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      "source": [
        "# Basic Python"
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      "source": [
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```
"text": [
  ["Hi', 'there', 'Sam!']\n"
]
},
],
"source": [
  "s = \"Hi there Sam!\"\n",
  "print(s.split())"
]
},
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  "source": []
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    "## 2. Use .format() to print the following string. \n",
    "\n",
    "### Output should be: The diameter of Earth is 12742 kilometers."
  ]
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    "text": [
      "The diameter of Earth is 12742\n"
    ]
  }
],
"source": [
  "# planet = \"Earth\\n\",
  "# diameter = 12742\n",
  "\n",
  "res = \"The diameter of {planet} is {diameter}\\n\",
  "print(res.format(planet=\"Earth\",diameter=12742))"
],
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    "## 3. In this nest dictionary grab the word \"hello\""
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```

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    "output_type": "stream",
    "text": [
      "hello\n"
    ]
  }
],
"source": [
  "d = {'k1':[1,2,3,{'tricky':['oh','man','inception',{'target':[1,2,3,'hello']}]]}]\n",
  "print(d['k1'][3]['tricky'][3]['target'][3])"
]
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    "# Numpy"
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},
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  "import numpy as np"
]
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    "## 4.2 Create an array of 10 fives?"
  ]
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```

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},
],
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  "\n",
  "arr = np.zeros(10)\n",
  "\n",
  "print(arr)"
]
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  },
  "outputs": [
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      "name": "stdout",
      "text": [
        "[5. 5. 5. 5. 5. 5. 5. 5. 5.]\n"
      ]
    }
  ]
}
```

```
]
}
],
"source": [
  "import numpy as np\n",
  "\n",
  "arr = np.ones(10)*5\n",
  "\n",
  "print(arr)"
]
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```

```

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  "name": "stdout",
  "text": [
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    " True False  True False]\n",
    "[20 22 24 26 28 30 32 34]\n"
  ]
}
],
"source": [
  "import numpy as np\n",
  "x=np.arange(20,36)\n",
  "y=(x%2==0)\n",
  "print(y)\n",
  "z=x[y]\n",
  "print(z)"
]
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{
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  {
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    "name": "stdout",
    "text": [
      "[[0 1 2]\n",
      " [3 4 5]\n",
      " [6 7 8]]\n"
    ]
  }
],
"source": [
  "import numpy as np\n",
  "arr = np.arange(0,9).reshape((3,3))\n",
  "print(arr)"
],
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  "source": [
    "## 7. Concatenate a and b \n",

```

```
    "## a = np.array([1, 2, 3]), b = np.array([4, 5, 6])"
  ]
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    "text": [
      "[1 2 3 4 5 6]\n"
    ]
  }
],
```

```
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    "import numpy as np\n",  
    "\n",  
    "a = np.array([1,2,3])\n",  
    "b = np.array([4,5,6])\n",  
    "print(np.concatenate((a,b)))"  
]  
,  
{  
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        "# Pandas"  
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    "source": [  
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```

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"outputs": [],
"source": [
    "import pandas as pd\n"
]
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{
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                    "0      A   65\n",
                    "1      B   66\n",
                    "2      C   67"
                ],
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                    " <div class=\"colab-df-container\">\n",

```

```

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"<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>Alphabets</th>\n",
"            <th>ASCII</th>\n",
"        </tr>\n",
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"        <tr>\n",
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"            <td>A</td>\n",
"            <td>65</td>\n",
"        </tr>\n",
"        <tr>\n",
"            <th>1</th>\n",
"            <td>B</td>\n",

