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    "import seaborn as sns\n",
    "import matplotlib.pyplot as plt"
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    "Glucose = resultado en prueba de glucosa; variable cuantitativa discreta\n",
    "Outcome = 0 y 1; donde \"0\" indica un paciente sano y \"1\" indica un paciente diabético;
variable cuantitativa discreta"
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      "df.shape"
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       "3            1       89             66             23       94  28.1   \n",
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       "\n",
       "   DiabetesPedigreeFunction  Age  Outcome  \n",
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```

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        "\n",
        "     DiabetesPedigreeFunction  Age  Outcome  \n",
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       " 2   BloodPressure             768 non-null    int64  \n",
       " 3   SkinThickness             768 non-null    int64  \n",
       " 4   Insulin                   768 non-null    int64  \n",
       " 5   BMI                       768 non-null    float64\n",
       " 6   DiabetesPedigreeFunction  768 non-null    float64\n",
       " 7   Age                       768 non-null    int64  \n",
       " 8   Outcome                   768 non-null    int64  \n",
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       "Insulin                    186\n",
       "BMI                        248\n",
       "DiabetesPedigreeFunction   517\n",
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      "50%       3.000000  117.000000      72.000000      23.000000   30.500000   \n",
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      "\n",
      "              BMI  DiabetesPedigreeFunction         Age     Outcome  \n",
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      "std      7.884160                  0.331329   11.760232    0.476951  \n",
```

```
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```

```
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    "df.Pregnancies.unique()"
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       "       189, 166, 100, 118, 107, 103, 126,  99, 196, 119, 143, 147,  97,\n",
       "       145, 117, 109, 158,  88,  92, 122, 138, 102,  90, 111, 180, 133,\n",
       "       106, 171, 159, 146,  71, 105, 101, 176, 150,  73, 187,  84,  44,\n",
       "       141, 114,  95, 129,  79,   0,  62, 131, 112, 113,  74,  83, 136,\n",
       "        80, 123,  81, 134, 142, 144,  93, 163, 151,  96, 155,  76, 160,\n",
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       "        91, 165,  86, 193, 191, 161, 167,  77, 182, 157, 178,  61,  98,\n",
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        "Name: Pregnancies, dtype: int64\n"
       ]
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      "#Se puede obtener la media, mediana y moda para\n",
      "mean_pregnancies = df['Pregnancies'].mean()\n",
      "median_pregnancies = df['Pregnancies'].median()\n",
      "mode_pregnancies = df['Pregnancies'].mode()\n",
      "print(\"Mean_pregnancies:\",mean_pregnancies)\n",
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      "La cantidad de embarazos al centro es 3  \n",
      "La cantidad de embarazos más repetida fue de 0 y 1"
     ]
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        "Median_glucose: 117.0\n",
        "Mode_glucose: 0     99\n",
        "1    100\n",
        "Name: Glucose, dtype: int64\n"
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      }
```

```
   ],
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    "median_glucose = df['Glucose'].median()\n",
    "mode_glucose = df['Glucose'].mode()\n",
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    "print(\"Mode_glucose:\",mode_glucose)"
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    "La glucosa al centro es 117  \n",
    "La glucosa más repetida fue de 0, 1, 99 y 100"
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      "Name: Outcome, dtype: int64\n"
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    }
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    "#Se puede obtener la media, mediana y moda para\n",
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    "median_outcome = df['Outcome'].median()\n",
    "mode_outcome = df['Outcome'].mode()\n",
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    "print(\"Mode_outcome:\",mode_outcome)"
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    "El resultado más repetido fue de 0"
   ]
```

```
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  de los datos indican un paciente sano."
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        "2     103\n",
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        "4      68\n",
        "5      57\n",
        "6      50\n",
        "7      45\n",
        "8      38\n",
        "9      28\n",
        "10     24\n",
        "11     11\n",
        "13     10\n",
        "12      9\n",
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        "15      1\n",
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  \n",
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     "# nombreDataframe['columna'].value_counts()\n",
     "df.Pregnancies.value_counts()"
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        "111    14\n",
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        "       ..\n",
        "191     1\n",
        "177     1\n",
        "44      1\n",
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        "190     1\n",
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        "1    268\n",
        "Name: count, dtype: int64"
       ]
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     "# nombreDataframe['columna'].value_counts()\n",
```

```
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         "1     135\n",
         "0     111\n",
         "2     103\n",
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         "4      68\n",
         "5      57\n",
         "6      50\n",
         "7      45\n",
         "8      38\n",
         "9      28\n",
         "10     24\n",
         "11     11\n",
         "13     10\n",
         "12      9\n",
         "14      2\n",
         "15      1\n",
         "17      1\n",
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      "df[\"Pregnancies\"].value_counts()"
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       "data": {
