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/* ----- */
/* Step 1: Import Dataset into SAS */
/* ----- */

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PROC IMPORT DATAFILE="/home/u64173315/metaverse_transactions_dataset.csv"
  OUT=metaverse_data
  DBMS=CSV
  REPLACE;
  GUESSINGROWS=MAX;
RUN;

```

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/* ----- */
/* Step 2: Convert Multi-Class into Binary Target */
/* ----- */

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```

DATA metaverse_data;
  SET metaverse_data;
  IF anomaly = "low_risk" THEN fraud_flag = 0;
  ELSE fraud_flag = 1; /* Combine moderate & high risk into 1 */
RUN;

```

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/* ----- */
/* Step 3: Split Data into Train (70%) & Test (30%) */
/* ----- */

```

```

DATA metaverse_train metaverse_test;
  SET metaverse_data;
  IF RANUNI(12345) < 0.7 THEN OUTPUT metaverse_train;
  ELSE OUTPUT metaverse_test;
RUN;

```

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/* ----- */
/* Step 4: Train Logistic Regression and Compute AUC */
/* ----- */

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PROC LOGISTIC DATA=metaverse_train DESCENDING;
  CLASS fraud_flag (REF='0') location_region purchase_pattern age_group / PARAM=REF;
  MODEL fraud_flag = amount risk_score session_duration login_frequency
    / OUTROC=ROC_Logistic_AUC;
  OUTPUT OUT=Logistic_Predictions P=Pred_Prob;
RUN;

```

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/* ----- */
/* Step 5: Compute Confusion Matrix for Precision, Recall, and F1-Score */
/* ----- */

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PROC FREQ DATA=Logistic_Predictions;
  TABLES fraud_flag * Pred_Prob / CHISQ NOROW NOCOL NOPERCENT;
RUN;

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/* ----- */  
/* Step 6: Print AUC Values */  
/* ----- */
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```
PROC PRINT DATA=ROC_Logistic_AUC;
```