

Chittagong University of Engineering & Technology

Department of Computer Science & Engineering



Course Code : CSE-243

Course Title : Algorithms Design and Analysis

Name of the Student : Abdullah al Mamun

Remarks

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Student ID: 1804064

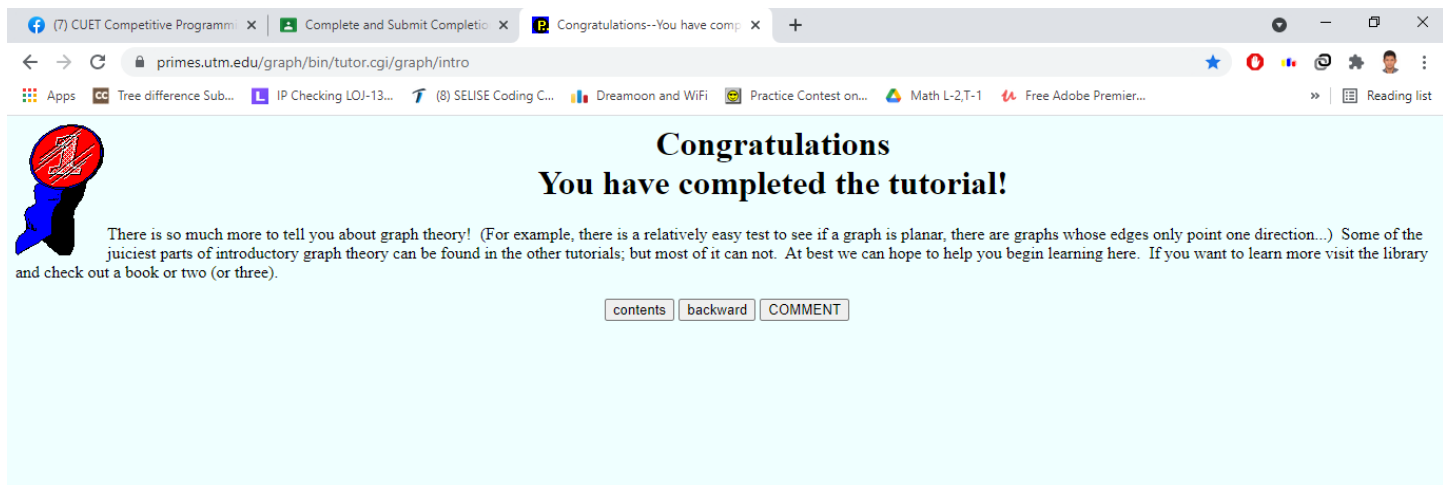
Section : A

Date of Submission :6/7/2021

Username: 1804064_Abdullah_al_mamun.

