Lab 4- Machine Learning

Task 1 (1 point)

Download the '[advertising.csv](https://acu-online.instructure.com/courses/578/files/157082?wrap=1)[Download advertising.csv](https://acu-online.instructure.com/courses/578/files/157082/download?download_frd=1)' dataset and load it into your Jupyter notebook.

Task 2 (1 point)

Data preparation.

**Step 1:**Remove the two text variables 'Ad Topic Line' and 'Timestamp' from the dataframe.

**Step 2:**Use one-hot encoding to convert 'Country' and 'City' variables to numeric values.

Task 3 (4 points)

Machine Learning with SVM.

**Step 1:  Assign training data and labels**Make 'Click on Ad' as labels; use the remaining variables as data.

**Step 2: Train Test Split**Split the training data into training and test sets with train\_test\_split(). Consider what you will get if you use different hyperparameter settings in the above function?

**Step 3: Training and Fitting the model**Make predictions from the trained model.  
You'll want to set up the classification model, SVM, with Scikit-learn. You can then train the model with training data and make predictions on the test set.

Play with the hyperparameters of SVM and observe the differences generated by different settings of the parameters in the function.

**Step 4:** **Model Evaluation**  
Evaluate your predictions with confusion\_matrix() and classification\_report()

**Step 5: Analysis Report**

Create a new markdown cell and provide an analysis of your evaluation results, including answers to the following questions:

* + - What is the FP, TP, FN, TN of your prediction?
    - What is the precision, recall, and f1-score of your model?
    - What can you tell by the evaluation metrics?
    - What other classifiers could you apply to solve this problem?