COMP1511/1911 Programming Fundamentals

Week 9 Lecture 2

Exam Information
Revision

csesoc UNSW

COMP1511 REVISION SESSION

COLOMBO THEATRE A
NOV 07, 2024 | 4:30 - 6:30 PM

Revision Sessions

In Week 11, we will be running some exam revision classes.

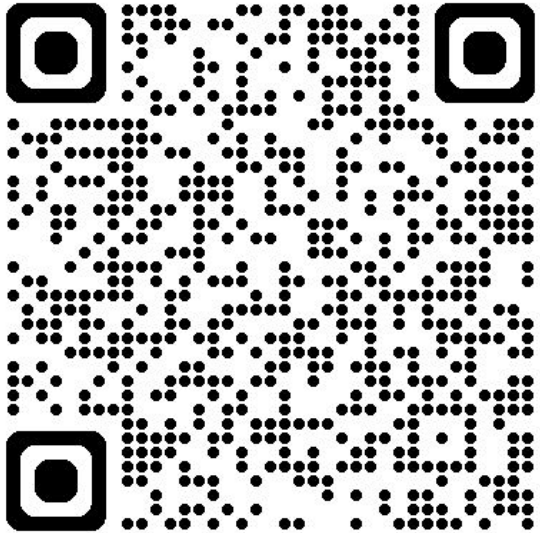
Registration and details will be announced soon .

My Experience Surveys

http://myexperience.unsw.edu.au/

Week 10 Practice Exams

- If you are in an online tut-lab
  - you can sign up for an in-person lab for week 10
  - sign up details also on Ed forum.
  - Access code: COMP1511
- Don’t miss this chance to see what the exam environment is like



https://buytickets.at/comp1511unsw/1447098

Week 10 Practice Exams

During the practice exams:

- Any autotests or submissions will not be stored on student history
- Any code written in the exam environment will not be accessible to you once you log out of the exam environment.
- Practice exam questions will also be available at home via the week 10 lab on the course website,
  - This is useful for study
  - However please come to the labs to see the exam environment!

Last Lecture

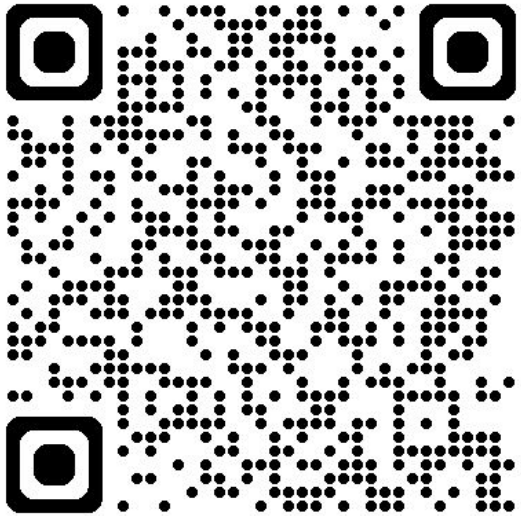
- Deleting Nodes
- Bigger Linked List Example

Today’s Lecture

- Do last function from last lecture
- Do search and delete with curr->next
- Exam info
- Format
- Preparation
- Hints and tip
- Revision

Link to Week 9 Live Lecture Code

https://cgi.cse.unsw.edu.au/~cs1511/24T3/live/week_9/



Exam: What is in it?

- Everything that we have learnt so far
- Lots of focus on:
  - Variables: int, double, char, structs
  - Simple IF statements and WHILE loops
  - Arrays, 2D Arrays
  - Strings
  - Pointers
  - Linked Lists

The Exam: Time and Date and Location

- Date: 25th November
- 3 hours + 10 minutes reading time
- There will be 2 sessions of the exam.
- The students sitting the exam in the afternoon will be corralled for a period of twenty-thirty minutes as we conduct the changeover.
- Students in the morning exam, will not be able to leave early.
- **You will get more information about how to select your preference for exam times and your locations next week.**

The Exam Environment

- The practice exam in the lab NEXT week will provide you with a test environment that will be similar to your exam - this will allow you to familiarise yourself with the setup
- dcc, autotests, submit (like give) are the same as in your labs
  - Submit as many times as you want - only last submission will be marked
- **There will not be**
  - `dcc-help`
  - `dcc-sidekick`
  - `autotest-help`