```

```

"    <td>66</td>\n",
"  </tr>\n",
" <tr>\n",
"   <th>2</th>\n",
"   <td>C</td>\n",
"   <td>67</td>\n",
" </tr>\n",
" </tbody>\n",
"</table>\n",
"</div>\n",
"  <button class=\"colab-df-convert\" onclick=\"convertToInteractive('df-caa19c40-4b26-4f36-b767-32768b6ae31d')\" \n",
"    title=\"Convert this dataframe to an interactive table.\" \n",
"    style=\"display:none;\">\n",
"  \n",
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"    width=\"24px\">\n",
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"    <path d=\"M18.56 5.44l.94 2.06.94-2.06-.94-2.06-.94-2.06-.94 2.06-2.06.94zm-11 11l8.5 8.5l.94-2.06 2.06-.94 2.06-.94L8.5 2.5l-.94 2.06-2.06.94zm10 10l.94 2.06.94-2.06-.94-2.06-.94-2.06-.94 2.06-2.06.94z\"/><path d=\"M17.41 7.96l-1.37-1.37c-.4-.4-.92-.59-1.43-.59-.52 0-1.04-.2-1.43-.59L10.3 9.45l-7.72 7.72c-.78.78-.78 2.05 0 2.83L4 21.41c.39.39.9.59 1.41.59.51 0 1.02-.2 1.41-.59l7.78-7.78 2.81-2.81c.8-.78.8-2.07 0-2.86zM5.41 20L4 18.59l7.72-7.72 1.47 1.35L5.41 20z\"/>\n",
"  </svg>\n",
"  </button>\n",
"  \n",
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"    .colab-df-container {\n",
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"      flex-wrap:wrap;\n",
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"    }\n",

```

```

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"    padding: 0 0 0 0;\n",
"    width: 32px;\n",
"  }\n",
"\n",
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"    box-shadow: 0px 1px 2px rgba(60, 64, 67, 0.3), 0px 1px 3px 1px rgba(60, 64, 67,
0.15);\n",
"    fill: #174EA6;\n",
"  }\n",
"\n",
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"    fill: #D2E3FC;\n",
"  }\n",
"\n",
"  [theme=dark] .colab-df-convert:hover {\n",
"    background-color: #434B5C;\n",
"    box-shadow: 0px 1px 3px 1px rgba(0, 0, 0, 0.15);\n",
"    filter: drop-shadow(0px 1px 2px rgba(0, 0, 0, 0.3));\n",
"    fill: #FFFFFF;\n",
"  }\n",

```

```

" </style>\n",
"\n",
" <script>\n",
"   const buttonEl =\n",
"     document.querySelector('#df-caa19c40-4b26-4f36-b767-32768b6ae31d button.colab-
df-convert');\n",
"     buttonEl.style.display =\n",
"       google.colab.kernel.accessAllowed ? 'block' : 'none';\n",
"\n",
"     async function convertToInteractive(key) {\n",
"       const element = document.querySelector('#df-caa19c40-4b26-4f36-b767-
32768b6ae31d');\n",
"       const dataTable =\n",
"         await google.colab.kernel.invokeFunction('convertToInteractive',\n",
"           [key], {});\n",
"       if (!dataTable) return;\n",
"\n",
"       const docLinkHtml = 'Like what you see? Visit the ' +\n",
"         '<a target=\"_blank\"
href=https://colab.research.google.com/notebooks/data_table.ipynb>data table notebook</a>'\n",
"         + ' to learn more about interactive tables.';\n",
"       element.innerHTML = \"\n",
"         dataTable['output_type'] = 'display_data';\n",
"         await google.colab.output.renderOutput(dataTable, element);\n",
"         const docLink = document.createElement('div');\n",
"         docLink.innerHTML = docLinkHtml;\n",
"         element.appendChild(docLink);\n",
"       }\n",
"     </script>\n",
" </div>\n",
" </div>\n",
" "

```



```

    ]
  },
  "metadata": {},
  "execution_count": 27
}
],
"source": [
  "data = [['A', 65], ['B', 66], ['C', 67]]\n",
  "\n",
  "df = pd.DataFrame(data, columns=['Alphabets', 'ASCII'])\n",
  "\n",
  "df"
]
},
{
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  "source": [
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```

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      "                '2023-01-05', '2023-01-06', '2023-01-07', '2023-01-08',\n",
      "                '2023-01-09', '2023-01-10', '2023-01-11', '2023-01-12',\n",
      "                '2023-01-13', '2023-01-14', '2023-01-15', '2023-01-16',\n",
      "                '2023-01-17', '2023-01-18', '2023-01-19', '2023-01-20',\n",
      "                '2023-01-21', '2023-01-22', '2023-01-23', '2023-01-24',\n",
      "                '2023-01-25', '2023-01-26', '2023-01-27', '2023-01-28',\n",
      "                '2023-01-29', '2023-01-30', '2023-01-31', '2023-02-01',\n",
      "                '2023-02-02', '2023-02-03', '2023-02-04', '2023-02-05',\n",
      "                '2023-02-06', '2023-02-07', '2023-02-08', '2023-02-09'],\n",
      "                dtype='datetime64[ns]', freq='D')"
    ]
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  "metadata": {},
  "execution_count": 33
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],
"source": [
  "from pandas.core.window.rolling import timedelta as td\n",
  "from pandas.io.sql import date as d\n",
  "import pandas as pd\n",
  "startDate = d(2023, 1, 1)\n",
  "endDate = d(2023, 2, 10)\n",
  "pd.date_range(startDate,endDate-td(days=1),freq='d')

