

# PASS TASK (Task 6.1)

## About this task

### Step-1

At the completion of week 6 modules, you are required to complete a lesson review to indicate what you have learnt and how you learnt it by submitting evidence requested at the end of this file.

### Step-2

Your tutor will then review your submission and will give you feedback. If your submission is incomplete the tutor will ask you to include missing parts. Tutor can also ask follow-up questions, either to clarify something that you have submitted or to assess your understanding of certain topics.

## Feedback and submission deadlines

**Feedback deadline:** Friday 29 Aug (No submission before this date means no feedback!)

**Submission deadline:** Before creating and submitting portfolio.

## Evidence of Learning

1. Submit a summary report (pdf format) in Ontrack (<https://ontrack.deakin.edu.au>)
  - 1.1. Summarise the main points that is covered in week 5 and 6.
  - 1.2. Provide summary of your reading list – external resources, websites, book chapters, code libraries, etc.
  - 1.3. Reflect on the knowledge that you have gained by reading contents of this week with respect to machine learning.
  - 1.4. Attempt the quiz given in weekly content (5.18 and 6.15) and add screenshot of your score (>85% is considered completion of this task) in this report.
2. Complete the problem solving task given below and submit your code file (.ipynb) separately to OnTrack (<https://ontrack.deakin.edu.au>).

## Problem Solving:

The data is related with direct marketing campaigns (phone calls) of a Portuguese banking institution. The classification goal is to predict if the client will subscribe a term deposit (variable  $y$ ).

1. Load "[bank-full.csv](#)" dataset and create a logistic regression model for predicting target variable (subscribed a term deposit or not). Use appropriate evaluation methods and report the performance of the model using appropriate metrics.
2. Have you used any hyperparameter tuning while building the model in Q1? If yes, then plot the performances that were obtained at different steps of optimisation. Otherwise, create an optimised model and compare performance with Q1.
3. Create two regularized logistic regression models for the predicting the target variable using the evaluation setting that you have used Q1 and report the performance.
4. Compare the performance of the three models (Q1 and Q3), explain which model is good and why.
5. Continue from question 4, with the same evaluation setting, use KNN and tune K on the training set, report the performance on the test set and the optimal K. Compare KNN with all the above logistic regression models, consider the following aspects: number of trainable parameters, training time and model performance. Explain why KNN is worse/better than logistic regression.