The Exam: Exam Conditions

- Closed book, however:
  - Our course website will be open, which means you will have access and are allowed to refer to:
    - Any lecture material or code
    - Any tutorial material or code
    - Any laboratory material or code

The Exam: Exam Conditions

- Exam conditions still apply!!!
- If you experience any issues during the exam, please raise your hand and wait for an invigilator.
- No discussion of the exam or sharing your code with anyone except for COMP1511/1911 staff
- Do not communicate with anyone about the exam within 24 hours of the exam start time - this is considered plagiarism

The Exam: Exam Conditions

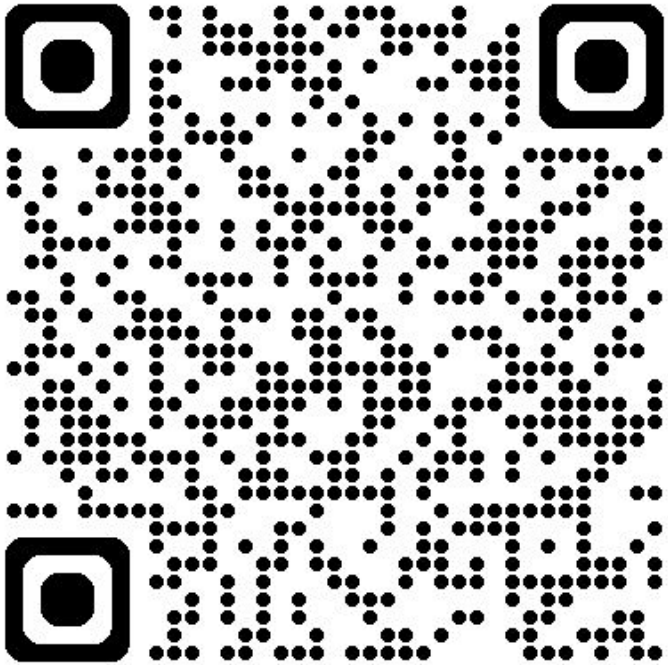
- You can bring a clear bottle of water
- Pens
- NO devices/phones etc
- No paper - we will give you a sheet of paper to do working on
  - This will be collected but not marked.
  - You can ask for more paper if you need it

The Exam: Exam Conditions

- When you come into the room and seat yourself, there will be instructions provided to you on how to start the exam
- We personalise the papers, so your paper may be different from that of someone else.
- The different sessions also have different exam papers
- You will have all the code in the home directory when you log into the exam.
    - This will be the same as in the practice exam
    - You do not need to fetch the exam.
    - You can re-fetch particular question files if needed.

The Exam: Official Exam Rules: Fit to Sit

- Fit to Sit Policy:
- By sitting the exam on the scheduled assessment date, you are declaring that you are fit to do so and cannot later apply for Special Consideration.



https://www.student.unsw.edu.au/exam-rules

The Exam: Official Exam Rules Fit to Sit

- If, during the exam you feel unwell to the point that you cannot continue with the exam
  - Stop working on the exam and take note of the time Please raise your hand and let the invigilator know you are unwell.
  - Immediately submit a Special Consideration application saying that you felt ill during the exam and were unable to continue
  - You must provide a medical certificate dated within 24 hours of the exam, along with any record of the conversation you have had with us (basically that you have let us know you feel unwell before leaving)

The Supplementary exam

- Draft Timetable Date: January 21st 2025
- Only for students granted special consideration
  - Applied for special consideration due to illness or misadventure
- If you think you will need to sit this exam, make sure you are available
- https://www.student.unsw.edu.au/exam-rules

The Exam: Hurdles

- There's an array hurdle, question 2 and 4
  - You must earn a mark of 50% or more in at least one array hurdle question
- There's a linked list hurdle, question 1 and 3
  - COMP1511 students must also earn a mark of 50% or more in at least one linked list hurdle question
  - COMP1911 students will still do these questions but they will not be hurdles
- These questions will be clearly marked on the exam paper as hurdles

The Exam Format

- 11 Practical Programming Questions
  - rated (with 1 dot, 2 dot and 3 dots) to give you an idea of how difficult each question is
  - we hope that everyone can attempt and complete the first eight questions
  - we hope many students can attempt and complete q9 too.

