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```

Firefox

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```
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      "1         2570      7242     2.0           0  ...      7        2170   \n",
      "2          770     10000     1.0           0  ...      6         770   \n",
      "\n",
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```

```
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          "          <td>47.7379</td>\n",
          "          <td>-122.233</td>\n",
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          "\n",
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          "1           0     0          3      7        2170            400      1951  \n",
          "2           0     0          3      6         770              0      1933  \n",
          "\n",
          "   yr_renovated  zipcode      lat     long  sqft_living15  sqft_lot15  \n",
          "0             0    98178  47.5112 -122.257           1340        5650  \n",
          "1          1991    98125  47.7210 -122.319           1690        7639  \n",
          "2             0    98028  47.7379 -122.233           2720        8062  "
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Firefox

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      "  --sklearn-color-text: black;\n",
      "  --sklearn-color-line: gray;\n",
      "  /* Definition of color scheme for unfitted estimators */\n",
      "  --sklearn-color-unfitted-level-0: #fff5e6;\n",
      "  --sklearn-color-unfitted-level-1: #f6e4d2;\n",
      "  --sklearn-color-unfitted-level-2: #ffe0b3;\n",
      "  --sklearn-color-unfitted-level-3: chocolate;\n",
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      "  --sklearn-color-fitted-level-2: #b3dbfd;\n",
      "  --sklearn-color-fitted-level-3: cornflowerblue;\n",
      "\n",
      "  /* Specific color for light theme */\n",
      "  --sklearn-color-text-on-default-background: var(--sg-text-color, var(--theme-code-
foreground, var(--jp-content-font-color1, black)));\n",
      "  --sklearn-color-background: var(--sg-background-color, var(--theme-background, var(--jp-
layout-color0, white)));\n",
      "  --sklearn-color-border-box: var(--sg-text-color, var(--theme-code-foreground, var(--jp-
content-font-color1, black)));\n",
      "  --sklearn-color-icon: #696969;\n",
      "\n",
      "  @media (prefers-color-scheme: dark) {\n",
      "    /* Redefinition of color scheme for dark theme */\n",
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foreground, var(--jp-content-font-color1, white)));\n",
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jp-layout-color0, #111)));\n",
      "    --sklearn-color-border-box: var(--sg-text-color, var(--theme-code-foreground, var(--
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```

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"  clip: rect(1px, 1px, 1px, 1px);\n",
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"  padding-bottom: 0.4em;\n",
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"}\n",
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"      but bootstrap.min.css set `[hidden] { display: none !important; }`\n",
"      so we also need the `!important` here to be able to override the\n",
"      default hidden behavior on the sphinx rendered scikit-learn.org.\n",
"      See: https://github.com/scikit-learn/scikit-learn/issues/21755 */\n",
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"}\n",
"\n",
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"div.sk-serial,\n",
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"  background-repeat: no-repeat;\n",
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"}\n",
"\n",
"#sk-container-id-5 div.sk-parallel {\n",
"    display: flex;\n",
"    align-items: stretch;\n",
"    justify-content: center;\n",
"    background-color: var(--sklearn-color-background);\n",
"    position: relative;\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-parallel-item {\n",
"    display: flex;\n",
"    flex-direction: column;\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-parallel-item:first-child::after {\n",
"    align-self: flex-end;\n",
"    width: 50%;\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-parallel-item:last-child::after {\n",
"    align-self: flex-start;\n",
"    width: 50%;\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-parallel-item:only-child::after {\n",
"    width: 0;\n",
"}\n",
"\n",
"/* Serial-specific style estimator block */\n",
"\n",
"#sk-container-id-5 div.sk-serial {\n",
"    display: flex;\n",
"    flex-direction: column;\n",
"    align-items: center;\n",
"    background-color: var(--sklearn-color-background);\n",
"    padding-right: 1em;\n",
"    padding-left: 1em;\n",
"}\n",
"\n",
"\n",
"/* Toggleable style: style used for estimator/Pipeline/ColumnTransformer box that is\n",
"clickable and can be expanded/collapsed.\n",
"- Pipeline and ColumnTransformer use this feature and define the default style\n",
"- Estimators will overwrite some part of the style using the `sk-estimator` class\n",
"*/\n",
"\n",
"/* Pipeline and ColumnTransformer style (default) */\n",
"\n",
"#sk-container-id-5 div.sk-toggleable {\n",
"    /* Default theme specific background. It is overwritten whether we have a\n",
"    specific estimator or a Pipeline/ColumnTransformer */\n",
"    background-color: var(--sklearn-color-background);\n",
"}\n",
"\n",
"/* Toggleable label */\n",
"#sk-container-id-5 label.sk-toggleable__label {\n",
"    cursor: pointer;\n",
"    display: block;\n",
"    width: 100%;\n",
```

```
"    margin-bottom: 0;\n",
"    padding: 0.5em;\n",
"    box-sizing: border-box;\n",
"    text-align: center;\n",
"}\n",
"\n",
"#sk-container-id-5 label.sk-toggleable__label-arrow:before {\n",
"    /* Arrow on the left of the label */\n",
"    content: \"▸\";\n",
"    float: left;\n",
"    margin-right: 0.25em;\n",
"    color: var(--sklearn-color-icon);\n",
"}\n",
"\n",
"#sk-container-id-5 label.sk-toggleable__label-arrow:hover:before {\n",
"    color: var(--sklearn-color-text);\n",
"}\n",
"\n",
"/* Toggleable content - dropdown */\n",
"\n",
"#sk-container-id-5 div.sk-toggleable__content {\n",
"    max-height: 0;\n",
"    max-width: 0;\n",
"    overflow: hidden;\n",
"    text-align: left;\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-toggleable__content.fitted {\n",
"    /* fitted */\n",
"    background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-toggleable__content pre {\n",
"    margin: 0.2em;\n",
"    border-radius: 0.25em;\n",
"    color: var(--sklearn-color-text);\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-toggleable__content.fitted pre {\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-5 input.sk-toggleable__control:checked~div.sk-toggleable__content {\n",
"    /* Expand drop-down */\n",
"    max-height: 200px;\n",
"    max-width: 100%;\n",
"    overflow: auto;\n",
"}\n",
"\n",
"#sk-container-id-5 input.sk-toggleable__control:checked~label.sk-toggleable__label-
arrow:before {\n",
"    content: \"▾\";\n",
"}\n",
"\n",
"/* Pipeline/ColumnTransformer-specific style */\n",
"\n",
"#sk-container-id-5 div.sk-label input.sk-toggleable__control:checked~label.sk-
```

```
toggleable__label {\n",
      "  color: var(--sklearn-color-text);\n",
      "  background-color: var(--sklearn-color-unfitted-level-2);\n",
      "}\n",
      "\n",
      "#sk-container-id-5 div.sk-label.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
      "  background-color: var(--sklearn-color-fitted-level-2);\n",
      "}\n",
      "\n",
      "/* Estimator-specific style */\n",
      "\n",
      "/* Colorize estimator box */\n",
      "#sk-container-id-5 div.sk-estimator input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
      "  /* unfitted */\n",
      "  background-color: var(--sklearn-color-unfitted-level-2);\n",
      "}\n",
      "\n",
      "#sk-container-id-5 div.sk-estimator.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
      "  /* fitted */\n",
      "  background-color: var(--sklearn-color-fitted-level-2);\n",
      "}\n",
      "\n",
      "#sk-container-id-5 div.sk-label label.sk-toggleable__label,\n",
      "#sk-container-id-5 div.sk-label label {\n",
      "  /* The background is the default theme color */\n",
      "  color: var(--sklearn-color-text-on-default-background);\n",
      "}\n",
      "\n",
      "/* On hover, darken the color of the background */\n",
      "#sk-container-id-5 div.sk-label:hover label.sk-toggleable__label {\n",
      "  color: var(--sklearn-color-text);\n",
      "  background-color: var(--sklearn-color-unfitted-level-2);\n",
      "}\n",
      "\n",
      "/* Label box, darken color on hover, fitted */\n",
      "#sk-container-id-5 div.sk-label.fitted:hover label.sk-toggleable__label.fitted {\n",
      "  color: var(--sklearn-color-text);\n",
      "  background-color: var(--sklearn-color-fitted-level-2);\n",
      "}\n",
      "\n",
      "/* Estimator label */\n",
      "\n",
      "#sk-container-id-5 div.sk-label label {\n",
      "  font-family: monospace;\n",
      "  font-weight: bold;\n",
      "  display: inline-block;\n",
      "  line-height: 1.2em;\n",
      "}\n",
      "\n",
      "#sk-container-id-5 div.sk-label-container {\n",
      "  text-align: center;\n",
      "}\n",
      "\n",
      "/* Estimator-specific */\n",
      "#sk-container-id-5 div.sk-estimator {\n",
      "  font-family: monospace;\n",
      "  border: 1px dotted var(--sklearn-color-border-box);\n",
      "  border-radius: 0.25em;\n",
      "  box-sizing: border-box;\n",
```

```
"    margin-bottom: 0.5em;\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-estimator.fitted {\n",
"    /* fitted */\n",
"    background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"/* on hover */\n",
"#sk-container-id-5 div.sk-estimator:hover {\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-2);\n",
"}\n",
"\n",
"#sk-container-id-5 div.sk-estimator.fitted:hover {\n",
"    /* fitted */\n",
"    background-color: var(--sklearn-color-fitted-level-2);\n",
"}\n",
"\n",
"/* Specification for estimator info (e.g. \"i\" and \"?\") */\n",
"\n",
"/* Common style for \"i\" and \"?\" */\n",
"\n",
".sk-estimator-doc-link,\n",
"a:link.sk-estimator-doc-link,\n",
"a:visited.sk-estimator-doc-link {\n",
"    float: right;\n",
"    font-size: smaller;\n",
"    line-height: 1em;\n",
"    font-family: monospace;\n",
"    background-color: var(--sklearn-color-background);\n",
"    border-radius: 1em;\n",
"    height: 1em;\n",
"    width: 1em;\n",
"    text-decoration: none !important;\n",
"    margin-left: 1ex;\n",
"    /* unfitted */\n",
"    border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
"    color: var(--sklearn-color-unfitted-level-1);\n",
"}\n",
"\n",
".sk-estimator-doc-link.fitted,\n",
"a:link.sk-estimator-doc-link.fitted,\n",
"a:visited.sk-estimator-doc-link.fitted {\n",
"    /* fitted */\n",
"    border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
"    color: var(--sklearn-color-fitted-level-1);\n",
"}\n",
"\n",
"/* On hover */\n",
