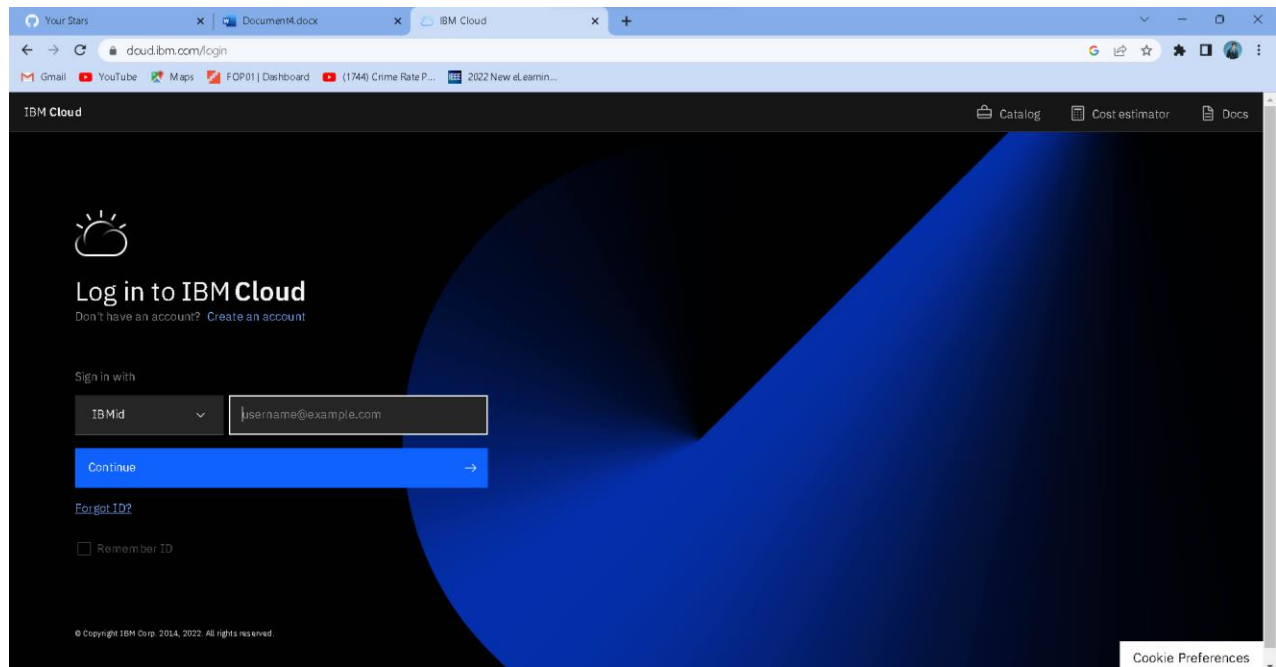


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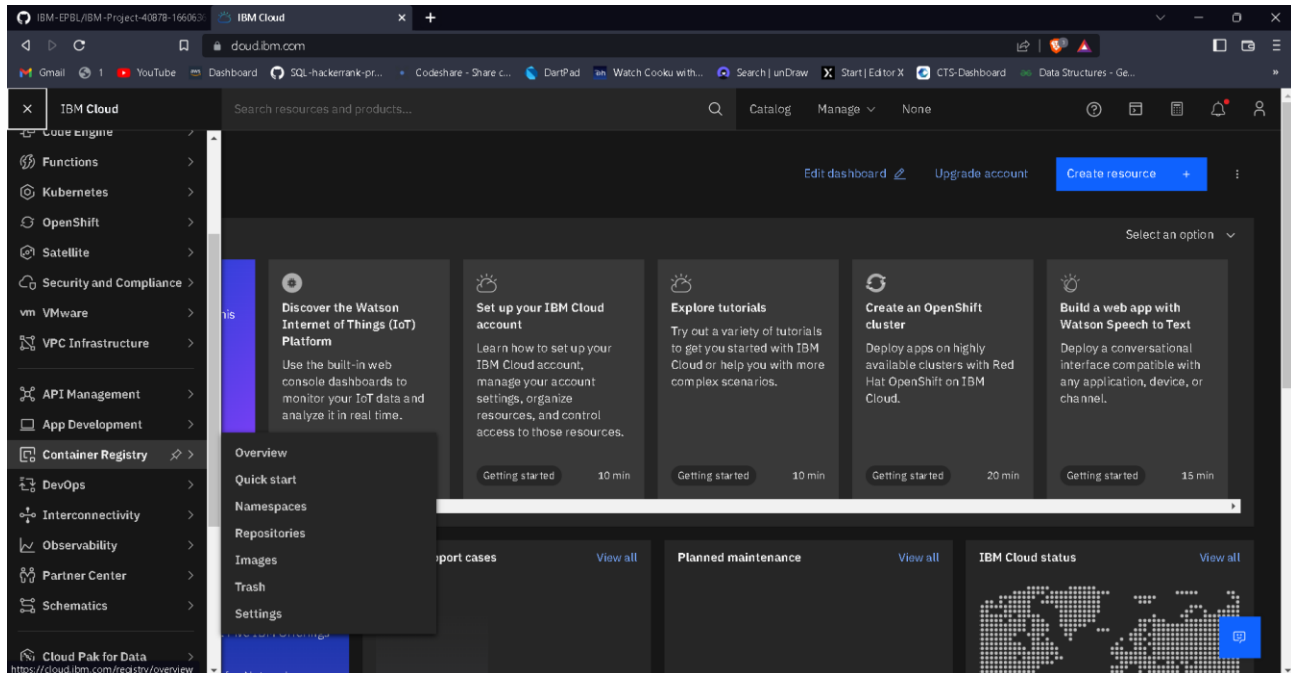
SETTING UP AN APPLICATION ENVIRONMENT

