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{
  "cells": [
    {
      "cell_type": "markdown",
      "metadata": {
        "id": "McSxJAwcOdZ1"
      },
      "source": [
        "# Basic Python"
      ]
    },
    {
      "cell_type": "markdown",
      "metadata": {
        "id": "CU48hgo4Owz5"
      },
      "source": [
        "## 1. Split this string"
      ]
    },
    {
      "cell_type": "code",
      "execution_count": null,
      "metadata": {
        "id": "s07c7JK7Oqt-"
      },
      "outputs": [],
      "source": [
        "s = \"Hi there Sam!\""
      ]
    }
  ],
}
```

```
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "colab": {
      "base_uri": "https://localhost:8080/"
    },
    "id": "6mGVa3SQYLkb",
    "outputId": "53f8d9e0-0781-4559-e7ef-62a049a1ca2c"
  },
  "outputs": [
    {
      "data": {
        "text/plain": [
          "['Hi', 'there', 'Sam!']"
        ]
      },
      "execution_count": 53,
      "metadata": {},
      "output_type": "execute_result"
    },
    {
      "source": [
        "a=s.split(' ')\n",
        "a"
      ]
    }
  ],
  {
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    "metadata": {
      "id": "GH1QBn8HP375"
```

```
},
"source": [
  "## 2. Use .format() to print the following string. \n",
  "\n",
  "### Output should be: The diameter of Earth is 12742 kilometers."
]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "id": "_ZHoml3kPqic"
  },
  "outputs": [],
  "source": [
    "planet = \"Earth\"\n",
    "diameter = 12742"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "colab": {
      "base_uri": "https://localhost:8080/"
    },
    "id": "HyRyJv6CYPb4",
    "outputId": "2ac7b054-7d26-4a8b-bc41-4f9d9b42dbfc"
  },
  "outputs": [
    {
```

```

    "name": "stdout",
    "output_type": "stream",
    "text": [
        "The diameter of Earth is 12742 kilometers.\n"
    ]
}
],
"source": [
    "print('The diameter of {} is {} kilometers.'.format(planet,diameter))"
]
},
{
    "cell_type": "markdown",
    "metadata": {
        "id": "KE74ZEwkRExZ"
    },
    "source": [
        "## 3. In this nest dictionary grab the word \"hello\""
    ]
},
{
    "cell_type": "code",
    "execution_count": null,
    "metadata": {
        "id": "fcVwbCc1QrQI"
    },
    "outputs": [],
    "source": [
        "d = {'k1':[1,2,3,{'tricky':['oh','man','inception',{'target':[1,2,3,'hello']}]}]}"
    ]
},

```

```
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "colab": {
      "base_uri": "https://localhost:8080/",
      "height": 36
    },
    "id": "MvbkMZpXYRaw",
    "outputId": "ddaad2eb-52ef-4772-8e94-b39927b26c6e"
  },
  "outputs": [
    {
      "data": {
        "application/vnd.google.colaboratory.intrinsic+json": {
          "type": "string"
        },
        "text/plain": [
          "'hello'"
        ]
      },
      "execution_count": 9,
      "metadata": {},
      "output_type": "execute_result"
    }
  ],
  "source": [
    "d['k1'][3]['tricky'][3]['target'][3]"
  ]
}
```

```
"cell_type": "markdown",
"metadata": {
  "id": "bw0vVp-9ddjv"
},
"source": [
  "# Numpy"
]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "id": "LLiE_TYrhA1O"
  },
  "outputs": [],
  "source": [
    "import numpy as np"
  ]
},
{
  "cell_type": "markdown",
  "metadata": {
    "id": "wOg8hinbgx30"
  },
  "source": [
    "## 4.1 Create an array of 10 zeros? \n",
    "## 4.2 Create an array of 10 fives?"
  ]
},
{
  "cell_type": "code",
```

```
"execution_count": null,
"metadata": {
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    "base_uri": "https://localhost:8080/"
  },
  "id": "NHirmgCYXvU",
  "outputId": "f72bb9de-93e1-44fd-ccdb-4564f8d212fa"
},
"outputs": [
  {
    "data": {
      "text/plain": [
        "array([0., 0., 0., 0., 0., 0., 0., 0., 0., 0.])"
      ]
    },
    "execution_count": 22,
    "metadata": {},
    "output_type": "execute_result"
  },
  {
    "source": [
      "a=np.zeros(10)\n",
      "a"
    ]
  },
  {
    "cell_type": "code",
    "execution_count": null,
    "metadata": {
      "colab": {
        "base_uri": "https://localhost:8080/"
```