"div.sk-estimator:hover .sk-estimator-doc-link:hover,\n",
".sk-estimator-doc-link:hover,\n",
"div.sk-label-container:hover .sk-estimator-doc-link:hover,\n",
".sk-estimator-doc-link:hover {\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-3);\n",
"    color: var(--sklearn-color-background);\n",
"    text-decoration: none;\n",
"}\n",
"\n",
```

```
"div.sk-estimator.fitted:hover .sk-estimator-doc-link.fitted:hover,\n",
".sk-estimator-doc-link.fitted:hover,\n",
"div.sk-label-container:hover .sk-estimator-doc-link.fitted:hover,\n",
".sk-estimator-doc-link.fitted:hover {\n",
"  /* fitted */\n",
"  background-color: var(--sklearn-color-fitted-level-3);\n",
"  color: var(--sklearn-color-background);\n",
"  text-decoration: none;\n",
"}\n",
"\n",
"/* Span, style for the box shown on hovering the info icon */\n",
".sk-estimator-doc-link span {\n",
"  display: none;\n",
"  z-index: 9999;\n",
"  position: relative;\n",
"  font-weight: normal;\n",
"  right: .2ex;\n",
"  padding: .5ex;\n",
"  margin: .5ex;\n",
"  width: min-content;\n",
"  min-width: 20ex;\n",
"  max-width: 50ex;\n",
"  color: var(--sklearn-color-text);\n",
"  box-shadow: 2pt 2pt 4pt #999;\n",
"  /* unfitted */\n",
"  background: var(--sklearn-color-unfitted-level-0);\n",
"  border: .5pt solid var(--sklearn-color-unfitted-level-3);\n",
"}\n",
"\n",
".sk-estimator-doc-link.fitted span {\n",
"  /* fitted */\n",
"  background: var(--sklearn-color-fitted-level-0);\n",
"  border: var(--sklearn-color-fitted-level-3);\n",
"}\n",
"\n",
".sk-estimator-doc-link:hover span {\n",
"  display: block;\n",
"}\n",
"\n",
"/* \"?\"-specific style due to the `<a>` HTML tag */\n",
"\n",
"#sk-container-id-5 a.estimator_doc_link {\n",
"  float: right;\n",
"  font-size: 1rem;\n",
"  line-height: 1em;\n",
"  font-family: monospace;\n",
"  background-color: var(--sklearn-color-background);\n",
"  border-radius: 1rem;\n",
"  height: 1rem;\n",
"  width: 1rem;\n",
"  text-decoration: none;\n",
"  /* unfitted */\n",
"  color: var(--sklearn-color-unfitted-level-1);\n",
"  border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
"}\n",
"\n",
"#sk-container-id-5 a.estimator_doc_link.fitted {\n",
"  /* fitted */\n",
"  border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
"  color: var(--sklearn-color-fitted-level-1);\n",
"}\n",
"\n",
```

```
        "/* On hover */\n",
        "#sk-container-id-5 a.estimator_doc_link:hover {\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-3);\n",
        "  color: var(--sklearn-color-background);\n",
        "  text-decoration: none;\n",
        "}\n",
        "\n",
        "#sk-container-id-5 a.estimator_doc_link.fitted:hover {\n",
        "  /* fitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-3);\n",
        "}\n",
        "</style><div id=\"sk-container-id-5\" class=\"sk-top-container\"><div class=\"sk-text-
repr-fallback\"><pre>SimpleImputer()</pre><b>In a Jupyter environment, please rerun this cell to
show the HTML representation or trust the notebook. <br />On GitHub, the HTML representation is
unable to render, please try loading this page with nbviewer.org.</b></div><div class=\"sk-
container\" hidden><div class=\"sk-item\"><div class=\"sk-estimator fitted sk-toggleable\"><input
class=\"sk-toggleable__control sk-hidden--visually\" id=\"sk-estimator-id-5\" type=\"checkbox\"
checked><label for=\"sk-estimator-id-5\" class=\"sk-toggleable__label fitted sk-toggleable__label-
arrow fitted\">  SimpleImputer<a class=\"sk-estimator-doc-link fitted\"
rel=\"noreferrer\" target=\"_blank\" href=\"https://scikit-learn.org/1.4/modules/generated/
sklearn.impute.SimpleImputer.html\">?<span>Documentation for SimpleImputer</span></a><span
class=\"sk-estimator-doc-link fitted\">i<span>Fitted</span></span></label><div class=\"sk-
toggleable__content fitted\"><pre>SimpleImputer()</pre></div> </div></div></div></div>"
       ],
       "text/plain": [
        "SimpleImputer()"
       ]
      },
      "execution_count": 318,
      "metadata": {},
      "output_type": "execute_result"
     }
    ],
    "source": [
     "from sklearn.impute import SimpleImputer\n",
     "imputer= SimpleImputer(strategy='mean')\n",
     "imputer.fit(df[['price']])"
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 319,
    "id": "f0a96f16-9b7b-4907-a835-a3053289bd6c",
    "metadata": {},
    "outputs": [
     {
      "data": {
       "text/plain": [
        "id                0\n",
        "price             0\n",
        "bedrooms          0\n",
        "bathrooms         0\n",
        "sqft_living       0\n",
        "sqft_lot          0\n",
        "floors            0\n",
        "waterfront        0\n",
        "view              0\n",
        "condition         0\n",
        "grade             0\n",
        "sqft_above        0\n",
        "sqft_basement     0\n",
```

```
         "yr_built          0\n",
         "yr_renovated      0\n",
         "zipcode           0\n",
         "lat               0\n",
         "long              0\n",
         "sqft_living15     0\n",
         "sqft_lot15        0\n",
         "dtype: int64"
        ]
       },
       "execution_count": 319,
       "metadata": {},
       "output_type": "execute_result"
      }
     ],
     "source": [
      "df.isnull().sum()"
     ]
    },
    {
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     "execution_count": 338,
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     "metadata": {},
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      {
       "data": {
        "text/plain": [
         "array([540088.14176653])"
        ]
       },
       "execution_count": 338,
       "metadata": {},
       "output_type": "execute_result"
      }
     ],
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      "imputer.statistics_"
     ]
    },
    {
     "cell_type": "code",
     "execution_count": 339,
     "id": "3b2e24f1-a776-4000-bc1b-b6556638512e",
     "metadata": {},
     "outputs": [],
     "source": [
      "df['price']=imputer.transform(df[['price']])"
     ]
    },
    {
     "cell_type": "code",
     "execution_count": 340,
     "id": "76bab246-6d7f-42c5-b681-dba04aaca543",
     "metadata": {},
     "outputs": [
      {
       "data": {
        "text/plain": [
         "id                0\n",
         "price             0\n",
         "bedrooms          0\n",
```

```
      "bathrooms        0\n",
      "sqft_living      0\n",
      "sqft_lot         0\n",
      "floors           0\n",
      "waterfront       0\n",
      "view             0\n",
      "condition        0\n",
      "grade            0\n",
      "sqft_above       0\n",
      "sqft_basement    0\n",
      "yr_built         0\n",
      "yr_renovated     0\n",
      "zipcode          0\n",
      "lat              0\n",
      "long             0\n",
      "sqft_living15    0\n",
      "sqft_lot15       0\n",
      "dtype: int64"
     ]
    },
    "execution_count": 340,
    "metadata": {},
    "output_type": "execute_result"
   }
  ],
  "source": [
   "df.isnull().sum()"
  ]
 },
 {
  "cell_type": "code",
  "execution_count": 342,
  "id": "bf8d2129-321a-45ea-909e-808f2f8e6e99",
  "metadata": {},
  "outputs": [
   {
    "data": {
     "text/plain": [
      "id               0\n",
      "price            0\n",
      "bedrooms         0\n",
      "bathrooms        0\n",
      "sqft_living      0\n",
      "sqft_lot         0\n",
      "floors           0\n",
      "waterfront       0\n",
      "view             0\n",
      "condition        0\n",
      "grade            0\n",
      "sqft_above       0\n",
      "sqft_basement    0\n",
      "yr_built         0\n",
      "yr_renovated     0\n",
      "zipcode          0\n",
      "lat              0\n",
      "long             0\n",
      "sqft_living15    0\n",
      "sqft_lot15       0\n",
      "dtype: int64"
     ]
    },
    "execution_count": 342,
```

```
     "metadata": {},
     "output_type": "execute_result"
    }
   ],
   "source": [
    "df.isnull().sum()"
   ]
  },
  {
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   "execution_count": 343,
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   "metadata": {},
   "outputs": [
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     "data": {
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       "<style scoped>\n",
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       "        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>id</th>\n",
       "      <th>price</th>\n",
       "      <th>bedrooms</th>\n",
       "      <th>bathrooms</th>\n",
       "      <th>sqft_living</th>\n",
       "      <th>sqft_lot</th>\n",
       "      <th>floors</th>\n",
       "      <th>waterfront</th>\n",
       "      <th>view</th>\n",
       "      <th>condition</th>\n",
       "      <th>grade</th>\n",
       "      <th>sqft_above</th>\n",
       "      <th>sqft_basement</th>\n",
       "      <th>yr_built</th>\n",
       "      <th>yr_renovated</th>\n",
       "      <th>zipcode</th>\n",
       "      <th>lat</th>\n",
       "      <th>long</th>\n",
       "      <th>sqft_living15</th>\n",
       "      <th>sqft_lot15</th>\n",
       "    </tr>\n",
       "  </thead>\n",
       "  <tbody>\n",
       "    <tr>\n",
       "      <th>count</th>\n",
       "      <td>1.941900e+04</td>\n",
       "      <td>1.941900e+04</td>\n",
```

```
"          <td>19419.000000</td>\n",
"          <td>19419.000000</td>\n",
"          <td>19419.000000</td>\n",
"          <td>1.941900e+04</td>\n",
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"          <td>19419.000000</td>\n",
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"          <td>19419.000000</td>\n",
"          <td>19419.000000</td>\n",
"          <td>19419.000000</td>\n",
"          <td>19419.000000</td>\n",
"          <td>19419.000000</td>\n",
"          <td>19419.000000</td>\n",
"          <td>19419.000000</td>\n",
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"          <td>19419.000000</td>\n",
"        </tr>\n",
"        <tr>\n",
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"          <td>5.181692e+05</td>\n",
"          <td>3.353262</td>\n",
"          <td>2.081003</td>\n",
"          <td>2000.995571</td>\n",
"          <td>8.264170e+03</td>\n",
"          <td>1.49019</td>\n",
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"          <td>0.209846</td>\n",
"          <td>3.409187</td>\n",
"          <td>7.574592</td>\n",
"          <td>1713.423451</td>\n",
"          <td>287.572120</td>\n",
"          <td>1970.159483</td>\n",
"          <td>79.666770</td>\n",
"          <td>98080.829342</td>\n",
"          <td>47.562396</td>\n",
"          <td>-122.227479</td>\n",
"          <td>1919.754261</td>\n",
"          <td>7252.012153</td>\n",
"        </tr>\n",
"        <tr>\n",
"          <th>std</th>\n",
"          <td>2.874513e+09</td>\n",
"          <td>3.270848e+05</td>\n",
"          <td>0.932930</td>\n",
"          <td>0.750882</td>\n",
"          <td>843.027070</td>\n",
"          <td>1.471303e+04</td>\n",
"          <td>0.54513</td>\n",
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Firefox

file:///C:/Users/USER/OneDrive/Jonah%20Mbugua/Mbugua/Hex%20S...