The Exam Format

- Q1 - Q4 (12 marks each) HURDLES
- Q5 - Q8 (5 marks each) Debugging Questions
  - These questions will be about whether you understand core coding concepts and the C programming language
  - In the style: "Debug the following code to make sure it works to produce the desired output."
  - Some examples are in the Week 10 Prac Exam
- Q9 - Q10 (11 marks each)
- Q11 (10 marks)

Questions

- Questions are similar in style to the revision exercises and problem sets
- Rated (with 1 dot, 2 dot and 3 dots) to give you an idea of how difficult each question is.
- Some will have provided code as frameworks
- Each question will need to be written, compiled and tested
- You will have access to autotests
    - Harder questions will have less autotests

Questions 1 and 2: These are (●○○)

- Similar in style to Practice test questions 1 or 2
- Question 1 is a linked list hurdle (not a hurdle for COMP1911)
  - Use of linked list of ints/doubles
  - no insertion or removal of nodes
- Question 2 is an array hurdle
  - Use of arrays of int/double/struct
- Tests your ability to:
  - Create simple C programs, use variables (int, double, char, structs) , use scanf and printf
  - Use **if** statements and **while** loops

Example Question 1 (●○○)

Perform some computation or comparisons on a linked list

Given a linked list, return the largest value in that list.
If the list is empty, return -1
Edit the function

```
int largest(struct node *head);
```

Example Question 1 (●○○)

Perform some computation or comparisons on 2 linked lists

Given 2 linked lists return the difference in the number of nodes in each list.

Edit the function

```
int difference(struct node *head1,
               struct node *head2);
```

Example Question 2 (●○○)

Loop through an array and gather some kind of information

Given an array of structs, where each struct is:

```
struct direction {
    int number;
    char dir;
};
```

Print out the total of the number of steps taken in a specific direction.

Example Question 2 (●○○)

So for example, if direction is 'l', find all the structs with direction as 'l' and add the numbers in those structs up.

Edit the function:

```
int direction_count(int size,
                    struct direction array[size]);
```

Example Question 2 (●○○)

Loop through an array and gather some kind of information

Given an array:
Count the number of multiples of 3 in the array.

```
int array_count_multiples (int size,
                           int array[]);
```

Questions 3 and 4: These are (●●◌)

- Similar in style to Practice test questions 3 and 4
- Question 3 is a linked list hurdle (not a hurdle for COMP1911)
  - You need to pass this OR Question 1 to pass the linked list hurdle
- Question 4 is an array hurdle
  - You need to pass this OR Question 2 to pass the array hurdle
- These are harder applications of the hurdles
- You may need to loop through more than once and/or insert/remove nodes, working with 2d arrays, test more difficult conditions and keep track of more than one thing.

Questions 9 and 10: These are (●●●)

- Question 9
  - Harder manipulation of arrays
  - Possibly fgets or string manipulation
- Question 10
  - Manipulate linked lists (adding and removing items etc)
  - Potentially use malloc() and free() with structs and pointers

More complex combinations, and some questions requiring interesting problem solving

Question 11: (●●●) and 

- For those aiming for a HD+ mark
- Everything taught in the course might be in these questions
- Will also test your ability to break a problem down into its parts
- The Prac Exam has an example of past Question 11 so you can see the difficulty level

Coding Time

Sample hurdle 1 questions

Exam Marking

- Most of the marking will be automated and also hand marked
- Make sure your input/output format matches the specification
- Marks will be earnt for correct code, not for passing autotests
- Minor errors, like a typo in an otherwise correct solution, will only result in a small loss of marks
- There are extra tests used in automarking in addition to the ones you get given as autotests during the exam.

Exam Marking and Style

- There are no marks for style
  - so you don't need to explain your code in comments
  - but it needs to be readable so I can mark it
  - and so you can debug it and not get confused!!

The Exam: What should I study?

- The basics are important!
- Know how to use both arrays and linked lists
- Go back and do the problem sets if you haven't already or redo them for revision
- The revision exercises on the course webpage are also very useful to do and/or redo
- Try to do coding exercises from lectures without looking at the answers
- Try the Week 10 practice exam!