1. IBM CLOUD CLI INSTALLATION:

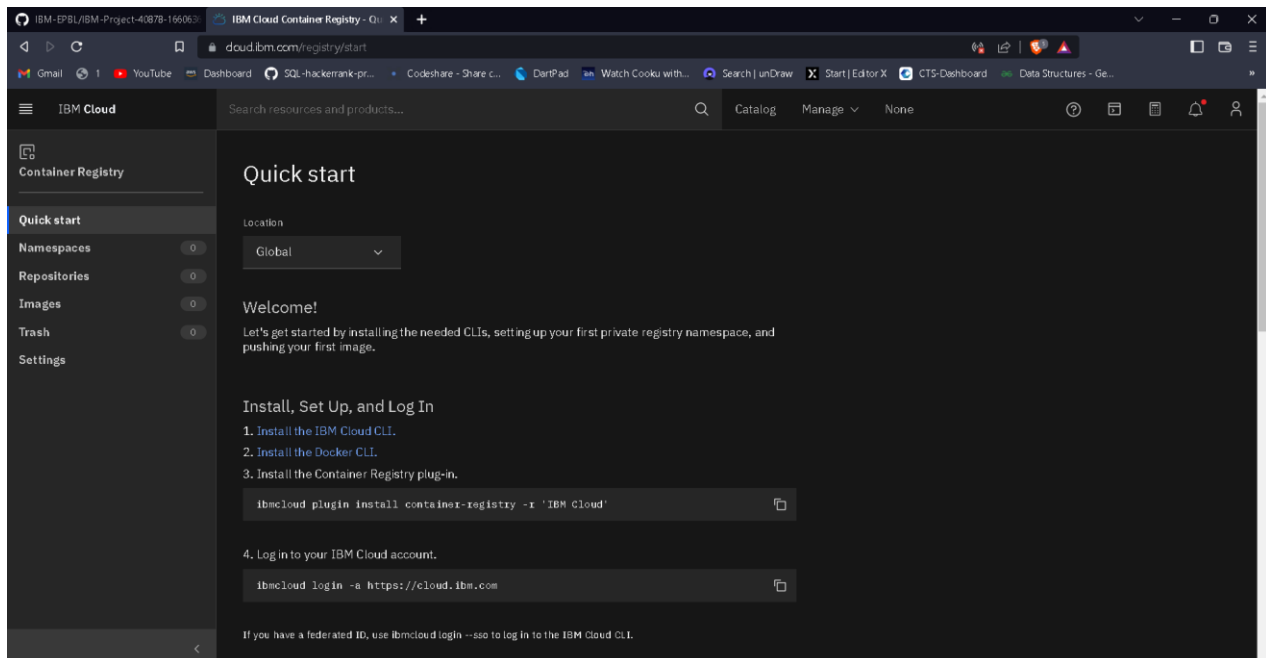
Step1: Log in to the IBM cloud



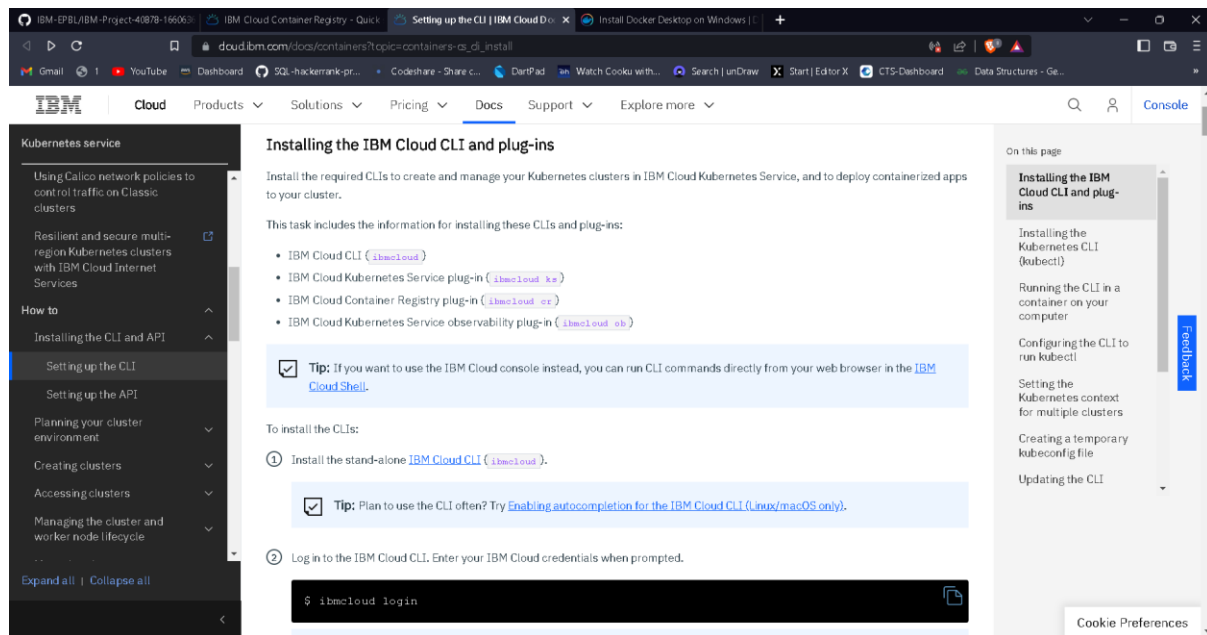
Step 2: Select container registry



Step3: Select QuickStart to open container registry and click on install IBM Cloud CLI