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        "  margin: -1px;\n",
        "  overflow: hidden;\n",
        "  padding: 0;\n",
        "  position: absolute;\n",
        "  width: 1px;\n",
        "}\n",
        "\n",
        "#sk-container-id-6 div.sk-dashed-wrapped {\n",
        "  border: 1px dashed var(--sklearn-color-line);\n",
        "  margin: 0 0.4em 0.5em 0.4em;\n",
        "  box-sizing: border-box;\n",
        "  padding-bottom: 0.4em;\n",
        "  background-color: var(--sklearn-color-background);\n",
        "}\n",
        "\n",
        "#sk-container-id-6 div.sk-container {\n",
        "  /* jupyter's `normalize.less` sets `[hidden] { display: none; }`\n",
        "     but bootstrap.min.css set `[hidden] { display: none !important; }`\n",
        "     so we also need the `!important` here to be able to override the\n",
        "     default hidden behavior on the sphinx rendered scikit-learn.org.\n",
        "     See: https://github.com/scikit-learn/scikit-learn/issues/21755 */\n",
        "  display: inline-block !important;\n",
        "  position: relative;\n",
        "}\n",
        "\n",
        "#sk-container-id-6 div.sk-text-repr-fallback {\n",
        "  display: none;\n",
        "}\n",
        "\n",
        "div.sk-parallel-item,\n",
        "div.sk-serial,\n",
        "div.sk-item {\n",
        "  /* draw centered vertical line to link estimators */\n",
        "  background-image: linear-gradient(var(--sklearn-color-text-on-default-background),
var(--sklearn-color-text-on-default-background));\n",
        "  background-size: 2px 100%;\n",
```

```
"    background-repeat: no-repeat;\n",
"    background-position: center center;\n",
"}\n",
"\n",
"/* Parallel-specific style estimator block */\n",
"\n",
"#sk-container-id-6 div.sk-parallel-item::after {\n",
"    content: \"\";\n",
"    width: 100%;\n",
"    border-bottom: 2px solid var(--sklearn-color-text-on-default-background);\n",
"    flex-grow: 1;\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-parallel {\n",
"    display: flex;\n",
"    align-items: stretch;\n",
"    justify-content: center;\n",
"    background-color: var(--sklearn-color-background);\n",
"    position: relative;\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-parallel-item {\n",
"    display: flex;\n",
"    flex-direction: column;\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-parallel-item:first-child::after {\n",
"    align-self: flex-end;\n",
"    width: 50%;\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-parallel-item:last-child::after {\n",
"    align-self: flex-start;\n",
"    width: 50%;\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-parallel-item:only-child::after {\n",
"    width: 0;\n",
"}\n",
"\n",
"/* Serial-specific style estimator block */\n",
"\n",
"#sk-container-id-6 div.sk-serial {\n",
"    display: flex;\n",
"    flex-direction: column;\n",
"    align-items: center;\n",
"    background-color: var(--sklearn-color-background);\n",
"    padding-right: 1em;\n",
"    padding-left: 1em;\n",
"}\n",
"\n",
"\n",
"/* Toggleable style: style used for estimator/Pipeline/ColumnTransformer box that is\n",
"clickable and can be expanded/collapsed.\n",
"- Pipeline and ColumnTransformer use this feature and define the default style\n",
"- Estimators will overwrite some part of the style using the `sk-estimator` class\n",
"*/\n",
"\n",
"/* Pipeline and ColumnTransformer style (default) */\n",
"\n",
"#sk-container-id-6 div.sk-toggleable {\n",
"    /* Default theme specific background. It is overwritten whether we have a\n",
```

```
"    specific estimator or a Pipeline/ColumnTransformer */\n",
"    background-color: var(--sklearn-color-background);\n",
"}\n",
"\n",
"/* Toggleable label */\n",
"#sk-container-id-6 label.sk-toggleable__label {\n",
"    cursor: pointer;\n",
"    display: block;\n",
"    width: 100%;\n",
"    margin-bottom: 0;\n",
"    padding: 0.5em;\n",
"    box-sizing: border-box;\n",
"    text-align: center;\n",
"}\n",
"\n",
"#sk-container-id-6 label.sk-toggleable__label-arrow:before {\n",
"    /* Arrow on the left of the label */\n",
"    content: \"►\";\n",
"    float: left;\n",
"    margin-right: 0.25em;\n",
"    color: var(--sklearn-color-icon);\n",
"}\n",
"\n",
"#sk-container-id-6 label.sk-toggleable__label-arrow:hover:before {\n",
"    color: var(--sklearn-color-text);\n",
"}\n",
"\n",
"/* Toggleable content - dropdown */\n",
"\n",
"#sk-container-id-6 div.sk-toggleable__content {\n",
"    max-height: 0;\n",
"    max-width: 0;\n",
"    overflow: hidden;\n",
"    text-align: left;\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-toggleable__content.fitted {\n",
"    /* fitted */\n",
"    background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-toggleable__content pre {\n",
"    margin: 0.2em;\n",
"    border-radius: 0.25em;\n",
"    color: var(--sklearn-color-text);\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-toggleable__content.fitted pre {\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-6 input.sk-toggleable__control:checked~div.sk-toggleable__content {\n",
"    /* Expand drop-down */\n",
"    max-height: 200px;\n",
"    max-width: 100%;\n",
"    overflow: auto;\n",
"}\n",
```

```
        "\n",
        "#sk-container-id-6 input.sk-toggleable__control:checked~label.sk-toggleable__label-
arrow:before {\n",
        "  content: \"▾\";\n",
        "}\n",
        "\n",
        "/* Pipeline/ColumnTransformer-specific style */\n",
        "\n",
        "#sk-container-id-6 div.sk-label input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  color: var(--sklearn-color-text);\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
        "#sk-container-id-6 div.sk-label.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "/* Estimator-specific style */\n",
        "\n",
        "/* Colorize estimator box */\n",
        "#sk-container-id-6 div.sk-estimator input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
        "#sk-container-id-6 div.sk-estimator.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  /* fitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "#sk-container-id-6 div.sk-label label.sk-toggleable__label,\n",
        "#sk-container-id-6 div.sk-label label {\n",
        "  /* The background is the default theme color */\n",
        "  color: var(--sklearn-color-text-on-default-background);\n",
        "}\n",
        "\n",
        "/* On hover, darken the color of the background */\n",
        "#sk-container-id-6 div.sk-label:hover label.sk-toggleable__label {\n",
        "  color: var(--sklearn-color-text);\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
        "/* Label box, darken color on hover, fitted */\n",
        "#sk-container-id-6 div.sk-label.fitted:hover label.sk-toggleable__label.fitted {\n",
        "  color: var(--sklearn-color-text);\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "/* Estimator label */\n",
        "\n",
        "#sk-container-id-6 div.sk-label label {\n",
        "  font-family: monospace;\n",
        "  font-weight: bold;\n",
        "  display: inline-block;\n",
        "  line-height: 1.2em;\n",
        "}\n",
        "\n",
        "#sk-container-id-6 div.sk-label-container {\n",
```

```
"  text-align: center;\n",
"}\n",
"\n",
"/* Estimator-specific */\n",
"#sk-container-id-6 div.sk-estimator {\n",
"  font-family: monospace;\n",
"  border: 1px dotted var(--sklearn-color-border-box);\n",
"  border-radius: 0.25em;\n",
"  box-sizing: border-box;\n",
"  margin-bottom: 0.5em;\n",
"  /* unfitted */\n",
"  background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-estimator.fitted {\n",
"  /* fitted */\n",
"  background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"/* on hover */\n",
"#sk-container-id-6 div.sk-estimator:hover {\n",
"  /* unfitted */\n",
"  background-color: var(--sklearn-color-unfitted-level-2);\n",
"}\n",
"\n",
"#sk-container-id-6 div.sk-estimator.fitted:hover {\n",
"  /* fitted */\n",
"  background-color: var(--sklearn-color-fitted-level-2);\n",
"}\n",
"\n",
"/* Specification for estimator info (e.g. \"i\" and \"?\") */\n",
"\n",
"/* Common style for \"i\" and \"?\" */\n",
"\n",
".sk-estimator-doc-link,\n",
"a:link.sk-estimator-doc-link,\n",
"a:visited.sk-estimator-doc-link {\n",
"  float: right;\n",
"  font-size: smaller;\n",
"  line-height: 1em;\n",
"  font-family: monospace;\n",
"  background-color: var(--sklearn-color-background);\n",
"  border-radius: 1em;\n",
"  height: 1em;\n",
"  width: 1em;\n",
"  text-decoration: none !important;\n",
"  margin-left: 1ex;\n",
"  /* unfitted */\n",
"  border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
"  color: var(--sklearn-color-unfitted-level-1);\n",
"}\n",
"\n",
".sk-estimator-doc-link.fitted,\n",
"a:link.sk-estimator-doc-link.fitted,\n",
"a:visited.sk-estimator-doc-link.fitted {\n",
"  /* fitted */\n",
"  border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
"  color: var(--sklearn-color-fitted-level-1);\n",
"}\n",
"\n",
"/* On hover */\n",
"div.sk-estimator:hover .sk-estimator-doc-link:hover,\n",
```

```
                    ".sk-estimator-doc-link:hover,\n",
                    "div.sk-label-container:hover .sk-estimator-doc-link:hover,\n",
                    ".sk-estimator-doc-link:hover {\n",
                    "  /* unfitted */\n",
                    "  background-color: var(--sklearn-color-unfitted-level-3);\n",
                    "  color: var(--sklearn-color-background);\n",
                    "  text-decoration: none;\n",
                    "}\n",
                    "\n",
                    "div.sk-estimator.fitted:hover .sk-estimator-doc-link.fitted:hover,\n",
                    ".sk-estimator-doc-link.fitted:hover,\n",
                    "div.sk-label-container:hover .sk-estimator-doc-link.fitted:hover,\n",
                    ".sk-estimator-doc-link.fitted:hover {\n",
                    "  /* fitted */\n",
                    "  background-color: var(--sklearn-color-fitted-level-3);\n",
                    "  color: var(--sklearn-color-background);\n",
                    "  text-decoration: none;\n",
                    "}\n",
                    "\n",
                    "/* Span, style for the box shown on hovering the info icon */\n",
                    ".sk-estimator-doc-link span {\n",
                    "  display: none;\n",
                    "  z-index: 9999;\n",
                    "  position: relative;\n",
                    "  font-weight: normal;\n",
                    "  right: .2ex;\n",
                    "  padding: .5ex;\n",
                    "  margin: .5ex;\n",
                    "  width: min-content;\n",
                    "  min-width: 20ex;\n",
                    "  max-width: 50ex;\n",
                    "  color: var(--sklearn-color-text);\n",
                    "  box-shadow: 2pt 2pt 4pt #999;\n",
                    "  /* unfitted */\n",
                    "  background: var(--sklearn-color-unfitted-level-0);\n",
                    "  border: .5pt solid var(--sklearn-color-unfitted-level-3);\n",
                    "}\n",
                    "\n",
                    ".sk-estimator-doc-link.fitted span {\n",
                    "  /* fitted */\n",
                    "  background: var(--sklearn-color-fitted-level-0);\n",
                    "  border: var(--sklearn-color-fitted-level-3);\n",
                    "}\n",
                    "\n",
                    ".sk-estimator-doc-link:hover span {\n",
                    "  display: block;\n",
                    "}\n",
                    "\n",
                    "/* \"?\"-specific style due to the `<a>` HTML tag */\n",
                    "\n",
                    "#sk-container-id-6 a.estimator_doc_link {\n",
                    "  float: right;\n",
                    "  font-size: 1rem;\n",
                    "  line-height: 1em;\n",
                    "  font-family: monospace;\n",
                    "  background-color: var(--sklearn-color-background);\n",
                    "  border-radius: 1rem;\n",
                    "  height: 1rem;\n",
                    "  width: 1rem;\n",
                    "  text-decoration: none;\n",
                    "  /* unfitted */\n",
                    "  color: var(--sklearn-color-unfitted-level-1);\n",
```

```
        "  border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
        "}\n",
        "\n",
        "#sk-container-id-6 a.estimator_doc_link.fitted {\n",
        "  /* fitted */\n",
        "  border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
        "  color: var(--sklearn-color-fitted-level-1);\n",
        "}\n",
        "\n",
        "/* On hover */\n",
        "#sk-container-id-6 a.estimator_doc_link:hover {\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-3);\n",
        "  color: var(--sklearn-color-background);\n",
        "  text-decoration: none;\n",
        "}\n",
        "\n",
        "#sk-container-id-6 a.estimator_doc_link.fitted:hover {\n",
        "  /* fitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-3);\n",
        "}\n",
        "</style><div id=\"sk-container-id-6\" class=\"sk-top-container\"><div class=\"sk-text-
repr-fallback\"><pre>MinMaxScaler()</pre><b>In a Jupyter environment, please rerun this cell to
