Installation for scan chain

Contents

Note:

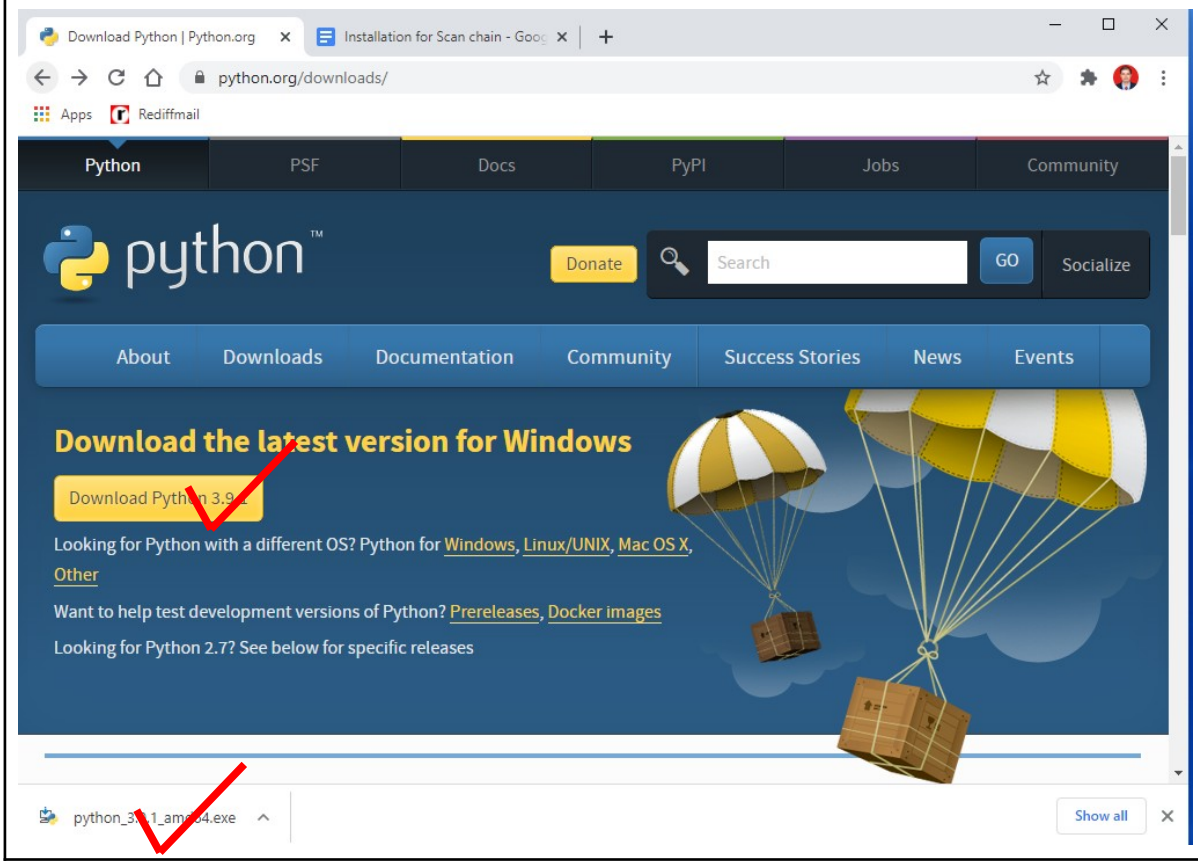
 Represents mouse click

