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        "\\n",
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"      if (!dataTable) return;\n",
"\n",
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"          [key], {});\n",
"      if (!dataTable) return;\n",
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"        '<a target=\"_blank\" href=https://colab.research.google.com/notebooks/data_table.ipynb>data table notebook</a>'\n",
"        + ' to learn more about interactive tables.';\n",
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.94-.94-2.06-.94 2.06-2.06.94z"/><path d="M17.41 7.96l-1.37-1.37c-.4-.4-.92-.59-1.43-.59-.52 0-
1.04-.2-1.43-.59L10.3 9.45l-7.72 7.72c-.78.78-.78 2.05 0 2.83L4 21.41c.39.39.9.59 1.41.59.51 0 1.02-.2
1.41-.59l7.78-7.78 2.81-2.81c.8-.78.8-2.07 0-2.86zM5.41 20L4 18.59l7.72-7.72 1.47 1.35L5.41
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    "    + ' to learn more about interactive tables.';\n",
    "    element.innerHTML = \";\n",
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L/ALgYQTaVj0opfXkuj51PhfegHwKYDeCPAN4rpawIIVIAvovgHQ4jAN4ppVy/90tMNDUhxJsA/BeApwD44eJ  
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fFkl8I4S4SwiRDtctFkL8puYbQ0eGyz8hhHhECPGkEOLqfVhmliliOsAJKeVMx0BERES0VwkhPABPAUgBmAfg  
NCnlY0IIDUBGSjkhOgD8BCAQSmIFeIUJS5pG0ALACwDsByKeUTQogfA7hdSvk9IcQfAPyLIPJnQogUgv+p9  
iYA5wP4EAAB4HYA10op79+XdUFEREQHJv6JFhERER0Mav9E668A3CyEWIbgQcs/CyFOBuADmA9gDoCtNf  
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Fv44OZUBH921aidbaqlIJMAXhZCnBeezxRCZAD8GsDFQohcuHy+EGJg2gpGREREBzV+g4eliIgOBmkhRPSnV  
ALA+6SUnhDi+wDuEEI8BeBRAM/F7NvONo0uBPAtlcQaAA6At0sp7xJCHA3gQSEEABQAvBfAtldTMCililKAL  
1kmlililililup4/BMTlililililqIOxwc8REREREREREQdjg94ilililililg6HB/wEBERERERERF1OD7gISililililLqcHzAQO  
RERERERETU4fiAh4ililililiow/1/IB+Dzb9+iFAAAAAASUVORK5CYII=\n"

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"metadata": {

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}

}

]

},

{

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"from sklearn.preprocessing import LabelEncoder\n",

"encoder=LabelEncoder()\n",

"for i in pro:\n",

" if pro[i].dtype=='object' or pro[i].dtype=='category':\n",

" pro[i]=encoder.fit\_transform(pro[i])"

],

"metadata": {

"id": "jg4CVChY4I9s"

},

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    "x.head()"
  ],
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      "height": 270
    },
    "id": "ciUAjg9L4sL1",
    "outputId": "706fca47-aba7-4a8e-b7c5-ddf13ea36f89"
  },
  "execution_count": 37,
  "outputs": [
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      "output_type": "execute_result",
      "data": {
        "text/plain": [
          "   CreditScore  Geography  Gender  Age  Tenure  Balance  NumOfProducts  \\\n",
          "0    619.0      0      0  42.0   2.0    0.00      1.0  \n",
          "1    608.0      2      0  41.0   1.0  83807.86      1.0  \n",
          "2    502.0      0      0  42.0   8.0 159660.80      3.0  \n",
          "3    699.0      0      0  39.0   1.0    0.00      2.0  \n",
          "4    850.0      2      0  43.0   2.0 125510.82      1.0  \n"
        ]
      }
    }
  ]
}

```