show the HTML representation or trust the notebook. <br />On GitHub, the HTML representation is
unable to render, please try loading this page with nbviewer.org.</b></div><div class=\"sk-
container\" hidden><div class=\"sk-item\"><div class=\"sk-estimator fitted sk-toggleable\"><input
class=\"sk-toggleable__control sk-hidden--visually\" id=\"sk-estimator-id-6\" type=\"checkbox\"
checked><label for=\"sk-estimator-id-6\" class=\"sk-toggleable__label fitted sk-toggleable__label-
arrow fitted\">  MinMaxScaler<a class=\"sk-estimator-doc-link fitted\"
rel=\"noreferrer\" target=\"_blank\" href=\"https://scikit-learn.org/1.4/modules/generated/
sklearn.preprocessing.MinMaxScaler.html\">?<span>Documentation for MinMaxScaler</span></a><span
class=\"sk-estimator-doc-link fitted\">i<span>Fitted</span></span></label><div class=\"sk-
toggleable__content fitted\"><pre>MinMaxScaler()</pre></div> </div></div></div></div>"
       ],
       "text/plain": [
        "MinMaxScaler()"
       ]
      },
      "execution_count": 362,
      "metadata": {},
      "output_type": "execute_result"
     }
    ],
    "source": [
     "from sklearn.preprocessing import MinMaxScaler\n",
     "scaler=MinMaxScaler()\n",
     "scaler.fit(x)"
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 363,
    "id": "f2cc8575-83a6-4c7c-85e8-41c33e25e5fa",
    "metadata": {},
    "outputs": [],
    "source": [
     "x[:]=scaler.transform(x)"
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 364,
```

```
            "id": "0c2caf60-f1bb-497c-8daf-1e68404546a2",
            "metadata": {},
            "outputs": [
             {
              "data": {
               "text/html": [
                "<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>id</th>\n",
                "      <th>bedrooms</th>\n",
                "      <th>bathrooms</th>\n",
                "      <th>sqft_living</th>\n",
                "      <th>sqft_lot</th>\n",
                "      <th>floors</th>\n",
                "      <th>waterfront</th>\n",
                "      <th>view</th>\n",
                "      <th>condition</th>\n",
                "      <th>grade</th>\n",
                "      <th>sqft_above</th>\n",
                "      <th>sqft_basement</th>\n",
                "      <th>yr_built</th>\n",
                "      <th>yr_renovated</th>\n",
                "      <th>zipcode</th>\n",
                "      <th>lat</th>\n",
                "      <th>long</th>\n",
                "      <th>sqft_living15</th>\n",
                "      <th>sqft_lot15</th>\n",
                "    </tr>\n",
                "  </thead>\n",
                "  <tbody>\n",
                "    <tr>\n",
                "      <th>0</th>\n",
                "      <td>0.720103</td>\n",
                "      <td>0.090909</td>\n",
                "      <td>0.173913</td>\n",
                "      <td>0.223757</td>\n",
                "      <td>0.004406</td>\n",
                "      <td>0.0</td>\n",
                "      <td>0</td>\n",
                "      <td>0.0</td>\n",
                "      <td>0.5</td>\n",
                "      <td>0.444444</td>\n",
                "      <td>0.223757</td>\n",
                "      <td>0.000</td>\n",
                "      <td>0.478261</td>\n",
                "      <td>0.000000</td>\n",
```

```
"        <td>0.893939</td>\n",
"        <td>0.571498</td>\n",
"        <td>0.207071</td>\n",
"        <td>0.139265</td>\n",
"        <td>0.295816</td>\n",
"      </tr>\n",
"      <tr>\n",
"        <th>1</th>\n",
"        <td>0.647853</td>\n",
"        <td>0.090909</td>\n",
"        <td>0.391304</td>\n",
"        <td>0.607735</td>\n",
"        <td>0.005774</td>\n",
"        <td>0.4</td>\n",
"        <td>0</td>\n",
"        <td>0.0</td>\n",
"        <td>0.5</td>\n",
"        <td>0.444444</td>\n",
"        <td>0.497238</td>\n",
"        <td>0.200</td>\n",
"        <td>0.443478</td>\n",
"        <td>0.988089</td>\n",
"        <td>0.626263</td>\n",
"        <td>0.908959</td>\n",
"        <td>0.154882</td>\n",
"        <td>0.206963</td>\n",
"        <td>0.413516</td>\n",
"      </tr>\n",
"      <tr>\n",
"        <th>2</th>\n",
"        <td>0.568795</td>\n",
"        <td>0.060606</td>\n",
"        <td>0.173913</td>\n",
"        <td>0.110497</td>\n",
"        <td>0.008142</td>\n",
"        <td>0.0</td>\n",
"        <td>0</td>\n",
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"        <td>0.5</td>\n",
"        <td>0.333333</td>\n",
"        <td>0.110497</td>\n",
"        <td>0.000</td>\n",
"        <td>0.286957</td>\n",
"        <td>0.000000</td>\n",
"        <td>0.136364</td>\n",
"        <td>0.936143</td>\n",
"        <td>0.227273</td>\n",
"        <td>0.406190</td>\n",
"        <td>0.438547</td>\n",
"      </tr>\n",
"      <tr>\n",
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"        <td>0.251157</td>\n",
"        <td>0.121212</td>\n",
"        <td>0.521739</td>\n",
"        <td>0.439227</td>\n",
"        <td>0.003848</td>\n",
"        <td>0.0</td>\n",
"        <td>0</td>\n",
"        <td>0.0</td>\n",
"        <td>1.0</td>\n",
"        <td>0.444444</td>\n",
```

```
    "        <td>0.187845</td>\n",
    "        <td>0.455</td>\n",
    "        <td>0.565217</td>\n",
    "        <td>0.000000</td>\n",
    "        <td>0.681818</td>\n",
    "        <td>0.586939</td>\n",
    "        <td>0.092593</td>\n",
    "        <td>0.143133</td>\n",
    "        <td>0.257353</td>\n",
    "      </tr>\n",
    "      <tr>\n",
    "        <th>4</th>\n",
    "        <td>0.197333</td>\n",
    "        <td>0.090909</td>\n",
    "        <td>0.347826</td>\n",
    "        <td>0.361878</td>\n",
    "        <td>0.006493</td>\n",
    "        <td>0.0</td>\n",
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    "        <td>0.0</td>\n",
    "        <td>0.5</td>\n",
    "        <td>0.555556</td>\n",
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    "        <td>0.405468</td>\n",
    "      </tr>\n",
    "      <tr>\n",
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    "      <tr>\n",
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    "        <td>0.320442</td>\n",
    "        <td>0.000525</td>\n",
    "        <td>0.8</td>\n",
```

```
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    "          <td>0.0</td>\n",
    "          <td>0.5</td>\n",
    "          <td>0.555556</td>\n",
    "          <td>0.320442</td>\n",
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    "        <tr>\n",
    "          <th>21611</th>\n",
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    "          <td>0.090909</td>\n",
```

```
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    "        <td>0.339779</td>\n",
    "        <td>0.001604</td>\n",
    "        <td>0.4</td>\n",
    "        <td>0</td>\n",
    "        <td>0.0</td>\n",
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    "        <td>0.939130</td>\n",
    "        <td>0.000000</td>\n",
    "        <td>0.722222</td>\n",
    "        <td>0.704842</td>\n",
    "        <td>0.171717</td>\n",
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    "0      0.720103  0.090909   0.173913     0.223757  0.004406     0.0   \n",
    "1      0.647853  0.090909   0.391304     0.607735  0.005774     0.4   \n",
    "2      0.568795  0.060606   0.173913     0.110497  0.008142     0.0   \n",
    "3      0.251157  0.121212   0.521739     0.439227  0.003848     0.0   \n",
    "4      0.197333  0.090909   0.347826     0.361878  0.006493     0.0   \n",
    "...         ...       ...        ...          ...       ...     ...   \n",
    "21608  0.026467  0.090909   0.434783     0.320442  0.000525     0.8   \n",
    "21609  0.666639  0.121212   0.434783     0.535912  0.004546     0.4   \n",
    "21610  0.153783  0.060606   0.130435     0.179558  0.000713     0.4   \n",
    "21611  0.029327  0.090909   0.434783     0.339779  0.001604     0.4   \n",
    "21612  0.153783  0.060606   0.130435     0.179558  0.000478     0.4   \n",
    "\n",
    "       waterfront  view  condition     grade  sqft_above  sqft_basement  \\\n",
    "0               0   0.0        0.5  0.444444    0.223757          0.000   \n",
    "1               0   0.0        0.5  0.444444    0.497238          0.200   \n",
```

```
       "2               0   0.0        0.5  0.333333   0.110497          0.000   \n",
       "3               0   0.0        1.0  0.444444   0.187845          0.455   \n",
       "4               0   0.0        0.5  0.555556   0.361878          0.000   \n",
       "...            ...   ...        ...       ...        ...            ...   \n",
       "21608           0   0.0        0.5  0.555556   0.320442          0.000   \n",
       "21609           0   0.0        0.5  0.555556   0.535912          0.000   \n",
       "21610           0   0.0        0.5  0.444444   0.179558          0.000   \n",
       "21611           0   0.0        0.5  0.555556   0.339779          0.000   \n",
       "21612           0   0.0        0.5  0.444444   0.179558          0.000   \n",
       "\n",
       "       yr_built  yr_renovated   zipcode       lat      long  sqft_living15  \\\n",
       "0      0.478261      0.000000  0.893939  0.571498  0.207071       0.139265   \n",
       "1      0.443478      0.988089  0.626263  0.908959  0.154882       0.206963   \n",
       "2      0.286957      0.000000  0.136364  0.936143  0.227273       0.406190   \n",
       "3      0.565217      0.000000  0.681818  0.586939  0.092593       0.143133   \n",
       "4      0.756522      0.000000  0.368687  0.741354  0.385522       0.228240   \n",
       "...         ...           ...       ...       ...       ...            ...   \n",
       "21608  0.947826      0.000000  0.515152  0.874055  0.132155       0.176015   \n",
       "21609  0.991304      0.000000  0.732323  0.570693  0.118687       0.234043   \n",
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       "21612  0.939130      0.000000  0.722222  0.704842  0.171717       0.077369   \n",
       "\n",
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       "2        0.438547  \n",
       "3        0.257353  \n",
       "4        0.405468  \n",
       "...           ...  \n",
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    "x_train,x_test,y_train, y_test=train_test_split(x,y, test_size=0.2, random_state=42)"
   ]
  },
  {
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   "execution_count": 367,
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          "  /* Definition of color scheme common for light and dark mode */\n",
          "  --sklearn-color-text: black;\n",
          "  --sklearn-color-line: gray;\n",
          "  /* Definition of color scheme for unfitted estimators */\n",
          "  --sklearn-color-unfitted-level-0: #fff5e6;\n",
          "  --sklearn-color-unfitted-level-1: #f6e4d2;\n",
          "  --sklearn-color-unfitted-level-2: #ffe0b3;\n",
          "  --sklearn-color-unfitted-level-3: chocolate;\n",
          "  /* Definition of color scheme for fitted estimators */\n",
          "  --sklearn-color-fitted-level-0: #f0f8ff;\n",
          "  --sklearn-color-fitted-level-1: #d4ebff;\n",
          "  --sklearn-color-fitted-level-2: #b3dbfd;\n",
          "  --sklearn-color-fitted-level-3: cornflowerblue;\n",
          "\n",
          "  /* Specific color for light theme */\n",
          "  --sklearn-color-text-on-default-background: var(--sg-text-color, var(--theme-code-
foreground, var(--jp-content-font-color1, black)));\n",
          "  --sklearn-color-background: var(--sg-background-color, var(--theme-background, var(--jp-
layout-color0, white)));\n",
          "  --sklearn-color-border-box: var(--sg-text-color, var(--theme-code-foreground, var(--jp-
content-font-color1, black)));\n",
          "  --sklearn-color-icon: #696969;\n",
          "\n",
          "  @media (prefers-color-scheme: dark) {\n",
          "    /* Redefinition of color scheme for dark theme */\n",
          "    --sklearn-color-text-on-default-background: var(--sg-text-color, var(--theme-code-
foreground, var(--jp-content-font-color1, white)));\n",
          "    --sklearn-color-background: var(--sg-background-color, var(--theme-background, var(--
jp-layout-color0, #111)));\n",
          "    --sklearn-color-border-box: var(--sg-text-color, var(--theme-code-foreground, var(--
jp-content-font-color1, white)));\n",
          "    --sklearn-color-icon: #878787;\n",
          "  }\n",
          "}\n",
```

```
        "\n",
        "#sk-container-id-7 {\n",
        "  color: var(--sklearn-color-text);\n",
        "}\n",
        "\n",
        "#sk-container-id-7 pre {\n",
        "  padding: 0;\n",
        "}\n",
        "\n",
        "#sk-container-id-7 input.sk-hidden--visually {\n",
        "  border: 0;\n",
        "  clip: rect(1px 1px 1px 1px);\n",
        "  clip: rect(1px, 1px, 1px, 1px);\n",
        "  height: 1px;\n",
        "  margin: -1px;\n",
        "  overflow: hidden;\n",
        "  padding: 0;\n",
        "  position: absolute;\n",
        "  width: 1px;\n",
        "}\n",
        "\n",
        "#sk-container-id-7 div.sk-dashed-wrapped {\n",
        "  border: 1px dashed var(--sklearn-color-line);\n",
        "  margin: 0 0.4em 0.5em 0.4em;\n",
        "  box-sizing: border-box;\n",
        "  padding-bottom: 0.4em;\n",