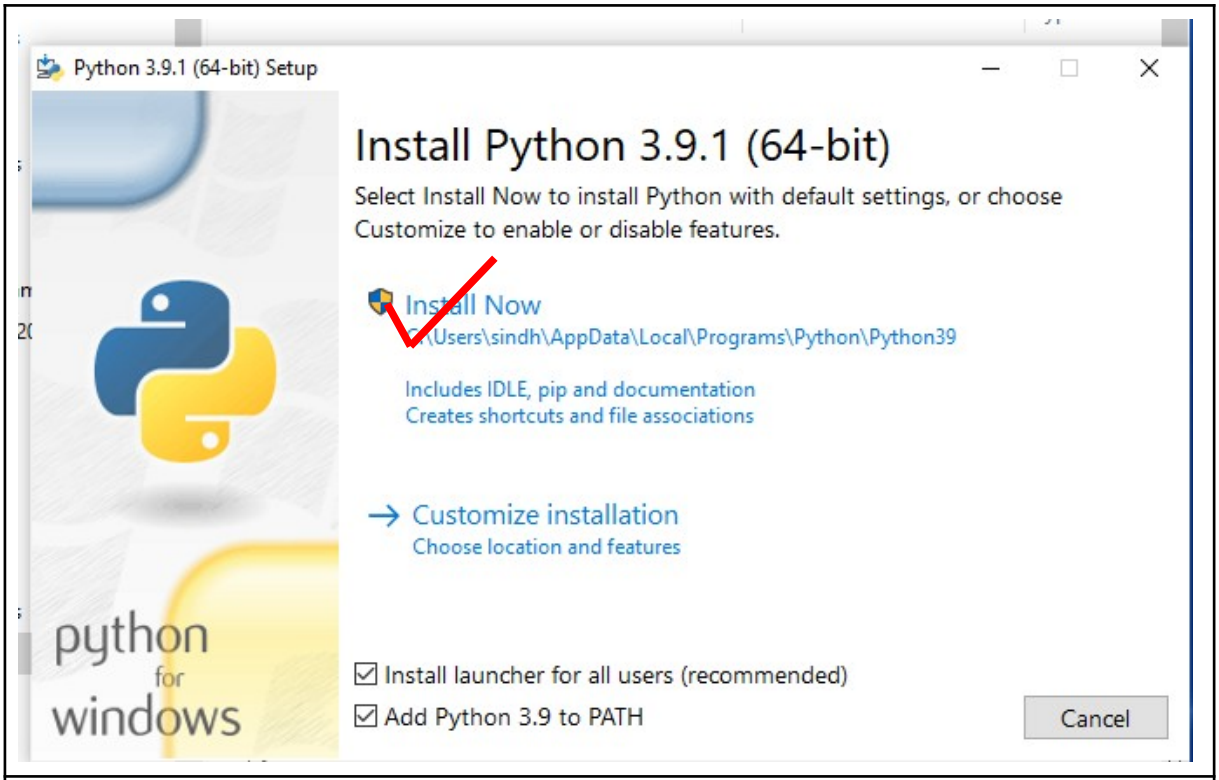
Yellow highlight represents changes made

Python Installation:

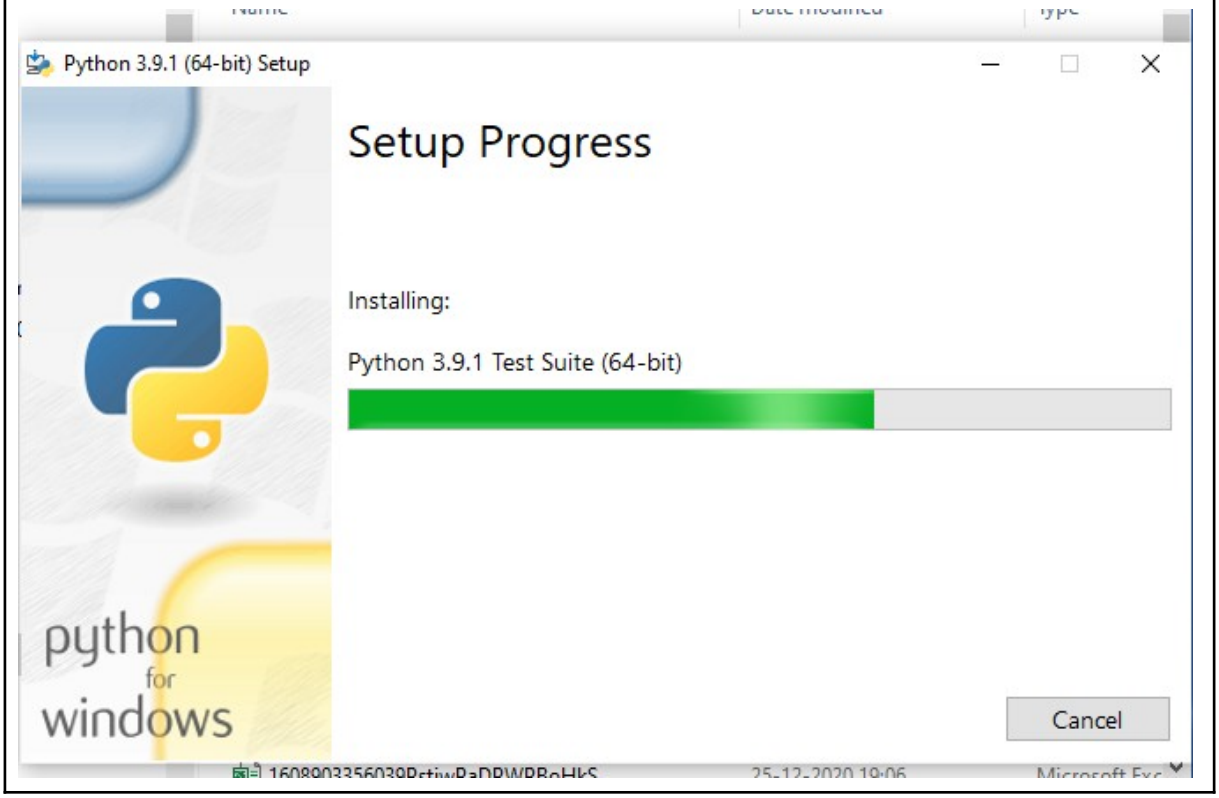
If you **already have python installed** then:
No need to follow this section but you should have path to python set in system variable. To test it type **python** or **python3** or **py** in windows command prompt. It should open python command line. If command **python** or **python3** works for you, replace **py** with **python** or **python3** henceforth in this document in next commands
else:
follow the commands given below:

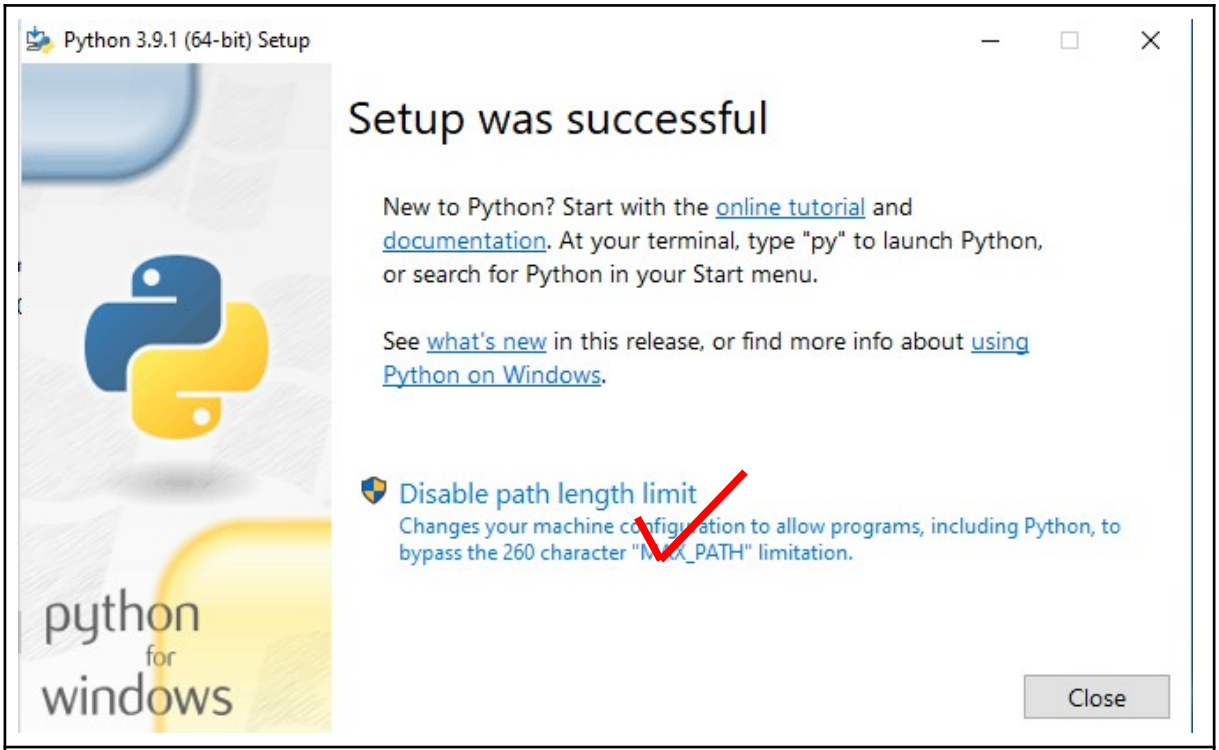
We will first download python3.9 installer then open the downloaded .exe