```

    },
    "id": "e4005lsTYXxx",
    "outputId": "088c3049-209d-405d-d97f-3f081e532d0f"
  },
  "outputs": [
    {
      "data": {
        "text/plain": [
          "array([5, 5, 5, 5, 5, 5, 5, 5, 5, 5])"
        ]
      },
      "execution_count": 21,
      "metadata": {},
      "output_type": "execute_result"
    }
  ],
  "source": [
    "a=np.ones(10,dtype=int)*5\\n",
    "a"
  ]
},
{
  "cell_type": "markdown",
  "metadata": {
    "id": "gZHHDUBvrMX4"
  },
  "source": [
    "## 5. Create an array of all the even integers from 20 to 35"
  ]
},
{

```



```
"cell_type": "code",
"execution_count": null,
"metadata": {
  "colab": {
    "base_uri": "https://localhost:8080/"
  },
  "id": "oAI2tbU2Yag-",
  "outputId": "a3a20c77-489e-449c-f2fb-46d557e632dc"
},
"outputs": [
  {
    "data": {
      "text/plain": [
        "array([20, 22, 24, 26, 28, 30, 32, 34])"
      ]
    },
    "execution_count": 20,
    "metadata": {},
    "output_type": "execute_result"
  },
  {
    "source": [
      "a=np.arange(20,35,2)\n",
      "a"
    ]
  },
  {
    "cell_type": "markdown",
    "metadata": {
      "id": "NaOM308NsRpZ"
    },
  },
```

```
"source": [  
  "## 6. Create a 3x3 matrix with values ranging from 0 to 8"  
]  
,  
{  
  "cell_type": "code",  
  "execution_count": null,  
  "metadata": {  
    "colab": {  
      "base_uri": "https://localhost:8080/"  
    },  
    "id": "tOIEVH7BYceE",  
    "outputId": "0227e5be-c1de-4651-ac3d-39f929c66890"  
  },  
  "outputs": [  
    {  
      "data": {  
        "text/plain": [  
          "array([[0, 1, 2],\n",  
          "      [3, 4, 5],\n",  
          "      [6, 7, 8]])"  
        ]  
      },  
      "execution_count": 24,  
      "metadata": {},  
      "output_type": "execute_result"  
    }  
  ],  
  "source": [  
    "np.arange(0,9).reshape(3,3)\n"  
  ]  
}
```

```
},
{
  "cell_type": "markdown",
  "metadata": {
    "id": "hQ0dnhAQuU_p"
  },
  "source": [
    "## 7. Concatenate a and b \n",
    "## a = np.array([1, 2, 3]), b = np.array([4, 5, 6])"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "colab": {
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    },
    "id": "rAPSw97aYfE0",
    "outputId": "09ab48d4-aab0-4fa8-a317-9ae7448b96cf"
  },
  "outputs": [
    {
      "data": {
        "text/plain": [
          "array([1, 2, 3, 4, 5, 6])"
        ]
      },
      "execution_count": 29,
      "metadata": {},
      "output_type": "execute_result"
    }
  ]
}
```

```

    }
  ],
  "source": [
    "a = np.array([1, 2, 3])\n",
    "b = np.array([4, 5, 6])\n",
    "c=np.concatenate((a,b))\n",
    "c"
  ]
},
{
  "cell_type": "markdown",
  "metadata": {
    "id": "dIPEY9DRwZga"
  },
  "source": [
    "# Pandas"
  ]
},
{
  "cell_type": "markdown",
  "metadata": {
    "id": "ijoYW51zwr87"
  },
  "source": [
    "## 8. Create a dataframe with 3 rows and 2 columns"
  ]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {

```

```
"id": "T5OxJRZ8uvR7"
},
"outputs": [],
"source": [
  "import pandas as pd"
]
},
{
  "cell_type": "code",
  "execution_count": null,
  "metadata": {
    "colab": {
      "base_uri": "https://localhost:8080/",
      "height": 143
    },
    "id": "OX-ng4S0ZNRf",
    "outputId": "09015410-e23f-4c3c-8f1d-bd6bb6a8aa95"
  },
  "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",
```

