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"    <td>-8.486401e-01</td>\n",
"    <td>-6.915971e-01</td>\n",
```

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"    <td>-5.423504e-01</td>\n",
"    <td>-1.618463e-01</td>\n",
"    <td>-3.545861e-01</td>\n",
"    <td>-3.171451e-01</td>\n",
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"  <tr>\n",
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"    <td>4.010308e-02</td>\n",
"    <td>2.235804e-02</td>\n",
"    <td>-5.142873e-02</td>\n",
"    <td>...</td>\n",
"    <td>-2.945017e-02</td>\n",
"    <td>6.781943e-03</td>\n",
```

```
"    <td>-1.119293e-02</td>\n",
"    <td>4.097606e-02</td>\n",
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"    <td>8.037239e-01</td>\n",
"    <td>1.027196e+00</td>\n",
"    <td>7.433413e-01</td>\n",
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"    <td>...</td>\n",
"    <td>1.863772e-01</td>\n",
"    <td>5.285536e-01</td>\n",
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"    <td>2.000721e+01</td>\n",
"    <td>1.559499e+01</td>\n",
"    <td>...</td>\n",
"    <td>2.720284e+01</td>\n",
"    <td>1.050309e+01</td>\n",
"    <td>2.252841e+01</td>\n",
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"    <td>7.519589e+00</td>\n",
"    <td>3.517346e+00</td>\n",
"    <td>3.161220e+01</td>\n",
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"    <td>25691.160000</td>\n",
"    <td>1.000000</td>\n",
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"</div>"
],
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"mean    94813.859575  1.168375e-15  3.416908e-16 -1.379537e-15  2.074095e-15   \n",
"std     47488.145955  1.958696e+00  1.651309e+00  1.516255e+00  1.415869e+00   \n",
"min         0.000000 -5.640751e+01 -7.271573e+01 -4.832559e+01 -5.683171e+00   \n",
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"max    172792.000000  2.454930e+00  2.205773e+01  9.382558e+00  1.687534e+01   \n",
"\n",
"              V5          V6          V7          V8          V9  \\\n",
"count  2.848070e+05  2.848070e+05  2.848070e+05  2.848070e+05  2.848070e+05   \n",
"mean   9.604066e-16  1.487313e-15 -5.556467e-16  1.213481e-16 -2.406331e-15   \n",
"std    1.380247e+00  1.332271e+00  1.237094e+00  1.194353e+00  1.098632e+00   \n",
"min   -1.137433e+02 -2.616051e+01 -4.355724e+01 -7.321672e+01 -1.343407e+01   \n",
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"50%   -5.433583e-02 -2.741871e-01  4.010308e-02  2.235804e-02 -5.142873e-02   \n",
"75%    6.119264e-01  3.985649e-01  5.704361e-01  3.273459e-01  5.971390e-01   \n",
"max    3.480167e+01  7.330163e+01  1.205895e+02  2.000721e+01  1.559499e+01   \n",
"\n",
"       ...         V21         V22         V23         V24  \\\n",
"count  ...  2.848070e+05  2.848070e+05  2.848070e+05  2.848070e+05   \n",
"mean   ...  1.654067e-16 -3.568593e-16  2.578648e-16  4.473266e-15   \n",
"std    ...  7.345240e-01  7.257016e-01  6.244603e-01  6.056471e-01   \n",
"min    ... -3.483038e+01 -1.093314e+01 -4.480774e+01 -2.836627e+00   \n",
"25%    ... -2.283949e-01 -5.423504e-01 -1.618463e-01 -3.545861e-01   \n",
"50%    ... -2.945017e-02  6.781943e-03 -1.119293e-02  4.097606e-02   \n",
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"max    ...  2.720284e+01  1.050309e+01  2.252841e+01  4.584549e+00   \n",
"\n",
```

```
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   "mean   5.340915e-16  1.683437e-15 -3.660091e-16 -1.227390e-16      88.349619   \n",
   "std    5.212781e-01  4.822270e-01  4.036325e-01  3.300833e-01     250.120109   \n",
   "min   -1.029540e+01 -2.604551e+00 -2.256568e+01 -1.543008e+01       0.000000   \n",
   "25%   -3.171451e-01 -3.269839e-01 -7.083953e-02 -5.295979e-02       5.600000   \n",
   "50%    1.659350e-02 -5.213911e-02  1.342146e-03  1.124383e-02      22.000000   \n",
   "75%    3.507156e-01  2.409522e-01  9.104512e-02  7.827995e-02      77.165000   \n",
   "max    7.519589e+00  3.517346e+00  3.161220e+01  3.384781e+01   25691.160000   \n",
   "\n",
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   "std        0.041527  \n",
