COMP6771
Advanced C++ Programming

Week 13
Exam Revision

2016

www.cse.unsw.edu.au/~cs6771

Feedback for Optiver

- From Optiver:
  - Was the content interesting? ie is this what students want to hear about? Was it technical enough, or too technical?
  - Was it relevant to what they are learning in the C++ course?
  - Are there other interesting topics students would want to hear about?
  - Any feedback for Greg on his presentation skills/engagement with the students?
  - Any other ways we can improve or any changes we could have made?

MyExperience Survey

- 42 people have done it = 28.4% response rate :)
- 106 haven't done it ... yet
- Any direct feedback (non-anonymous) can also be emailed to j.xue@unsw.edu.au or b.heap@unsw.edu.au

Final Exam

- 8.45am Thursday November 10
- Skyline Room Randwick Racecourse
- 3 hours, closed book
- 55 marks, 55% of your overall mark for the course

- Must pass the exam to pass the course

Multiple-Choice Questions

- Multiple-Choice Questions (13 Marks)
  - No negative marking
  - One corret answer only
  - 11 sample questions (Week 12 Extra Tute Questions): http://www.cse.unsw.edu.au/ cs6771/16s2/tutorials/tute12.pdf

Short Answer: Code Comprehension Questions

- Answer questions with respect to code (12 Marks)

Example: What is the output of the following program?

```
1  #include<iostream>
2
3  struct X {
4    X() { std::cout << "X() "; }
5  };
6
7  struct Y {
8    Y()  { std::cout << "Y() "; }
9  };
10
11 class A {
12 public:
13   A() { std::cout << "A() "; }
14 private:
15   X x;
16  };
17
18 class B : public A {
19 public:
20   B() { std::cout << "B() "; }
21 private:
22   Y y;
23 };
24
25 int main() {
26   B b;
27 }
```

C++ Concepts Questions

- C++ Concepts (22 Marks)
- Do not write a whole page answer for a 1 mark question! At most a few sentences
- Examples:
  - Q1. Describe briefly the functionality of iterators. (1 Mark)
  - Q2. Describe the differences between const and non-const iterators (1 Mark)
  - Q3. What is iterator invalidation? (1 Mark)
  - Q4. Describely briefly the five types of iterators supported in C++. (2 marks)

Coding Questions

- Coding (8 Marks)
- Short answers
- Examples: constructors
- Simple STL algorithms (no need to memorize any)

What's not in the exam

- Metaprogramming
- `constexpr`
- Custom Iterators
- `std::future`
- Extension topics

Core C++ Topics Examined

- Friends
- `const`
- Constructors and initialiser lists
- Operator Overloading
- Exception Handling and noexcept
- Scoping
- Types, Pointers and References
- Using statement

C++11 Topics Examined

- Lamda Functions
- Trailing return types
- `std::bind`
- `std::forward`
- Most Vexing Parse
- Narrowing
- Threads, mutexes and lock guards

Dynamic Memory Management Topics Examined

- Named and unamed objects
- Memory Leaks
- Double Free Problem
- Smart Pointers (theory and C++14 types)
- RAII
- Reference Counting

Templates Topics Examined

- Template Specialisation
- Type traits
- Variadic Templates

OOP Topics Examined

- Access Control (public, private, protected)
- Inheritance
- Vtables and Virtual
- Static and Dynamic Binding
- Construction and Destruction
- Object Slicing Problem

Advice/Expectations

- Exam is 3 hours (approx 3 minutes/mark)
- Short written output questions: only write the output of the program or why it doesn't compile.
- For written questions expectation is around 1-2 sentances/mark.
- Must be able to read code and explain the topics from the above slides.
- Must be able to write code for:
  - Constructors
  - Operator Overloading
  - Lamda Functions
- The lecture slides and tutorials have many exam like questions

