Exam PA December 13, 2019 Project Report Template

**Instructions to Candidates: Please remember to avoid using your own name within this document or when naming your file. There is no limit on page count.**

As indicated in the instructions, work on each task should be presented in the designated section for that task.

## Task 1 – Examine each variable and make appropriate adjustments (12 points)

## Task 2 – Construct a classification tree (10 points)

## Task 3 – Construct a boosted tree (6 points)

## Task 4 – Recommend a tree model (4 points)

## Task 5 – Consider a random forest (5 points)

## Task 6 – Convert cap\_gain to a factor variable (5 points)

## Task 7 – Select a distribution and link function for a GLM (3 points)

## Task 8 – Estimate the GLM coefficients using regularization (10 points)

## Task 9 – Select the final model (5 points)

## Task 10 – Select the cutoff probability (10 points)

## Task 11 – Write model demo for marketing (10 points)

**Note to candidates: This table is provided for use but this does not imply it should be used as is, or used at all.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| age | education\_num | marital\_status | occupation | cap\_gain | hours\_per\_week | score |
| 39 | 10 | Married-civ-spouse | Group 3 | 0 | 40 | 60 |
| 53 | 10 | Married-civ-spouse | Group 3 | 0 | 40 | 60 |
| 39 | 13 | Married-civ-spouse | Group 3 | 0 | 40 | 60 |
| 39 | 10 | Never-married | Group 3 | 0 | 40 | 60 |
| 39 | 10 | Married-civ-spouse | Group 5 | 0 | 40 | 60 |
| 39 | 10 | Married-civ-spouse | Group 3 | 2000 | 40 | 60 |
| 39 | 10 | Married-civ-spouse | Group 3 | 0 | 50 | 60 |
| 39 | 10 | Married-civ-spouse | Group 3 | 0 | 40 | 64 |

## Task 12 – Executive summary (20 points)