   "min        0.000000  \n",
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   "50%        0.000000  \n",
   "75%        0.000000  \n",
   "max        1.000000  \n",
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     "V4       0\n",
     "V5       0\n",
     "V6       0\n",
     "V7       0\n",
     "V8       0\n",
     "V9       0\n",
     "V10      0\n",
     "V11      0\n",
     "V12      0\n",
     "V13      0\n",
     "V14      0\n",
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     "V16      0\n",
     "V17      0\n",
     "V18      0\n",
     "V19      0\n",
     "V20      0\n",
```

```
    "V21      0\n",
    "V22      0\n",
    "V23      0\n",
    "V24      0\n",
    "V25      0\n",
    "V26      0\n",
    "V27      0\n",
    "V28      0\n",
    "Amount    0\n",
    "Class     0\n",
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  "metadata": {},
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   "data": {
    "text/plain": [
```

```
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    "1       492\n",
    "Name: count, dtype: int64"
   ]
  },
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  "metadata": {},
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 }
],
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 "file['Class'].value_counts()"
]
},
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 "metadata": {},
 "outputs": [],
 "source": [
  "normal=file[file.Class==0]"
 ]
},
{
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 "execution_count": 12,
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 "metadata": {},
 "outputs": [],
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```
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 ]
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```
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  }
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     "mean         88.291022\n",
     "std         250.105092\n",
     "min           0.000000\n",
     "25%           5.650000\n",
     "50%          22.000000\n",
     "75%          77.050000\n",
     "max       25691.160000\n",
     "Name: Amount, dtype: float64"
    ]
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   "execution_count": 15,
   "metadata": {},
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```
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    "mean     122.211321\n",
    "std      256.683288\n",
    "min        0.000000\n",
    "25%        1.000000\n",
    "50%        9.250000\n",
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```

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"    <th>V2</th>\n",
"    <th>V3</th>\n",
"    <th>V4</th>\n",
"    <th>V5</th>\n",
"    <th>V6</th>\n",
"    <th>V7</th>\n",
"    <th>V8</th>\n",
"    <th>V9</th>\n",
"    <th>...</th>\n",
"    <th>V20</th>\n",
"    <th>V21</th>\n",
"    <th>V22</th>\n",
"    <th>V23</th>\n",
"    <th>V24</th>\n",
"    <th>V25</th>\n",
"    <th>V26</th>\n",
"    <th>V27</th>\n",
"    <th>V28</th>\n",
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```

```
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```

```
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"    <td>0.000070</td>\n",
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"    <td>-0.000131</td>\n",
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"    <td>...</td>\n",
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```

```
"     <td>0.170575</td>\n",
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"\n",
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"Class                                     ...                       \n",
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"\n",
"           V22       V23       V24       V25       V26       V27       V28  \\\n",
"Class                                                                        \n",
"0    -0.000024  0.000070  0.000182 -0.000072 -0.000089 -0.000295 -0.000131   \n",
"1     0.014049 -0.040308 -0.105130  0.041449  0.051648  0.170575  0.075667   \n",
"\n",
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"1     122.211321  \n",