```
"\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>PLACE</th>\n",
"     <th>FAMOUS_PLACE</th>\n",
"   </tr>\n",
" </thead>\n",
" <tbody>\n",
"   <tr>\n",
"     <th>1</th>\n",
"     <td>VELLORE</td>\n",
"     <td>FORT</td>\n",
"   </tr>\n",
"   <tr>\n",
"     <th>2</th>\n",
"     <td>CHENNAI</td>\n",
"     <td>MARINA BEACH</td>\n",
"   </tr>\n",
"   <tr>\n",
"     <th>3</th>\n",
"     <td>MADURAI</td>\n",
"     <td>TEMPLE</td>\n",
"   </tr>\n",
" </tbody>\n",
"</table>\n",
```

```

    "</div>"
  ],
  "text/plain": [
    "  PLACE FAMOUS_PLACE\n",
    "1 VELLORE    FORT\n",
    "2 CHENNAI MARINA BEACH\n",
    "3 MADURAI    TEMPLE"
  ]
},
"execution_count": 3,
"metadata": {},
"output_type": "execute_result"
}
],
"source": [
  "a={'PLACE':['VELLORE','CHENNAI','MADURAI'],'FAMOUS_PLACE':['FORT','MARINA\n",
    BEACH','TEMPLE']}\n",
  "b=pd.DataFrame(a,index=(1,2,3))\n",
  "b"
]
},
{
  "cell_type": "markdown",
  "metadata": {
    "id": "UXSmdNclyJQD"
  },
  "source": [
    "## 9. Generate the series of dates from 1st Jan, 2023 to 10th Feb, 2023"
  ]
},
{

```

```
"cell_type": "code",
"execution_count": null,
"metadata": {
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    "base_uri": "https://localhost:8080/"
  },
  "id": "DYEO_xdXaeol",
  "outputId": "90a21456-d256-4000-a836-4a110bec22c6"
},
"outputs": [
  {
    "data": {
      "text/plain": [
        "DatetimeIndex(['2023-01-01', '2023-01-02', '2023-01-03', '2023-01-04',\n",
        "                '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",
        "                '2023-02-10'],\n",
        "              dtype='datetime64[ns]', freq='D')"
```



```

],
"source": [
    "a=pd.date_range('01-01-2023','02-10-2023')\n",
    "a"
]
},
{
    "cell_type": "markdown",
    "metadata": {
        "id": "ZizSetD-y5az"
    },
    "source": [
        "## 10. Create 2D list to DataFrame\n",
        "\n",
        "lists = [[1, 'aaa', 22],[2, 'bbb', 25],[3, 'ccc', 24]]"
    ]
},
{
    "cell_type": "code",
    "execution_count": null,
    "metadata": {
        "id": "_XMC8aEt0IIB"
    },
    "outputs": [],
    "source": [
        "lists = [[1, 'aaa', 22], [2, 'bbb', 25], [3, 'ccc', 24]]"
    ]
},
{
    "cell_type": "code",
    "execution_count": null,

```

```
"metadata": {
  "colab": {
    "base_uri": "https://localhost:8080/",
    "height": 143
  },
  "id": "knH76sDKYsVX",
  "outputId": "8b8759a9-5fa1-4380-8da1-6d237861b154"
},
"outputs": [
  {
    "data": {
      "text/html": [
        "\n",
        " <div id=\"df-178b37a9-533f-4612-9e81-1224faca903a\">\n",
        "   <div class=\"colab-df-container\">\n",
        "     <div>\n",
        "<style scoped>\n",
        "  .dataframe tbody tr th:only-of-type {\n",
        "    vertical-align: middle;\n",
        "  }\n",
        "\n",
        "  .dataframe tbody tr th {\n",
        "    vertical-align: top;\n",
        "  }\n",
        "\n",
        "  .dataframe thead th {\n",
        "    text-align: right;\n",
        "  }\n",
        "</style>\n",
        "<table border=\"1\" class=\"dataframe\">\n",
        "  <thead>\n",
```

```

" <tr style=\"text-align: right;\">\n",
" <th></th>\n",
" <th>A</th>\n",
" <th>B</th>\n",
" <th>C</th>\n",
" </tr>\n",
" </thead>\n",
" <tbody>\n",
" <tr>\n",
" <th>1</th>\n",
" <td>1</td>\n",
" <td>aaa</td>\n",
" <td>22</td>\n",
" </tr>\n",
" <tr>\n",
" <th>2</th>\n",
" <td>2</td>\n",
" <td>bbb</td>\n",
" <td>25</td>\n",
" </tr>\n",
" <tr>\n",
" <th>3</th>\n",
" <td>3</td>\n",
" <td>ccc</td>\n",
" <td>24</td>\n",
" </tr>\n",
" </tbody>\n",
"</table>\n",
"</div>\n",
" <button class=\"colab-df-convert\" onclick=\"convertToInteractive('df-178b37a9-533f-4612-9e81-1224faca903a')\">\n",

```