        "  background-color: var(--sklearn-color-background);\n",
        "}\n",
        "\n",
        "#sk-container-id-7 div.sk-container {\n",
        "  /* jupyter's `normalize.less` sets `[hidden] { display: none; }`\n",
        "     but bootstrap.min.css set `[hidden] { display: none !important; }`\n",
        "     so we also need the `!important` here to be able to override the\n",
        "     default hidden behavior on the sphinx rendered scikit-learn.org.\n",
        "     See: https://github.com/scikit-learn/scikit-learn/issues/21755 */\n",
        "  display: inline-block !important;\n",
        "  position: relative;\n",
        "}\n",
        "\n",
        "#sk-container-id-7 div.sk-text-repr-fallback {\n",
        "  display: none;\n",
        "}\n",
        "\n",
        "div.sk-parallel-item,\n",
        "div.sk-serial,\n",
        "div.sk-item {\n",
        "  /* draw centered vertical line to link estimators */\n",
        "  background-image: linear-gradient(var(--sklearn-color-text-on-default-background),
var(--sklearn-color-text-on-default-background));\n",
        "  background-size: 2px 100%;\n",
        "  background-repeat: no-repeat;\n",
        "  background-position: center center;\n",
        "}\n",
        "\n",
        "/* Parallel-specific style estimator block */\n",
        "\n",
        "#sk-container-id-7 div.sk-parallel-item::after {\n",
        "  content: \"\";\n",
        "  width: 100%;\n",
        "  border-bottom: 2px solid var(--sklearn-color-text-on-default-background);\n",
        "  flex-grow: 1;\n",
        "}\n",
```

```
                    "\n",
                    "#sk-container-id-7 div.sk-parallel {\n",
                    "  display: flex;\n",
                    "  align-items: stretch;\n",
                    "  justify-content: center;\n",
                    "  background-color: var(--sklearn-color-background);\n",
                    "  position: relative;\n",
                    "}\n",
                    "\n",
                    "#sk-container-id-7 div.sk-parallel-item {\n",
                    "  display: flex;\n",
                    "  flex-direction: column;\n",
                    "}\n",
                    "\n",
                    "#sk-container-id-7 div.sk-parallel-item:first-child::after {\n",
                    "  align-self: flex-end;\n",
                    "  width: 50%;\n",
                    "}\n",
                    "\n",
                    "#sk-container-id-7 div.sk-parallel-item:last-child::after {\n",
                    "  align-self: flex-start;\n",
                    "  width: 50%;\n",
                    "}\n",
                    "\n",
                    "#sk-container-id-7 div.sk-parallel-item:only-child::after {\n",
                    "  width: 0;\n",
                    "}\n",
                    "\n",
                    "/* Serial-specific style estimator block */\n",
                    "\n",
                    "#sk-container-id-7 div.sk-serial {\n",
                    "  display: flex;\n",
                    "  flex-direction: column;\n",
                    "  align-items: center;\n",
                    "  background-color: var(--sklearn-color-background);\n",
                    "  padding-right: 1em;\n",
                    "  padding-left: 1em;\n",
                    "}\n",
                    "\n",
                    "\n",
                    "/* Toggleable style: style used for estimator/Pipeline/ColumnTransformer box that is\n",
                    "clickable and can be expanded/collapsed.\n",
                    "- Pipeline and ColumnTransformer use this feature and define the default style\n",
                    "- Estimators will overwrite some part of the style using the `sk-estimator` class\n",
                    "*/\n",
                    "\n",
                    "/* Pipeline and ColumnTransformer style (default) */\n",
                    "\n",
                    "#sk-container-id-7 div.sk-toggleable {\n",
                    "  /* Default theme specific background. It is overwritten whether we have a\n",
                    "  specific estimator or a Pipeline/ColumnTransformer */\n",
                    "  background-color: var(--sklearn-color-background);\n",
                    "}\n",
                    "\n",
                    "/* Toggleable label */\n",
                    "#sk-container-id-7 label.sk-toggleable__label {\n",
                    "  cursor: pointer;\n",
                    "  display: block;\n",
                    "  width: 100%;\n",
                    "  margin-bottom: 0;\n",
                    "  padding: 0.5em;\n",
                    "  box-sizing: border-box;\n",
```

```
"    text-align: center;\n",
"}\n",
"\n",
"#sk-container-id-7 label.sk-toggleable__label-arrow:before {\n",
"    /* Arrow on the left of the label */\n",
"    content: \"▸\";\n",
"    float: left;\n",
"    margin-right: 0.25em;\n",
"    color: var(--sklearn-color-icon);\n",
"}\n",
"\n",
"#sk-container-id-7 label.sk-toggleable__label-arrow:hover:before {\n",
"    color: var(--sklearn-color-text);\n",
"}\n",
"\n",
"/* Toggleable content - dropdown */\n",
"\n",
"#sk-container-id-7 div.sk-toggleable__content {\n",
"    max-height: 0;\n",
"    max-width: 0;\n",
"    overflow: hidden;\n",
"    text-align: left;\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-7 div.sk-toggleable__content.fitted {\n",
"    /* fitted */\n",
"    background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-7 div.sk-toggleable__content pre {\n",
"    margin: 0.2em;\n",
"    border-radius: 0.25em;\n",
"    color: var(--sklearn-color-text);\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-7 div.sk-toggleable__content.fitted pre {\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-7 input.sk-toggleable__control:checked~div.sk-toggleable__content {\n",
"    /* Expand drop-down */\n",
"    max-height: 200px;\n",
"    max-width: 100%;\n",
"    overflow: auto;\n",
"}\n",
"\n",
"#sk-container-id-7 input.sk-toggleable__control:checked~label.sk-toggleable__label-
arrow:before {\n",
"    content: \"▾\";\n",
"}\n",
"\n",
"/* Pipeline/ColumnTransformer-specific style */\n",
"\n",
"#sk-container-id-7 div.sk-label input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
"    color: var(--sklearn-color-text);\n",
"    background-color: var(--sklearn-color-unfitted-level-2);\n",
```

```
        "}\n",
        "\n",
        "#sk-container-id-7 div.sk-label.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "/* Estimator-specific style */\n",
        "\n",
        "/* Colorize estimator box */\n",
        "#sk-container-id-7 div.sk-estimator input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
        "#sk-container-id-7 div.sk-estimator.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  /* fitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "#sk-container-id-7 div.sk-label label.sk-toggleable__label,\n",
        "#sk-container-id-7 div.sk-label label {\n",
        "  /* The background is the default theme color */\n",
        "  color: var(--sklearn-color-text-on-default-background);\n",
        "}\n",
        "\n",
        "/* On hover, darken the color of the background */\n",
        "#sk-container-id-7 div.sk-label:hover label.sk-toggleable__label {\n",
        "  color: var(--sklearn-color-text);\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
        "/* Label box, darken color on hover, fitted */\n",
        "#sk-container-id-7 div.sk-label.fitted:hover label.sk-toggleable__label.fitted {\n",
        "  color: var(--sklearn-color-text);\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "/* Estimator label */\n",
        "\n",
        "#sk-container-id-7 div.sk-label label {\n",
        "  font-family: monospace;\n",
        "  font-weight: bold;\n",
        "  display: inline-block;\n",
        "  line-height: 1.2em;\n",
        "}\n",
        "\n",
        "#sk-container-id-7 div.sk-label-container {\n",
        "  text-align: center;\n",
        "}\n",
        "\n",
        "/* Estimator-specific */\n",
        "#sk-container-id-7 div.sk-estimator {\n",
        "  font-family: monospace;\n",
        "  border: 1px dotted var(--sklearn-color-border-box);\n",
        "  border-radius: 0.25em;\n",
        "  box-sizing: border-box;\n",
        "  margin-bottom: 0.5em;\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-0);\n",
```

```
"}\n",
"\n",
"#sk-container-id-7 div.sk-estimator.fitted {\n",
"  /* fitted */\n",
"  background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"/* on hover */\n",
"#sk-container-id-7 div.sk-estimator:hover {\n",
"  /* unfitted */\n",
"  background-color: var(--sklearn-color-unfitted-level-2);\n",
"}\n",
"\n",
"#sk-container-id-7 div.sk-estimator.fitted:hover {\n",
"  /* fitted */\n",
"  background-color: var(--sklearn-color-fitted-level-2);\n",
"}\n",
"\n",
"/* Specification for estimator info (e.g. \"i\" and \"?\") */\n",
"\n",
"/* Common style for \"i\" and \"?\" */\n",
"\n",
".sk-estimator-doc-link,\n",
"a:link.sk-estimator-doc-link,\n",
"a:visited.sk-estimator-doc-link {\n",
"  float: right;\n",
"  font-size: smaller;\n",
"  line-height: 1em;\n",
"  font-family: monospace;\n",
"  background-color: var(--sklearn-color-background);\n",
"  border-radius: 1em;\n",
"  height: 1em;\n",
"  width: 1em;\n",
"  text-decoration: none !important;\n",
"  margin-left: 1ex;\n",
"  /* unfitted */\n",
"  border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
"  color: var(--sklearn-color-unfitted-level-1);\n",
"}\n",
"\n",
".sk-estimator-doc-link.fitted,\n",
"a:link.sk-estimator-doc-link.fitted,\n",
"a:visited.sk-estimator-doc-link.fitted {\n",
"  /* fitted */\n",
"  border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
"  color: var(--sklearn-color-fitted-level-1);\n",
"}\n",
"\n",
"/* On hover */\n",
"div.sk-estimator:hover .sk-estimator-doc-link:hover,\n",
".sk-estimator-doc-link:hover,\n",
"div.sk-label-container:hover .sk-estimator-doc-link:hover,\n",
".sk-estimator-doc-link:hover {\n",
"  /* unfitted */\n",
"  background-color: var(--sklearn-color-unfitted-level-3);\n",
"  color: var(--sklearn-color-background);\n",
"  text-decoration: none;\n",
"}\n",
"\n",
"div.sk-estimator.fitted:hover .sk-estimator-doc-link.fitted:hover,\n",
".sk-estimator-doc-link.fitted:hover,\n",
"div.sk-label-container:hover .sk-estimator-doc-link.fitted:hover,\n",
```

```
                ".sk-estimator-doc-link.fitted:hover {\n",
                "  /* fitted */\n",
                "  background-color: var(--sklearn-color-fitted-level-3);\n",
                "  color: var(--sklearn-color-background);\n",
                "  text-decoration: none;\n",
                "}\n",
                "\n",
                "/* Span, style for the box shown on hovering the info icon */\n",
                ".sk-estimator-doc-link span {\n",
                "  display: none;\n",
                "  z-index: 9999;\n",
                "  position: relative;\n",
                "  font-weight: normal;\n",
                "  right: .2ex;\n",
                "  padding: .5ex;\n",
                "  margin: .5ex;\n",
                "  width: min-content;\n",
                "  min-width: 20ex;\n",
                "  max-width: 50ex;\n",
                "  color: var(--sklearn-color-text);\n",
                "  box-shadow: 2pt 2pt 4pt #999;\n",
                "  /* unfitted */\n",
                "  background: var(--sklearn-color-unfitted-level-0);\n",
                "  border: .5pt solid var(--sklearn-color-unfitted-level-3);\n",
                "}\n",
                "\n",
                ".sk-estimator-doc-link.fitted span {\n",
                "  /* fitted */\n",
                "  background: var(--sklearn-color-fitted-level-0);\n",
                "  border: var(--sklearn-color-fitted-level-3);\n",
                "}\n",
                "\n",
                ".sk-estimator-doc-link:hover span {\n",
                "  display: block;\n",
                "}\n",
                "\n",
                "/* \"?\"-specific style due to the `<a>` HTML tag */\n",
                "\n",
                "#sk-container-id-7 a.estimator_doc_link {\n",
                "  float: right;\n",
                "  font-size: 1rem;\n",
                "  line-height: 1em;\n",
                "  font-family: monospace;\n",
                "  background-color: var(--sklearn-color-background);\n",
                "  border-radius: 1rem;\n",
                "  height: 1rem;\n",
                "  width: 1rem;\n",
                "  text-decoration: none;\n",
                "  /* unfitted */\n",
                "  color: var(--sklearn-color-unfitted-level-1);\n",
                "  border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
                "}\n",
                "\n",
                "#sk-container-id-7 a.estimator_doc_link.fitted {\n",
                "  /* fitted */\n",
                "  border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
                "  color: var(--sklearn-color-fitted-level-1);\n",
                "}\n",
                "\n",
                "/* On hover */\n",
                "#sk-container-id-7 a.estimator_doc_link:hover {\n",
                "  /* unfitted */\n",
```

Firefox

file:///C:/Users/USER/OneDrive/Jonah%20Mbugua/Mbugua/Hex%20S...