The Exam: What should I study?

- Variables, Structs, enums, IF, Looping, Functions, Arrays, Linked Lists are very important to understand!
- You will need to have some understanding of Strings, Pointers, and Memory Allocation to be able to work successfully with char arrays, and linked lists
- Advice: Stop using chatgpt as a crutch if you are doing so
    - You will not have that in the exam

Log in Details

- Make sure you know you zid and zpass to log into the exam environment.
- You will not have access to phones or internet or paper notes to look up these log-in details!
- Please make sure you have them memorised

The Exam: Hints and Tips

- Read all questions before starting
- Start with the easier questions
- Make sure you read the question before jumping in and coding up something the question is not asking or using libraries it says not to use.
- Prepare! A couple of minutes thinking and drawing a diagram will clarify how you're going to approach a question
- When you are struggling with a question (particularly linked lists) DRAW DIAGRAMS!

The Exam: Hints and Tips

- Less questions answered completely is better than more questions partially answered
  - But don’t get stuck on a question you can’t make progress on for the whole 3 hours!!!
- The later questions have been designed to be very challenging
  - You do not need to complete them to get a great mark in this subject

The Exam: Advice

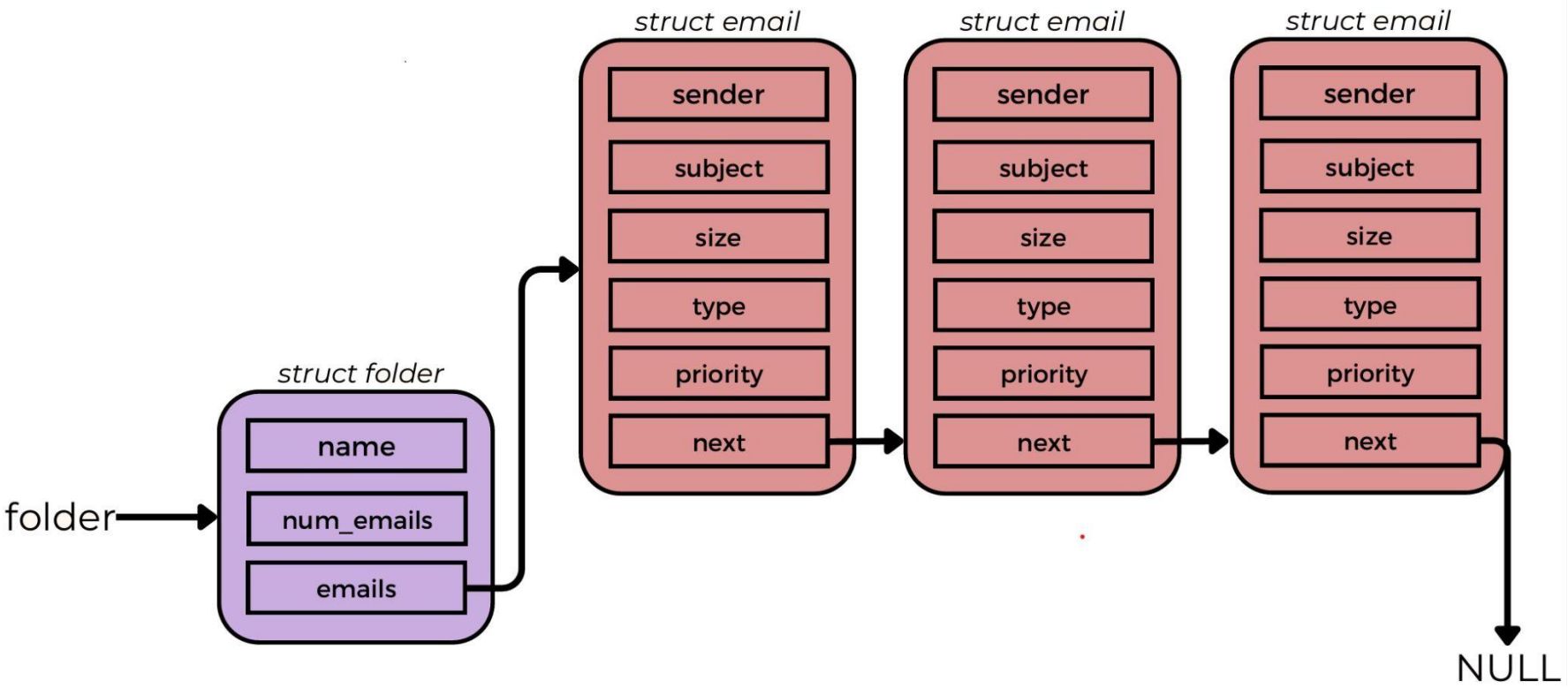
- Try to get a good night's sleep
- Try to eat properly before so you can concentrate.
- Make sure you breathe!
- You can do it!

