MACM 316 - Computing Assignment 4

- Read the *Guidelines for Assignments* first.
- Submit a one-page PDF report to Crowdmark and upload your Matlab scripts (as m-files) to Canvas. *Do not use any other file formats*.
- Keep in mind that Canvas discussions are open forums.
- You must acknowledge any collaborations/assistance from colleagues, TAs, instructors etc.

The population of British Columbia at July 1 is given below for selected years:

2011	2012	2013	2014
4,502,104	4,566,769	4,630,077	4,707,103

2016	2017	2018	2019	2020
4,859,250	4,929,384	5,010,476	5,090,955	5,147,712

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Part A: (4 marks)

Write a Neville's method code in Matlab to approximate the population at January 1, 2015 using n data points (ie, n of the 9 years), with n ranging from 2 to 9. Plot your approximation versus n.

For $n < 9$, how did you select which years to use as data points? Which n gives the best estimate of the population at January 1, 2015 ? Explain your choices.

Part B: (3 marks)

Use your Neville's method code to approximate the population at July 1, 2025 using n data points. As before, use different values of n ranging from 2 to 9. Plot your approximation versus n.

For $n < 9$ how did you select which years to use as data points? Explain your choice.

Part C: (3 marks)

How accurate do you think your approximation is in Part A and Part B? Be as quantitative as possible. Explain your reasoning using only the given data, and results from your code

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NOTES:

- Refer to the Guidelines for Computing Assignments for general rules, requirements on written communication, information on the graphical presentation, and the grading scheme.
- Remember that you will be marked based on your report so make sure that it includes all of your results. We do not normally access your submitted Matlab scripts, but we may if we have academic integrity or other concerns.

Submit your 1 page report for this question to Crowdmark in .pdf format according the Assignment Guidelines described in the syllabus.

Submit your Matlab code to Canvas "Computing Assignment 4 - Matlab Code". Do not include identifying information on your report.

After marking, we will post a few exemplary reports as sample solutions. We appreciate your support on this. If you do not wish to have your report posted, please state so at the top of your report.

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