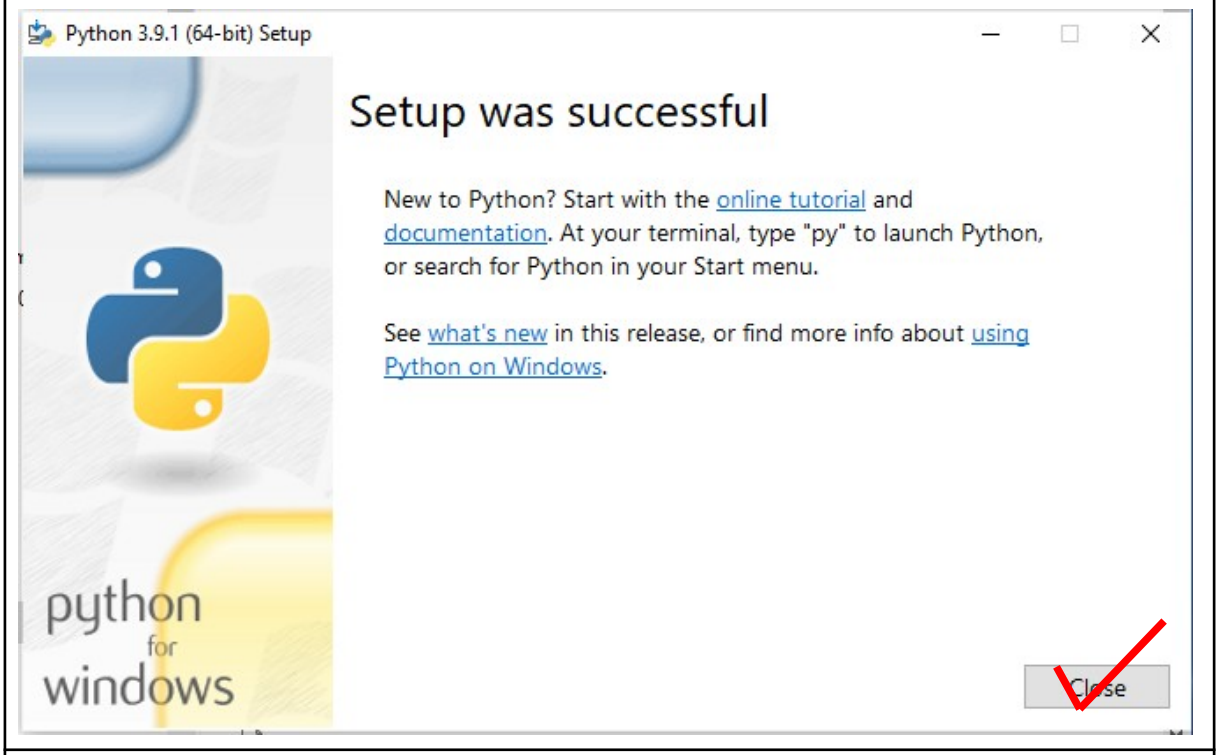


Do you want to allow …..? -> Click Yes



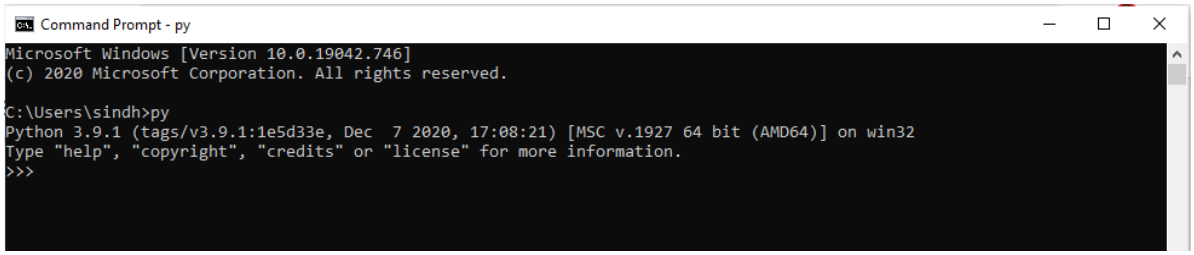


Click on Disable path length limit if the error is seen. And give it permission in Windows Security Dialog Box that appears next.



Type **py** in command prompt to confirm your installation has added to PATH variable. If not, you may have to do it manually, contact your TA.

In Windows command Prompt, Type **py**