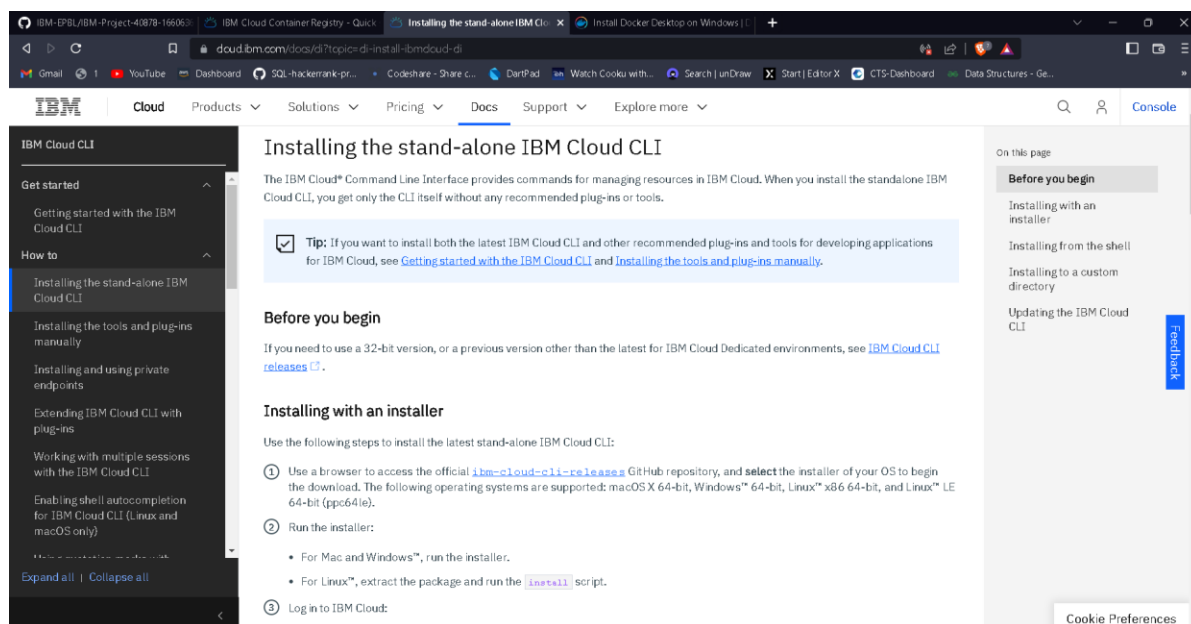


Step 4: Click on IBM Cloud CLI



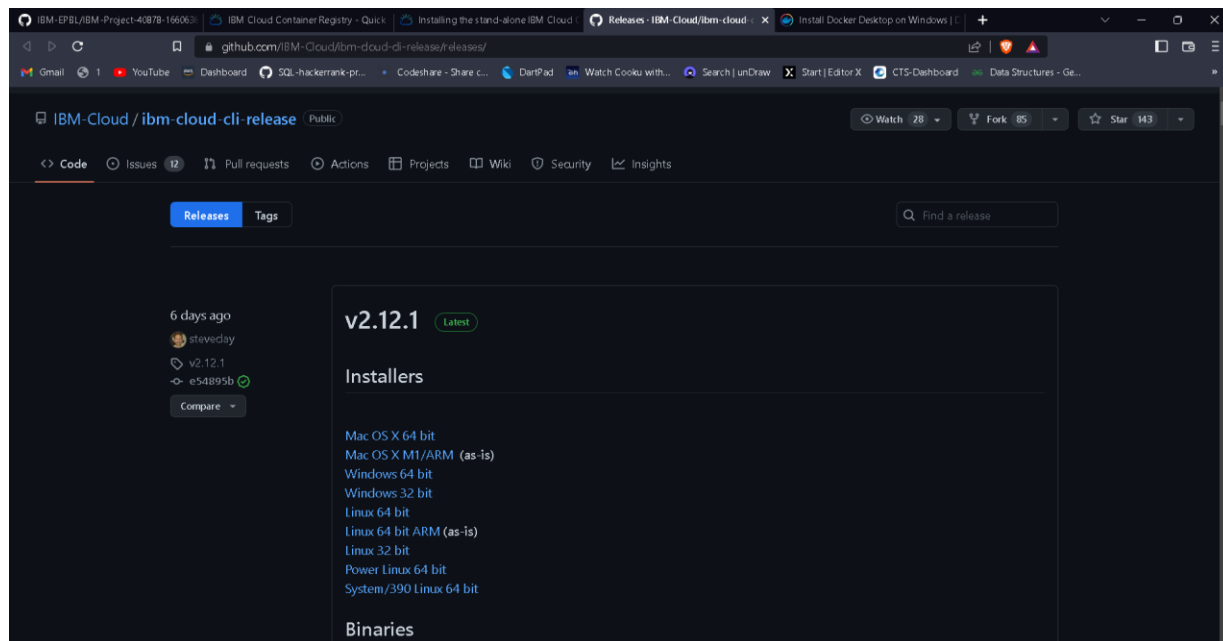
The screenshot shows the IBM Cloud CLI installation page. The left sidebar contains a navigation menu with the following items: Kubernetes service, Using Calico network policies to control traffic on Classic clusters, Resilient and secure multi-region Kubernetes clusters with IBM Cloud Internet Services, How to, Installing the CLI and API, Setting up the API, Planning your cluster environment, Creating clusters, Accessing clusters, Managing the cluster and worker node lifecycle, and Expand all | Collapse all. The main content area is titled "Installing the IBM Cloud CLI and plug-ins" and includes the following text: "Install the required CLIs to create and manage your Kubernetes clusters in IBM Cloud Kubernetes Service, and to deploy containerized apps to your cluster. This task includes the information for installing these CLIs and plug-ins: IBM Cloud CLI (ibmcloud), IBM Cloud Kubernetes Service plug-in (ibmcloud ks), IBM Cloud Container Registry plug-in (ibmcloud cr), and IBM Cloud Kubernetes Service observability plug-in (ibmcloud ob). A tip states: "If you want to use the IBM Cloud console instead, you can run CLI commands directly from your web browser in the IBM Cloud Shell." The steps to install the CLIs are: 1. Install the stand-alone IBM Cloud CLI (ibmcloud). A tip suggests: "Plan to use the CLI often? Try Enabling autocompletion for the IBM Cloud CLI (Linux/macOS only)." 2. Log in to the IBM Cloud CLI. Enter your IBM Cloud credentials when prompted. A terminal snippet shows the command: \$ ibmcloud login. The right sidebar contains a table of contents for the page: Installing the IBM Cloud CLI and plug-ins, Installing the Kubernetes CLI (kubectl), Running the CLI in a container on your computer, Configuring the CLI to run kubectl, Setting the Kubernetes context for multiple clusters, Creating a temporary kubeconfig file, and Updating the CLI. A "Feedback" button is located on the right sidebar.

Step 5: And then, Click on IBM Cloud CLI releases

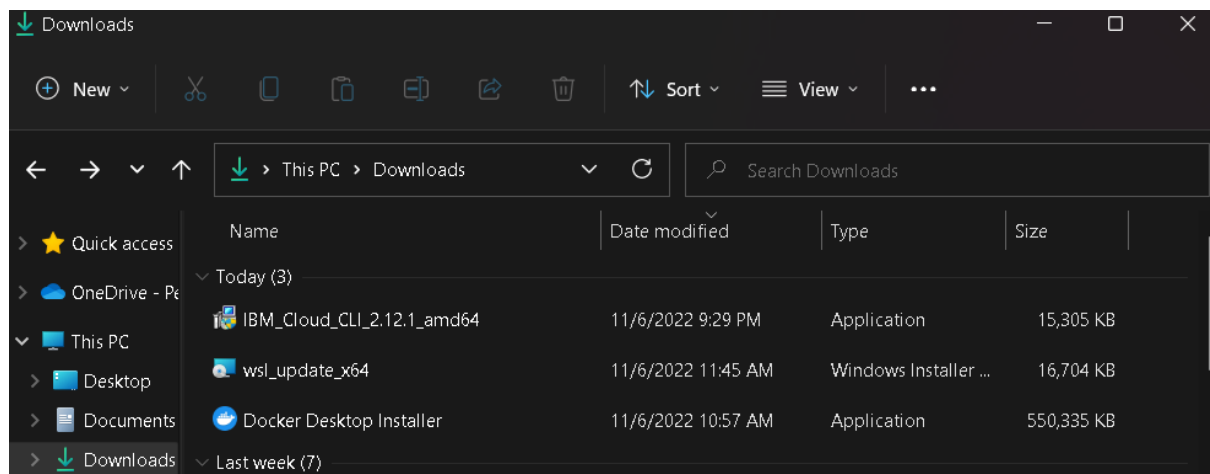


The screenshot shows the IBM Cloud CLI releases page. The left sidebar contains a navigation menu with the following items: IBM Cloud CLI, Get started, Getting started with the IBM Cloud CLI, How to, Installing the stand-alone IBM Cloud CLI, Installing the tools and plug-ins manually, Installing and using private endpoints, Extending IBM Cloud CLI with plug-ins, Working with multiple sessions with the IBM Cloud CLI, Enabling shell autocompletion for IBM Cloud CLI (Linux and macOS only), and Expand all | Collapse all. The main content area is titled "Installing the stand-alone IBM Cloud CLI" and includes the following text: "The IBM Cloud* Command Line Interface provides commands for managing resources in IBM Cloud. When you install the standalone IBM Cloud CLI, you get only the CLI itself without any recommended plug-ins or tools. A tip states: "If you want to install both the latest IBM Cloud CLI and other recommended plug-ins and tools for developing applications for IBM Cloud, see Getting started with the IBM Cloud CLI and Installing the tools and plug-ins manually." The "Before you begin" section states: "If you need to use a 32-bit version, or a previous version other than the latest for IBM Cloud Dedicated environments, see IBM Cloud CLI releases." The "Installing with an installer" section states: "Use the following steps to install the latest stand-alone IBM Cloud CLI: 1. Use a browser to access the official ibm-cloud-cli-releases GitHub repository, and select the installer of your OS to begin the download. The following operating systems are supported: macOS X 64-bit, Windows* 64-bit, Linux* x86 64-bit, and Linux* LE 64-bit (ppc64le). 2. Run the installer: For Mac and Windows*, run the installer. For Linux*, extract the package and run the install script. 3. Log in to IBM Cloud:"

Step 6: After that, the GitHub page will open and download the IBM CLI installer by selecting as per your system required installer.

