertaining!

Friday’s schedule (07.01)
Morning
Lectures/tutorials
Mentor interviews
Afternoon
Lunch at Women’s College
Lectures/tutorials
Evening
Dinner at Women’s College
Programming competition

Today’s schedule (08.01)
Morning
Lectures/tutorials/project
Afternoon
Lunch at Women’s College
Lectures/tutorials/project
Evening
Dinner at Women’s College
Crypto Challenge
Day 7: the weekend begins!

It might be the weekend but there is no rest yet for the students and tutors of NCSS - the program continued instead with lectures and tutorials, as students all move on to their projects and get further into the respective coding they must do to achieve tasks.

Apparently there aren't quite as many attendees for morning games but in the labs the tiredness is not yet showing - everyone is still really enthusiastic and working hard!

**PYTHON GROUP**

Lectures were given on web design and databases in the morning. Students have been assigned different modules to work on for their social network, either front-end or back-end, from colour choice to tokenising to live status updating!

**EMBEDDED GROUP**

Lectures continue, and the challenge for the embedded students has been announced! We hung out in the labs and watched as students quickly programmed their robots to do what they need to do, as well as other cool features.

### Cryptography challenge

In the competitive spirit of the previous night’s programming competition, students once again assembled in IT for an evening of encrypting and decrypting - as fast as possible!

After a brief introduction into what cryptography is and some simple forms of ciphers, students were put into groups named after idols such as Ash Ketchum and Dr Horrible (look it up!). They then began two hours of designing ciphers to encode text, figuring out the cipher to crack other teams’ codes and writing chunks of decrypting code in Python.

Teams did excellently at both tasks and came up with some great ciphers! Congratulations to all the teams especially Sauron (1st), Superman (2nd) and Voldemort (3rd) - and condolences to the tutor teams Aquaman and Bolt!
Name: Katrina Tolentino
Age: 24
School: Chatham High (NSW)

What do you do?
I'm in my fourth year of teaching high school students computer science. I did a degree in IT and education, and can also teach math at a junior level.

Why NCSS?
I found out about the program in two ways, actually! I heard about it through a student that came to NCSS and was really positive about it. I also got a letter about NCSS in the mail and thought it sounded fun!

Future plans?
I'm really enjoying teaching at the moment, so I will continue this for a few years and see how it goes. I might also try working in the IT industry at some point.

Picking up teaching style?
Yeah, it's really enjoyable and I've picked up a lot of ideas for group activities, like the team-building exercises, knots and shaking hands at Macquarie - it's great for encouraging students to get to know each other.

Best bit of NCSS so far?
Meeting other students and hanging out with them has been really fun, I'm a bit of a secret spy at the moment!
NCSS students visit Atlassian

It was warm and sunny in the Sydney CBD as students made their way to the Sydney HQ of Atlassian, a small-business success formed by Scott Farquhar and Mike Cannon-Brookes soon after they finished university.

Scott gave an introductory talk about how Atlassian was formed to the first-time NCSS students, describing the background and how their software has become high-demand by some of the biggest companies in the world.

Next, programmer Charles Miller gave a talk on how to make awesome software. He argued that the key factor distinguishing Atlassian was that they learnt to create software based on what they as a company felt was missing - and hence others find the software useful too!

Returning NCSS students were given a deeper insight into the company separate to the others. Many students identified with the honest, laidback approach championed by Atlassian. After this, the students enjoyed a tour of the building and an excellent barbeque lunch, before assembling outside the front for a photo in their kindly-donated Atlassian NCSS t-shirts!
Yesterday's events in a nutshell and what to expect for today

The weekend started but the early mornings continued - students are now working mostly on their respective projects. It is cool to see that each Python group has approached the purpose of their social networks in a different way, from music to file-sharing. And teams are working really well together to meet their deadlines - making decisions as a group!

It looks like the embedded students are also having a lot of fun, with a mix of both achieving their set tasks and programming their robots to do anything cool that they can think of. Tutors say they are being really creative!

**WHAT’S COMING UP NEXT?**

The weekend will continue with more lectures and project work, and the deadlines for the projects are quickly approaching - presentations on Tuesday!

Students are definitely feeling the weight of such a busy schedule, so the evening’s activities are relatively calm with human simulations and some free time to relax at Women’s College.