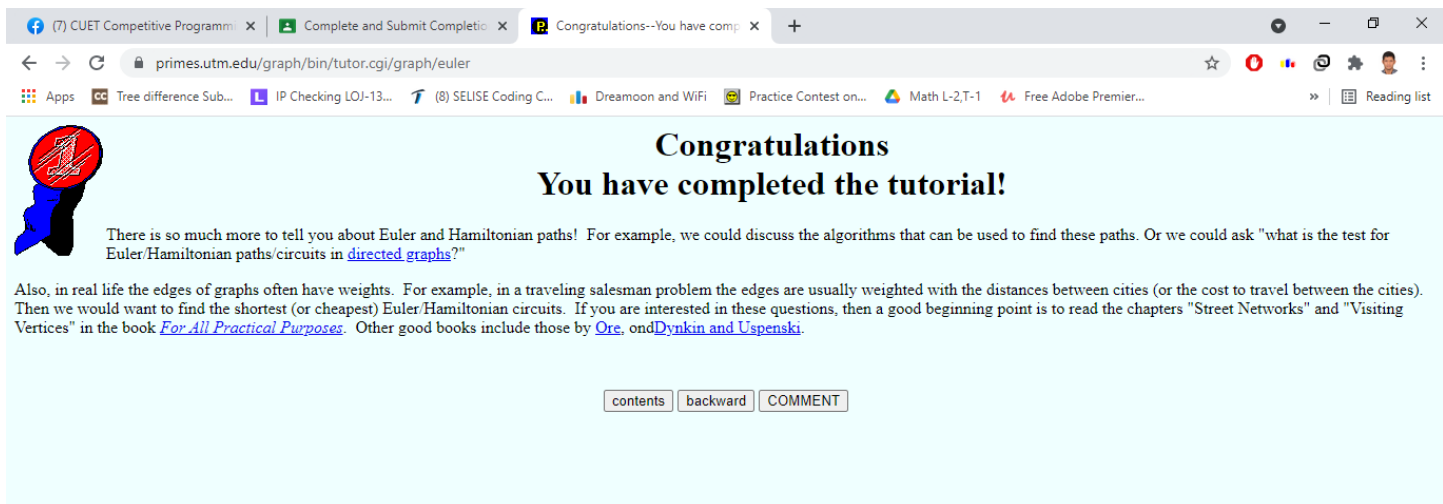
Password: 1804064

01. Introduction to Graph Theory (6 pages)



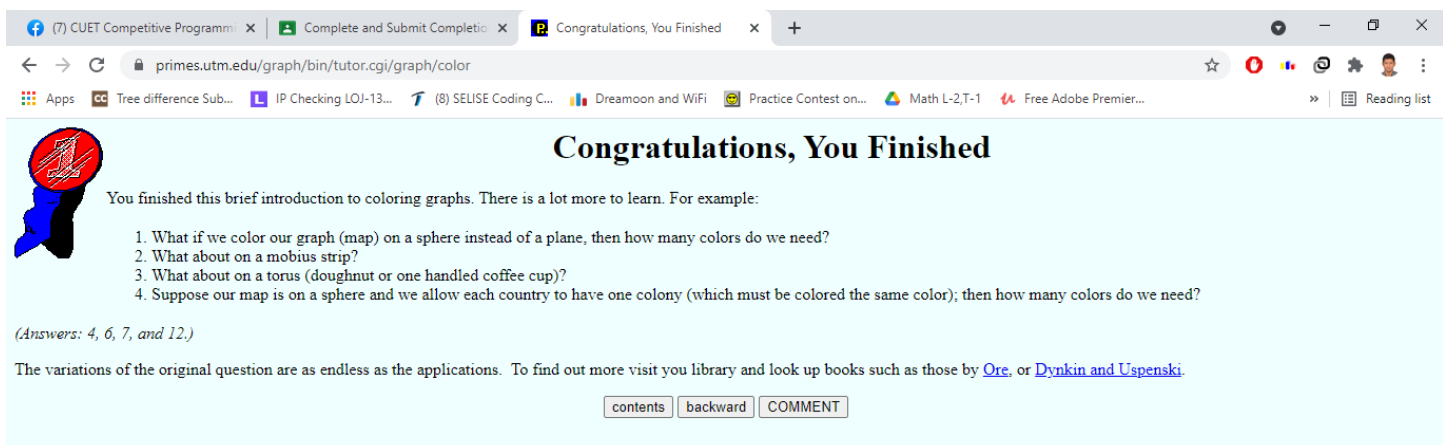
The screenshot shows a web browser with three tabs: "(7) CUET Competitive Program...", "Complete and Submit Completio...", and "Congratulations--You have comp...". The address bar shows the URL "primes.utm.edu/graph/bin/tutor.cgi/graph/intro". The page features a large blue ribbon icon with a red "1" on the left. The main heading is "Congratulations You have completed the tutorial!". Below this, a paragraph states: "There is so much more to tell you about graph theory! (For example, there is a relatively easy test to see if a graph is planar, there are graphs whose edges only point one direction...) Some of the juiciest parts of introductory graph theory can be found in the other tutorials; but most of it can not. At best we can hope to help you begin learning here. If you want to learn more visit the library and check out a book or two (or three)." At the bottom, there are three buttons: "contents", "backward", and "COMMENT".

02. Euler Circuits and Paths



The screenshot shows a web browser with three tabs: "(7) CUET Competitive Program...", "Complete and Submit Completio...", and "Congratulations--You have comp...". The address bar shows the URL "primes.utm.edu/graph/bin/tutor.cgi/graph/euler". The page features a large blue ribbon icon with a red "1" on the left. The main heading is "Congratulations You have completed the tutorial!". Below this, a paragraph states: "There is so much more to tell you about Euler and Hamiltonian paths! For example, we could discuss the algorithms that can be used to find these paths. Or we could ask 'what is the test for Euler/Hamiltonian paths/circuits in [directed graphs](#)'?" Another paragraph follows: "Also, in real life the edges of graphs often have weights. For example, in a traveling salesman problem the edges are usually weighted with the distances between cities (or the cost to travel between the cities). Then we would want to find the shortest (or cheapest) Euler/Hamiltonian circuits. If you are interested in these questions, then a good beginning point is to read the chapters 'Street Networks' and 'Visiting Vertices' in the book [For All Practical Purposes](#). Other good books include those by [Ore](#), and [Dynkin and Uspenski](#)." At the bottom, there are three buttons: "contents", "backward", and "COMMENT".

03. Coloring Problems (6 pages)



The screenshot shows a web browser with three tabs: "(7) CUET Competitive Program...", "Complete and Submit Completio...", and "Congratulations, You Finished". The address bar shows the URL "primes.utm.edu/graph/bin/tutor.cgi/graph/color". The page features a large blue ribbon icon with a red "1" on the left. The main heading is "Congratulations, You Finished". Below this, a paragraph states: "You finished this brief introduction to coloring graphs. There is a lot more to learn. For example:" followed by a list of four questions: "1. What if we color our graph (map) on a sphere instead of a plane, then how many colors do we need?", "2. What about on a mobius strip?", "3. What about on a torus (doughnut or one handled coffee cup)?", and "4. Suppose our map is on a sphere and we allow each country to have one colony (which must be colored the same color); then how many colors do we need?". Below the list, a paragraph states: "(Answers: 4, 6, 7, and 12.)" Another paragraph follows: "The variations of the original question are as endless as the applications. To find out more visit you library and look up books such as those by [Ore](#), or [Dynkin and Uspenski](#)." At the bottom, there are three buttons: "contents", "backward", and "COMMENT".