```
            "    background-color: var(--sklearn-color-unfitted-level-3);\n",
            "    color: var(--sklearn-color-background);\n",
            "    text-decoration: none;\n",
            "}\n",
            "\n",
            "#sk-container-id-7 a.estimator_doc_link.fitted:hover {\n",
            "  /* fitted */\n",
            "    background-color: var(--sklearn-color-fitted-level-3);\n",
            "}\n",
            "</style><div id=\"sk-container-id-7\" class=\"sk-top-container\"><div class=\"sk-text-
repr-fallback\"><pre>LinearRegression()</pre><b>In a Jupyter environment, please rerun this cell
to show the HTML representation or trust the notebook. <br />On GitHub, the HTML representation is
unable to render, please try loading this page with nbviewer.org.</b></div><div class=\"sk-
container\" hidden><div class=\"sk-item\"><div class=\"sk-estimator fitted sk-toggleable\"><input
class=\"sk-toggleable__control sk-hidden--visually\" id=\"sk-estimator-id-7\" type=\"checkbox\"
checked><label for=\"sk-estimator-id-7\" class=\"sk-toggleable__label fitted sk-toggleable__label-
arrow fitted\">  LinearRegression<a class=\"sk-estimator-doc-link fitted\"
rel=\"noreferrer\" target=\"_blank\" href=\"https://scikit-learn.org/1.4/modules/generated/
sklearn.linear_model.LinearRegression.html\">?<span>Documentation for LinearRegression</span></
a><span class=\"sk-estimator-doc-link fitted\">i<span>Fitted</span></span></label><div class=\"sk-
toggleable__content fitted\"><pre>LinearRegression()</pre></div> </div></div></div></div>"
          ],
          "text/plain": [
            "LinearRegression()"
          ]
        },
        "execution_count": 368,
        "metadata": {},
        "output_type": "execute_result"
      }
    ],
    "source": [
      "from sklearn.linear_model import LinearRegression\n",
      "model=LinearRegression()\n",
      "model.fit(x_train,y_train)"
    ]
  },
  {
    "cell_type": "code",
    "execution_count": 370,
    "id": "d99f03b9-e8a1-49de-86a3-d654f26ae02d",
    "metadata": {},
    "outputs": [],
    "source": [
      "y_pred=model.predict(x_test)"
    ]
  },
  {
    "cell_type": "code",
    "execution_count": 372,
    "id": "3d91c0d4-4618-4bb0-b1e8-32b586c8dcc7",
    "metadata": {},
    "outputs": [
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        "data": {
          "text/plain": [
            "20949    379950.0\n",
            "6695     490000.0\n",
            "8388     575000.0\n",
            "3907     220000.0\n",
            "4865     268000.0\n",
            "Name: price, dtype: float64"
```

```
       ]
      },
      "execution_count": 372,
      "metadata": {},
      "output_type": "execute_result"
     }
    ],
    "source": [
     "y_test[:5]"
    ]
   },
   {
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    "execution_count": 373,
    "id": "bc798348-7a3d-4f26-8875-78985ee861b6",
    "metadata": {},
    "outputs": [
     {
      "data": {
       "text/plain": [
        "array([605547.71360105, 511328.1015971 , 456510.03236644, 192372.20711189,\n",
        "       309219.72414435])"
       ]
      },
      "execution_count": 373,
      "metadata": {},
      "output_type": "execute_result"
     }
    ],
    "source": [
     "y_pred[:5]"
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 374,
    "id": "c4fbebf0-3ec3-457b-a627-d29ea83bea7a",
    "metadata": {},
    "outputs": [],
    "source": [
     "from sklearn.metrics import mean_absolute_error"
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 375,
    "id": "2b21349f-104f-4db7-b71b-7e60cc4ee448",
    "metadata": {},
    "outputs": [
     {
      "data": {
       "text/plain": [
        "100734.69386754752"
       ]
      },
      "execution_count": 375,
      "metadata": {},
      "output_type": "execute_result"
     }
    ],
    "source": [
     "mean_absolute_error(y_test,y_pred)"
```

```
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 379,
    "id": "a9d4dabc-f57f-47a3-8045-2e80963b14b4",
    "metadata": {},
    "outputs": [
     {
      "data": {
       "text/html": [
        "<style>#sk-container-id-8 {\n",
        "  /* Definition of color scheme common for light and dark mode */\n",
        "  --sklearn-color-text: black;\n",
        "  --sklearn-color-line: gray;\n",
        "  /* Definition of color scheme for unfitted estimators */\n",
        "  --sklearn-color-unfitted-level-0: #fff5e6;\n",
        "  --sklearn-color-unfitted-level-1: #f6e4d2;\n",
        "  --sklearn-color-unfitted-level-2: #ffe0b3;\n",
        "  --sklearn-color-unfitted-level-3: chocolate;\n",
        "  /* Definition of color scheme for fitted estimators */\n",
        "  --sklearn-color-fitted-level-0: #f0f8ff;\n",
        "  --sklearn-color-fitted-level-1: #d4ebff;\n",
        "  --sklearn-color-fitted-level-2: #b3dbfd;\n",
        "  --sklearn-color-fitted-level-3: cornflowerblue;\n",
        "\n",
        "  /* Specific color for light theme */\n",
        "  --sklearn-color-text-on-default-background: var(--sg-text-color, var(--theme-code-foreground, var(--jp-content-font-color1, black)));\n",
        "  --sklearn-color-background: var(--sg-background-color, var(--theme-background, var(--jp-layout-color0, white)));\n",
        "  --sklearn-color-border-box: var(--sg-text-color, var(--theme-code-foreground, var(--jp-content-font-color1, black)));\n",
        "  --sklearn-color-icon: #696969;\n",
        "\n",
        "  @media (prefers-color-scheme: dark) {\n",
        "    /* Redefinition of color scheme for dark theme */\n",
        "    --sklearn-color-text-on-default-background: var(--sg-text-color, var(--theme-code-foreground, var(--jp-content-font-color1, white)));\n",
        "    --sklearn-color-background: var(--sg-background-color, var(--theme-background, var(--jp-layout-color0, #111)));\n",
        "    --sklearn-color-border-box: var(--sg-text-color, var(--theme-code-foreground, var(--jp-content-font-color1, white)));\n",
        "    --sklearn-color-icon: #878787;\n",
        "  }\n",
        "}\n",
        "\n",
        "#sk-container-id-8 {\n",
        "  color: var(--sklearn-color-text);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 pre {\n",
        "  padding: 0;\n",
        "}\n",
        "\n",
        "#sk-container-id-8 input.sk-hidden--visually {\n",
        "  border: 0;\n",
        "  clip: rect(1px 1px 1px 1px);\n",
        "  clip: rect(1px, 1px, 1px, 1px);\n",
        "  height: 1px;\n",
        "  margin: -1px;\n",
        "  overflow: hidden;\n",
```

```
"   padding: 0;\n",
"   position: absolute;\n",
"   width: 1px;\n",
"}\n",
"\n",
"#sk-container-id-8 div.sk-dashed-wrapped {\n",
"   border: 1px dashed var(--sklearn-color-line);\n",
"   margin: 0 0.4em 0.5em 0.4em;\n",
"   box-sizing: border-box;\n",
"   padding-bottom: 0.4em;\n",
"   background-color: var(--sklearn-color-background);\n",
"}\n",
"\n",
"#sk-container-id-8 div.sk-container {\n",
"   /* jupyter's `normalize.less` sets `[hidden] { display: none; }`\n",
"       but bootstrap.min.css set `[hidden] { display: none !important; }`\n",
"       so we also need the `!important` here to be able to override the\n",
"       default hidden behavior on the sphinx rendered scikit-learn.org.\n",
"       See: https://github.com/scikit-learn/scikit-learn/issues/21755 */\n",
"   display: inline-block !important;\n",
"   position: relative;\n",
"}\n",
"\n",
"#sk-container-id-8 div.sk-text-repr-fallback {\n",
"   display: none;\n",
"}\n",
"\n",
"div.sk-parallel-item,\n",
"div.sk-serial,\n",
"div.sk-item {\n",
"   /* draw centered vertical line to link estimators */\n",
"   background-image: linear-gradient(var(--sklearn-color-text-on-default-background),
var(--sklearn-color-text-on-default-background));\n",
"   background-size: 2px 100%;\n",
"   background-repeat: no-repeat;\n",
"   background-position: center center;\n",
"}\n",
"\n",
"/* Parallel-specific style estimator block */\n",
"\n",
"#sk-container-id-8 div.sk-parallel-item::after {\n",
"   content: \"\";\n",
"   width: 100%;\n",
"   border-bottom: 2px solid var(--sklearn-color-text-on-default-background);\n",
"   flex-grow: 1;\n",
"}\n",
"\n",
"#sk-container-id-8 div.sk-parallel {\n",
"   display: flex;\n",
"   align-items: stretch;\n",
"   justify-content: center;\n",
"   background-color: var(--sklearn-color-background);\n",
"   position: relative;\n",
"}\n",
"\n",
"#sk-container-id-8 div.sk-parallel-item {\n",
"   display: flex;\n",
"   flex-direction: column;\n",
"}\n",
"\n",
"#sk-container-id-8 div.sk-parallel-item:first-child::after {\n",
"   align-self: flex-end;\n",
```

```
"   width: 50%;\n",
"}\n",
"\n",
"#sk-container-id-8 div.sk-parallel-item:last-child::after {\n",
"   align-self: flex-start;\n",
"   width: 50%;\n",
"}\n",
"\n",
"#sk-container-id-8 div.sk-parallel-item:only-child::after {\n",
"   width: 0;\n",
"}\n",
"\n",
"/* Serial-specific style estimator block */\n",
"\n",
"#sk-container-id-8 div.sk-serial {\n",
"   display: flex;\n",
"   flex-direction: column;\n",
"   align-items: center;\n",
"   background-color: var(--sklearn-color-background);\n",
"   padding-right: 1em;\n",
"   padding-left: 1em;\n",
"}\n",
"\n",
"\n",
"/* Toggleable style: style used for estimator/Pipeline/ColumnTransformer box that is\n",
"clickable and can be expanded/collapsed.\n",
"- Pipeline and ColumnTransformer use this feature and define the default style\n",
"- Estimators will overwrite some part of the style using the `sk-estimator` class\n",
"*/\n",
"\n",
"/* Pipeline and ColumnTransformer style (default) */\n",
"\n",
"#sk-container-id-8 div.sk-toggleable {\n",
"   /* Default theme specific background. It is overwritten whether we have a\n",
"   specific estimator or a Pipeline/ColumnTransformer */\n",
"   background-color: var(--sklearn-color-background);\n",
"}\n",
"\n",
"/* Toggleable label */\n",
"#sk-container-id-8 label.sk-toggleable__label {\n",
"   cursor: pointer;\n",
"   display: block;\n",
"   width: 100%;\n",
"   margin-bottom: 0;\n",
"   padding: 0.5em;\n",
"   box-sizing: border-box;\n",
"   text-align: center;\n",
"}\n",
"\n",
"#sk-container-id-8 label.sk-toggleable__label-arrow:before {\n",
"   /* Arrow on the left of the label */\n",
"   content: \"▸\";\n",
"   float: left;\n",
"   margin-right: 0.25em;\n",
"   color: var(--sklearn-color-icon);\n",
"}\n",
"\n",
"#sk-container-id-8 label.sk-toggleable__label-arrow:hover:before {\n",
"   color: var(--sklearn-color-text);\n",
"}\n",
"\n",
"/* Toggleable content - dropdown */\n",
```

```
        "\n",
        "#sk-container-id-8 div.sk-toggleable__content {\n",
        "  max-height: 0;\n",
        "  max-width: 0;\n",
        "  overflow: hidden;\n",
        "  text-align: left;\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-0);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 div.sk-toggleable__content.fitted {\n",
        "  /* fitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-0);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 div.sk-toggleable__content pre {\n",
        "  margin: 0.2em;\n",
        "  border-radius: 0.25em;\n",
        "  color: var(--sklearn-color-text);\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-0);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 div.sk-toggleable__content.fitted pre {\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-0);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 input.sk-toggleable__control:checked~div.sk-toggleable__content {\n",
        "  /* Expand drop-down */\n",
        "  max-height: 200px;\n",
        "  max-width: 100%;\n",
        "  overflow: auto;\n",
        "}\n",
        "\n",
        "#sk-container-id-8 input.sk-toggleable__control:checked~label.sk-toggleable__label-
arrow:before {\n",
        "  content: \"▾\";\n",
        "}\n",
        "\n",
        "/* Pipeline/ColumnTransformer-specific style */\n",
        "\n",
        "#sk-container-id-8 div.sk-label input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  color: var(--sklearn-color-text);\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 div.sk-label.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "/* Estimator-specific style */\n",
        "\n",
        "/* Colorize estimator box */\n",
        "#sk-container-id-8 div.sk-estimator input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
```

```
        "#sk-container-id-8 div.sk-estimator.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
        "  /* fitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 div.sk-label label.sk-toggleable__label,\n",
        "#sk-container-id-8 div.sk-label label {\n",
        "  /* The background is the default theme color */\n",
        "  color: var(--sklearn-color-text-on-default-background);\n",
        "}\n",
        "\n",
        "/* On hover, darken the color of the background */\n",
        "#sk-container-id-8 div.sk-label:hover label.sk-toggleable__label {\n",
        "  color: var(--sklearn-color-text);\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
        "/* Label box, darken color on hover, fitted */\n",
        "#sk-container-id-8 div.sk-label.fitted:hover label.sk-toggleable__label.fitted {\n",
        "  color: var(--sklearn-color-text);\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
        "}\n",
        "\n",
        "/* Estimator label */\n",
        "\n",
        "#sk-container-id-8 div.sk-label label {\n",
        "  font-family: monospace;\n",
        "  font-weight: bold;\n",
        "  display: inline-block;\n",
        "  line-height: 1.2em;\n",
        "}\n",
        "\n",
        "#sk-container-id-8 div.sk-label-container {\n",
        "  text-align: center;\n",
        "}\n",
        "\n",
        "/* Estimator-specific */\n",
        "#sk-container-id-8 div.sk-estimator {\n",
        "  font-family: monospace;\n",
        "  border: 1px dotted var(--sklearn-color-border-box);\n",
        "  border-radius: 0.25em;\n",
        "  box-sizing: border-box;\n",
        "  margin-bottom: 0.5em;\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-0);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 div.sk-estimator.fitted {\n",
        "  /* fitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-0);\n",
        "}\n",
        "\n",
        "/* on hover */\n",
        "#sk-container-id-8 div.sk-estimator:hover {\n",
        "  /* unfitted */\n",
        "  background-color: var(--sklearn-color-unfitted-level-2);\n",
        "}\n",
        "\n",
        "#sk-container-id-8 div.sk-estimator.fitted:hover {\n",
        "  /* fitted */\n",
        "  background-color: var(--sklearn-color-fitted-level-2);\n",
```

Firefox

file:///C:/Users/USER/OneDrive/Jonah%20Mbugua/Mbugua/Hex%20S...