Pip and pyusb installation

If you already have pip installation, you can simply confirm else you need to follow the complete sequence:

In to download pip - Windows Command Prompt-

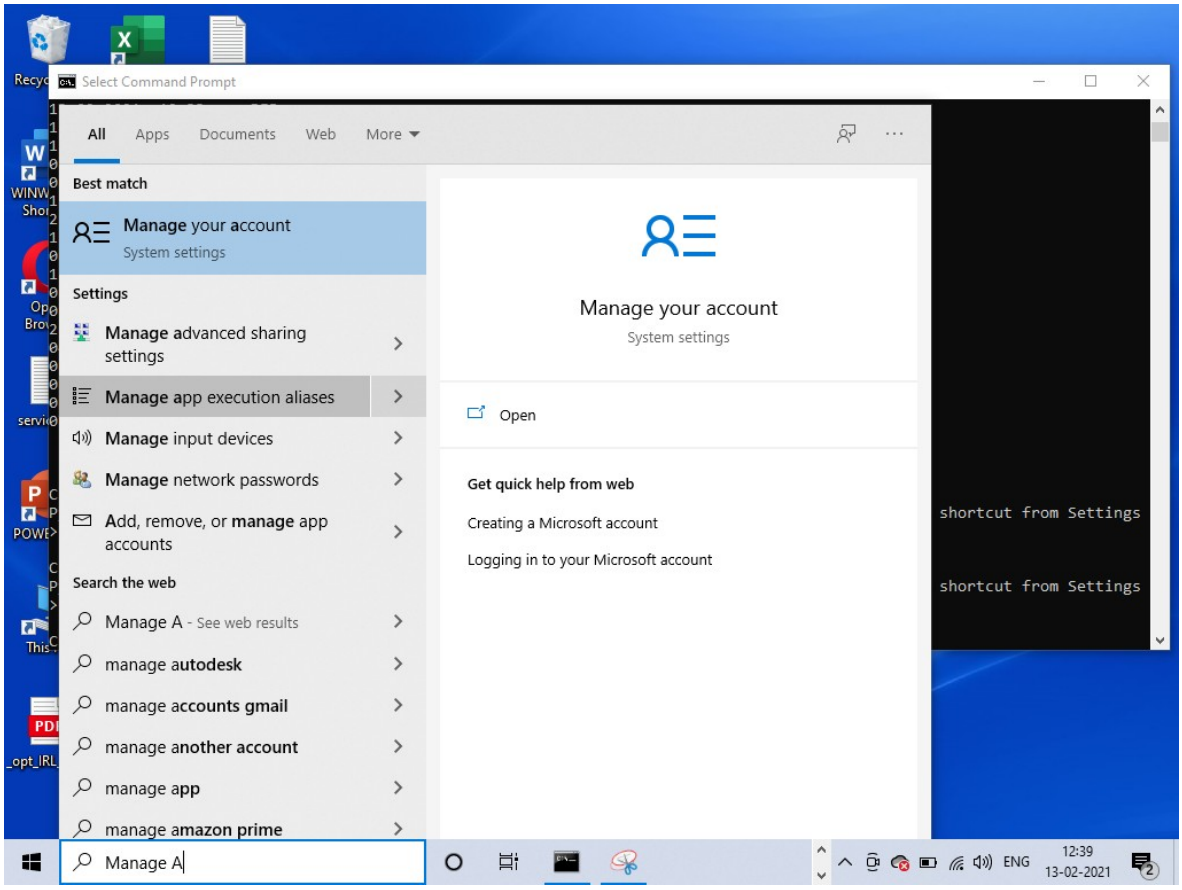
curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py

```
C:\Users\sindh>curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 1884k  100 1884k    0     0   314k      0  0:00:06  0:00:06 --:--:--  277k
```

