

PRATHYUSHA ENGINEERING COLLEGE

INFORMATION TECHNOLOGY

IBM NALAIYA THIRAN

Domain name : Artificial Intelligence

Title : REAL-TIME COMMUNICATION SYSTEM POWERED BY AI FOR SPECIALLY ABLED

```
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  "nbformat_minor": 0,
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    "data": {
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      ],
      "application/vnd.google.colaboratory.intrinsic+json": {
        "type": "string"
      }
    },
    "metadata": {},
    "execution_count": 2
  }
]
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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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  }
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  "cell_type": "code",
  "source": [
    "planet = \"Earth\"\n",
    "diameter = 12742"
  ],
  "metadata": {
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  },
  "execution_count": 3,
  "outputs": []
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  "cell_type": "code",
  "source": [
    "print(\"The diameter of {} is {} kilometers\").format(planet,diameter\n",
    "
    ))"
  ],
  "metadata": {

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                "The diameter of Earth is 12742 kilometer\n"
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        "## 3. In this nest dictionary grab the word \"hello\""
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        "d =
{'k1': [1,2,3, {'tricky': ['oh', 'man', 'inception', {'target': [1,2,3, 'hello']}]}]}]"
    ],
    "metadata": {
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    },
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    "source": [
        "d['k1'][3]['tricky'][3]['target'][3]"
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            "data": {
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        "'hello'"
    ],
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        "type": "string"
    }
},
"metadata": {},
"execution_count": 9
}
]
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    ],
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{
    "cell_type": "code",
    "source": [
        "import numpy as np"
    ],
    "metadata": {
        "id": "LLiE_TYrhA10"
    },
    "execution_count": 10,
    "outputs": []
},
{
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    "source": [
        "## 4.1 Create an array of 10 zeros? \n",
        "## 4.2 Create an array of 10 fives?"
    ],
    "metadata": {
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    }
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{
    "cell_type": "code",
    "source": [
        "a=np.zeros(10)\n",
        "a"
    ],
    "metadata": {
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    "execution_count": 12,
    "outputs": [
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                "array([0., 0., 0., 0., 0., 0., 0., 0., 0., 0.])"
            ]
        },
        "metadata": {},
        "execution_count": 12
    }
]
},
{
    "cell_type": "code",
    "source": [
        "b=np.ones(10)*5\n",
        "b"
    ],
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            "base_uri": "https://localhost:8080/"
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            "output_type": "execute_result",
            "data": {
                "text/plain": [
                    "array([5., 5., 5., 5., 5., 5., 5., 5., 5., 5.])"
                ]
            },
            "metadata": {},
            "execution_count": 13
        }
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},
{
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        "## 5. Create an array of all the even integers from 20 to 35"
    ],
    "metadata": {
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    }
},
{
    "cell_type": "code",
    "source": [
        "s=np.arange(20,50,2)\n",
        "s"
    ],
    "metadata": {
        "id": "oAI2tbU2Yag-",
        "colab": {
            "base_uri": "https://localhost:8080/"
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        "outputId": "09b9e929-d046-4017-95d9-15f41f514437"
    }
}

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    },
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46, 48]])"
          ]
        },
        "metadata": {},
        "execution_count": 15
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    ]
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  {
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      "## 6. Create a 3x3 matrix with values ranging from 0 to 8"
    ],
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    }
  },
  {
    "cell_type": "code",
    "source": [
      "b=np.arange(0,9).reshape(3,3)\n",
      "b"
    ],
    "metadata": {
      "id": "tO1EVH7BYceE",
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    },
    "execution_count": 17,
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        "output_type": "execute_result",
        "data": {
          "text/plain": [
            "array([[0, 1, 2],\n",
            "       [3, 4, 5],\n",
            "       [6, 7, 8]])"
          ]
        },
        "metadata": {},
        "execution_count": 17
      }
    ]
  },
  {
    "cell_type": "markdown",
    "source": [
      "## 7. Concatenate a and b \n",

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    "## a = np.array([1, 2, 3]), b = np.array([4, 5, 6])"
  ],
  "metadata": {
    "id": "hQ0dnhAQuU_p"
  }
},
{
  "cell_type": "code",
  "source": [
    "a=np.array([1,2,3])\n",
    "b=np.array([4,5,6])\n",
    "np.concatenate((a,b))"
  ],
  "metadata": {
    "id": "rAPSw97aYfE0",
    "colab": {
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    },
    "outputId": "7a0cce13-2d3f-4a8c-b9a4-1c9aa60b1575"
  },
  "execution_count": 18,
  "outputs": [
    {
      "output_type": "execute_result",
      "data": {
        "text/plain": [
          "array([1, 2, 3, 4, 5, 6])"
        ]
      },
      "metadata": {},
      "execution_count": 18
    }
  ]
},
{
  "cell_type": "markdown",
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    "# Pandas"
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  "metadata": {
    "id": "dlPEY9DRwZga"
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{
  "cell_type": "markdown",
  "source": [
    "## 8. Create a dataframe with 3 rows and 2 columns"
  ],
  "metadata": {
    "id": "ijoYW51zwr87"
  }
},
{
  "cell_type": "code",
  "source": [
    "import pandas as pd\n"
  ],
  "metadata": {

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  },
  "execution_count": 22,
  "outputs": []
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{
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    "d =
{\\\"names\\\": [\\\"aaa\\\", \\\"bbb\\\", \\\"ccc\\\", ], \\\"age\\\": [21, 22, 20]}\\n\",
    \"df = pd.DataFrame(d)\\n\",
    \"df\"
  ],
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      "data": {
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          " names  age\\n",
          "0    aaa   21\\n",
          "1    bbb   22\\n",
          "2    ccc   20\"
        ],
        "text/html": [
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          \" <div id=\\\"df-b5679877-3840-42e3-9a1b-a99a23e039fd\\\">\\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>names</th>\\n\",
          \"      <th>age</th>\\n\",
          \"    </tr>\\n\",
          \"  </thead>\\n\",