```

"\n",
"  HasCrCard IsActiveMember EstimatedSalary \n",
"0      1      1    101348.88 \n",
"1      0      1    112542.58 \n",
"2      1      0    113931.57 \n",
"3      0      0     93826.63 \n",
"4      1      1     79084.10 "
],
"text/html": [
"\n",
" <div id=\"df-71330b13-2873-41c2-9dc0-b1458361a20d\">\n",
" <div class=\"colab-df-container\">\n",
" <div>\n",
"<style scoped>\n",
" .dataframe tbody tr th:only-of-type {\n",
"   vertical-align: middle;\n",
" } \n",
"\n",
" .dataframe tbody tr th {\n",
"   vertical-align: top;\n",
" } \n",
"\n",
" .dataframe thead th {\n",
"   text-align: right;\n",
" } \n",
"</style>\n",
"<table border=\"1\" class=\"dataframe\">\n",
" <thead>\n",
" <tr style=\"text-align: right;\">\n",

```



```
"    <th></th>\n",
"    <th>CreditScore</th>\n",
"    <th>Geography</th>\n",
"    <th>Gender</th>\n",
"    <th>Age</th>\n",
"    <th>Tenure</th>\n",
"    <th>Balance</th>\n",
"    <th>NumOfProducts</th>\n",
"    <th>HasCrCard</th>\n",
"    <th>IsActiveMember</th>\n",
"    <th>EstimatedSalary</th>\n",
"  </tr>\n",
" </thead>\n",
" <tbody>\n",
"   <tr>\n",
"     <th>0</th>\n",
"     <td>619.0</td>\n",
"     <td>0</td>\n",
"     <td>0</td>\n",
"     <td>42.0</td>\n",
"     <td>2.0</td>\n",
"     <td>0.00</td>\n",
"     <td>1.0</td>\n",
"     <td>1</td>\n",
"     <td>1</td>\n",
"     <td>101348.88</td>\n",
"   </tr>\n",
"   <tr>\n",
"     <th>1</th>\n",
```

```
"    <td>608.0</td>\n",
"    <td>2</td>\n",
"    <td>0</td>\n",
"    <td>41.0</td>\n",
"    <td>1.0</td>\n",
"    <td>83807.86</td>\n",
"    <td>1.0</td>\n",
"    <td>0</td>\n",
"    <td>1</td>\n",
"    <td>112542.58</td>\n",
"  </tr>\n",
"  <tr>\n",
"    <th>2</th>\n",
"    <td>502.0</td>\n",
"    <td>0</td>\n",
"    <td>0</td>\n",
"    <td>42.0</td>\n",
"    <td>8.0</td>\n",
"    <td>159660.80</td>\n",
"    <td>3.0</td>\n",
"    <td>1</td>\n",
"    <td>0</td>\n",
"    <td>113931.57</td>\n",
"  </tr>\n",
"  <tr>\n",
"    <th>3</th>\n",
"    <td>699.0</td>\n",
"    <td>0</td>\n",
"    <td>0</td>
```

```

"    <td>39.0</td>\n",
"    <td>1.0</td>\n",
"    <td>0.00</td>\n",
"    <td>2.0</td>\n",
"    <td>0</td>\n",
"    <td>0</td>\n",
"    <td>93826.63</td>\n",
"  </tr>\n",
" <tr>\n",
"   <th>4</th>\n",
"   <td>850.0</td>\n",
"   <td>2</td>\n",
"   <td>0</td>\n",
"   <td>43.0</td>\n",
"   <td>2.0</td>\n",
"   <td>125510.82</td>\n",
"   <td>1.0</td>\n",
"   <td>1</td>\n",
"   <td>1</td>\n",
"   <td>79084.10</td>\n",
" </tr>\n",
" </tbody>\n",
"</table>\n",
"</div>\n",
"  <button class=\"colab-df-convert\" onclick=\"convertToInteractive('df-71330b13-2873-41c2-9dc0-b1458361a20d')\">\n",
"    title=\"Convert this dataframe to an interactive table.\"\n",
"    style=\"display:none;\">\n",
"  \n",

```

