**Quiz 5 - Decision Trees**

Consider again the dataset <**bank-sample.csv**> given in the lecture of Topic 5. One would want to build a model (a decision tree) which helps to predict if a customer will subscribe the bank’s service. A decision tree was built using 4 features (marital, education, loan, poutcome) while subscribe (no/yes) is the response. Refer to the photo provided for all subsequent questions.

Please revise the lecture notes (pdf slides for the details of the 5 variables).

Note: in order to score better for this quiz, please watch the pre-recorded videos and attend the live lecture. If you did not attend the live lecture, please watch the record of the live lecture well before taking this quiz.

A diagram of a relationship

Description automatically generated

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| **Question 1**  How many people in the data set subscribed to the bank service? | |
| A | 1789 |
| B | 211 |
| C | 58 |
| D | 32 |

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| **Question 2**  Which feature is the most important in determining whether a customer will subscribe to the bank service? | |
| A | poutcome |
| B | education |
| C | marital |
| D | loan |

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| **Question 3**  Consider the leaf node at the bottom right of the image (yes: 8/8). Select all the correct options. | |
| A | There are 8 customers with poutcome = success & education = primary or unknown. |
| B | Out of the 58 customers with poutcome = success, 8 of them subscribed to the bank service |
| C | Customers with poutcome = success & education = primary or unknown are predicted to have a 100% probability of subscribing to the bank service |
| D | This leaf node provides no information on whether customers will subscribe to the bank service |

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| **Question 4**  What is the predicted probability of subscribing for a customer with the following characteristics: poutcome = success, education = tertiary, marital = single, loan = no? | |
| A | 0.52 |
| B | 0.53 |
| C | 0.55 |
| D | 0.57 |

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| **Question 5**  True or False? Decision Trees can handle categorical and quantitative features. | |
| A | True |
| B | False |