University of Nottingham
School of Mathematical Sciences

MATH4063/G14SCC SCIENTIFIC COMPUTING AND C++

Deadline: 8th January 2021, 3:00pm (GMT) **Coursework 2 – Solution Template**

Your solutions to the assessed coursework may be submitted using this template. Please cut and paste the output from your codes into the correct parts of this file and include your plots and responses to the questions where suggested. Once this template has been completed, you must then create a pdf file for submission. Under Windows or Mac you can use Texmaker + a LaTeX compiler; from the Windows Virtual Desktop this may be accessed as follows:

`Start > UoN Application > (UoN) Texmaker 5`

Open this file under `File`*; to build the pdf file, click the arrow next to* `Quick Build`*; this will then generate the file* `coursework2_submission.pdf`*.*

You may use an alternative document processing system, such as Word, to produce a pdf file containing your results, plots and answers. However, if you do, you must format your answers in the same way as suggested below.

A single zip or tar file containing the file `coursework2_submission.pdf` *and all the files in the requested folders in the checklists below should be submitted on Moodle. Note that all parameters and values should be set within your codes: do NOT use inputs such as those obtained with* `std::cin` *or from the command line.*

STUDENT NAME

Question 1(c)

File checklist for folder `Q1`:

- `AbstractApproximator.cpp`, `AbstractApproximator.hpp`
- `Driver.cpp`
- `Lagrange.cpp`, `Lagrange.hpp`
- `Vector.cpp`, `Vector.hpp`
- For any additional files, provide a `README.txt`

1(c) Enter your output here (max 1 page, display only selected output if necessary).

```
%%%%%%%%%%%%%%%%% Output of Driver.cpp %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

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```

1(c) Include your plots and comments here.

Question 2(c)

File checklist for folder `Q2`:

- `AbstractQuadratureRule.cpp`, `AbstractQuadratureRule.hpp`
- `Driver.cpp`
- `Gauss4point.cpp`, `Gauss4point.hpp`
- `Matrix.cpp`, `Matrix.hpp`
- `Simpson.cpp`, `Simpson.hpp`
- `Vector.cpp`, `Vector.hpp`
- For any additional files, provide a `README.txt`

2(c) Enter your output here (display only selected output if necessary).

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%%%%%%%%%%%%%%%%%% Output of Driver.cpp %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

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```

2(c) Include your plots and comments here.

Question 3(b)

File checklist for folder `Q3`:

- `AbstractApproximator.cpp`, `AbstractApproximator.hpp`
- `AbstractQuadratureRule.cpp`, `AbstractQuadratureRule.hpp`
- `BestL2Fit.cpp`, `BestL2Fit.hpp`
- `Driver.cpp`
- `Gauss4point.cpp`, `Gauss4point.hpp`
- `Matrix.cpp`, `Matrix.hpp`
- `Vector.cpp`, `Vector.hpp`
- For any additional files, provide a `README.txt`

3(b) Enter your output here (display only selected output if necessary).

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%%%%%%%%%%%%%%%%%% Output of Driver.cpp %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

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```

3(b) Include your plots and comments here.

Question 4(b)

File checklist for folder `Q4`:

- `AbstractApproximator.cpp`, `AbstractApproximator.hpp`
- `AbstractQuadratureRule.cpp`, `AbstractQuadratureRule.hpp`
- `Driver.cpp`
- `Gauss4point.cpp`, `Gauss4point.hpp`
- `LocalBestL2Fit.cpp`, `LocalBestL2Fit.hpp`
- `Matrix.cpp`, `Matrix.hpp`
- `Vector.cpp`, `Vector.hpp`
- For any additional files, provide a `README.txt`

4(b) Enter your output here (display only selected output if necessary).

```
%%%%%%%%%%%%%%%%%% Output of Driver.cpp %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

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```

4(b) Include your plots and comments here.