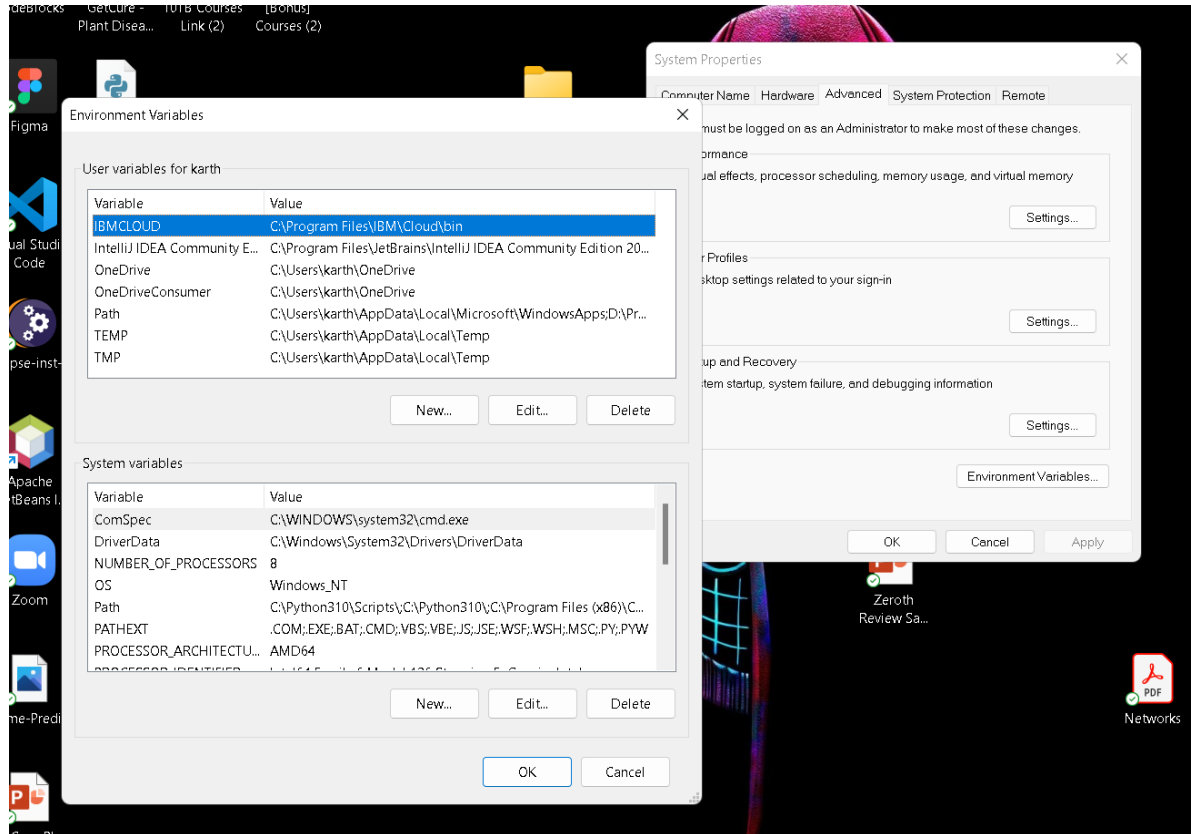


Step 7: After the download, Click the downloaded setup to run the installer.



Step 8: After the installation set environment variable and then open CMD (Windows). Type this command to login in IBM cloud

“ibmcloud login”



In the variable name, name it as “IBM Cloud” and in variable value the path location of the IBM.

Step 9: Enter your IBM cloud email id and password, then it will authenticate and signals “OK”. The number of regions will display, select one of them for your targeted account.

```
Command Prompt - ibmcloud login

C:\Users\karth>ibmcloud login
API endpoint: https://cloud.ibm.com

C:\Users\karth>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: us-east

Email> donaldvj17@gmail.com

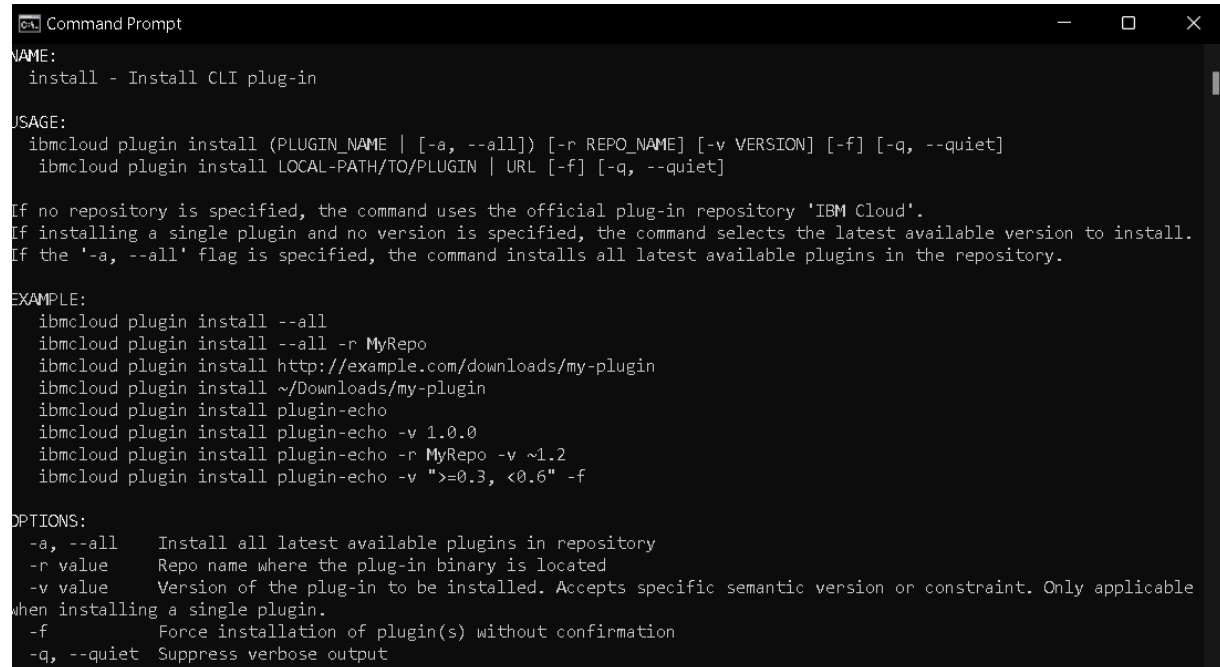
Password>
Authenticating...
OK

Targeted account None (3de90de6135b45488710630b2d0e4372)

API endpoint:      https://cloud.ibm.com
Region:           us-east
User:             donaldvj17@gmail.com
Account:          None (3de90de6135b45488710630b2d0e4372)
Resource group:   No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:
```

Step 10: Then copy the plugin command in your container registry (where the command displayed in your container registry which is opened on web browser) and paste and run it on cmd.

“ibmcloud plugin install container-registry -r”



```
Command Prompt
NAME:
  install - Install CLI plug-in

USAGE:
  ibmcloud plugin install (PLUGIN_NAME | [-a, --all]) [-r REPO_NAME] [-v VERSION] [-f] [-q, --quiet]
  ibmcloud plugin install LOCAL-PATH/TO/PLUGIN | URL [-f] [-q, --quiet]

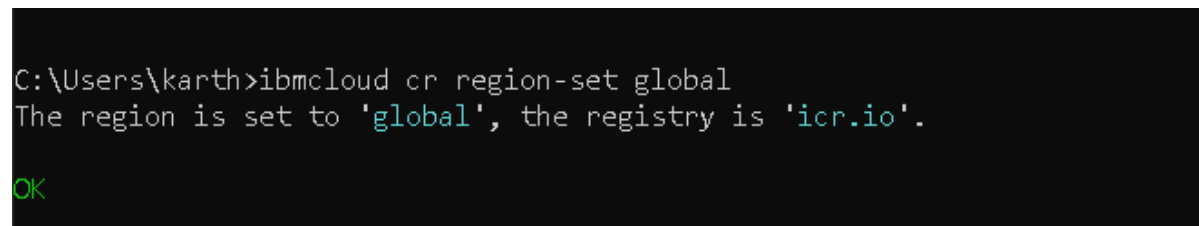
If no repository is specified, the command uses the official plug-in repository 'IBM Cloud'.
If installing a single plugin and no version is specified, the command selects the latest available version to install.
If the '-a, --all' flag is specified, the command installs all latest available plugins in the repository.

EXAMPLE:
  ibmcloud plugin install --all
  ibmcloud plugin install --all -r MyRepo
  ibmcloud plugin install http://example.com/downloads/my-plugin
  ibmcloud plugin install ~/Downloads/my-plugin
  ibmcloud plugin install plugin-echo
  ibmcloud plugin install plugin-echo -v 1.0.0
  ibmcloud plugin install plugin-echo -r MyRepo -v ~1.2
  ibmcloud plugin install plugin-echo -v ">=0.3, <0.6" -f

OPTIONS:
  -a, --all      Install all latest available plugins in repository
  -r value       Repo name where the plug-in binary is located
  -v value       Version of the plug-in to be installed. Accepts specific semantic version or constraint. Only applicable
when installing a single plugin.
  -f             Force installation of plugin(s) without confirmation
  -q, --quiet    Suppress verbose output
```

Step 11: Set your region to global.

