UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Department of Computer Science
COS132 - Imperative Programming
Practical 3

1 Introduction

Deadline: 11th April, 18:00

1.1 Objectives and Outcomes

This practical will test your knowledge on the flow of information between function call and return.

1.2 Submission

Your marks will only be published after the submission deadline, fitchFork will reflect a mark of zero instead. You will also be provided with one of the following submission feedback: Compilation failed, Abnormal exit status or Submission successful. Only submit the given files (maths.cpp and makefile) as a compressed archive.

You will have a maximum of 5 uploads for this practical. Submit your code to Fitchfork before the closing time. Students are **strongly advised** to submit well before the deadline as **no late submissions will be accepted**.

1.3 Plagiarism

Copying will not be tolerated in this course. For a formal definition of plagiarism, the student is referred to the COS132 Study guide. If you have questions regarding this, please ask one of the lecturers, to avoid any misunderstanding.

2 Practical Requirements

2.1 Functions

You are required to write a program that makes use of c++ functions to perform different mathematical computation. You are provided with the following mathematical equations which must be written in separate c++ functions:

(1) $$F(x) = 3x - 1$$

$$G(x) = F(x)^2 + 3F(x) + 4 \tag{2}$$

$$S(x) = G(x) * F(x)^x \tag{3}$$

You are required to implement the following functions in your program (Note the names):

1. To calculate F(x), name: linearEquation
   - 1 input parameters: integer (value of x)
   - return: double
2. To calculate G(x), name: quadraticEquation
   - 1 input parameters: integer (value of x)
   - return: double
   - Note! function makes call to linearEquation
3. To calculate S(x), name: exponentialEquation
   - 3 input parameters: 1 integer (value of x) and 2 doubles (results from F(x) and G(x) respectively)
   - return: double

You are provided with a makefile and a file named maths.cpp. Open and study this file to see it. The file is empty besides the skeleton that you are now used to. No Maths libraries are allowed, using will result in a mark of 0.

Example of this is presented below. Please note the wording, spaces and endlines used. They should match the example provided.

```
--- MATHEMATICS CALCULATOR ---
What would you like to do?
1) Calculate F(x)
2) Calculate G(x)
3) Calculate S(x)
4) Exit
Enter your choice: 2
Enter the value of x: 2
Results = 44
What would you like to do?
1) Calculate F(x)
2) Calculate G(x)
3) Calculate S(x)
4) Exit
Enter your choice: 4
```

Note! The program makes use of a loop to allow for selection of different calculation until user chooses to exit the program using option 4.