COMP1511 PROGRAMMING FUNDAMENTALS

LECTURE 17

Exam Information and Starting Revision

LAST WEEK...

- A short week!
- Multi-files
- Abstract Data Types: Stack

FOR OUR FINAL WEEK...

- Exam info!
  - Format
  - Preparation
  - Hints and tip
- Starting our revision

WHERE IS THE CODE?

Live lecture code can be found here:

HTTPS://CGI.CSE.UNSW.EDU.AU/~CS1511/22T1/LIVE/WEEK10/

COURSE FEEDBACK

my Experience surveys

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

THE EXAM

WHAT IS IN IT?

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

THE EXAM

TIME/DATE

- Date: 2nd May
- Time: 1-7pm
  - The exam is six hours long
- The lab this 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
  - Give is the same as in your labs/weekly tests
  - Autotests are run the same way etc
  - Submit as many times as you want - only last submission will be marked
  - We will contact you via UNSW EMAIL before and during the exam if we need to.

THE EXAM

EXAM HURDLES

- There’s an array hurdle, question 1 or 3
  - You must earn a mark of 50% or more in at least one array hurdle question
- There’s a linked list hurdle, question 2 or 4
  - You must also earn a mark of 50% or more in at least one linked list hurdle question

THE EXAM

EXAM CONDITIONS

- ”Open book”
- Exam conditions still apply!!!
  - Do not communicate with anyone about the exam within 24 hours of the exam start time - this is considered plagiarism
  - NO EXTERNAL HELP - you cannnot ask questions online or in discussion groups - we will be monitoring this
  - No discussion of the exam or sharing your code with anyone except for COMP1511 staff

THE EXAM

CONTACT US DURING THE EXAM

- Please use the following email address, we will have a team dedicated to monitoring the exam, and I will be there throughout the whole exam also.
- If you experience any issues during the exam - you can contact us on:

cs1511.exam@cse.unsw.edu.au

THE EXAM

EMAIL FROM US WITH DETAILS

- You will receive an email on your UNSW email address a few days before the exam, which will contain:
  - A link to the exam website (it will not be available until the start time of the exam)
  - We personalise the papers, so your paper will become available at 1pm on the 2nd May
  - The command needed to fetch your exam. You will use a similar command in your practice exam to get you used to the process:

THE EXAM

FIT TO SIT

Fit to Sit Policy:
https://www.student.unsw.edu.au/exam-rules

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.

THE EXAM

FIT TO SIT

If, during an online exam you feel unwell to the point that you cannot continue with the exam, you should take the following steps:

- Stop working on the exam and take note of the time
- You must contact us immediately via email at cs1511.exam@cse.unsw.edu.au
- 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 screenshots of the conversation you have had with us

THE EXAM

SUPP EXAM

- If you are granted special consideration based on the Fit to Sit university policy, a supplementary exam will be held between the 23 May – 27 May 2022. If you think you will need to sit this exam, make sure you are available.
- Fit to Sit Policy: https://www.student.unsw.edu.au/exam-rules

THE EXAM

WEEK 11 REVISION CLASSES

In Week 11, we will be running some revision classes. Tickets for the classes will be available on Hale this week - this is your opportunity to work through questions with help from the tutors and get some extra practice in before the exam!

Tuesday 26th April 3-5pm (Bridget and Enzo)
Wednesday 27th April 11-1pm (Ben and Michelle)
Thursday 28th April 3-5pm (Gab and Riley)

THE EXAM

CSE SOC
1511 EXAM PREP 'N' CHILL

CSESoc is running a COMP1511 Exam Prep 'n' Chill for you to practice your coding and prepare for your exam! There will be unseen practice problems for you to work through together with your fellow students or at your own pace. There will also be an optional 1hr competition with CSESoc merchandise prizes starting 5:30pm. And if you would rather take a break during this overwhelming time, still come along for free pizza, donuts, and good vibes!

