

## STU11002 Lab 3 Task

In a single file, write code to conduct the following tasks and comment the code clearly using # eg

eg

```
#see summary statistics for the variable AGE  
summary(Lab1$AGE)
```

or

```
summary(Lab1$AGE) #see summary statistics for the variable AGE
```

### TASKS

#### 1) (2 marks)

- a. Simulate a population of 4,000 with a variable from a Normal(4,5) distribution and a population of 4,000 with a variable from an Exponential distribution with  $\lambda = 2.1$ . [use the command `rexp(n,rate)` ]
- b. Draw samples of size 50 and size 100 from each population.

#### 2) (4 marks)

- a. Choose a confidence level and calculate confidence intervals for the mean of the sample of size 50 from each distribution, using a) the Z-score and the known population SD, and b) the t-distribution and the sample SD.

#### 3) (4 marks)

- a. Use R to plot graphs to help you assess the normality of each population, as well as each of the samples of size 50. (The sample of size 100 does not need to be assessed).
- b. Would you trust/rely on the confidence intervals you calculated in part 2? Why/Why not?