Computer science
Lab #3

BScv

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Object, functions, statistics

NB : use good practice for naming and write code [1]!!!

Problem 1

Create an object named **passager** which contains the data of the file "*titanic.csv*". Create a function to read the full file as a **vector** of passager.
To do this, you probably need the follow tools that you can find in the std library.

- ifstream `https://www.cplusplus.com/reference/fstream/ifstream/?kw=ifstream`

- getline `https://www.cplusplus.com/reference/string/string/getline/?kw=getline`

- vector `https://www.cplusplus.com/reference/vector/vector/?kw=vector`

Problem 2

The "*titanic.csv*" file contains data for 887 of the real Titanic passengers. Each row represents one person. The columns describe different attributes about the person including whether they survived (S), their age (A), their passenger-class (C), their sex (G) and the fare they paid (X).
Write a program which finds the answers to the following questions. Calculate the conditional probability that a person survives given their sex and passenger-class:

- P(S= true | G=female,C=1)

- P(S= true | G=female,C=2)

- P(S= true | G=female,C=3)

- P(S= true | G=male,C=1)

- P(S= true | G=male,C=2)

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[1] `https://google.github.io/styleguide/cppguide.html`

- P(S= true | G=male,C=3)

Problem 3

What is the probability that a child who is in third class and is 10 years old or younger survives? Since the number of data points that satisfy the condition is small use the "bayesian" approach and represent your probability as a beta distribution.
Calculate a belief distribution for:

- S= true | A<=10,C=3

Problem 4

You can express your answer as a parameterized distribution. How much did people pay to be on the ship? Calculate the expectation of fare conditioned on passenger-class:

- E[X | C=1]

- E[X | C=2]

- E[X | C=3]