```

" <svg xmlns="http://www.w3.org/2000/svg" height="24px" viewBox="0 0 24 24"\n",
"   width="24px">\n",
"   <path d="M0 0h24v24H0V0z" fill="none"/>\n",
"   <path d="M18.56 5.44l.94 2.06.94-2.06-.94-2.06-.94-2.06-.94-2.06.94zm-11
1L8.5 8.5l.94-2.06 2.06-.94-2.06-.94L8.5 2.5l-.94 2.06-2.06.94zm10 10l.94 2.06.94-2.06-
.94-.94-2.06-.94 2.06-2.06.94z"/><path d="M17.41 7.96l-1.37-1.37c-.4-.4-.92-.59-1.43-.59-.52 0-
1.04-.2-1.43-.59L10.3 9.45l-7.72 7.72c-.78.78-.78 2.05 0 2.83L4 21.41c.39.39.9.59 1.41.59.51 0 1.02-.2
1.41-.59l7.78-7.78 2.81-2.81c.8-.78.8-2.07 0-2.86zM5.41 20L4 18.59l7.72-7.72 1.47 1.35L5.41
20z"/>\n",
" </svg>\n",
"   </button>\n",
"   \n",
" <style>\n",
"   .colab-df-container {\n",
"     display: flex;\n",
"     flex-wrap: wrap;\n",
"     gap: 12px;\n",
"   }\n",
" \n",
"   .colab-df-convert {\n",
"     background-color: #E8F0FE;\n",
"     border: none;\n",
"     border-radius: 50%;\n",
"     cursor: pointer;\n",
"     display: none;\n",
"     fill: #1967D2;\n",
"     height: 32px;\n",
"     padding: 0 0 0 0;\n",
"     width: 32px;\n",
"   }\n",

```

```

"\n",
"  .colab-df-convert:hover {\n",
"    background-color: #E2EBFA;\n",
"    box-shadow: 0px 1px 2px rgba(60, 64, 67, 0.3), 0px 1px 3px 1px rgba(60, 64, 67, 0.15);\n",
"    fill: #174EA6;\n",
"  }\n",
"\n",
"  [theme=dark] .colab-df-convert {\n",
"    background-color: #3B4455;\n",
"    fill: #D2E3FC;\n",
"  }\n",
"\n",
"  [theme=dark] .colab-df-convert:hover {\n",
"    background-color: #434B5C;\n",
"    box-shadow: 0px 1px 3px 1px rgba(0, 0, 0, 0.15);\n",
"    filter: drop-shadow(0px 1px 2px rgba(0, 0, 0, 0.3));\n",
"    fill: #FFFFFF;\n",
"  }\n",
" </style>\n",
"\n",
"  <script>\n",
"    const buttonEl =\n",
"      document.querySelector('#df-71330b13-2873-41c2-9dc0-b1458361a20d button.colab-df-convert');\n",
"    buttonEl.style.display =\n",
"      google.colab.kernel.accessAllowed ? 'block' : 'none';\n",
"\n",
"    async function convertToInteractive(key) {\n",

```

```

    "    const element = document.querySelector('#df-71330b13-2873-41c2-9dc0-
b1458361a20d');\n",
    "    const dataTable =\n",
    "    await google.colab.kernel.invokeFunction('convertToInteractive',\n",
    "    [key], {});\n",
    "    if (!dataTable) return;\n",
    "\n",
    "    const docLinkHtml = 'Like what you see? Visit the ' +\n",
    "    '<a target=\"_blank\"
href=https://colab.research.google.com/notebooks/data_table.ipynb>data table notebook</a>'\n",
    "    + ' to learn more about interactive tables.';\n",
    "    element.innerHTML = \";\n",
    "    dataTable['output_type'] = 'display_data';\n",
    "    await google.colab.output.renderOutput(dataTable, element);\n",
    "    const docLink = document.createElement('div');\n",
    "    docLink.innerHTML = docLinkHtml;\n",
    "    element.appendChild(docLink);\n",
    "    }\n",
    "  </script>\n",
    "  </div>\n",
    "  </div>\n",
    "  "
  ]
},
"metadata": {},
"execution_count": 37
}
]
},

```

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  "source": [
    "y=pro.iloc[:, -1]\n",
    "y.head()"
  ],
  "metadata": {
    "colab": {
      "base_uri": "https://localhost:8080/"
    },
    "id": "rkOlvrHU4vLo",
    "outputId": "5193081f-f0d5-417a-9b6e-6d3951706315"
  },
  "execution_count": 38,
  "outputs": [
    {
      "output_type": "execute_result",
      "data": {
        "text/plain": [
          "0   1\n",
          "1   0\n",
          "2   1\n",
          "3   0\n",
          "4   0\n",
          "Name: Exited, dtype: int64"
        ]
      },
      "metadata": {},
      "execution_count": 38
    }
  ]
}
```

```

    }
  ]
},
{
  "cell_type": "code",
  "source": [
    "from sklearn.preprocessing import StandardScaler\n",
    "scaler=StandardScaler()\n",
    "x=scaler.fit_transform(x)"
  ],
  "metadata": {
    "id": "3aVuJwYg4xnR"
  },
  "execution_count": 39,
  "outputs": []
},
{
  "cell_type": "code",
  "source": [
    "x"
  ],
  "metadata": {
    "colab": {
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    },
    "id": "FUABWKY640Oa",
    "outputId": "1830203b-397b-49b9-d5a2-f996f61debef"
  },
  "execution_count": 40,

