

Kristina Lazarova

School of Computing Science Sir Alwyn Williams Building University of Glasgow G12 8QQ

Level 4 Project — March, 2017

<b>Abstract</b> We show how to produce a level 4 project report using latex and pdflatex using the style file l4proj.cls
We show how to produce a level 4 project report using latex and pdflatex using the style file l4proj.cls

## **Education Use Consent**

I hereby give my perm	sion for this project to be shown to other University of Glasgow students and to be
distributed in an electro-	c format. Please note that you are under no obligation to sign this declaration, bu
doing so would help fu	re students.
Name:	Signature:

# **Contents**

1	Literature Review					
2	Intro	ntroduction				
3	Imp	Implementation details				
	3.1	Software tools and technologies	3			
	3.2	Challenges	3			
	3.3	Software reliability testing	3			
4	4 Evaluation					
	4.1	Design	4			
	4.2	Participants	4			
	4.3	Procedure	4			
	4.4	Results	4			
	4.5	Discussion	4			
5			5			
	5.1	First Section in Chapter	5			
		5.1.1 A subsection	5			
6	The Fox and Dog		6			
	6.1	The Fox Jumps Over	6			
	6.2	The Lazy Dog	7			
Aŗ	pend	ices	8			

A	Running the Programs	9
В	Generating Random Graphs	10

# **Literature Review**

This is the first chapter where I will introduce data visualisation and and explain how I came up with the idea of this research

# Introduction

Introduction to the specific area of my research

# **Implementation details**

### 3.1 Software tools and technologies

A web application framework

#### 3.2 Challenges

```
Spring idea failed changed to Node.js
Angular compatibility with Node.js
```

Spring is among the most widely used frameworks in industry [?].

## 3.3 Software reliability testing

# **Evaluation**

- 4.1 Design
- 4.2 Participants
- 4.3 Procedure
- 4.4 Results
- 4.5 Discussion

#### 5.1 First Section in Chapter

The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.

#### 5.1.1 A subsection

The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.

The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.

## The Fox and Dog

The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.

#### **6.1** The Fox Jumps Over

The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over Uroborus (Figure 6.1). The quick brown fox jumped over the lazy dog.

The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.

The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick

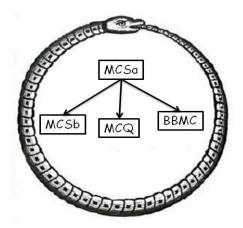


Figure 6.1: An alternative hierarchy of the algorithms.

brown fox jumped over the lazy dog. The quick brown fox jumped over [?] the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.

#### 6.2 The Lazy Dog

The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.

The quick brown fox jumped over the lazy dog. The quick brown fox [?] jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.

# **Appendices**

# Appendix A

# **Running the Programs**

An example of running from the command line is as follows:

```
> java MaxClique BBMC1 brock200_1.clq 14400
```

This will apply BBMC with style=1 to the first brock200 DIMACS instance allowing 14400 seconds of cpu time.

## Appendix B

# **Generating Random Graphs**

We generate Erdós-Rënyi random graphs G(n,p) where n is the number of vertices and each edge is included in the graph with probability p independent from every other edge. It produces a random graph in DIMACS format with vertices numbered 1 to n inclusive. It can be run from the command line as follows to produce a clq file

> java RandomGraph 100 0.9 > 100-90-00.clq