Event details as follows:

When: Wk10 Wednesday 20th Apr 4-7pm

Where: J17 Lv5 Design Next Studio + Online

Facebook event link: https://fb.me/e/1qorp7uwN

THE EXAM FORMAT

The format of the exam will be:

- 20 Short Answer Questions (1 mark each)
  - They require you to understand what pieces of code are doing, interpreting code, interpreting diagrams, etc.
  - Examples are in the Week 10 prac exam
- 8 Practical Questions (10 marks each)
  - Programming questions
  - Similar in style to the questions you did in your problem sets, revision exercises
  - These are also rated to give you an idea of how difficult each question is.
- We hope that everyone can attempt and complete the first four questions

THE EXAM

SHORT ANSWER QUESTIONS

Short Answer Questions

Number of questions: 20

Marks: 1 mark each (total of 20 marks)

- These questions will be about whether you understand core coding concepts and the C programming language
- Your answers will either be multiple choice or short answers
- Some are: ”What will this code do?”
- Some are: ”How does this concept work?”
- Some examples are in the Week 10 Prac Exam

THE EXAM

SHORT ANSWER QUESTIONS

- You will fetch a file called exam_sa.txt to answer them in
- This file is in a special format
- Type your answers within the {{{ triple curly brackets }}}
- Only answers in the {{{ triple curly brackets }}} will be accepted
- Some questions will have validation (so, you might only be able to answer with the letters ‘A’, ‘B’, ‘C’, ‘D’ for example)
- It will have the same structure as the file prac_sa.txt in the Week 10 prac exam

THE EXAM

PRACTICAL QUESTIONS

Practical Questions

Number of questions: 8

Marks: 10 mark each (total of 80 marks)

- Questions are similar to the Revision Exercises and Problem Sets
- Stages of difficulty from basic to extreme challenge (will be marked in the same rating system as your problem sets)
- Some will have provided code as frameworks
- Each question will need to be written, compiled and tested
- You will have access to autotests (but they're just tests!)
- Harder questions will have less autotests
- There will be no specific style marking, so you don't need to explain your code in comments

THE EXAM

PRACTICAL QUESTIONS

- When you fetch your exam in the beginning, it will also copy over any starter files you may need for the practical questions.
- Read all the questions before starting
- Start with the easier questions
- Prepare! A couple of minutes thinking and drawing a diagram will clarify how you're going to approach a question
- Use your problem set/revision practice! Debugging and testing will be important here
- Less questions answered completely is better than more questions partially answered

THE EXAM

PRACTICAL QUESTIONS

QUESTION 1 AND QUESTION 2

These are: 

- Similar to Practical test question 1 or 2
- Question 1 is an array hurdle
- Question 2 is a linked list hurdle

- Tests your ability to:
  - Create simple C programs
  - Use variables (int, double, char)
  - Use scanf and printf
  - Use IF statements and WHILE loops
  - Use of simple structs
  - Use of arrays of int/double/struct in Q1
  - Use of linked list of ints/doubles (no insertion or removal of nodes) in Q2

