

# Tutorial letter 102/3/2017

## Programming: Data Structures COS2611

Semester 1 and 2

School of Computing

**IMPORTANT INFORMATION:**

This tutorial letter contains  
important information about the exam.

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## 1 List of all tutorial matter received to date

COS2611/101	General information
COS2611/201	Solution for Assignment 01
COS2611/202	Solution for Assignment 02
COS2611/102	Information about the exam (this tutorial letter)

Please contact dispatch if you did not receive all the material, alternatively, download it from myUnisa.

## 2 Information about the exam

### Preparation

The best thing to do in preparation for the exam is to write as many programs and solve as many problems on the work as possible.

There are three sources of problems that you should concentrate on:

- Exercises in the textbook
- The assignment questions
- Past exam papers

The exercises in the textbook are intended to give you practice in applying the concepts covered in each lesson. For this reason, revision of these exercises should form an important part of your exam preparation.

Then you will find it useful to go back and attempt the assignments again, especially those questions that you struggled with. Do this without referring to your own answers and without the solutions. Then compare your answers with what you did previously. You will probably be surprised to see how your understanding has grown since you did the assignment originally. Finally, compare your answers to the model solutions.

As final preparation, set aside two hours for yourself and write last year's exam paper given at the end of this tutorial letter. Don't sit in front of a computer when you do it. Write out your answers with pen and paper. This will give you a good idea of what it will be like to write the actual exam. (Writing out your answers by hand is a different activity from typing a program

and testing it out on a computer.) It should also give you an idea of how fast you should aim to work and give you an indication of how well prepared you are.

Although we will not be able to mark your efforts at preparation (eg. textbook exercises or past exam papers) you are welcome to contact us with any questions or problems that you have. The solutions to this sample paper will be discussed on myUnisa. You are welcome to give you attempts, suggestions and questions on the discussion forum.

### Structure of the exam paper

In setting the exam paper, we have tried to cover all the work. There are questions that range in difficulty from very easy to challenging. Most questions require you to write C++ code or answer questions on a piece of C++ code. As you should know by now, the only way to prepare yourself for this is to practice, practice, and practice solving programming problems.

The exam will consist of a number of questions covering the following topics:

- Algorithm analysis
  - The big Oh notation
  - Time and Space complexity
- Data Structures
  - Structs, pointers and arrays
  - Linked lists
  - Queues
  - Stacks
  - Binary trees
  - Graphs
- Recursion
- Searching
  - Sequential search
  - Binary Search
- Sorting
  - Insertion sort
  - Selection sort
  - Quick sort
  - Merge sort

As some topics may be tested in context of another, it is difficult to give a precise mark allocation for each topic.

The general structure of the examination paper will be as follows:

Question 1:[20 marks]

This question will consist of 10 multiple-choice questions on algorithm analysis.

Please note, you will answer the multiple choice questions in your answer book and NOT on a mark reading sheet.

The remainder of the questions includes:

- Implementation/application type questions on
  - Structs, pointers and arrays
  - Linked lists, Stacks and Queues
  - Searching and Sorting Binary Trees
- Application type questions on Graphs [No implementations]

You will not be expected to write long and complicated programs. In most cases, questions require you to write a function or part of a class, or at most a program of limited scope.

You will be allowed to use a non-programmable scientific calculator in the exams.

The structure of the examination paper included here is quite similar to the one in last year's examination. The examination paper is 2 hours. The paper will total 70 marks.

NOTE: You must answer all questions in your answer book.

A sample exam paper is included with this tutorial letter. The solutions are on myUnisa under additional resources. If you have any problems, please feel free to contact the lecturer for COS2611, namely

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**NB!!! Please contact your e-tutor for content related problems. Discuss the solutions to assignments and possible solutions to past exam papers with your e-tutor.**