**Test Instructions**

**Below are the test questions to be completed within 7 days from the day you receive them.**

**You may use any language (e.g. Python, R, Excel, etc.) to derive the answer. You may use any format as well. Once completed, kindly send the test results with all the questions answered and working steps clearly presented by replying to grace.loo@titansoft.com.sg.**

**1. We have 2 recommender systems: Model A & Model B. This is a summary table of daily performance of the 2 models from 2020-09-07 to 2020-09-13. The manager has assigned each model different amounts of customers to test their performance each day. After a seven-day test, which model will you choose, Model A or Model B? Please explain your decision.**

**Hint: Margin = Net\_Amount/Sales\_Amount**

**Please refer to excel file (model\_compare.csv) for this question.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Date** | **By** | **Margin (%)** | **Customer\_Count** | **Sales\_Amount** | **Net\_Amount** |
| 2020-09-07 | Model A | 2.81% | 74 | 2448 | 68.8 |
| 2020-09-08 | Model A | 1.11% | 92 | 3232 | 35.72 |
| 2020-09-09 | Model A | 1.86% | 120 | 3948 | 73.29 |
| 2020-09-10 | Model A | 2.20% | 63 | 2207 | 48.45 |
| 2020-09-11 | Model A | 1.61% | 64 | 2155 | 34.68 |
| 2020-09-12 | Model A | 0.64% | 265 | 8484 | 54.29 |
| 2020-09-13 | Model A | 0.28% | 241 | 7857 | 22.37 |
| 2020-09-07 | Model B | 3.31% | 29 | 863 | 28.54 |
| 2020-09-08 | Model B | 1.36% | 25 | 800 | 10.88 |
| 2020-09-09 | Model B | 1.27% | 29 | 986 | 12.56 |
| 2020-09-10 | Model B | 1.14% | 19 | 593 | 6.79 |
| 2020-09-11 | Model B | 2.23% | 22 | 739 | 16.44 |
| 2020-09-12 | Model B | 0.55% | 42 | 1348 | 7.37 |
| 2020-09-13 | Model B | 0.13% | 53 | 1768 | 2.3 |

**2. We are running a business that sells houses. We have a very high customer cost. Based on the 10 user data in our system, should we get this new customer with the following information below?**

**Please refer to excel file (buyer.csv) for this question.**

**New customer:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Age** | **Gender** | **Annual income** | **Married** |
| 40 | Female | 310k | FALSE |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **User** | **Age** | **Gender** | **Annual income** | **Married** | **Buy** |
| 1 | 27 | Male | 150k | FALSE | FALSE |
| 2 | 47 | Female | 300k | TRUE | TRUE |
| 3 | 32 | Male | 120k | FALSE | FALSE |
| 4 | 24 | Male | 450k | FALSE | TRUE |
| 5 | 45 | Male | 300k | TRUE | FALSE |
| 6 | 56 | Male | 320k | TRUE | TRUE |
| 7 | 31 | Male | 150k | FALSE | FALSE |
| 8 | 23 | Female | 300k | TRUE | FALSE |
| 9 | 42 | Male | 230k | FALSE | FALSE |
| 10 | 32 | Female | 420k | TRUE | TRUE |

**3. We have released a new online game in the market. Below is the sales information for this game. Based on this data, how would you predict the sales amount of 500th day and 1000th day?**

**Please refer to excel (sale\_amount.csv) for this question**

|  |  |
| --- | --- |
| **Day** | **Sales amount (million)** |
| 1 | 1.08 |
| 21 | 0.90 |
| 41 | 0.72 |
| 61 | 0.58 |
| 81 | 0.48 |
| 101 | 0.42 |
| 121 | 0.37 |
| 141 | 0.33 |
| 161 | 0.26 |
| 181 | 0.24 |
| 201 | 0.22 |
| 221 | 0.11 |