```



```

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  {
    "output_type": "execute_result",
    "data": {
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        "array([[ -0.32687761, -0.90188624, -1.09598752, ...,  0.64609167,\n",
        "         0.97024255,  0.02188649],\n",
        "        [ -0.44080365,  1.51506738, -1.09598752, ..., -1.54776799,\n",
        "         0.97024255,  0.21653375],\n",
        "        [ -1.53863634, -0.90188624, -1.09598752, ...,  0.64609167,\n",
        "        -1.03067011,  0.2406869 ],\n",
        "        ..., \n",
        "        [  0.60524449, -0.90188624, -1.09598752, ..., -1.54776799,\n",
        "         0.97024255, -1.00864308],\n",
        "        [  1.25772996,  0.30659057,  0.91241915, ...,  0.64609167,\n",
        "        -1.03067011, -0.12523071],\n",
        "        [  1.4648682 , -0.90188624, -1.09598752, ...,  0.64609167,\n",
        "        -1.03067011, -1.07636976]])"
      ]
    },
    },
    "metadata": {},
    "execution_count": 40
  }
],
{
  "cell_type": "code",
  "source": [
    "from sklearn.model_selection import train_test_split\n",

```

```
"x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.33)\n",
"x_train.shape"
],
"metadata": {
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  "id": "W5RG9ibx43hT",
  "outputId": "f7fea99c-04f2-4b96-eac8-586082d0c5be"
},
"execution_count": 41,
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    "data": {
      "text/plain": [
        "(6700, 10)"
      ]
    },
    "metadata": {},
    "execution_count": 41
  }
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{
  "cell_type": "code",
  "source": [
    "x_test.shape"
  ],

```

```
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  "id": "eVLr7zta47gq",
  "outputId": "1b65fe69-ad5f-4af0-e7bb-2a91aa5374ea"
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    "data": {
      "text/plain": [
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      ]
    },
    "metadata": {},
    "execution_count": 42
  }
],
{
  "cell_type": "code",
  "source": [
    "y_train.shape"
  ],
  "metadata": {
    "colab": {
      "base_uri": "https://localhost:8080/"
```

```
    },
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    "outputId": "05d84cb3-1157-4821-c958-9fa0a3d0ad28"
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  "execution_count": 43,
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      "data": {
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        ]
      },
      "metadata": {},
      "execution_count": 43
    }
  ],
  },
  {
    "cell_type": "code",
    "source": [
      "y_test.shape"
    ],
    "metadata": {
      "colab": {
        "base_uri": "https://localhost:8080/"
      },
      "id": "mEZXROH4_lg",
      "outputId": "3cd8ec97-8ad3-49b0-ae1-3b42e8b370eb"
```

```
,
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    "output_type": "execute_result",
    "data": {
      "text/plain": [
        "(3300,)"
      ]
    },
    "metadata": {},
    "execution_count": 44
  }
]
},
"metadata": {
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  "colab": {
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    "provenance": []
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  "kernelspec": {
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    "name": "python3"
  }
},
"nbformat": 4,
"nbformat_minor": 0
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}