

```
{
  "nbformat": 4,
  "nbformat_minor": 0,
  "metadata": {
    "colab": {
      "provenance": []
    },
    "kernelspec": {
      "name": "python3",
      "display_name": "Python 3"
    },
    "language_info": {
      "name": "python"
    }
  },
  "cells": [
    {
      "cell_type": "markdown",
      "source": [
        "Import necessary libraries"
      ],
      "metadata": {
        "id": "SYHFf5j9J5WV"
      }
    },
    {
      "cell_type": "code",
      "source": [
        "import requests\n",
        "import numpy as np\n",
        "from PIL import Image, ImageOps\n",
```

```
"import matplotlib.pyplot as plt"
],
"metadata": {
  "id": "Cwd4b1T8J588"
},
"execution_count": null,
"outputs": []
},
{
  "cell_type": "markdown",
  "source": [
    "Input pre-processing"
  ],
  "metadata": {
    "id": "fvPxnI9dJ8t6"
  }
},
{
  "cell_type": "code",
  "source": [
    "img = Image.open(f\"../sample/sample 1.png\").convert(\"L\")\n",
    "img = ImageOps.invert(img)\n",
    "img = img.resize((28, 28))\n",
    "img_arr = np.array(img)\n",
    "img_arr = img_arr / 255.0\n",
    "img_arr = img_arr.reshape(28, 28, 1)\n",
    "\n"
  ],
  "metadata": {
    "id": "vCJETXXgJ_Or"
  }
},
```

```

    "execution_count": null,
    "outputs": []
},
{
    "cell_type": "markdown",
    "source": [
        "Get results from the deployed model"
    ],
    "metadata": {
        "id": "oxlbGmcZKC2v"
    }
},
{
    "cell_type": "code",
    "source": [
        "API_KEY = \"\" \"\",
        \"\",
        "token_response = requests.post('https://iam.cloud.ibm.com/identity/token', \"\",
        \"
            data={\"apikey\": API_KEY, \"grant_type\": 'urn:ibm:params:oauth:grant-
type:apikey'})\"\",
        \"\",
        "mltoken = token_response.json()[\"access_token\"]\",
        \"\",
        "header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken}\"\",
        \"\",
        "payload_scoring = {\"input_data\": [{\"fields\": [], \"values\": [img_arr.tolist(), img2_arr.tolist(),
img3_arr.tolist()]}]}\",
        \"\",
        "response_scoring = requests.post('https://us-
south.ml.cloud.ibm.com/ml/v4/deployments/ae43e79c-1fbc-450a-b0b4-
9a54c451033b/predictions?version=2022-11-10', \"\",
        \"
            json=payload_scoring, headers={'Authorization': 'Bearer ' + mltoken})\"

```

```
],
"metadata": {
  "id": "5N2WDFVoKGHh"
},
"execution_count": null,
"outputs": []
},
{
  "cell_type": "markdown",
  "source": [
    "Display results"
  ],
  "metadata": {
    "id": "DUmoTp3wKPj9"
  }
},
{
  "cell_type": "code",
  "source": [
    "plt.imshow(plt.imread(\"../sample/sample 1.png\"))\n",
    "plt.axis('off')\n",
    "plt.show()\n",
    "print(\"Result: \", response_scoring.json()['predictions'][0]['values'][0][1])"
  ],
  "metadata": {
    "id": "Y7aFqYaYKQw_"
  },
  "execution_count": null,
  "outputs": []
},
{
```

```
"source": [
```

qVrZMtbpHJ22L5Zj+Lfpdx6Arr6pm5kzFbQs11U1g4OD7rpjx46VOB4n0emytgp3TiAphkNIqjFlrZZncVtl
nXx+8eJF16avx8bGpujT5RXL6VjmVtGZSrGUn0laRmv3Js5U0sUKcabVdOHOCsRFcgJJkZxAUo3sc8YZPC
MjlyWOM3jiKpX/qt3NreLsm06vhKhbcD6ds5GmQt13rJuQ6SoaXQBu5odLpnp4pwp3TiAphkNIqpFlbT
wZ+u7duyWOwyVxknw7YlmlJWk85Vkf7WuZFSeEr1+/vsS6ELhOLEl1Bk8s1/U70Rk9cYF5N9DvW79TM
/+97t69u8Q7d+50123cuLHECxYs6PRHbAt3TiAphkNliuQEkmPmN1P7X3WLreMKinanbtUtUNYFxPGRv
W4spVPIDh486K4bGhoqsS4ErhOn2unfGfvWN2/eLLFOZ9R/0y30+4/T8vQIQ/2ODx8+7K7TBeHTtQol4s
4JJEVYakk1pqzVsjMOZ+jQRNzDRkvDWCZq+aQLcnVvGjNfWq1bt8616RCJlqsHDhwx1x0/frzEcU+bKnEf
lh0uicc96O/WuN3TsDPRWUBxSEr3zNXjDHWfXTO/J+9MHQ/lnRNliuQEkmPMWauzRmLZqeWNBIVpZ
vbgwYMS65ELZn7miJaC8fgBfUKoTwHN/PEGOisllr/6mbVsqxNnCOkp1XHWi5bXWILHox+6gZah8e/ULO
w+hY2zrjKcdM2dE0iK5ASSljmBpBrT56ybNXLo0KESx0XN2heLG1VVHXmn72fm+7TarzTzfUs9ATqupug
E/Q5iX0z7o8iBOyeQFMkJJNWYU8Z0dk8sT8fHx1vGZmYTexMljsc46EJpLU8HBgbcdWvWrClxLFf1PTSeq
X1rMP04ZQzoMiQnkBTJCSTVmD5n3bF2emRf3cZXcSqb9gt1EfV0n9aM7kafE+gyJCeQVGPkWIV3FEHc
M0hL2bh4WekC7uk+rRndjbIW6DIkJ5AUyQkk1cg+J5AJfU6gy5CcQFIkJ5AUyQkkRXICSZGcQFIkJ5AUyQ
kkRXICSZGcQFIkJ5AUyQkkRXICSZGcQFIkJ5AUyQkkRXICSZGcQFIkJ5AUyQkkRXICSZGcQFIkJ5AUyQ
ICSZGcQFIkJ5AUyQkkRXICSZGcQFIkJ5AUyQkkRXICSZGcQFIkJ5AUyQkkNcvMfs30hwDwT9w5gaRITiAp
khNliuQEkiI5gaRITiCp/wEmPMMNLTlxtwAAAABJRu5ErkJggg==)"

```
  ],  
  "metadata": {  
    "id": "pY-bdzwnKlGh"  
  }  
},  
{  
  "cell_type": "markdown",  
  "source": [  
    "RESULT 2"  
  ],  
  "metadata": {  
    "id": "eiwKUDICKu4F"  
  }  
}  
]  
}
```