```

"      title=\"Convert this dataframe to an interactive table.\\n\",
"      style=\"display:none;\\\">\\n\",
"      \\n\",
"      <svg xmlns=\"http://www.w3.org/2000/svg\" height=\"24px\" viewBox=\"0 0 24 24\"\\n\",
"      width=\"24px\">\\n\",
"      <path d=\"M0 0h24v24H0V0z\" fill=\"none\"/>\\n\",
"      <path d=\"M18.56 5.44l.94 2.06.94-2.06-.94-2.06-.94 2.06-.94 2.06.94zm-
11 1l8.5 8.5l.94-2.06 2.06-.94-2.06-.94l8.5 2.5l-.94 2.06-2.06.94zm10 10l.94 2.06.94-2.06-.94-
2.06-.94-.94-2.06-.94 2.06-2.06.94z\"/><path d=\"M17.41 7.96l-1.37-1.37c-.4-.4-.92-.59-1.43-.59-.52
0-1.04-2-1.43.59l10.3 9.45l-7.72 7.72c-.78.78-.78 2.05 0 2.83l4 21.41c.39.39.9.59 1.41.59.51 0 1.02-
.2 1.41-.59l7.78-7.78 2.81-2.81c.8-.78.8-2.07 0-2.86z\"M5.41 20l4 18.59l7.72-7.72 1.47 1.35l5.41
20z\"/>\\n\",
"    </svg>\\n\",
"    </button>\\n\",
"    \\n\",
"    <style>\\n\",
"      .colab-df-container {\\n\",
"        display:flex;\\n\",
"        flex-wrap:wrap;\\n\",
"        gap: 12px;\\n\",
"      }\\n\",
"\\n\",
"      .colab-df-convert {\\n\",
"        background-color: #E8F0FE;\\n\",
"        border: none;\\n\",
"        border-radius: 50%;\\n\",
"        cursor: pointer;\\n\",
"        display: none;\\n\",
"        fill: #1967D2;\\n\",
"        height: 32px;\\n\",
"        padding: 0 0 0 0;\\n\",
"        width: 32px;\\n\",
"      }\\n\",

```

```

"\n",
"  .colab-df-convert:hover {\n",
"    background-color: #E2EBFA;\n",
"    box-shadow: 0px 1px 2px rgba(60, 64, 67, 0.3), 0px 1px 3px 1px rgba(60, 64, 67,
0.15);\n",
"    fill: #174EA6;\n",
"  }\n",
"\n",
"  [theme=dark] .colab-df-convert {\n",
"    background-color: #3B4455;\n",
"    fill: #D2E3FC;\n",
"  }\n",
"\n",
"  [theme=dark] .colab-df-convert:hover {\n",
"    background-color: #434B5C;\n",
"    box-shadow: 0px 1px 3px 1px rgba(0, 0, 0, 0.15);\n",
"    filter: drop-shadow(0px 1px 2px rgba(0, 0, 0, 0.3));\n",
"    fill: #FFFFFF;\n",
"  }\n",
" </style>\n",
"\n",
"  <script>\n",
"    const buttonEl =\n",
"      document.querySelector('#df-178b37a9-533f-4612-9e81-1224faca903a 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-178b37a9-533f-4612-9e81-
1224faca903a');\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\"'\n",
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",
" "
],
"text/plain": [
"  A  B  C\n",
"1 1  aaa  22\n",
"2 2  bbb  25\n",
"3 3  ccc  24"
]
},
"execution_count": 52,
"metadata": {},
"output_type": "execute_result"
}

```

```
],
"source": [
  "a=pd.DataFrame(lists,columns=('A','B','C'),index=('1','2','3'))\n",
  "a"
]
}
],
"metadata": {
  "colab": {
    "collapsed_sections": [],
    "provenance": []
  },
  "kernel_spec": {
    "display_name": "Python 3 (ipykernel)",
    "language": "python",
    "name": "python3"
  },
  "language_info": {
    "codemirror_mode": {
      "name": "ipython",
      "version": 3
    },
    "file_extension": ".py",
    "mimetype": "text/x-python",
    "name": "python",
    "nbconvert_exporter": "python",
    "pygments_lexer": "ipython3",
    "version": "3.9.12"
  }
},
"nbformat": 4,
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"nbformat_minor": 0

}