Peer Group Summative Project: Deadline 17th December 2021

Alexandra Rogers, ALU Discrete Maths Facilitator

1 Instructions

The goal of this final practical work is to assess your mastery of the skills and mathematical theory taught in this course. It will also test your ability to apply this theory practically and also to do your own research on topics and techniques not covered in class sessions.

This is a group assignment with a deadline of midnight on the 17th December 2021. Each group should have 4 or 5 members. You may use the same groups as the previous assignment or you can form new groups. You will need to sign up to a group in the Peer Group Summative group set on Canvas before submitting.

2 Project

For this project, you should write a Python program to randomly generate simple undirected graphs with 10 vertices. Your program should determine if the graph is connected and if it contains an Euler circuit (yes or no). If the graph contains an Euler circuit then your program should output the Euler circuit.

Using this program, or an adapted version, you should estimate the probability of a simple graph with 10 vertices having an Euler circuit given that the graph is connected.

Each group is expected to:

1. Demonstrate practical mathematical application of the project using Python as the coding language.
2. Write a short text documentation explaining how Discrete Mathematics concepts were relevant to the Project. You should write your estimated probability here and give a brief explanation of how your calculated this.
3. Submit your documentation containing a link to your Python code.

3 Assessment Criteria

Assessment will be based on:

1. Mathematical explanation in your documentation.
2. Problem solving techniques and the success of your code.
3. Mathematical application and reasoning beyond class work.