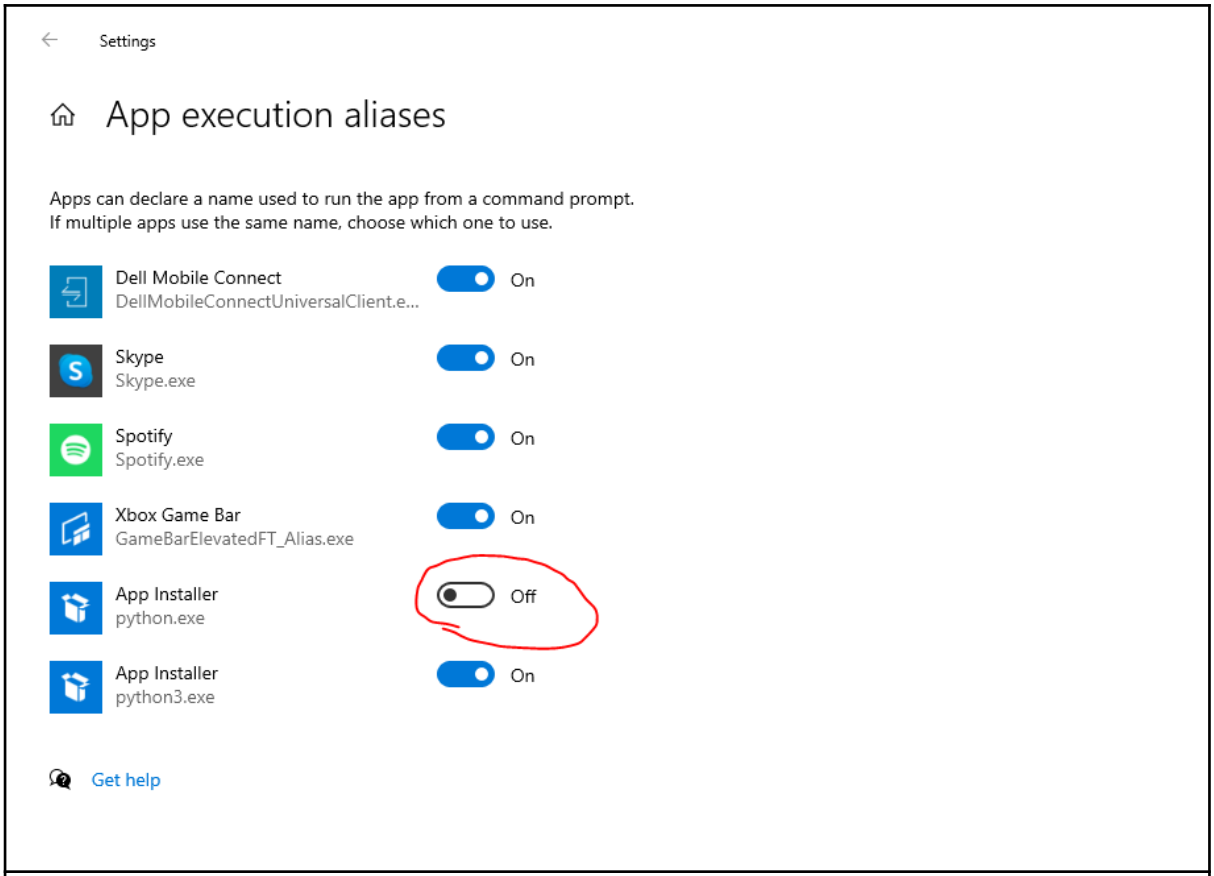
Type command – **dir** and check get-pip.py appears

```
C:\Users\sindh>dir
 Volume in drive C is OS
 Volume Serial Number is D661-68E7

 Directory of C:\Users\sindh

13-02-2021  12:33    <DIR>          .
13-02-2021  12:33    <DIR>          ..
13-02-2021  12:22    <DIR>          .idlerc
05-11-2020  19:35    <DIR>          3D Objects
05-11-2020  19:35    <DIR>          Contacts
13-02-2021  12:17    <DIR>          Desktop
25-12-2020  19:27    <DIR>          Documents
13-02-2021  11:49    <DIR>          Downloads
05-11-2020  19:35    <DIR>          Favorites
13-02-2021  12:34         1,929,903 get-pip.py
05-11-2020  19:35    <DIR>          Links
05-11-2020  19:35    <DIR>          Music
26-01-2021  22:47         6,029,312 NTUSER.DAT
04-02-2021  12:00    <DIR>          OneDrive
05-11-2020  19:36    <DIR>          Pictures
05-11-2020  19:35    <DIR>          Saved Games
05-11-2020  19:36    <DIR>          Searches
07-11-2020  10:11    <DIR>          Videos
               2 File(s)      7,959,215 bytes
              16 Dir(s)  187,567,542,272 bytes free
```