```



```

" <tbody>\n",
"   <tr>\n",
"     <th>0</th>\n",
"     <td>aaa</td>\n",
"     <td>21</td>\n",
"   </tr>\n",
"   <tr>\n",
"     <th>1</th>\n",
"     <td>bbb</td>\n",
"     <td>22</td>\n",
"   </tr>\n",
"   <tr>\n",
"     <th>2</th>\n",
"     <td>ccc</td>\n",
"     <td>20</td>\n",
"   </tr>\n",
" </tbody>\n",
"</table>\n",
"</div>\n",
"   <button class=\"colab-df-convert\"
onclick=\"convertToInteractive('df-b5679877-3840-42e3-9a1b-
a99a23e039fd')\">\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 2.06-.94-2.06-
.94-.94-2.06-.94 2.06-2.06.94zm-11 1L8.5 8.5l.94-2.06 2.06-.94-2.06-
.94L8.5 2.51-.94 2.06-2.06.94zm10 10l.94 2.06.94-2.06 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-
2.05 0 2.83L4 21.41c.39.39.95.59 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",
" \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",

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"    }\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-b5679877-3840-42e3-
9a1b-a99a23e039fd 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-
b5679877-3840-42e3-9a1b-a99a23e039fd');\n",
"            const dataTable =\n",
"                await
google.colab.kernel.invokeFunction('convertToInteractive',\n",
"                    [key], {});\n",
"            if (!dataTable) return;\n",
"\n",
"            const docLinkHtml = 'Like what you see? Visit
the ' +\n",
"                '<a target=\"_blank\"
href=https://colab.research.google.com/notebooks/data_table.ipynb>data
table notebook</a>'\n",
"                + ' to learn more about interactive
tables.';\n",
"            element.innerHTML = '';\n",
"            dataTable['output_type'] = 'display_data';\n",
"            await
google.colab.output.renderOutput(dataTable, element);\n",
"            const docLink =
document.createElement('div');\n",
"                docLink.innerHTML = docLinkHtml;\n",
"                element.appendChild(docLink);\n",
"            }\n",
"        </script>\n",

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```

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        "    "
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        "## 9. Generate the series of dates from 1st Jan, 2023 to 10th
Feb, 2023"
    ],
    "metadata": {
        "id": "UXSmdNclyJQD"
    }
},
{
    "cell_type": "code",
    "source": [
        "m= pd.date_range(start='1-01-2023',end='10-02-2023')\n",
        "for i in m:\n",
        "    print(i)"
    ],
    "metadata": {
        "id": "dgyC0JhVYl4F",
        "colab": {
            "base_uri": "https://localhost:8080/"
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        "outputId": "148bfe6d-e4ea-4796-fa1e-79ad4b21f7d9"
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            "name": "stdout",
            "text": [
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                "2023-01-02 00:00:00\n",
                "2023-01-03 00:00:00\n",
                "2023-01-04 00:00:00\n",
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        }
    ]
}

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}
]
},
{
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    "source": [
        "## 10. Create 2D list to DataFrame\n",
        "\n",
        "lists = [[1, 'aaa', 22],\n",
        "          [2, 'bbb', 25],\n",
        "          [3, 'ccc', 24]]"
    ],
    "metadata": {
        "id": "ZizSetD-y5az"
    }
},
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    "cell_type": "code",
    "source": [
        "lists = [[1, 'aaa', 22], [2, 'bbb', 25], [3, 'ccc', 24]]"
    ],
    "metadata": {
        "id": "_XMC8aEt01lB"
    },
    "execution_count": 23,
    "outputs": []
},
{
    "cell_type": "code",
    "source": [
        "print(pd.DataFrame(lists))"
    ],

```



```
"metadata": {
  "id": "knH76sDKYsVX",
  "colab": {
    "base_uri": "https://localhost:8080/"
  },
  "outputId": "b7cf97e6-eea3-4390-ec48-29f2d6aa92b7"
},
"execution_count": 28,
"outputs": [
  {
    "output_type": "stream",
    "name": "stdout",
    "text": [
      " 0      1      2\n",
      "0 1  aaa  22\n",
      "1 2  bbb  25\n",
      "2 3  ccc  24\n"
    ]
  }
]
}
```