THE EXAM

EXAMPLE QUESTION 1

- Loop through an array of structs 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. 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 total (int size, struct direction array[MAX])
```

THE EXAM

EXAMPLE QUESTION 2

Perform some computation on a linked list

Given a linked list, print the largest value in that list

Edit the function

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

THE EXAM

PRACTICAL QUESTION 3 AND QUESTION 4

These are: 

- Similar to Practical test question 4
- Question 3 is an array hurdle
- Question 4 is a linked list hurdle

If you have answered Q1 and Q2, this means that you have already passed the hurdles of the exam

- These are harder applications of the hurdles
- You will need to know everything from Q1 and Q2, in addition to:
  - Looping through more than once (maybe)
  - Some insertion/removal of nodes in Q4
  - Testing more difficult conditions and keeping track of more than one thing.

THE EXAM

PRACTICAL QUESTION 5 AND QUESTION 6

These are:

- Harder manipulation of arrays (Q5)
  - Possibly fgets or string manipulation
- Manipulate linked lists (adding and removing items etc) (q6)
  - Potentially use malloc() and free() with structs and pointers
  - Might use an Abstract Data Type (Q6)
- Again, more complex combinations, and some questions requiring interesting problem solving

THE EXAM

PRACTICAL QUESTION 7 AND QUESTION 8

COMBINATION OF:

●●● 

These are: ●●● and 

- For those aiming for a HD mark
- Everything taught in the course might be in these questions
- Think ” Exercises”, even some of the hard ones!
- Will also test your ability to break a problem down into its parts
- The Prac Exam has an example of past Question 7 and Question 8 so you can see the difficulty level
- Partial completion of this question will award some marks

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
- The revision exercises on the course webpage are also very useful

- Variables, Structs, 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 successfuly with char arrays, and linked lists
- Stretch Goals: Abstract Data Types and Multi-File Projects

THE EXAM

MARKING

- Most of the marking will be automated
- Make sure your input/output format matches the specification
- Answers for hurdles will also be checked by hand
- 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

THE EXAM

YOU'VE GOT THIS

- Whilst some parts of the exam (the later questions) have been designed to be very challenging, you do not need to complete them to be successful in getting a great mark in this subject
- Make sure that you take regular breaks during the six hours or your brain will turn to mush.
- You do not need to work the whole of the six hours, and you will reach a point where the work you are doing may not be getting you any extra marks - this is OK and it is a good time to finish up, take a good breath, and celebrate finishing the exam

THE EXAM

YOU'VE GOT THIS

- Take drink breaks and snack breaks as needed so you can keep yourself fuelled :)
- When you are struggling to understand a question (particularly linked lists) = DRAW DIAGRAMS!
- Go over your problem sets and revision questions for extra practice.
- Revision classes will be run in Week 11 - please book on Hale: https://unsw.to/hale
    - Classes will be run Monday, Tuesday, Wednesday, Thursday and Friday so plenty of opportunity to get in and revise!

BREAK TIME...

How are you all doing?

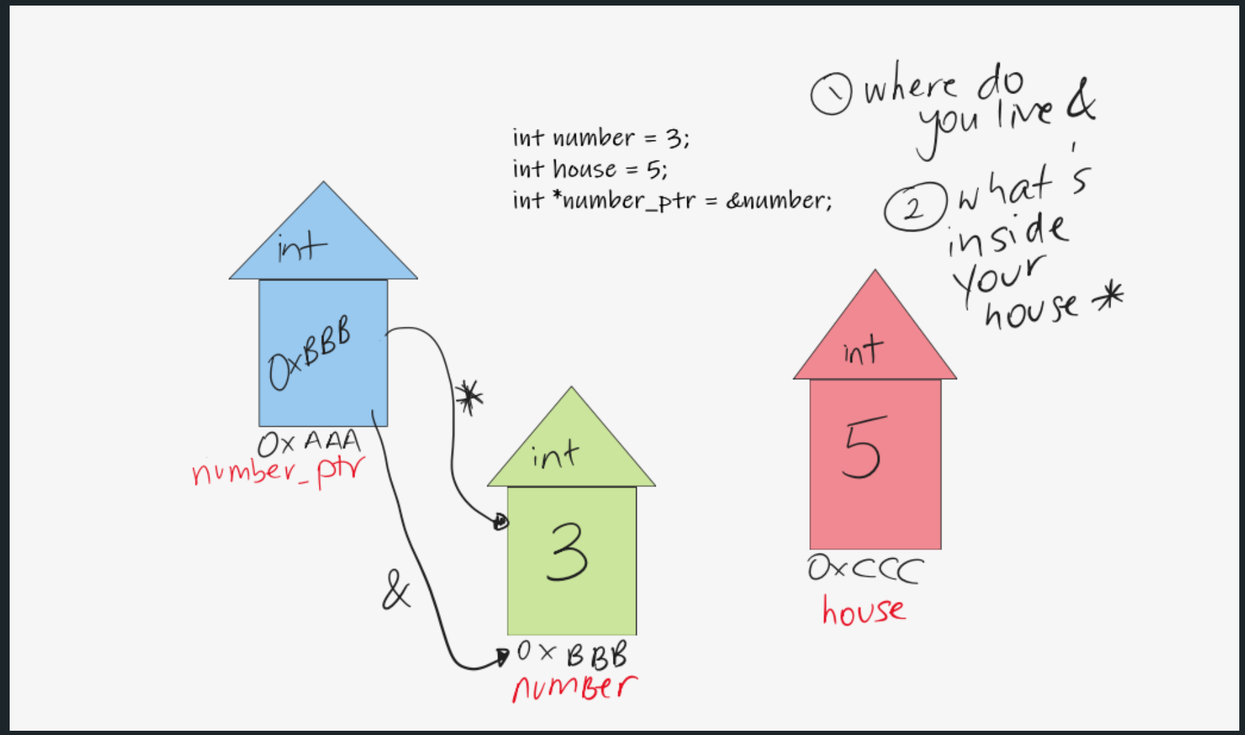
Are you doing anything fun once the first term is over?

Are you excited to be in computing and to continue to build your knowledge further?

REVISION TIME!

POINTERS

- Pointers are another variable type in C
- Pointers store the memory address of another variable
  - & - gives the address of
  - * - dereferences a pointer, so provides the value of stored at the address the pointer is at



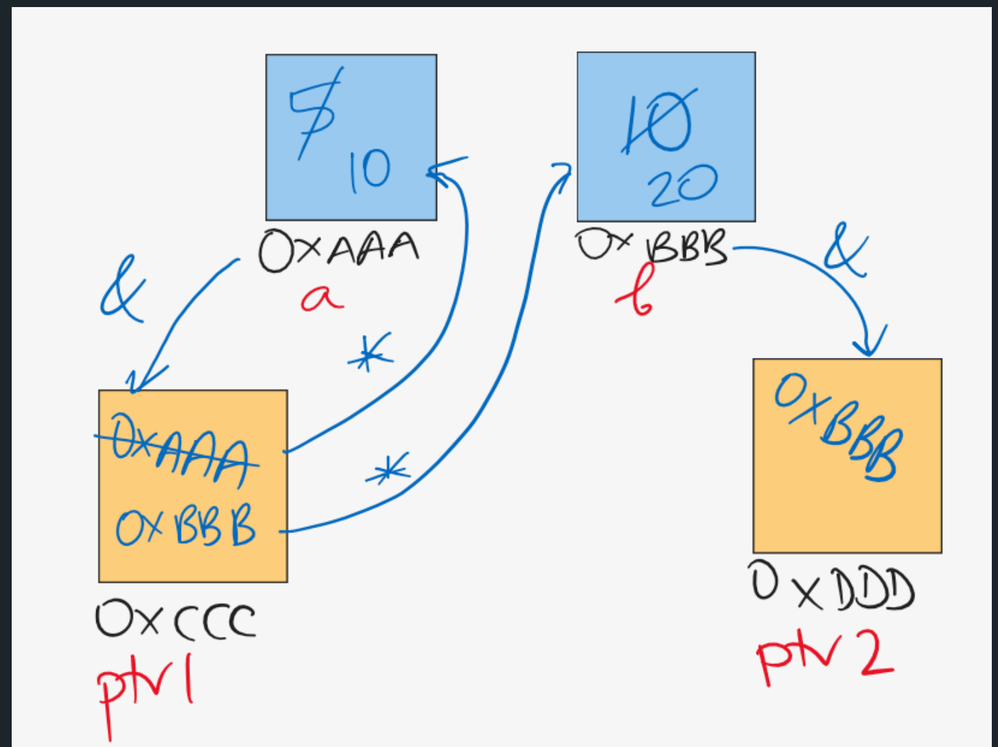
REVISION TIME!

POINTERS

- Let’s see an example:

pointer.c