**Saturday’s schedule (08.01)**
- **Morning**
  - Lectures/tutorials/project
- **Afternoon**
  - Lunch at Women’s College
  - Lectures/tutorials/project
- **Evening**
  - Dinner at Women’s College
  - Crypto Challenge

**Today’s schedule (09.01)**
- **Morning**
  - Lectures/tutorials/project
- **Afternoon**
  - Lunch at Women’s College
  - Lectures/tutorials/project
- **Evening**
  - Dinner at Women’s College
  - Simulation at Women’s College
Day 8: wrapping up the weekend

The last day of the weekend saw students beginning to feel the sleep they’ve been missing all week. It was looking a bit grim for morning games with only a couple of people showing up, but this was soon remedied with over a dozen students joining in for zabutsa - where do they get their energy?!

Lectures and tutorials continued for both groups, but the overall vibe of Sunday was a bit more relaxed and calm - because it is about to get really busy again!

PYTHON GROUP
The social networks of the Python group are coming together excellently - both in the front-end and the back-end! Most groups have logos and colour schemes happening as well as lots of functions and features being integrated.

EMBEDDED GROUP
The embedded groups are speeding along with their rescue missions, complete with princesses and overlords. Students are quickly achieving their goals and sorting out quirks before the demo and later competition late Monday!

Night before all-nighter

In order to allow students to (theoretically) get some rest before the epic all-nighter of Monday night, Sunday evening’s activities were more laidback than previous nights.

Students formed teams and rallied together to act out some basic sorting algorithms as a group, with some entertaining results! The scoring system was also fairly entertaining.

Next, students were set with the task of acting out what NCSS means to them - and we saw everything from pythons to mafia to James Curran to rice, at increasingly faster speeds!

Zombies were let loose among the students, so it will be interesting to find out just how well everyone slept after that. In general it was an early night for most - because tomorrow is the all-nighter!
VISITING GOOGLE

Mark and Harrison enjoy some icecream while waiting for the Google presentations to start

Students and tutors enjoy the view from the Google balcony, led on their tour by Jim

#NCSS

flowblok
@Spik3balloon @JJGatenby
Not I, sir! I'm now Callan.
#ncss #identitycrisis

Spik3balloon
@JJGatenby @flowblok Would the real @JJGatenby please stand up? #ncss #identitycrisis

lemnisca
Me: “5 minutes until we go to lunch.” Student: “Do we have to go to lunch!” #Embedded #NCSS students are learning the Way of the Coder.:)

damonreece
@StumpyTheRoomba stares into your soul and he doesn’t like what he’s seeing. #ncss

AlfieTheRoomba
I accidentally (destroyed?) the whole track! D: #ncss

EdmundTse
Students learning how to use Subversion to keep track of collaboratively edited code #ncss #embeded

LadyCaffeine
Brave roombai, I have prepared a map for you! http://i.imgur.com/PvrwN.jpg #ncss

AlfieTheRoomba
I will rescue the princess and she will be my squishy #ncss

damonreece
My hat now has a Twitter feed: @DamonReecesHat #ncss

jjgatenby
One more sleep until the #ncss all-nighter! Make sure you catch up on sleep tonight!

dominickng
32-player Mafia game going at #ncss. Accusations flying everywhere.

NCSS students visit Google

Students trekked through Darling Harbour to reach the Sydney HQ of Google, located on the wharfs near Star City casino. Many groups were excited by the large Google sign in the foyer and stopped to take pictures there.

Once upstairs, students were greeted with ice-cream and free stationery before being seated in an array of coloured chairs as speakers Sam, Matt and Jim presented brief talks. Sam introduced students to Google and talked about the particular role of the Sydney HQ, while Matt described his career path and how it differed from what might have been assumed typical. Jim talked about computing as an amazing industry and encouraged students to make the most of the opportunities they were given.

Next, small groups were toured around different parts of the Google building, through the sea, on the beach and in the jungle - and also into the company-provided games room, complete with billiard scoring laptop! The high-profile and prestige of Google as well as the youthful atmosphere appealed to many students and made for a cool conclusion to the varied and excellent site visits.
STUDENT SPOTLIGHT

Name: Jarrod William Small
Age: 16
School: Heathcote High (NSW)

What do you do?
Going into Year 12 this year - my subjects are English, maths, business studies, IPT and physics. I really like theoretical physics!

