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"Target Variable (y): \n",

"- Diagnosis (M = malignant, B = benign)\n",

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"Ten features (X) are computed for each cell nucleus:\n",

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"1. radius (mean of distances from center to points on the perimeter)\n",

"2. texture (standard deviation of gray-scale values)\n",

"3. perimeter\n",

"4. area\n",

"5. smoothness (local variation in radius lengths)\n",

"6. compactness (perimeter^2 / area - 1.0)\n",

"7. concavity (severity of concave portions of the contour)\n",

"8. concave points (number of concave portions of the contour)\n",

"9. symmetry\n",

"10. fractal dimension (coastline approximation - 1)\n",

"\n",

"For each characteristic three measures are given:\n",

"\n",

"a. Mean\n",

"\n",

"b. Standard error\n",

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"c. Largest/ Worst"

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"min                0.000000        0.156500                 0.055040   \n",
"25%                0.064930        0.250400                 0.071460   \n",
"50%                0.099930        0.282200                 0.080040   \n",
"75%                0.161400        0.317900                 0.092080   \n",
"max                0.291000        0.663800                 0.207500   \n",
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"max            NaN  \n",
```

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  "\n",
  "    .dataframe thead th {\n",
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```

```
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```

```
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"             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 2.06-.94-2.06-.94-.94-2.06-.94 2.06-2.06.94zm-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 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",
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"\n",
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"    }\n",
"\n",
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"      fill: #174EA6;\n",
"    }\n",
"\n",
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"      fill: #D2E3FC;\n",
"    }\n",
"\n",
```

```
"    [theme=dark] .colab-df-convert:hover {\n",
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"      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-fb737bca-f188-4205-b4aa-040719d6a725 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-fb737bca-f188-4205-b4aa-
040719d6a725');\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",
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       ]
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  ]
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  },
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```

```
  "cancer.columns"
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},
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        "       'area_mean', 'smoothness_mean', 'compactness_mean', 'concavity_mean',\n",
        "       'concave points_mean', 'symmetry_mean', 'fractal_dimension_mean',\n",
        "       'radius_se', 'texture_se', 'perimeter_se', 'area_se', 'smoothness_se',\n",
        "       'compactness_se', 'concavity_se', 'concave points_se', 'symmetry_se',\n",
        "       'fractal_dimension_se', 'radius_worst', 'texture_worst',\n",
        "       'perimeter_worst', 'area_worst', 'smoothness_worst',\n",
        "       'compactness_worst', 'concavity_worst', 'concave points_worst',\n",
        "       'symmetry_worst', 'fractal_dimension_worst', 'Unnamed: 32'],\n",
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      ]
    },
    "metadata": {},
    "execution_count": 7
```

```
    }
   ]
  },
  {
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    "y = cancer['diagnosis']"
   ],
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    "X = cancer.drop(['id','diagnosis','Unnamed: 32'],axis=1)"
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   "source": [
    "# Step 4 : train test split\n",
```

```
   "from sklearn.model_selection import train_test_split\n",
   "X_train, X_test, y_train, y_test = train_test_split(X,y, train_size=0.7, random_state=2529)"
  ],
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  },
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  "outputs": []
 },
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   "X_train.shape, X_test.shape, y_train.shape, y_test.shape"
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  "metadata": {
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```

```
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    }
  ]
},
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    "# Step 5 : select model\n",
    "from sklearn.linear_model import LogisticRegression\n",
    "model = LogisticRegression(max_iter=5000)"
  ],
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  },
  "execution_count": 12,
  "outputs": []
},
{
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  "source": [
    "# Step 6 : train or fit model\n",
    "model.fit(X_train,y_train)"
  ],
  "metadata": {
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```

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      "height": 75
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     "outputId": "85b9bf1a-0cc4-4b35-c73d-ea3ed03f226b",
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    },
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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
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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(max_iter=5000)</pre> "

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"\n",

"**Action 2: 👁 Watch Repository and get notified of all future updates and activities in this repository.**\n",

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"**[Click Here to Visit Fundamental Repository on GitHub](https://github.com/YBIFoundation/Fundamentals)**"

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