```
"}\n",
"\n",
"/* Specification for estimator info (e.g. \"i\" and \"?\") */\n",
"\n",
"/* Common style for \"i\" and \"?\" */\n",
"\n",
".sk-estimator-doc-link,\n",
"a:link.sk-estimator-doc-link,\n",
"a:visited.sk-estimator-doc-link {\n",
"   float: right;\n",
"   font-size: smaller;\n",
"   line-height: 1em;\n",
"   font-family: monospace;\n",
"   background-color: var(--sklearn-color-background);\n",
"   border-radius: 1em;\n",
"   height: 1em;\n",
"   width: 1em;\n",
"   text-decoration: none !important;\n",
"   margin-left: 1ex;\n",
"   /* unfitted */\n",
"   border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
"   color: var(--sklearn-color-unfitted-level-1);\n",
"}\n",
"\n",
".sk-estimator-doc-link.fitted,\n",
"a:link.sk-estimator-doc-link.fitted,\n",
"a:visited.sk-estimator-doc-link.fitted {\n",
"   /* fitted */\n",
"   border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
"   color: var(--sklearn-color-fitted-level-1);\n",
"}\n",
"\n",
"/* On hover */\n",
"div.sk-estimator:hover .sk-estimator-doc-link:hover,\n",
".sk-estimator-doc-link:hover,\n",
"div.sk-label-container:hover .sk-estimator-doc-link:hover,\n",
".sk-estimator-doc-link:hover {\n",
"   /* unfitted */\n",
"   background-color: var(--sklearn-color-unfitted-level-3);\n",
"   color: var(--sklearn-color-background);\n",
"   text-decoration: none;\n",
"}\n",
"\n",
"div.sk-estimator.fitted:hover .sk-estimator-doc-link.fitted:hover,\n",
".sk-estimator-doc-link.fitted:hover,\n",
"div.sk-label-container:hover .sk-estimator-doc-link.fitted:hover,\n",
".sk-estimator-doc-link.fitted:hover {\n",
"   /* fitted */\n",
"   background-color: var(--sklearn-color-fitted-level-3);\n",
"   color: var(--sklearn-color-background);\n",
"   text-decoration: none;\n",
"}\n",
"\n",
"/* Span, style for the box shown on hovering the info icon */\n",
".sk-estimator-doc-link span {\n",
"   display: none;\n",
"   z-index: 9999;\n",
"   position: relative;\n",
"   font-weight: normal;\n",
"   right: .2ex;\n",
"   padding: .5ex;\n",
"   margin: .5ex;\n",
```

```
"    width: min-content;\n",
"    min-width: 20ex;\n",
"    max-width: 50ex;\n",
"    color: var(--sklearn-color-text);\n",
"    box-shadow: 2pt 2pt 4pt #999;\n",
"    /* unfitted */\n",
"    background: var(--sklearn-color-unfitted-level-0);\n",
"    border: .5pt solid var(--sklearn-color-unfitted-level-3);\n",
"}\n",
"\n",
".sk-estimator-doc-link.fitted span {\n",
"    /* fitted */\n",
"    background: var(--sklearn-color-fitted-level-0);\n",
"    border: var(--sklearn-color-fitted-level-3);\n",
"}\n",
"\n",
".sk-estimator-doc-link:hover span {\n",
"    display: block;\n",
"}\n",
"\n",
"/* \"?\"-specific style due to the `<a>` HTML tag */\n",
"\n",
"#sk-container-id-8 a.estimator_doc_link {\n",
"    float: right;\n",
"    font-size: 1rem;\n",
"    line-height: 1em;\n",
"    font-family: monospace;\n",
"    background-color: var(--sklearn-color-background);\n",
"    border-radius: 1rem;\n",
"    height: 1rem;\n",
"    width: 1rem;\n",
"    text-decoration: none;\n",
"    /* unfitted */\n",
"    color: var(--sklearn-color-unfitted-level-1);\n",
"    border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
"}\n",
"\n",
"#sk-container-id-8 a.estimator_doc_link.fitted {\n",
"    /* fitted */\n",
"    border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
"    color: var(--sklearn-color-fitted-level-1);\n",
"}\n",
"\n",
"/* On hover */\n",
"#sk-container-id-8 a.estimator_doc_link:hover {\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-3);\n",
"    color: var(--sklearn-color-background);\n",
"    text-decoration: none;\n",
"}\n",
"\n",
"#sk-container-id-8 a.estimator_doc_link.fitted:hover {\n",
"    /* fitted */\n",
"    background-color: var(--sklearn-color-fitted-level-3);\n",
"}\n",
"</style><div id=\"sk-container-id-8\" class=\"sk-top-container\"><div class=\"sk-text-
repr-fallback\"><pre>Lasso(alpha=50, max_iter=100, tol=0.1)</pre><b>In a Jupyter environment,
please rerun this cell to show the HTML representation or trust the notebook. <br />On GitHub, the
HTML representation is unable to render, please try loading this page with nbviewer.org.</b></
div><div class=\"sk-container\" hidden><div class=\"sk-item\"><div class=\"sk-estimator fitted sk-
toggleable\"><input class=\"sk-toggleable__control sk-hidden--visually\" id=\"sk-estimator-id-8\"
type=\"checkbox\" checked><label for=\"sk-estimator-id-8\" class=\"sk-toggleable__label fitted sk-
```

```
      toggleable__label-arrow fitted\">  Lasso<a class=\"sk-estimator-doc-link fitted\"
      rel=\"noreferrer\" target=\"_blank\" href=\"https://scikit-learn.org/1.4/modules/generated/
      sklearn.linear_model.Lasso.html\">?<span>Documentation for Lasso</span></a><span class=\"sk-
      estimator-doc-link fitted\">i<span>Fitted</span></span></label><div class=\"sk-toggleable__content
      fitted\"><pre>Lasso(alpha=50, max_iter=100, tol=0.1)</pre></div> </div></div></div></div>"
       ],
       "text/plain": [
        "Lasso(alpha=50, max_iter=100, tol=0.1)"
       ]
      },
      "execution_count": 379,
      "metadata": {},
      "output_type": "execute_result"
     }
    ],
    "source": [
     "from sklearn.linear_model import Lasso\n",
     "Lasso_model=Lasso(alpha=50, max_iter=100,tol=0.1)\n",
     "Lasso_model.fit(x_train,y_train)"
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 380,
    "id": "d9cc029a-cd14-4a3b-a0cf-9a3cc82df7e6",
    "metadata": {},
    "outputs": [],
    "source": [
     "Lasso_pred=Lasso_model.predict(x_test)"
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 382,
    "id": "00ad5bb5-53ca-44d1-b7c7-b0cec62ddc9d",
    "metadata": {},
    "outputs": [
     {
      "data": {
       "text/plain": [
        "100763.64987405419"
       ]
      },
      "execution_count": 382,
      "metadata": {},
      "output_type": "execute_result"
     }
    ],
    "source": [
     "mean_absolute_error(y_test,Lasso_pred)"
    ]
   },
   {
    "cell_type": "code",
    "execution_count": 388,
    "id": "837ae88c-fc7b-4f66-8960-70423f09a26d",
    "metadata": {},
    "outputs": [
     {
      "data": {
       "text/html": [
        "<style>#sk-container-id-9 {\n",
```

```
"    /* Definition of color scheme common for light and dark mode */\n",
"    --sklearn-color-text: black;\n",
"    --sklearn-color-line: gray;\n",
"    /* Definition of color scheme for unfitted estimators */\n",
"    --sklearn-color-unfitted-level-0: #fff5e6;\n",
"    --sklearn-color-unfitted-level-1: #f6e4d2;\n",
"    --sklearn-color-unfitted-level-2: #ffe0b3;\n",
"    --sklearn-color-unfitted-level-3: chocolate;\n",
"    /* Definition of color scheme for fitted estimators */\n",
"    --sklearn-color-fitted-level-0: #f0f8ff;\n",
"    --sklearn-color-fitted-level-1: #d4ebff;\n",
"    --sklearn-color-fitted-level-2: #b3dbfd;\n",
"    --sklearn-color-fitted-level-3: cornflowerblue;\n",
"\n",
"    /* Specific color for light theme */\n",
"    --sklearn-color-text-on-default-background: var(--sg-text-color, var(--theme-code-
foreground, var(--jp-content-font-color1, black)));\n",
"    --sklearn-color-background: var(--sg-background-color, var(--theme-background, var(--jp-
layout-color0, white)));\n",
"    --sklearn-color-border-box: var(--sg-text-color, var(--theme-code-foreground, var(--jp-
content-font-color1, black)));\n",
"    --sklearn-color-icon: #696969;\n",
"\n",
"    @media (prefers-color-scheme: dark) {\n",
"      /* Redefinition of color scheme for dark theme */\n",
"      --sklearn-color-text-on-default-background: var(--sg-text-color, var(--theme-code-
foreground, var(--jp-content-font-color1, white)));\n",
"      --sklearn-color-background: var(--sg-background-color, var(--theme-background, var(--
jp-layout-color0, #111)));\n",
"      --sklearn-color-border-box: var(--sg-text-color, var(--theme-code-foreground, var(--
jp-content-font-color1, white)));\n",
"      --sklearn-color-icon: #878787;\n",
"    }\n",
"}\n",
"\n",
"#sk-container-id-9 {\n",
"  color: var(--sklearn-color-text);\n",
"}\n",
"\n",
"#sk-container-id-9 pre {\n",
"  padding: 0;\n",
"}\n",
"\n",
"#sk-container-id-9 input.sk-hidden--visually {\n",
"  border: 0;\n",
"  clip: rect(1px 1px 1px 1px);\n",
"  clip: rect(1px, 1px, 1px, 1px);\n",
"  height: 1px;\n",
"  margin: -1px;\n",
"  overflow: hidden;\n",
"  padding: 0;\n",
"  position: absolute;\n",
"  width: 1px;\n",
"}\n",
"\n",
"#sk-container-id-9 div.sk-dashed-wrapped {\n",
"  border: 1px dashed var(--sklearn-color-line);\n",
"  margin: 0 0.4em 0.5em 0.4em;\n",
"  box-sizing: border-box;\n",
"  padding-bottom: 0.4em;\n",
"  background-color: var(--sklearn-color-background);\n",
"}\n",
```

```
            "\n",
            "#sk-container-id-9 div.sk-container {\n",
            "  /* jupyter's `normalize.less` sets `[hidden] { display: none; }`\n",
            "      but bootstrap.min.css set `[hidden] { display: none !important; }`\n",
            "      so we also need the `!important` here to be able to override the\n",
            "      default hidden behavior on the sphinx rendered scikit-learn.org.\n",
            "      See: https://github.com/scikit-learn/scikit-learn/issues/21755 */\n",
            "  display: inline-block !important;\n",
            "  position: relative;\n",
            "}\n",
            "\n",
            "#sk-container-id-9 div.sk-text-repr-fallback {\n",
            "  display: none;\n",
            "}\n",
            "\n",
            "div.sk-parallel-item,\n",
            "div.sk-serial,\n",
            "div.sk-item {\n",
            "  /* draw centered vertical line to link estimators */\n",
            "  background-image: linear-gradient(var(--sklearn-color-text-on-default-background),
    var(--sklearn-color-text-on-default-background));\n",
            "  background-size: 2px 100%;\n",
            "  background-repeat: no-repeat;\n",
            "  background-position: center center;\n",
            "}\n",
            "\n",
            "/* Parallel-specific style estimator block */\n",
            "\n",
            "#sk-container-id-9 div.sk-parallel-item::after {\n",
            "  content: \"\";\n",
            "  width: 100%;\n",
            "  border-bottom: 2px solid var(--sklearn-color-text-on-default-background);\n",
            "  flex-grow: 1;\n",
            "}\n",
            "\n",
            "#sk-container-id-9 div.sk-parallel {\n",
            "  display: flex;\n",
            "  align-items: stretch;\n",
            "  justify-content: center;\n",
            "  background-color: var(--sklearn-color-background);\n",
            "  position: relative;\n",
            "}\n",
            "\n",
            "#sk-container-id-9 div.sk-parallel-item {\n",
            "  display: flex;\n",
            "  flex-direction: column;\n",
            "}\n",
            "\n",
            "#sk-container-id-9 div.sk-parallel-item:first-child::after {\n",
            "  align-self: flex-end;\n",
            "  width: 50%;\n",
            "}\n",
            "\n",
            "#sk-container-id-9 div.sk-parallel-item:last-child::after {\n",
            "  align-self: flex-start;\n",
            "  width: 50%;\n",
            "}\n",
            "\n",
            "#sk-container-id-9 div.sk-parallel-item:only-child::after {\n",
            "  width: 0;\n",
            "}\n",
            "\n",
```

```
            "/* Serial-specific style estimator block */\n",
            "\n",
            "#sk-container-id-9 div.sk-serial {\n",
            "  display: flex;\n",
            "  flex-direction: column;\n",
            "  align-items: center;\n",
            "  background-color: var(--sklearn-color-background);\n",
            "  padding-right: 1em;\n",
            "  padding-left: 1em;\n",
            "}\n",
            "\n",
            "\n",
            "/* Toggleable style: style used for estimator/Pipeline/ColumnTransformer box that is\n",
            "clickable and can be expanded/collapsed.\n",
            "- Pipeline and ColumnTransformer use this feature and define the default style\n",
            "- Estimators will overwrite some part of the style using the `sk-estimator` class\n",
            "*/\n",
            "\n",
            "/* Pipeline and ColumnTransformer style (default) */\n",
            "\n",
            "#sk-container-id-9 div.sk-toggleable {\n",