Why NCSS?
I've liked computing for a while but last year really got into it, teaching myself Python and borrowing books and material from my IPT teacher - who also encouraged me to attend NCSS.

Every language?
I'd really like to learn as much as possible about every syntax and language. James has done a lot of great work on languages.

Future plans?
I definitely want to go to uni and do some form of IT probably computer science. I'm also interested in the field of user-experience (UE), making software more friendly and easy to use.

Atlassian interview:
Talking to Jared from Atlassian, I found out they work on UE. I'm really excited at the prospect of an internship working with them and gaining broad experience.

Python project role:
Data models and authentication, to protect against data loss and security breaches - we are doing it as realistically as possible.

All-nighter strategy?
Go to bed early! Which probably means going to bed at midnight...

Best bit of NCSS so far:
Free time in the library, playing games and looking at books - it's nice to relax in the evening.

FROM THE EDITORS

Re: Zombie infestation
Beware of zombies! We saw firsthand the paranoia that has taken over Women's College. It would seem that a certain devious group of students is intent on victory - yes, we are watching you!
Yesterday’s events in a nutshell and what to expect for today

The weekend ended with a quiet evening to prepare students for their final day (and night) of programming for their different projects. It’s been great to see how the embedded groups are writing code to direct their robots to the goal, and also how different the approaches can be! The princesses of Group 5 and 6 and the robot faces are also greatly entertaining.

It is also impressive how each Python group has chosen a different and specific goal for their social network, and how the different front-ends and back-ends are coming together. We’re looking forward to seeing the finished products!

WHAT’S COMING UP NEXT?
The last day of proper project work will be busy for both groups. Embedded students will demonstrate their robots in the afternoon, and all groups will start to video footage to put together for their presentations on Tuesday.

The all-nighter will certainly be a test for most, and it’ll be interesting to see how the next 36 hours go!

Sunday’s schedule (09.01)

Morning
Lectures/tutorials/project

Afternoon
Lunch at Women’s College Lectures/tutorials/project

Evening
Dinner at Women’s College Simulation at Women’s College

Today’s schedule (10.01)

Morning
Lectures/tutorials/project

Afternoon
Lunch at Women’s College Lectures/tutorials/project Embedded demonstration

Evening
Dinner at Women’s College NCSS all-nighter!

Thank you to our awesome sponsors!
Day 9: of deadlines and wrapping up

The second-last day of NCSS, a bit of a euphemism since it blends seamlessly into the last day, began early on Monday morning with breakfast and a group photo. Students donned their NCSS shirts and posed outside Women’s College (see page 2).

After this they split into their groups and worked on their projects. A general lecture given by James after lunch giving students an insight into their future study options was followed by lab work until dinnertime.

PYTHON GROUP

The Python students had their final lecture before heading to the lab to start bringing together their social networks. The networks themselves started to take shape as functioning websites, both visually and in the back-end!

EMBEDDED GROUP

The embedded group also had their final lecture before demonstrating their robots to visiting industry guests before dinner. The challenges went forth with great success and all robots were cheered on!

How to stay up all night

Students and tutors once more participated in the annual NCSS all-nighter, stretching from Monday evening till Tuesday noon when the official project work was declared complete.

The Roombas competed in a speed challenge with students filling the SIT foyer and cheering for the different Roombas. Freelancer kindly donated shirts after the challenge and a group photo was taken! The vibe in the lab was energetic leading up until midnight, with many group meetings taking place for the Python group and their social networks rapidly taking form. The embedded groups received their task for the night, to build a functioning Roomba railway and they set to work implementing the various features.

Pizza sustained the different groups in the early hours of Tuesday, and the students rallied together in the final 12 hours of the all-nighter to get their projects done. Congratulations to all students and tutors - you survived!
CliqueShare was developed around the quintessential concept of sharing files in groups that can be used for projects. Group assignments can be collaborated by creating a specific project page where members can share files and communicate through the project wall. This feature allows all members of the project to track the project and have access to all the resources developed by group members.

Another key feature of CliqueShare is the ability to create groups or cliques that could be used for more generic groups of people such as sporting teams, social and cultural groups. This allows CliqueShare to be used for non-educational purposes, which will ultimately help extend how CliqueShare can be utilised.

