



Strathmore
UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES
BACHELOR OF SCIENCE IN INFORMATICS AND COMPUTER SCIENCE
INTRODUCTION TO PROGRAMMING
SEMESTER PROJECT

1st October 2021

Deadline: 8th October 2021 @2359 hours

Instructions

- ✚ This is supposed to be a 48 hours hackathon. Presentations will be done during the study week.
- ✚ You will be required to submit your work on the link provided on the e-learning by the deadline shown above. (The work should be only submitted by the group leader for a particular group). The submission shall consist of the code(cpp file and a short description of the solution in word with a chronological flow). The word document shall also contain the list of group members(full name and admission numbers).
- ✚ Note that the presentation of the **output** and a **well written** source code makes a difference between a well-done work and just any other work.

Case Study

In 2018, the registered number of Computer Science freshmen were split into three groups, A, B and C respectively. The gender ratios in those groups were as shown below.

ICS Group	Number of Male Students	Number of female Students	Totals
ICS A	19	11	30
ICS B	16	12	28
ICS C	36	19	55
Totals	71	42	113

In 2021 the Faculty decided to merge the three groups into **two**, balancing the gender ratios as shown below. Develop a C++ programme that will assist them in achieving their goal.

ICS Group	Number of Male Students	Number of female Students	Totals
ICS A	36	21	57
ICS B	35	21	56
Totals	71	42	113

Provided:

1. 3 CSV files having all the names of the students with their admission numbers and gender.

Required:

1. Read all the student's details from the given files and import them into your programme. **(4 Marks)**.
2. Develop a perfect shuffle algorithm (coded) that will give the output in the table above. **(6 Marks)**.
3. Print out the final lists into two separate CSV files having ICS A and B. **(6 Marks)**.
4. Include lucrative features into your programme such as options, presentable output and generally a well-structured system. **(4 Marks)**.

What is a perfect shuffle Algorithm?

- This is an algorithm that does not follow a predefined order of events. You should allow your program to maintain the same memory of the shuffled lists so as to avoid different lists all the time.

Test your programme before the presentations to avoid disappointments.

All the best! ☺