in Windows – Start panel -



Turn off App Installer python.exe and keep only one python App execution Alias as on, ignore this step if you don't see App Installer python... related Aliases



In Windows Command Prompt-
py get-pip.py

```
C:\Users\sindh>py get-pip.py
Python was not found; run without arguments to install from the Microsoft Store, or disable this shortcut from Settings
> Manage App Execution Aliases.

C:\Users\sindh>py get-pip.py
C:\Users\sindh\AppData\Local\Programs\Python\Python39\lib\site-packages\setuptools\distutils_patch.py:25: UserWarning: D
istutils was imported before Setuptools. This usage is discouraged and may exhibit undesirable behaviors or errors. Plea
se use Setuptools' objects directly or at least import Setuptools first.
  warnings.warn(
Collecting pip
  Downloading pip-21.0.1-py3-none-any.whl (1.5 MB)
     |████████████████████████████████| 1.5 MB 261 kB/s
Collecting wheel
  Downloading wheel-0.36.2-py2.py3-none-any.whl (35 kB)
Installing collected packages: wheel, pip
  WARNING: The script wheel.exe is installed in 'C:\Users\sindh\AppData\Local\Programs\Python\Python39\Scripts' which is
 not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  Attempting uninstall: pip
    Found existing installation: pip 20.2.3
    Uninstalling pip-20.2.3:
      Successfully uninstalled pip-20.2.3
  WARNING: The scripts pip.exe, pip3.9.exe and pip3.exe are installed in 'C:\Users\sindh\AppData\Local\Programs\Python\P
ython39\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed pip-21.0.1 wheel-0.36.2
```