Coding Time

Email Management System, split_list

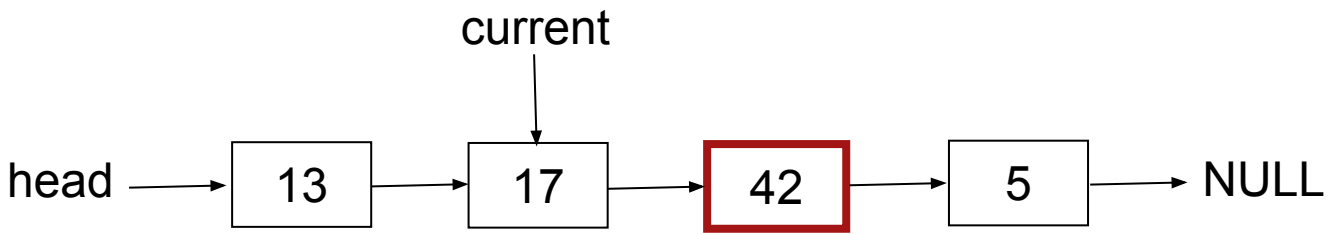
Search and delete with approach 2

Visualisation of the system



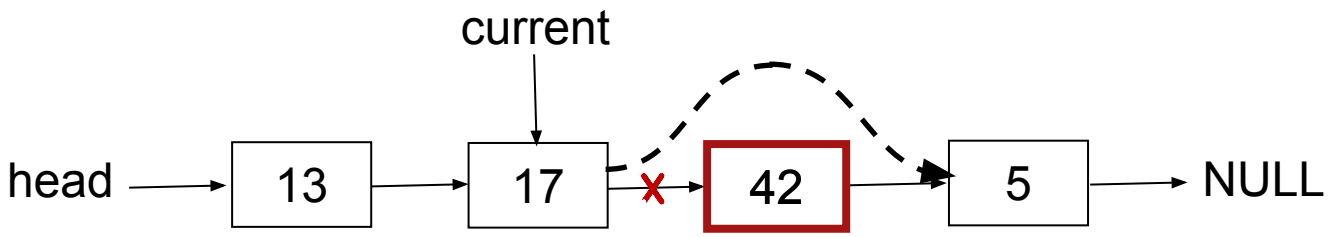
Search and delete Approach 2: general case

```
// Approach 2: Just use 1 pointer to traverse
// but check the next node
struct node *current = head;
while (current->next != NULL &&
       current->next->data != search_key) {
    current = current->next;
}
```



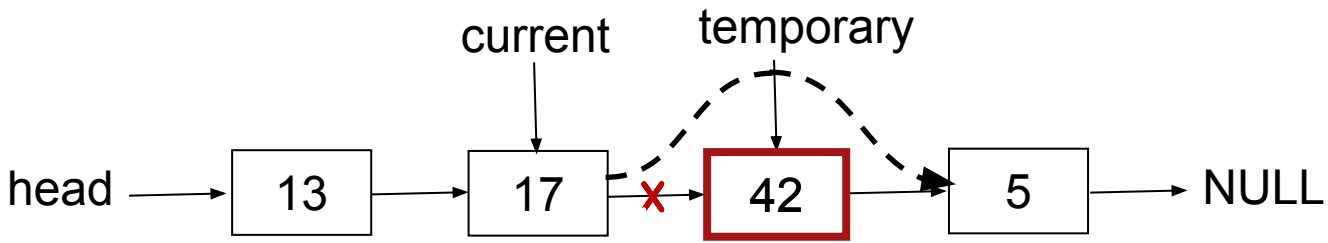
Search and delete: Approach 2

Then we need to connect current node to the one after the one we are deleting. But we still need a pointer to the node we want to free. How can we do that?