The website style and colour scheme has been designed in a sleek and modern fashion. ‘James Curran Green’ also known as ‘#397F7E’ became the colour to complement the purple header and menu titles. Visual animated elements have been incorporated into the website including a personal profile pop-down activated by hovering over the curved grey tab and expandable menus to display the individual menu items.

Cheatr is a social networking site as well as a site to help you study. So, if you spent too much time on Facebook when you’re supposed to be studying, now you can do both at the same time!

The goal of the site is to make it easy to find study resources and notes for the subjects you do and connect with other students in the same subjects.

Since the notes are rated by the people who use them, you can find the best notes fast, and study better. It makes no sense for each student to study alone when they could be working together.
damonreece  
#ncss  
I love you all too much, what’s gonna happen in 3.5 hours? D’:_>__>

Asterfobulongus  
#ncss  
ends in five hours or so. So long to simulations, cryptography, programs, memes, obscure references, jargon, and other good times.

dominickng  
All nighter survived. Caffeine consumption: 0. Survival rate: approximately 50% #ncss

gilesgardam  
So ends a productive #ncss all-nighter for group 1, over 5 000 lines of code in total.

taybenlor  
The best part about tutoring is teaching someone a general concept, leaving them alone and coming back 1hr later to see it working. #ncss

Group 5

Anthony Ulrich, Caitlin Mangan, Denise Tang, Elle Rimon, Eric Lam, Gemmy Wattanaparada, Jack Leykam, Niel van der Westhuizen, Sean Thompson, Shaun Chong, Tom D’Netto, Victor Roussekov

“I heard about NCSS via Facebook and I attended because I thought it would be fun. I saw it as an adventure to try and challenge myself and further my knowledge in the IT industry. I would be able to meet a whole bunch of people with the same interests as me in the same age group and I strived to get in. It has been such a blast attending the 8 days of summer school and if the chance was to come up again I would not turn it down.”

- Anthony Ulrich

“I found out about NCSS when my teacher suggested that I attend this summer school. Though I have had very little experience in programming, I thought this would be a great opportunity to further my knowledge of the IT industry. I have had lots of fun over these 10 days and will miss waking up at 6.30 every morning to go to exciting lectures and labs (oh and scoring chocolate). This has been an amazing experience and I am glad I attended NCSS 2011.”

- Elle Rimon

“I didn’t know any programming before but have learnt some C++. Coding is new and exciting! I really enjoyed the medical imaging Masterclass and am considering computer science and physics as well.”

- Jacinta, NCSS embedded student

Q: WHAT HAS CHANGED AFTER NCSS?

“I learnt some programming and Python, and it definitely feels more accessible now. I’m hoping to apply it to my major project this year - making vending machine interface software.”

- Louis, NCSS Python student

“I didn’t know any programming before but have learnt some C++. Coding is new and exciting! I really enjoyed the medical imaging Masterclass and am considering computer science and physics as well.”

- Jacinta, NCSS embedded student
**STUDENT SPOTLIGHT**

**Name:** Shelley Cooper-White  
**Age:** 17  
**School:** Alstonville High (NSW)

**What do you do?**  
I just finished Year 12, and will be starting university this year - the University of Sydney actually! I’m enrolling in B. Computer Science.

**Why NCSS?**  
I’m a returner student. I did the online NCSS challenge and really enjoyed it, then applied for NCSS last year - which was really fun! So I came back this year.

**Future plans?**  
I’ll be starting university in March and studying all kinds of subjects. I’m interested in AI, web design, game development, but open to lots of other fields too.

**Being a returner:**  
Working on the Python social network project last year was the best experience! We made a website called FacePalm. There are 12 returners - and we’re dominating the zombie game.

**How many kills?**  
I’m up to 22 at the time of this interview. They’re all recorded on my arm. Between me, Victor, Joel and Farid, we calculated that we probably killed more than a quarter of NCSS. Returner pact!

**Best bit of NCSS so far:**  
Definitely Zombies vs. Humans - it’s been a lot of fun!
“... centred on uploading and sharing original music...”