“ibmcloud cr region-set global”



```
C:\Users\karth>ibmcloud cr region-set global
The region is set to 'global', the registry is 'icr.io'.

OK
```

Step 12: Create namespace in your container registry

The screenshot shows the IBM Cloud Container Registry interface. The left sidebar contains a navigation menu with 'Namespaces' highlighted. The main content area is titled 'Namespaces' and shows a table with one namespace. The table has columns for Name, Resource group, Repository count, Image count, and Retention policy. The namespace listed is '4b16c86-2ec5-4938-ad32-3e8d770' in the 'Default' resource group, with 0 repositories and 0 images. A 'Create' button is visible in the top right of the table area.

IBM Cloud Container Registry - Namespaces

Search resources and products...

Namespaces

Location: Global

Resource group: Filter... Search

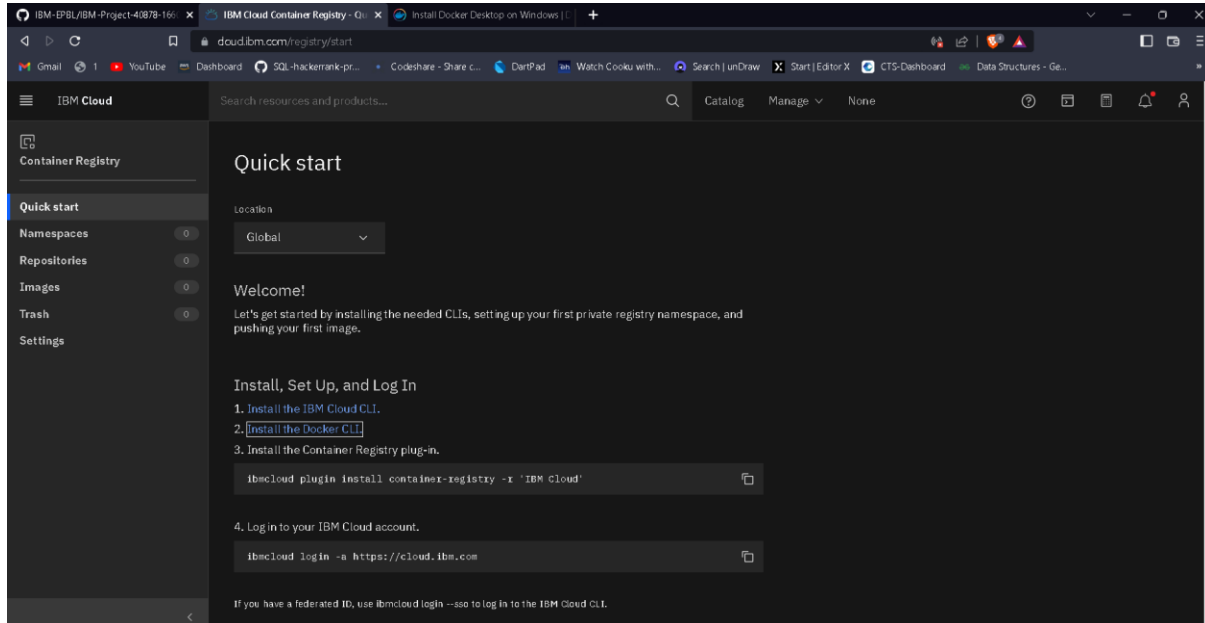
<input type="checkbox"/>	Name	Resource group	Repository count	Image count	Retention policy
<input type="checkbox"/>	4b16c86-2ec5-4938-ad32-3e8d770	Default	0	0	