```c
int main(void) {
    int a = 5;
    int b = 10;
    int *ptr1;
    int *ptr2;
    ptr1 = &a;
    ptr2 = &b;
    *ptr1 = 10;
    ptr1 = ptr2;
    *ptr1 = 20;
    printf("a = %d\nb = %d\n", a, b);
    return 0;
}
```



REVISION TIME!

POINTERS

```c
#include <stdio.h>

int sumPlusTwo(int *number1, int *number2){
    return *number1 + *number2 + 2;
}

void numPlusOne(int *number1){
    *number1 = *number1 + 1;
}

void swap (int *number1, int *number2){
    int temp = *number1;
    *number1 = *number2;
    *number2 = temp;
}

int main(void){

    int num1 = 13;
    int num2 = 1;

    printf("%d + %d + 2 = %d\n", num1, num2, sumPlusTwo(&num1, &num2));
    swap(&num1, &num2);
    numPlusOne(&num1);
    numPlusOne(&num1);
    printf("%d + %d + 2 = %d\n", num1, num2, sumPlusTwo(&num1, &num2));

    return 0;
}
```

pointer.c

IF TIME...

ARRAY OF STRUCTS

- Loop through an array of structs 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. 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 total (int size, struct direction array[MAX])
```

total.c

WHAT DID WE LEARN TODAY?

EXAM

Details, details, details!

REVISION

Pointers

pointer.c

REVISION

Array of structs (if time)

direction.c

REACH OUT

CONTENT RELATED QUESTIONS

Check out the forum

ADMIN QUESTIONS

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