**Group 3: Threebie**
Dominick Ng, Ben Taylor, Mike Lang, Lisa Fedorenko, Tian Pu, Brad Wootton, David McLean, Francesca McDermott, Francis Young, Justin Gock, Kathryn Chan, Louis Rankin, Mark Brodie, Poppy Wilson, Samantha Crome, Tom Grant, Xavier Murray

Our site, Threebie, is an up and coming social networking site centred on uploading and sharing original (user-created) music promoting up and coming artists while providing a music loving community to hang out.

Using some neat AJAX and JavaScript tricks we were able to create a smooth and intuitive user experience with some neat animations. Our back-end was well designed more or less from the ground up to integrate with the front-end user experience to create features such as real-time chat and a smart updating feed that grabs new information and processes it automatically without the user having to refresh. Sign-up is nearly instantaneous promoting the user to sign up and contribute to the community by allowing them to immediately start uploading and sharing their music as well as following artists who share their tastes.

This experience is complemented by our ‘cool-bar’, which appears within each template page to enhance the following experience and display users who you are following to allow easy access to information forming a very natural user experience.

“Photopulse© the social networking site for all photography great and small...”

**Group 4: Photopulse**
Samuel Crosby
Nick Carton
David Horst
Rochelle De Silva
Denbeigh Stevens
Georgia Judd
Derek Peczek

Lauren Black
Steve Hughes
Nicholas Donaldson
Toby Flemming
Madeleine Eagles

Photopulse© is the new and exciting photo sharing site but with a unique and exclusive feature in comparison to other similar sites, you are able to socialise! Photopulse is well suited towards everyone’s needs from families wishing to share their photos with friends to the professional photographer who wants to show employers or the public their favourite artworks.

This new social networking website is the new thing for everyone great and small, professional and amateur. Anyone passionate about taking photos, whether they are taken on a professional camera or they family Kodak, this is the site for you! Not only are you able to talk to others with similar interests you can view people’s photos that you have never met before enabling you able to inspire your photographic instincts.
TUTOR SPOTLIGHT

Name: Maddy Reid
Age: 20
School: University of Sydney

What do you do?
I’m in my second year doing a B. Information Technology - it’s a four year course including Honours, and I’ve studied subjects like programming, systems analysis and math.

Why NCSS?
I came as a student in Year 11 and also as a returner - it was lots of fun! I got involved in the Girls Programming Network and also tutoring because I enjoy outreach and teaching.

Future plans?
Survive uni! I’m considering doing a masters overseas or possibly working. Maybe research, but it takes a lot of self-discipline.

Interning at Macquarie:
I wanted to be involved with IT over summer and found out Macquarie offered internships. I love it! I’m working in a team rolling out Windows 7, and checking for compatibility.

Interning challenges?
It’s scary because what you do counts. Even as an intern, I am accountable for my role in the project. It’s more like real life which is pretty cool.

Best bit of interning:
The people! I really like meeting new people and finding out what they do. Macquarie has a system called Communicator where you can instant-message anyone in the company - I’ve been able talk to many people and learnt lots that way!

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Yesterday’s events in a nutshell and what to expect for today

It’s the final newsletter of NCSS 2011 and it’s been a big one! The students survived the all-nighter and the projects are looking fantastic. There have been a lot of adventures over the last 10 days, and many new friendships forged. It’s been great to see the different projects coming together - thank you to all groups for contributing a description of your project to the newsletter!

Personally, we’d like to thank all of the students, tutors, sponsors and affiliates of NCSS for all their help with making the newsletter - without your input and support we could not have made the newsletter what it was. Thanks for being awesome and we hope you’ve enjoyed reading it!

WHAT’S COMING UP NEXT?
The students have finished their projects and are currently preparing their presentations for the closing ceremony of NCSS 2011. It's been a blast for them and us, and we're glad to have been involved in such an awesome program. Congratulations to everyone for a super school and have a great 2011!

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Monday’s schedule (10.01)

Morning
Lectures/tutorials/project

Afternoon
Lunch at Women’s College
Lectures/tutorials/project
Embedded demonstration

Evening
Dinner at Women’s College
NCSS all-nighter!

Today’s schedule (11.01)

Morning
Project work
Practice demonstrations

Afternoon
Lunch at SIT
Closing ceremony
End of NCSS!

Thank you to our awesome sponsors!