Items per page: 25 1-1 of 1 item

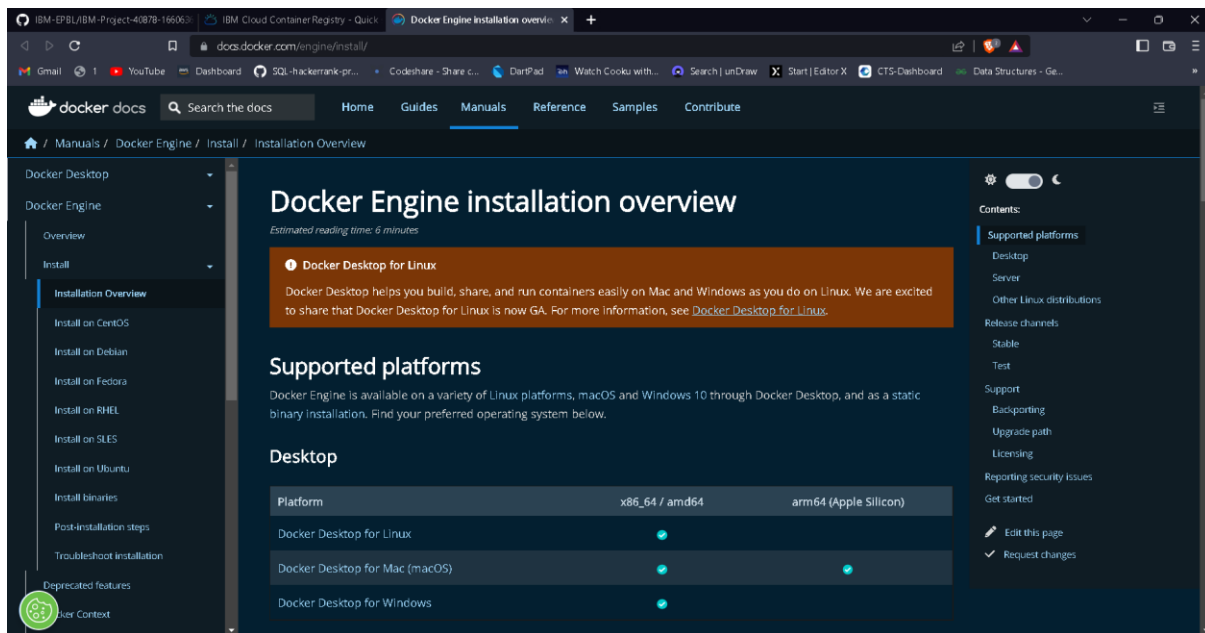
1 1 of 1 page

2. DOCKER CLI INSTALLATION:

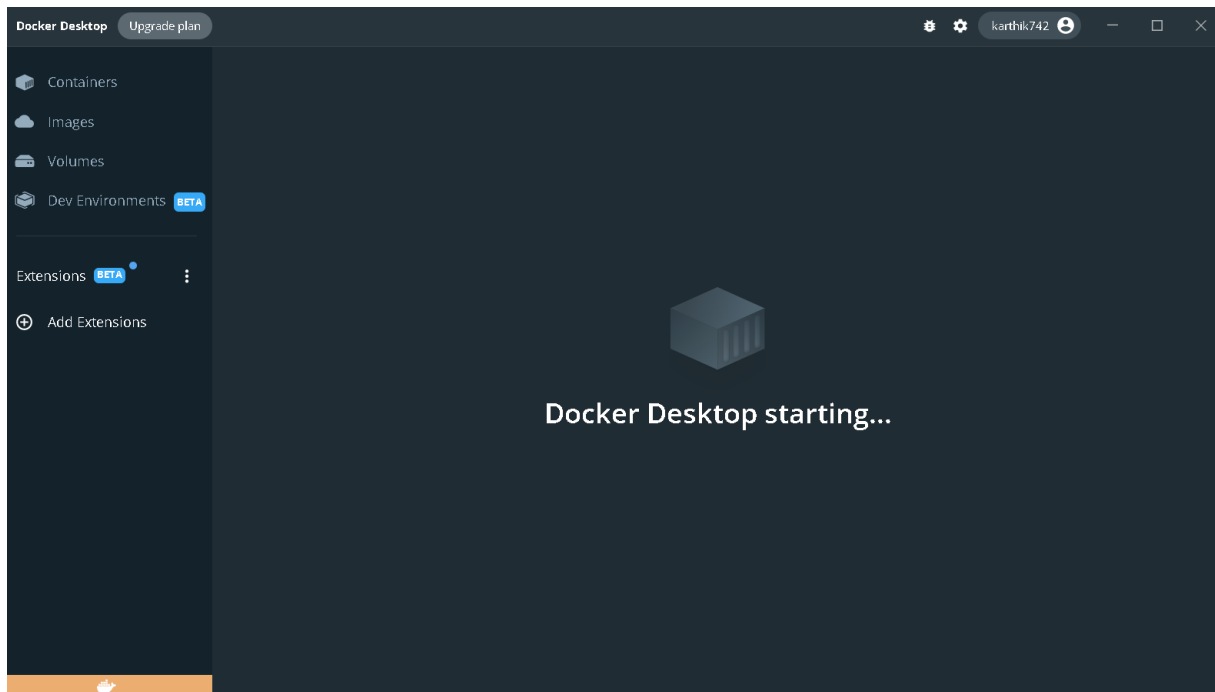
Step1: Open container registry in IBM cloud and click on Install Docker CLI.



Step 2: Then, click on required installer for your specified system and download it.

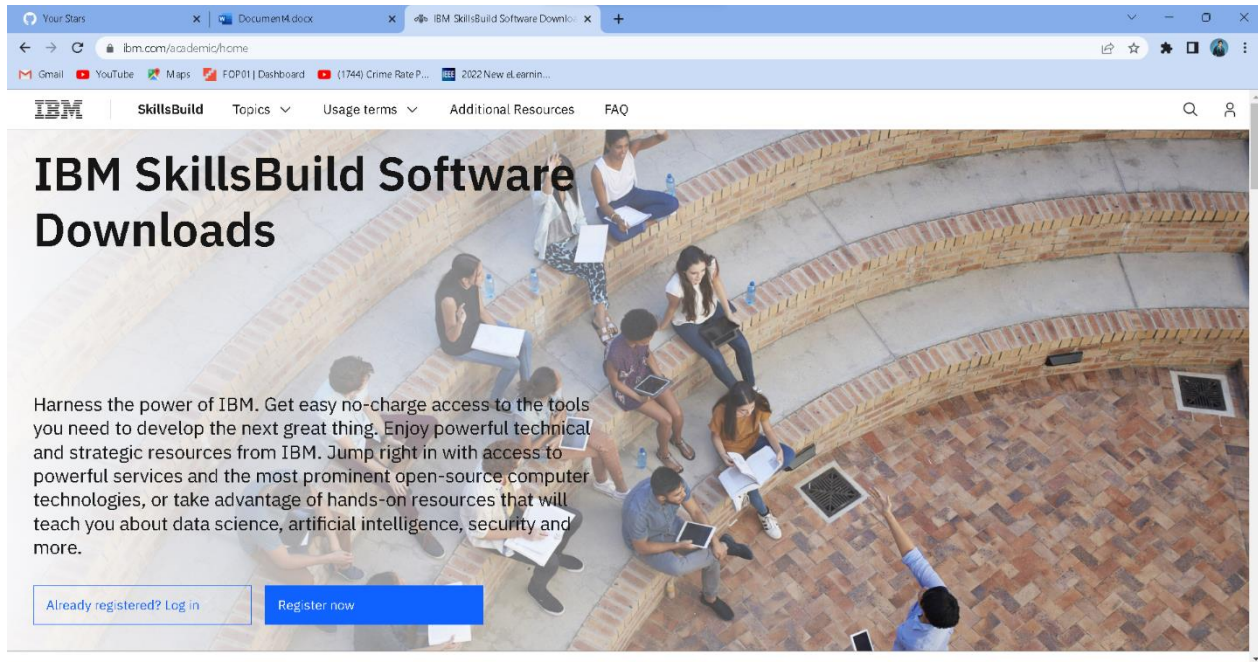


Step 3: After the setup download, run the setup and then open it and push the images, create the repositories.

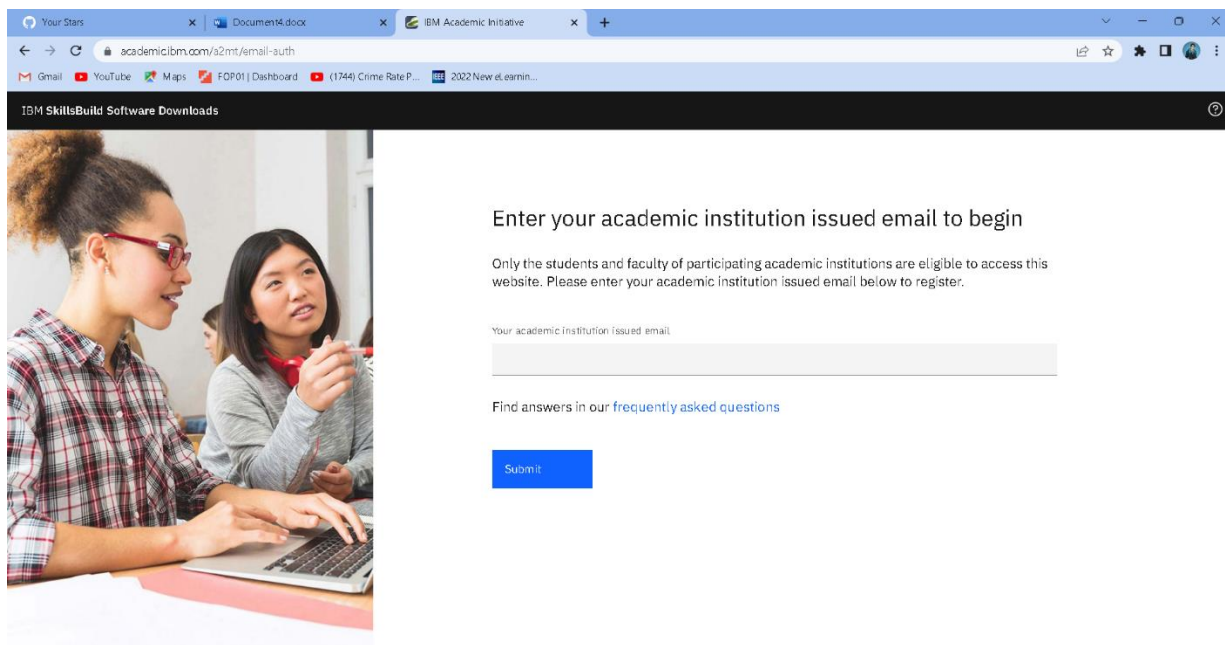


3.IBM CLOUD ACCOUNT CREATION:

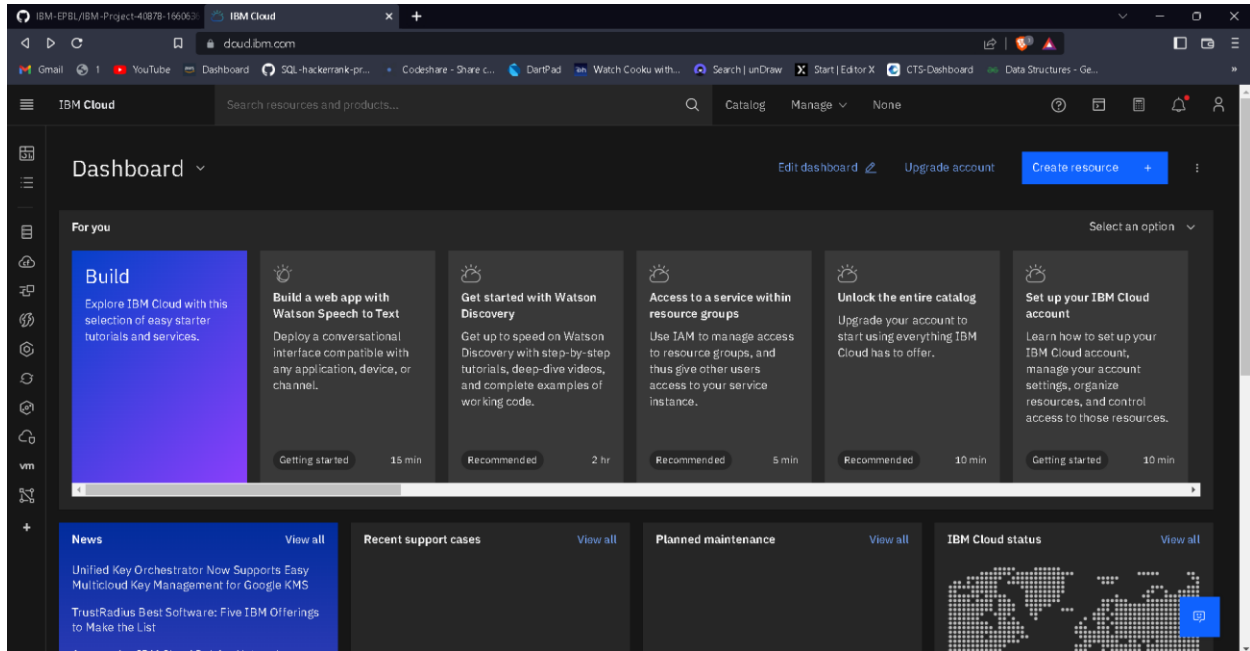
Step 1: Search for “ibm.com/academic” in the browser.



Step 2: Enter the mail issued by the academic institution and follow the procedure for entering the details which is provided as video link in your IBM profile.

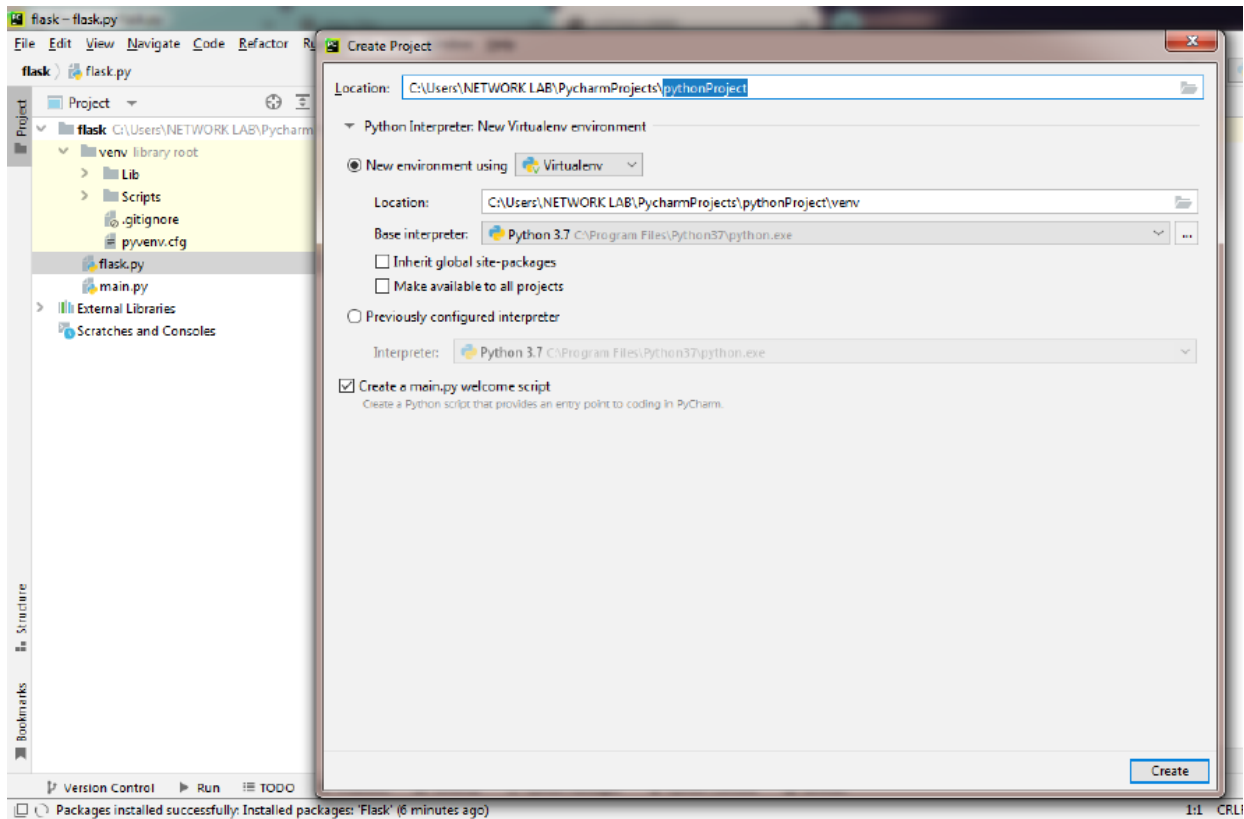


Step 3: After following the procedure that is given in reference video, your IBM cloud account will created.