"\n",
"[2 rows x 30 columns]"
```

```
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]
},
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 "execution_count": 19,
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 "source": [
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 ]
},
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 "metadata": {},
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 }
],
"source": [
```

```
  "new_file.groupby('Class').mean()"
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 "metadata": {},
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  "X=new_file.drop(columns='Class',axis=1)"
 ]
},
{
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  "Y=new_file['Class']"
 ]
},
{
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 "execution_count": 25,
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 "metadata": {},
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 "source": [
  "X_train,X_test,Y_train,Y_test=train_test_split(X,Y,test_size=0.2,stratify=Y,random_state=2)"
```

```
 ]
},
{
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  "model=LogisticRegression()"
 ]
},
{
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 "id": "e27ab1db",
 "metadata": {},
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  {
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   "output_type": "stream",
   "text": [
    "C:\\Users\\Diwakar mishra\\AppData\\Local\\Programs\\Python\\Python310\\lib\\site-packages\\sklearn\\linear_model\\_logistic.py:460: ConvergenceWarning: lbfgs failed to converge (status=1):\n",
    "STOP: TOTAL NO. of ITERATIONS REACHED LIMIT.\n",
    "\n",
    "Increase the number of iterations (max_iter) or scale the data as shown in:\n",
    "    https://scikit-learn.org/stable/modules/preprocessing.html\n",
    "Please also refer to the documentation for alternative solver options:\n",
    "    https://scikit-learn.org/stable/modules/linear_model.html#logistic-regression\n",
    "  n_iter_i = _check_optimize_result(\n"
```

```
 ]
},
{
 "data": {
  "text/html": [
   "<style>#sk-container-id-1 {color: black;}#sk-container-id-1 pre{padding: 0;}#sk-container-id-1 div.sk-toggleable {background-color: white;}#sk-container-id-1 label.sk-toggleable__label {cursor: pointer;display: block;width: 100%;margin-bottom: 0;padding: 0.3em;box-sizing: border-box;text-align: center;}#sk-container-id-1 label.sk-toggleable__label-arrow:before {content: \"▸\";float: left;margin-right: 0.25em;color: #696969;}#sk-container-id-1 label.sk-toggleable__label-arrow:hover:before {color: black;}#sk-container-id-1 div.sk-estimator:hover label.sk-toggleable__label-arrow:before {color: black;}#sk-container-id-1 div.sk-toggleable__content {max-height: 0;max-width: 0;overflow: hidden;text-align: left;background-color: #f0f8ff;}#sk-container-id-1 div.sk-toggleable__content pre {margin: 0.2em;color: black;border-radius: 0.25em;background-color: #f0f8ff;}#sk-container-id-1 input.sk-toggleable__control:checked~div.sk-toggleable__content {max-height: 200px;max-width: 100%;overflow: auto;}#sk-container-id-1 input.sk-toggleable__control:checked~label.sk-toggleable__label-arrow:before {content: \"▾\";}#sk-container-id-1 div.sk-estimator input.sk-toggleable__control:checked~label.sk-toggleable__label {background-color: #d4ebff;}#sk-container-id-1 div.sk-label input.sk-toggleable__control:checked~label.sk-toggleable__label {background-color: #d4ebff;}#sk-container-id-1 input.sk-hidden--visually {border: 0;clip: rect(1px 1px 1px 1px);clip: rect(1px, 1px, 1px, 1px);height: 1px;margin: -1px;overflow: hidden;padding: 0;position: absolute;width: 1px;}#sk-container-id-1 div.sk-estimator {font-family: monospace;background-color: #f0f8ff;border: 1px dotted black;border-radius: 0.25em;box-sizing: border-box;margin-bottom: 0.5em;}#sk-container-id-1 div.sk-estimator:hover {background-color: #d4ebff;}#sk-container-id-1 div.sk-parallel-item::after {content: \"\";width: 100%;border-bottom: 1px solid gray;flex-grow: 1;}#sk-container-id-1 div.sk-label:hover label.sk-toggleable__label {background-color: #d4ebff;}#sk-container-id-1 div.sk-serial::before {content: \"\";position: absolute;border-left: 1px solid gray;box-sizing: border-box;top: 0;bottom: 0;left: 50%;z-index: 0;}#sk-container-id-1 div.sk-serial {display: flex;flex-direction: column;align-items: center;background-color: white;padding-right: 0.2em;padding-left: 0.2em;position: relative;}#sk-container-id-1 div.sk-item {position: relative;z-index: 1;}#sk-container-id-1 div.sk-parallel {display: flex;align-items: stretch;justify-content: center;background-color: white;position: relative;}#sk-container-id-1 div.sk-item::before, #sk-container-id-1 div.sk-parallel-item::before {content: \"\";position: absolute;border-left: 1px solid gray;box-sizing: border-box;top: 0;bottom: 0;left: 50%;z-index: -1;}#sk-container-id-1 div.sk-parallel-item {display: flex;flex-direction: column;z-index: 1;position: relative;background-color: white;}#sk-container-id-1 div.sk-parallel-item:first-child::after {align-self: flex-end;width: 50%;}#sk-container-id-1 div.sk-parallel-item:last-child::after {align-self: flex-start;width: 50%;}#sk-container-id-1 div.sk-parallel-item:only-child::after {width: 0;}#sk-container-id-1 div.sk-dashed-wrapped {border: 1px dashed gray;margin: 0 0.4em 0.5em 0.4em;box-sizing: border-box;padding-bottom: 0.4em;background-color: white;}#sk-container-id-1 div.sk-label label {font-family: monospace;font-weight: bold;display: inline-block;line-height: 1.2em;}#sk-container-id-1 div.sk-label-container {text-align: center;}#sk-container-id-1 div.sk-container {/* jupyter's `normalize.less` sets `[hidden] { display: none; }` but bootstrap.min.css set `[hidden] { display: none !important; }` so we also need the `!important` here to be able to override the default hidden behavior on the sphinx rendered scikit-learn.org. See: https://github.com/scikit-learn/scikit-
```

learn/issues/21755 */display: inline-block !important;position: relative;}#sk-container-id-1 div.sk-text-repr-fallback {display: none;}</style><div id=\"sk-container-id-1\" class=\"sk-top-container\"><div class=\"sk-text-repr-fallback\"><pre>LogisticRegression()</pre>In a Jupyter environment, please rerun this cell to show the HTML representation or trust the notebook.
On GitHub, the HTML representation is unable to render, please try loading this page with nbviewer.org. <div class=\"sk-container\" hidden><div class=\"sk-item\"><div class=\"sk-estimator sk-toggleable\"><input class=\"sk-toggleable__control sk-hidden--visually\" id=\"sk-estimator-id-1\" type=\"checkbox\" checked><label for=\"sk-estimator-id-1\" class=\"sk-toggleable__label sk-toggleable__label-arrow\">LogisticRegression</label><div class=\"sk-toggleable__content\"><pre>LogisticRegression()</pre> "

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     "LogisticRegression()"

    ]

   },

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  }

 ],

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  "model.fit(X_train,Y_train)\n"

 ]

},

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  "X_train_prediction=model.predict(X_train)"

 ]

},

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  }
 ],
 "source": [
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},
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 "cell_type": "code",
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 ]
},
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 "metadata": {},
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   "name": "stdout",
   "output_type": "stream",
   "text": [
    "Test Data Accuracy: 91.87817258883248%\n"
   ]
  }
 ],
```

```
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  ]
 }
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  "name": "python3"
 },
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   "name": "ipython",
   "version": 3
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  "mimetype": "text/x-python",
  "name": "python",
  "nbconvert_exporter": "python",
  "pygments_lexer": "ipython3",
  "version": "3.10.2"
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