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         "99     17\n",
         "100    17\n",
         "111    14\n",
         "129    14\n",
         "125    14\n",
```

```
        "       ..\n",
        "191     1\n",
        "177     1\n",
        "44      1\n",
        "62      1\n",
        "190     1\n",
        "Name: count, Length: 136, dtype: int64"
       ]
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\n",
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     "# nombreDataframe['columna'].value_counts()\n",
     "df[\"Glucose\"].value_counts()"
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      "data": {
       "text/plain": [
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        "0    500\n",
        "1    268\n",
        "Name: count, dtype: int64"
       ]
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     "# nombreDataframe['columna'].value_counts()\n",
     "df[\"Outcome\"].value_counts()"
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     "# Crear variable totalPregDiabetic que incluya la suma de las columnas Pregnancies y Outcome con
  valor \"1\"\n",
     "# Mostrar el total por cada tamaño de familia\n",
     "conteo_preg = df[\"Pregnancies\"].count()\n",
     "conteo_outcome = (df[\"Outcome\"] == 1).sum()\n",
     "df[\"totalPregDiabetic\"] = df[\"Outcome\"] + (df[\"Pregnancies\"] == 1).astype(int)"
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        "0              6      148             72             35        0  33.6   \n",
        "1              1       85             66             29        0  26.6   \n",
        "2              8      183             64              0        0  23.3   \n",
        "3              1       89             66             23       94  28.1   \n",
        "4              0      137             40             35      168  43.1   \n",
        "..           ...      ...            ...            ...      ...   ...   \n",
        "763           10      101             76             48      180  32.9   \n",
        "764            2      122             70             27        0  36.8   \n",
        "765            5      121             72             23      112  26.2   \n",
        "766            1      126             60              0        0  30.1   \n",
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        "\n",
        "     DiabetesPedigreeFunction  Age  Outcome  totalPregDiabetic  \n",
        "0                       0.627   50        1                  1  \n",
        "1                       0.351   31        0                  1  \n",
        "2                       0.672   32        1                  1  \n",
        "3                       0.167   21        0                  1  \n",
        "4                       2.288   33        1                  1  \n",
        "..                        ...  ...      ...                ...  \n",
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        "764                     0.340   27        0                  0  \n",
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         "BloodPressure                72.000\n",
         "SkinThickness                35.000\n",
         "Insulin                       0.000\n",
         "BMI                          33.600\n",
         "DiabetesPedigreeFunction      0.627\n",
         "Age                          50.000\n",
         "Outcome                       1.000\n",
         "totalPregDiabetic             1.000\n",
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      "# Acceder a la primera fila\n",
      "df.iloc[0]"
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 "      <th>Glucose</th>\n",
 "      <th>BloodPressure</th>\n",
 "      <th>SkinThickness</th>\n",
 "      <th>Insulin</th>\n",
 "      <th>BMI</th>\n",
 "      <th>DiabetesPedigreeFunction</th>\n",
 "      <th>Age</th>\n",
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 "      <th>totalPregDiabetic</th>\n",
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 "1            1       85             66             29        0  26.6   \n",
 "2            8      183             64              0        0  23.3   \n",
 "\n",
 "   DiabetesPedigreeFunction  Age  Outcome  totalPregDiabetic  \n",
```

```
        "0                    0.627   50        1                    1  \n",
        "1                    0.351   31        0                    1  \n",
        "2                    0.672   32        1                    1  "
       ]
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    "Preguntas:\n",
    "1. ¿Hay alguna variable que no aporta información? No.\n",
    "2. Si tuvieras que eliminar variables, ¿cuáles quitarías y por qué? Eliminaría los datos de \"Insulin\" y \"SkinThickness\", debido a su alto número de datos con \"0\" que deberían ser \"null\". 374 y 227, respectivamente.\n",
    "3. Si comparas el rango de las variables (min-max), ¿todas están en rangos similares? Describe sus rangos. Tomando en cuenta que el dato mínimo en \"Pregnancies\" es \"0\" y el máximo es \"17\", no se encuentran en rangos similares. En cuanto a \"Glucose\", de igual manera, el dato mínimo es \"0\", cuando este dato debería tomarse como \"null\". Debido a esto, en comparación con el dato máximo de \"199\" el rango es grande. Respecto a \"Outcome\", los datos \"0\" y \"1\" se utilizan como \"sano\" y \"diabético\", por esto, el rango no es relevante.\n",
    "4. ¿Existen variables que tengan datos atípicos? Describe cuáles sí o no. Algunos datos de \"Insulin\", \"Glucose\", \"BMI\", \"BloodPressure\" y \"SkinThickness\" aparecen con \"0\" en lugar de \"null\", lo que puede afectar los resultados.\n",
    "5. ¿Existe correlación alta entre variables? Describe algunas, indicando si es correlación positiva o negativa. Hay una correlación positiva mayor a 0.50 entre las variables Age-totalPregDiabetic (0.556) y Age-Pregnancies (0.544). Las correlaciones negativas no son relevantes."
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      "BloodPressure: Min=0, Max=122, Rango=122\n",
      "SkinThickness: Min=0, Max=99, Rango=99\n",
      "Insulin: Min=0, Max=846, Rango=846\n",
      "BMI: Min=0.0, Max=67.1, Rango=67.1\n",
      "DiabetesPedigreeFunction: Min=0.078, Max=2.42, Rango=2.342\n",
      "Age: Min=21, Max=81, Rango=60\n",
      "Outcome: Min=0, Max=1, Rango=1\n",
      "totalPregDiabetic: Min=0, Max=2, Rango=2\n"
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     "for col in df.columns:\n",
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     "print(zero_counts_list)"
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