            "  /* Default theme specific background. It is overwritten whether we have a\n",
            "  specific estimator or a Pipeline/ColumnTransformer */\n",
            "  background-color: var(--sklearn-color-background);\n",
            "}\n",
            "\n",
            "/* Toggleable label */\n",
            "#sk-container-id-9 label.sk-toggleable__label {\n",
            "  cursor: pointer;\n",
            "  display: block;\n",
            "  width: 100%;\n",
            "  margin-bottom: 0;\n",
            "  padding: 0.5em;\n",
            "  box-sizing: border-box;\n",
            "  text-align: center;\n",
            "}\n",
            "\n",
            "#sk-container-id-9 label.sk-toggleable__label-arrow:before {\n",
            "  /* Arrow on the left of the label */\n",
            "  content: \"▸\";\n",
            "  float: left;\n",
            "  margin-right: 0.25em;\n",
            "  color: var(--sklearn-color-icon);\n",
            "}\n",
            "\n",
            "#sk-container-id-9 label.sk-toggleable__label-arrow:hover:before {\n",
            "  color: var(--sklearn-color-text);\n",
            "}\n",
            "\n",
            "/* Toggleable content - dropdown */\n",
            "\n",
            "#sk-container-id-9 div.sk-toggleable__content {\n",
            "  max-height: 0;\n",
            "  max-width: 0;\n",
            "  overflow: hidden;\n",
            "  text-align: left;\n",
            "  /* unfitted */\n",
            "  background-color: var(--sklearn-color-unfitted-level-0);\n",
            "}\n",
            "\n",
            "#sk-container-id-9 div.sk-toggleable__content.fitted {\n",
            "  /* fitted */\n",
```

```
"  background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-9 div.sk-toggleable__content pre {\n",
"  margin: 0.2em;\n",
"  border-radius: 0.25em;\n",
"  color: var(--sklearn-color-text);\n",
"  /* unfitted */\n",
"  background-color: var(--sklearn-color-unfitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-9 div.sk-toggleable__content.fitted pre {\n",
"  /* unfitted */\n",
"  background-color: var(--sklearn-color-fitted-level-0);\n",
"}\n",
"\n",
"#sk-container-id-9 input.sk-toggleable__control:checked~div.sk-toggleable__content {\n",
"  /* Expand drop-down */\n",
"  max-height: 200px;\n",
"  max-width: 100%;\n",
"  overflow: auto;\n",
"}\n",
"\n",
"#sk-container-id-9 input.sk-toggleable__control:checked~label.sk-toggleable__label-
arrow:before {\n",
"  content: \"▾\";\n",
"}\n",
"\n",
"/* Pipeline/ColumnTransformer-specific style */\n",
"\n",
"#sk-container-id-9 div.sk-label input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
"  color: var(--sklearn-color-text);\n",
"  background-color: var(--sklearn-color-unfitted-level-2);\n",
"}\n",
"\n",
"#sk-container-id-9 div.sk-label.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
"  background-color: var(--sklearn-color-fitted-level-2);\n",
"}\n",
"\n",
"/* Estimator-specific style */\n",
"\n",
"/* Colorize estimator box */\n",
"#sk-container-id-9 div.sk-estimator input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
"  /* unfitted */\n",
"  background-color: var(--sklearn-color-unfitted-level-2);\n",
"}\n",
"\n",
"#sk-container-id-9 div.sk-estimator.fitted input.sk-toggleable__control:checked~label.sk-
toggleable__label {\n",
"  /* fitted */\n",
"  background-color: var(--sklearn-color-fitted-level-2);\n",
"}\n",
"\n",
"#sk-container-id-9 div.sk-label label.sk-toggleable__label,\n",
"#sk-container-id-9 div.sk-label label {\n",
"  /* The background is the default theme color */\n",
"  color: var(--sklearn-color-text-on-default-background);\n",
"}\n",
"\n",
```

```
    "/* On hover, darken the color of the background */\n",
    "#sk-container-id-9 div.sk-label:hover label.sk-toggleable__label {\n",
    "  color: var(--sklearn-color-text);\n",
    "  background-color: var(--sklearn-color-unfitted-level-2);\n",
    "}\n",
    "\n",
    "/* Label box, darken color on hover, fitted */\n",
    "#sk-container-id-9 div.sk-label.fitted:hover label.sk-toggleable__label.fitted {\n",
    "  color: var(--sklearn-color-text);\n",
    "  background-color: var(--sklearn-color-fitted-level-2);\n",
    "}\n",
    "\n",
    "/* Estimator label */\n",
    "\n",
    "#sk-container-id-9 div.sk-label label {\n",
    "  font-family: monospace;\n",
    "  font-weight: bold;\n",
    "  display: inline-block;\n",
    "  line-height: 1.2em;\n",
    "}\n",
    "\n",
    "#sk-container-id-9 div.sk-label-container {\n",
    "  text-align: center;\n",
    "}\n",
    "\n",
    "/* Estimator-specific */\n",
    "#sk-container-id-9 div.sk-estimator {\n",
    "  font-family: monospace;\n",
    "  border: 1px dotted var(--sklearn-color-border-box);\n",
    "  border-radius: 0.25em;\n",
    "  box-sizing: border-box;\n",
    "  margin-bottom: 0.5em;\n",
    "  /* unfitted */\n",
    "  background-color: var(--sklearn-color-unfitted-level-0);\n",
    "}\n",
    "\n",
    "#sk-container-id-9 div.sk-estimator.fitted {\n",
    "  /* fitted */\n",
    "  background-color: var(--sklearn-color-fitted-level-0);\n",
    "}\n",
    "\n",
    "/* on hover */\n",
    "#sk-container-id-9 div.sk-estimator:hover {\n",
    "  /* unfitted */\n",
    "  background-color: var(--sklearn-color-unfitted-level-2);\n",
    "}\n",
    "\n",
    "#sk-container-id-9 div.sk-estimator.fitted:hover {\n",
    "  /* fitted */\n",
    "  background-color: var(--sklearn-color-fitted-level-2);\n",
    "}\n",
    "\n",
    "/* Specification for estimator info (e.g. \"i\" and \"?\") */\n",
    "\n",
    "/* Common style for \"i\" and \"?\" */\n",
    "\n",
    ".sk-estimator-doc-link,\n",
    "a:link.sk-estimator-doc-link,\n",
    "a:visited.sk-estimator-doc-link {\n",
    "  float: right;\n",
    "  font-size: smaller;\n",
    "  line-height: 1em;\n",
```

```
"    font-family: monospace;\n",
"    background-color: var(--sklearn-color-background);\n",
"    border-radius: 1em;\n",
"    height: 1em;\n",
"    width: 1em;\n",
"    text-decoration: none !important;\n",
"    margin-left: 1ex;\n",
"    /* unfitted */\n",
"    border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
"    color: var(--sklearn-color-unfitted-level-1);\n",
"}\n",
"\n",
".sk-estimator-doc-link.fitted,\n",
"a:link.sk-estimator-doc-link.fitted,\n",
"a:visited.sk-estimator-doc-link.fitted {\n",
"    /* fitted */\n",
"    border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
"    color: var(--sklearn-color-fitted-level-1);\n",
"}\n",
"\n",
"/* On hover */\n",
"div.sk-estimator:hover .sk-estimator-doc-link:hover,\n",
".sk-estimator-doc-link:hover,\n",
"div.sk-label-container:hover .sk-estimator-doc-link:hover,\n",
".sk-estimator-doc-link:hover {\n",
"    /* unfitted */\n",
"    background-color: var(--sklearn-color-unfitted-level-3);\n",
"    color: var(--sklearn-color-background);\n",
"    text-decoration: none;\n",
"}\n",
"\n",
"div.sk-estimator.fitted:hover .sk-estimator-doc-link.fitted:hover,\n",
".sk-estimator-doc-link.fitted:hover,\n",
"div.sk-label-container:hover .sk-estimator-doc-link.fitted:hover,\n",
".sk-estimator-doc-link.fitted:hover {\n",
"    /* fitted */\n",
"    background-color: var(--sklearn-color-fitted-level-3);\n",
"    color: var(--sklearn-color-background);\n",
"    text-decoration: none;\n",
"}\n",
"\n",
"/* Span, style for the box shown on hovering the info icon */\n",
".sk-estimator-doc-link span {\n",
"    display: none;\n",
"    z-index: 9999;\n",
"    position: relative;\n",
"    font-weight: normal;\n",
"    right: .2ex;\n",
"    padding: .5ex;\n",
"    margin: .5ex;\n",
"    width: min-content;\n",
"    min-width: 20ex;\n",
"    max-width: 50ex;\n",
"    color: var(--sklearn-color-text);\n",
"    box-shadow: 2pt 2pt 4pt #999;\n",
"    /* unfitted */\n",
"    background: var(--sklearn-color-unfitted-level-0);\n",
"    border: .5pt solid var(--sklearn-color-unfitted-level-3);\n",
"}\n",
"\n",
".sk-estimator-doc-link.fitted span {\n",
"    /* fitted */\n",
```

```
       "   background: var(--sklearn-color-fitted-level-0);\n",
       "   border: var(--sklearn-color-fitted-level-3);\n",
       "}\n",
       "\n",
       ".sk-estimator-doc-link:hover span {\n",
       "   display: block;\n",
       "}\n",
       "\n",
       "/* \"?\"-specific style due to the `<a>` HTML tag */\n",
       "\n",
       "#sk-container-id-9 a.estimator_doc_link {\n",
       "   float: right;\n",
       "   font-size: 1rem;\n",
       "   line-height: 1em;\n",
       "   font-family: monospace;\n",
       "   background-color: var(--sklearn-color-background);\n",
       "   border-radius: 1rem;\n",
       "   height: 1rem;\n",
       "   width: 1rem;\n",
       "   text-decoration: none;\n",
       "   /* unfitted */\n",
       "   color: var(--sklearn-color-unfitted-level-1);\n",
       "   border: var(--sklearn-color-unfitted-level-1) 1pt solid;\n",
       "}\n",
       "\n",
       "#sk-container-id-9 a.estimator_doc_link.fitted {\n",
       "   /* fitted */\n",
       "   border: var(--sklearn-color-fitted-level-1) 1pt solid;\n",
       "   color: var(--sklearn-color-fitted-level-1);\n",
       "}\n",
       "\n",
       "/* On hover */\n",
       "#sk-container-id-9 a.estimator_doc_link:hover {\n",
       "   /* unfitted */\n",
       "   background-color: var(--sklearn-color-unfitted-level-3);\n",
       "   color: var(--sklearn-color-background);\n",
       "   text-decoration: none;\n",
       "}\n",
       "\n",
       "#sk-container-id-9 a.estimator_doc_link.fitted:hover {\n",
       "   /* fitted */\n",
       "   background-color: var(--sklearn-color-fitted-level-3);\n",
       "}\n",
       "</style><div id=\"sk-container-id-9\" class=\"sk-top-container\"><div class=\"sk-text-
repr-fallback\"><pre>Ridge(alpha=50, max_iter=100, tol=0.1)</pre><b>In a Jupyter environment,
please rerun this cell to show the HTML representation or trust the notebook. <br />On GitHub, the
HTML representation is unable to render, please try loading this page with nbviewer.org.</b></
div><div class=\"sk-container\" hidden><div class=\"sk-item\"><div class=\"sk-estimator fitted sk-
toggleable\"><input class=\"sk-toggleable__control sk-hidden--visually\" id=\"sk-estimator-id-9\"
type=\"checkbox\" checked><label for=\"sk-estimator-id-9\" class=\"sk-toggleable__label fitted sk-
toggleable__label-arrow fitted\">  Ridge<a class=\"sk-estimator-doc-link fitted\"
rel=\"noreferrer\" target=\"_blank\" href=\"https://scikit-learn.org/1.4/modules/generated/
sklearn.linear_model.Ridge.html\">?<span>Documentation for Ridge</span></a><span class=\"sk-
estimator-doc-link fitted\">i<span>Fitted</span></span></label><div class=\"sk-toggleable__content
fitted\"><pre>Ridge(alpha=50, max_iter=100, tol=0.1)</pre></div> </div></div></div></div>"
      ],
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       "Ridge(alpha=50, max_iter=100, tol=0.1)"
      ]
     },
     "execution_count": 388,
     "metadata": {},
```

```
        "output_type": "execute_result"
       }
      ],
      "source": [
       "from sklearn.linear_model import Ridge\n",
       "Ridge_model=Ridge(alpha=50,max_iter=100,tol=0.1)\n",
       "Ridge_model.fit(x_train,y_train)"
      ]
     },
     {
      "cell_type": "code",
      "execution_count": 390,
      "id": "8f07d814-d6c6-4942-aea6-96bf908965e7",
      "metadata": {},
      "outputs": [],
      "source": [
       "Ridge_pred=Ridge_model.predict(x_test)"
      ]
     },
     {
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      "execution_count": 392,
      "id": "388ad0fe-b5cf-4f9b-af99-0319d05eed3b",
      "metadata": {},
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        "data": {
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          "99560.96835489241"
         ]
        },
        "execution_count": 392,
        "metadata": {},
        "output_type": "execute_result"
       }
      ],
      "source": [
       "mean_absolute_error(y_test,Ridge_pred)"
      ]
     }
    ],
    "metadata": {
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      "name": "python3"
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       "version": 3
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      "name": "python",
      "nbconvert_exporter": "python",
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      "version": "3.12.4"
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