4. CREATING A FLASK PROJECT:

Step 1: Open PyCharm in your desktop and create new project folder



Step 2: Enter the following code to create the flask project

```
from flask import Flask
```

```
app = Flask(__name__)
```

```
@app.route("/")
```

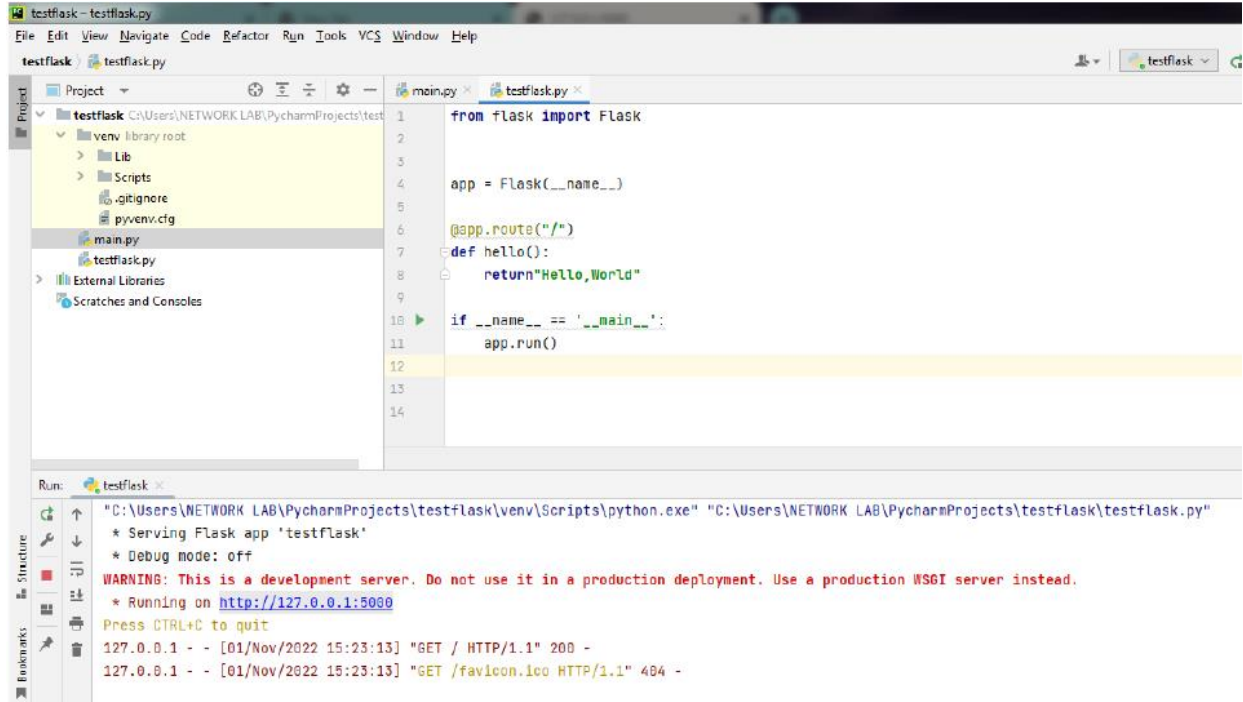
```
def hello():
```

```
    return "Hello, World"
```

```
if __name__ == '__main__':
```

```
    app.run()
```

Step 3: Then run the code, it will show website link in terminal.



The screenshot shows the PyCharm IDE interface. The top menu bar includes File, Edit, View, Navigate, Code, Refactor, Run, Tools, VCS, Window, and Help. The left sidebar shows the Project view with a tree structure: testflask (C:\Users\NETWORK LAB\PycharmProjects\testflask) containing venv (library root, Lib, Scripts, gitignore, pyvenv.cfg), main.py, testflask.py, External Libraries, and Scratches and Consoles. The main editor window displays the code for testflask.py:

```
1 from flask import Flask
2
3
4 app = Flask(__name__)
5
6 @app.route("/")
7 def hello():
8     return "Hello, World"
9
10
11 if __name__ == '__main__':
12     app.run()
13
14
```

The bottom panel shows the Run output for testflask:

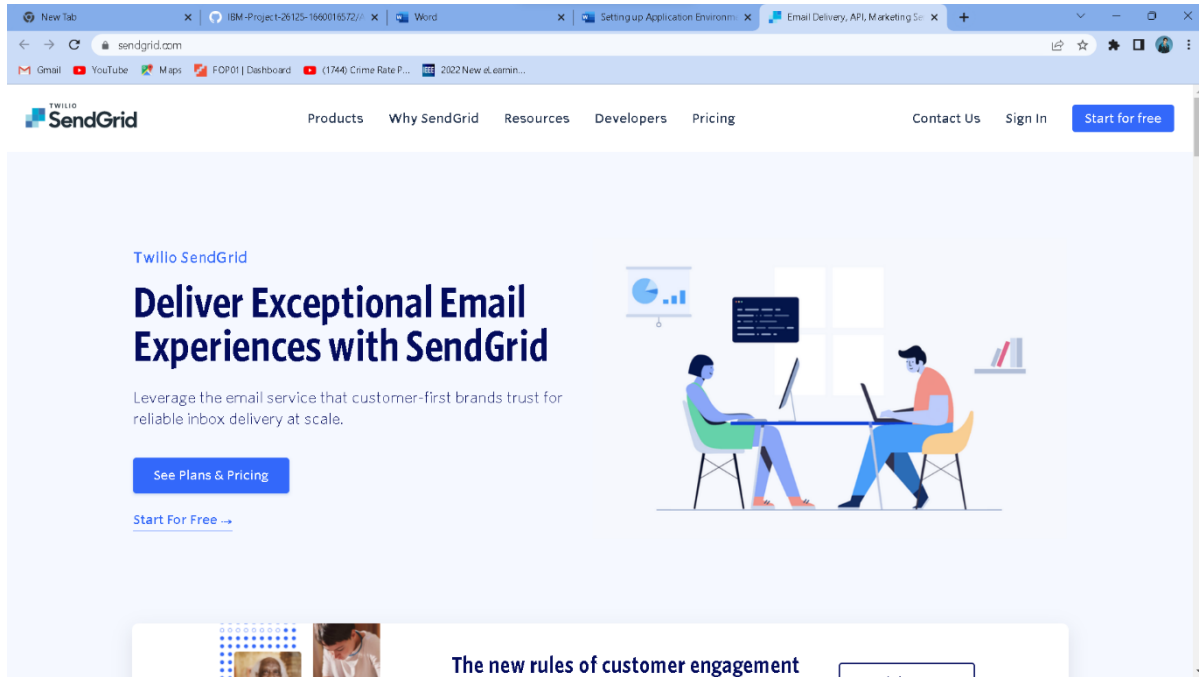
```
Run: testflask
"C:\Users\NETWORK LAB\PycharmProjects\testflask\venv\Scripts\python.exe" "C:\Users\NETWORK LAB\PycharmProjects\testflask\testflask.py"
* Serving Flask app 'testflask'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
127.0.0.1 - - [01/Nov/2022 15:23:13] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [01/Nov/2022 15:23:13] "GET /favicon.ico HTTP/1.1" 404 -
```

Step 4: By clicking the link in terminal, it will show "Hello World" in the browser page.



5. SENDGRID ACCOUNT CREATION:

Step1: Search for the SendGrid <https://sendgrid.com/>



Step 2: Registering new account and account is created.

A screenshot of the SendGrid account registration form, titled 'Tell Us About Yourself'. The form is located at 'signup.sendgrid.com/account_details'. It includes fields for First Name, Last Name, Company Name, and Company Website. There are dropdown menus for Country Code (set to USA (+1)) and Phone Number. A section titled 'What is your role?' has radio button options for Developer, CEO, Marketer, and Other. Another section titled 'How many emails do you send per month?' has radio button options for various ranges: 0 to 100,000, 100,000 to 700,000, 700,000 to 1,500,000, 1,500,000 to 10,000,000, 10,000,000 to 50,000,000, 50,000,000 to 100,000,000, and 100,000,000+. A final section titled 'How many employees work at your company?' has radio button options for 1 - 500 and 1,001 - 5,000. A 'Privacy - Terms' link is in the bottom right corner.