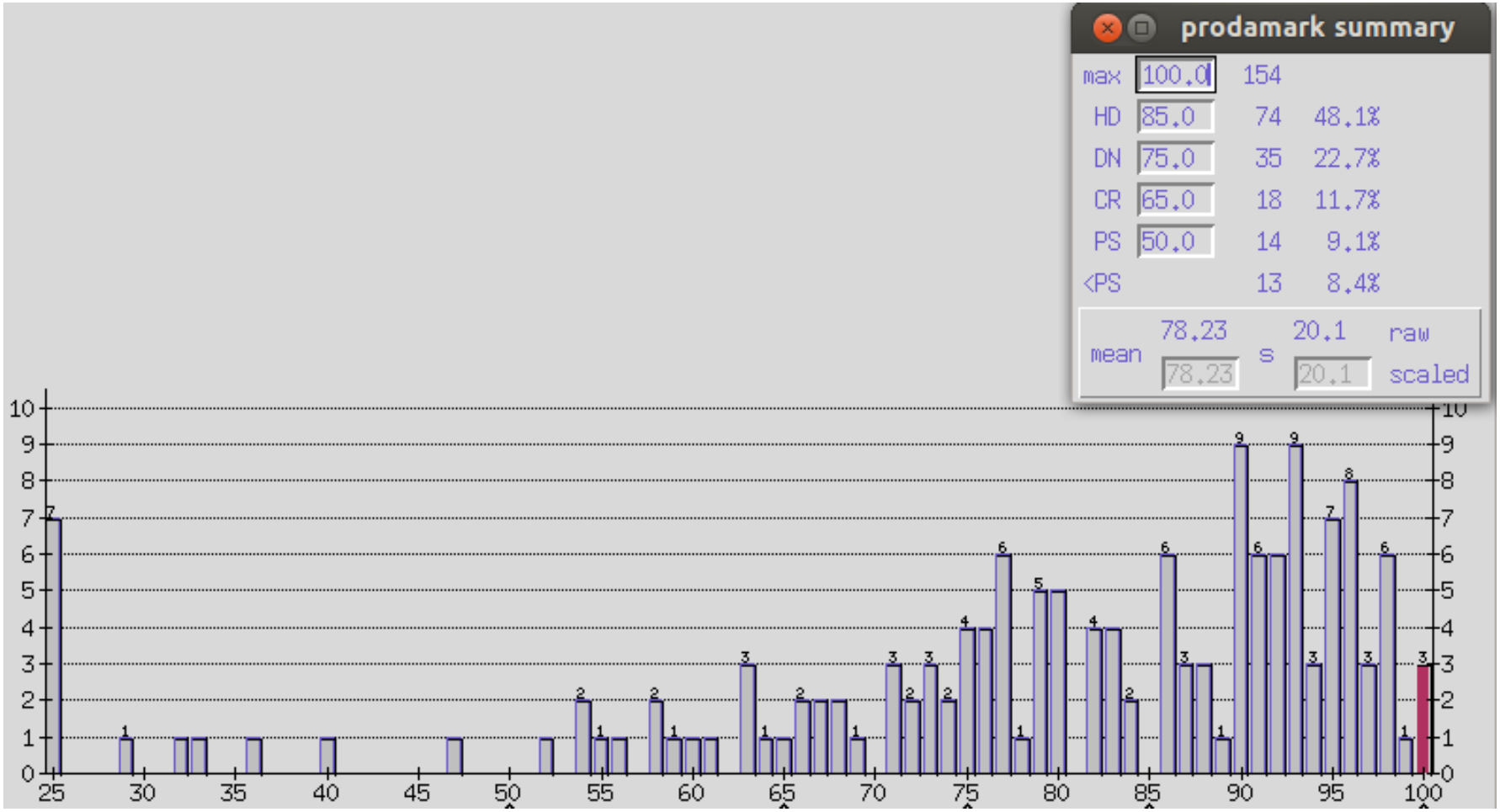
Help During Study Period

- Email the LIC/Tutors any questions.
- Answers will not be given to the sample exam and revision questions from Week 12 (you should be able to work out the answers).

The Optiver COMP6771 Prize

- http://www.optiver.com/sydney/
- Awarded to the COMP6771 student(s) with the highest score

Marks for Ass 1, 2, 3 combined (25% of course)



THE END

All the best
with
your exams!