September 14, 2022

Algorithms and data structures
Labwork 1

Please use Google classroom for labwork submission, join the class by the following link: https://classroom.google.com/c/NTQ1NjMwOTMwNzU0?cjc=gqtgfva

There are 6 Labworks in this course. After each lab work session:

- You need to complete one of the given exercises and upload your files to the assignment "Labwork No. - G No. - Version 1 (Attendance)". Submission must be done within 30 mins after the labwork, otherwise, it will be considered as a late submission.
- You will have one week (or 7 days) to complete the remaining exercises and upload your files to the assignment "Labwork No. - G No. - Version 2 (Complete)"
- Compress all code source files in a zip file and rename it as FULLNAME-ID-Lab#no.zip (e.g NguyenVanA-070-Lab1.zip). Save your files according to the exercise number i.e Ex1.cpp, Ex2.c, etc. Incorrect filenames will result in no score for the respective exercises.
- Only code source files (.c or .cpp) should be in the zip files. Other files (.exe, .o) MUST be removed from the zip file.
- Copy/Paste from any source is not tolerated. The penalty will be applied for a late submission.

NOTE: You must follow the guide. Incorrect zip file names, zip files containing other files (.exe), and copy/pasting lead to heavy penalties.

Exercise 1:
Write a pseudo-code then implement a program in C/C++ to enter a natural number n and verify whether n is sphenic. Calculate the complexity of your program.
Note: A sphenic number is a product of p*q*r where p, q, and r are three distinct prime numbers. Example: 30 = 2 * 3* 5; 42 = 2*3*7; 66 = 2*3*11

Exercise 2:
Write a pseudo-code then implement a program in C/C++ to enter a natural

number n and find all sphenic numbers from 1 to n (using the function from Exercise 1). Calculate the complexity of your program.

Exercise 3:
Complete the following function using pass-by-reference: void findMax(int &max, int a) which assigns value 'a' to 'max' if a > max. Write a pseudo-code then implement a program in C/C++ to find the maximum in a sequence of numbers using this function. Calculate the complexity of your program.