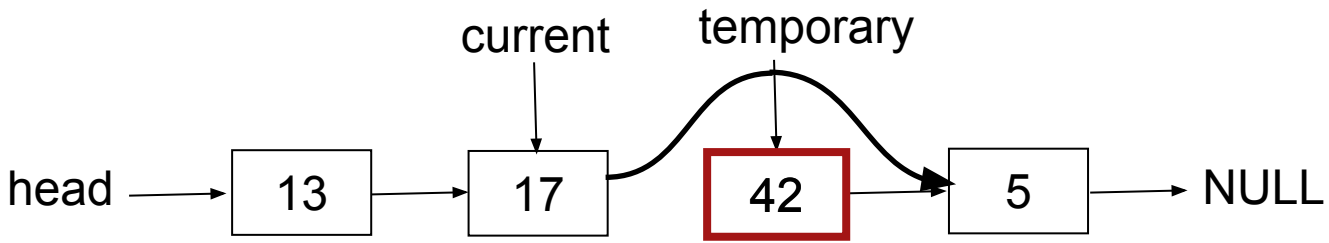
Search and delete: Approach 2

```
struct node *temporary = current->next;
```



Search and delete: Approach 2

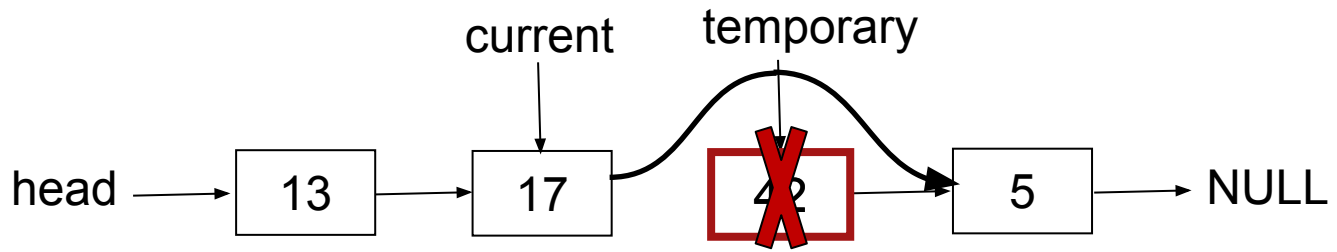
```
struct node *temporary = current->next;
current->next = temporary->next;
```



Search and delete: Approach 2

Now we can free the node we want to delete

```
free(temporary);
```



What did we learn today?

- Exam Details!!!
- Revision
  - example exam q1and q2 hurdle exercises
  - Finishing up the Email Management System code
  - Search and delete approach 2

Next Week

- More revision - kahoot poll to see favourite topics

Reach Out

Content Related Questions:
Forum

Admin related Questions email:
cs1511@unsw.edu.au

Don’t forget to attend Help Sessions
if you need one on one help

Struggling with non-course specific issues?

My Feelings and Mental Health
Managing Low Mood, Unusual Feelings & Depression

- **Mental Health Connect** — student.unsw.edu.au/**counselling** — Telehealth
- **Mind HUB** — student.unsw.edu.au/**mind-hub** — Online Self-Help Resources

In Australia Call Afterhours
UNSW Mental Health Support Line — 1300 787 026, 5pm-9am

Outside Australia Afterhours
24-hour Medibank Hotline — +61 (2) 8905 0307

Uni and Life Pressures
Stress, Financial, Visas, Accommodation & More

Student Support
Indigenous Student Support
– student.unsw.edu.au/**advisors**
– nura-gili-centre-indigenous-programs

Reporting Sexual Assault/Harassment

Equity Diversity and Inclusion (EDI)
– edi.unsw.edu.au/**sexual-misconduct**

Educational Adjustments
To Manage my Studies and Disability / Health Condition

Equitable Learning Services (ELS)
– student.unsw.edu.au/**els**

Academic and Study Skills

Academic Skills
– student.unsw.edu.au/**skills**

Special Consideration
Because Life Impacts our Studies and Exams

Special Consideration
– student.unsw.edu.au/**special-consideration**