```

```

]
},
{
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    "## 10. Create 2D list to DataFrame\n",
    "\n",
    "lists = [[1, 'aaa', 22],\n",
    "          [2, 'bbb', 25],\n",
    "          [3, 'ccc', 24]]"
  ]
},
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  ]
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        "0    1   aaa    22\n",
        "1    2   bbb    25\n",
        "2    3   ccc    24"
      ],
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        "     <div>\n",
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        "   }\n",
        "\n",
        "   .dataframe tbody tr th {\n",
        "     vertical-align: top;\n",
        "   }\n",
        "\n",
        "   .dataframe thead th {\n",

```

```
"    text-align: right;\n",
"  }\n",
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"      <th>Number1</th>\n",
"      <th>Letters</th>\n",
"      <th>Number2</th>\n",
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"  </thead>\n",
"  <tbody>\n",
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"      <td>22</td>\n",
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"      <td>2</td>\n",
"      <td>bbb</td>\n",
"      <td>25</td>\n",
"    </tr>\n",
"    <tr>\n",
"      <th>2</th>\n",
"      <td>3</td>\n",
"      <td>ccc</td>\n",
"      <td>24</td>\n",
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```

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

```

" fill: #1967D2;\n",
" height: 32px;\n",
" padding: 0 0 0 0;\n",
" width: 32px;\n",
" }\n",
"\n",
" .colab-df-convert:hover {\n",
" background-color: #E2EBFA;\n",
" box-shadow: 0px 1px 2px rgba(60, 64, 67, 0.3), 0px 1px 3px 1px rgba(60, 64, 67,
0.15);\n",
" fill: #174EA6;\n",
" }\n",
"\n",
" [theme=dark] .colab-df-convert {\n",
" background-color: #3B4455;\n",
" fill: #D2E3FC;\n",
" }\n",
"\n",
" [theme=dark] .colab-df-convert:hover {\n",
" background-color: #434B5C;\n",
" box-shadow: 0px 1px 3px 1px rgba(0, 0, 0, 0.15);\n",
" filter: drop-shadow(0px 1px 2px rgba(0, 0, 0, 0.3));\n",
" fill: #FFFFFF;\n",
" }\n",
" </style>\n",
"\n",
" <script>\n",
" const buttonEl =\n",
" document.querySelector('#df-3b0992a7-bc6f-4fb7-b0ee-3964bf184fec button.colab-
df-convert');\n",
" buttonEl.style.display =\n",
" google.colab.kernel.accessAllowed ? 'block' : 'none';\n",

```

```

"\n",
  "    async function convertToInteractive(key) {\n",
  "        const element = document.querySelector('#df-3b0992a7-bc6f-4fb7-b0ee-3964bf184fec');\n",
  "        const dataTable =\n",
  "            await google.colab.kernel.invokeFunction('convertToInteractive',\n",
  "                [key], {});\n",
  "        if (!dataTable) return;\n",
  "\n",
  "        const docLinkHtml = 'Like what you see? Visit the ' +\n",
  "            '<a target=\"_blank\" href=https://colab.research.google.com/notebooks/data_table.ipynb>data table notebook</a>'\n",
  "            + ' to learn more about interactive tables.';\n",
  "        element.innerHTML = \"\n",
  "            dataTable['output_type'] = 'display_data';\n",
  "            await google.colab.output.renderOutput(dataTable, element);\n",
  "            const docLink = document.createElement('div');\n",
  "            docLink.innerHTML = docLinkHtml;\n",
  "            element.appendChild(docLink);\n",
  "        }\n",
  "    </script>\n",
  " </div>\n",
  " </div>\n",
  " "
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"execution_count": 37
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],
"source": [
    "lists = [[1, 'aaa', 22], [2, 'bbb', 25], [3, 'ccc', 24]]\n",

```



```

    "df = pd.DataFrame(lists, columns=['Number1','Letters','Number2'])\n",
    "df"
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    "name": "python3"
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      "version": 3
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    "version": "3.9.13"
  },
  "vscode": {
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}

```

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