To check pip installation -
py -m pip --version

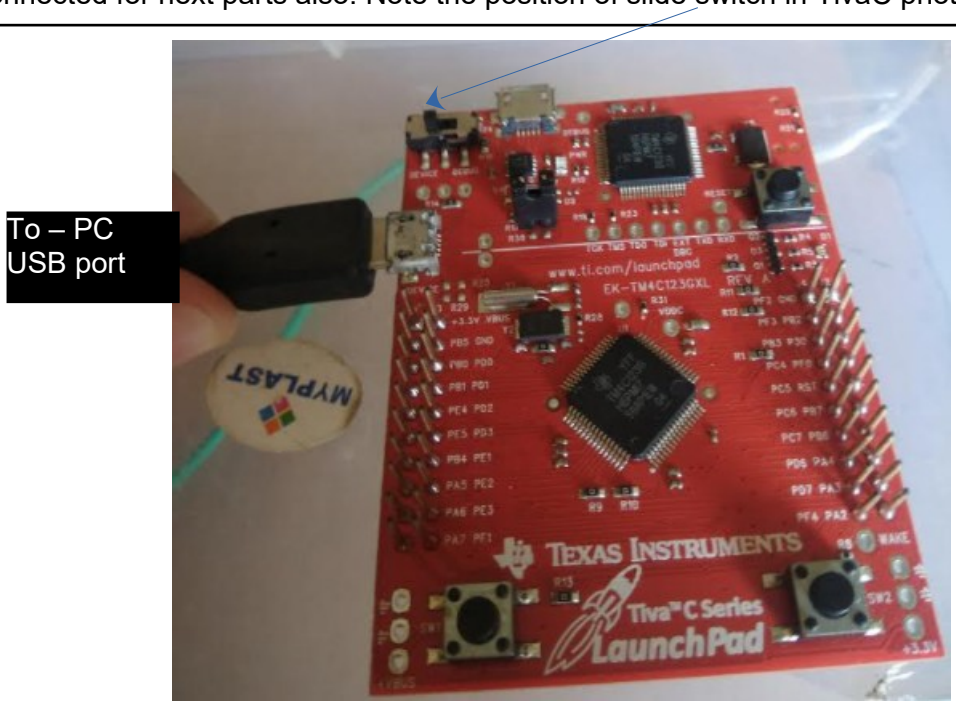
```
C:\Users\sindh>py -m pip --version
pip 21.0.1 from C:\Users\sindh\AppData\Local\Programs\Python\Python39\lib\site-packages\pip (python 3.9)
```

To install **pyusb** -
in Windows command Prompt-
py -m pip install pyusb

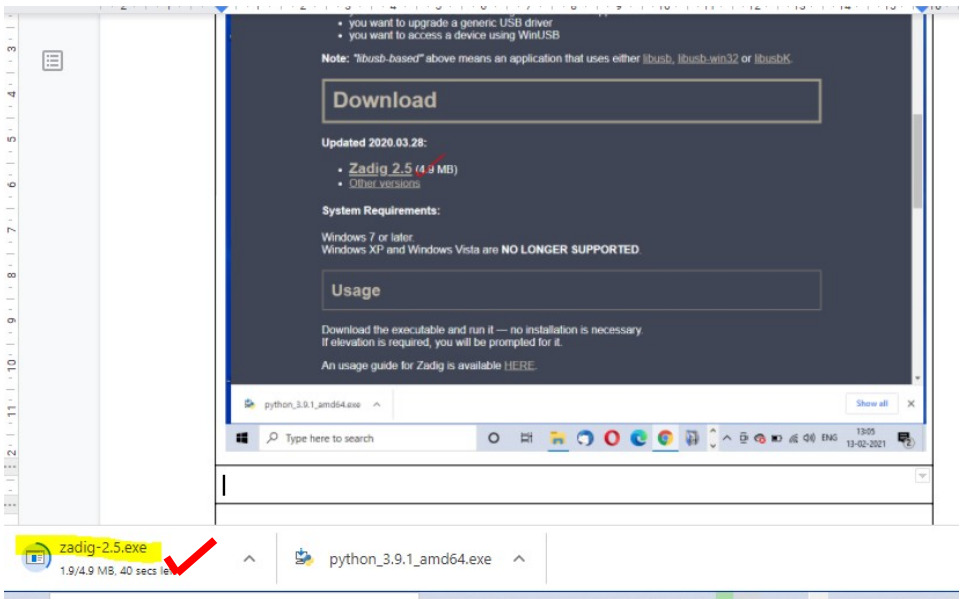
```
C:\Users\sindh>py -m pip install pyusb
Collecting pyusb
  Downloading pyusb-1.1.1-py3-none-any.whl (58 kB)
     |████████████████████████████████| 58 kB 718 kB/s
Installing collected packages: pyusb
Successfully installed pyusb-1.1.1
```

Zadig

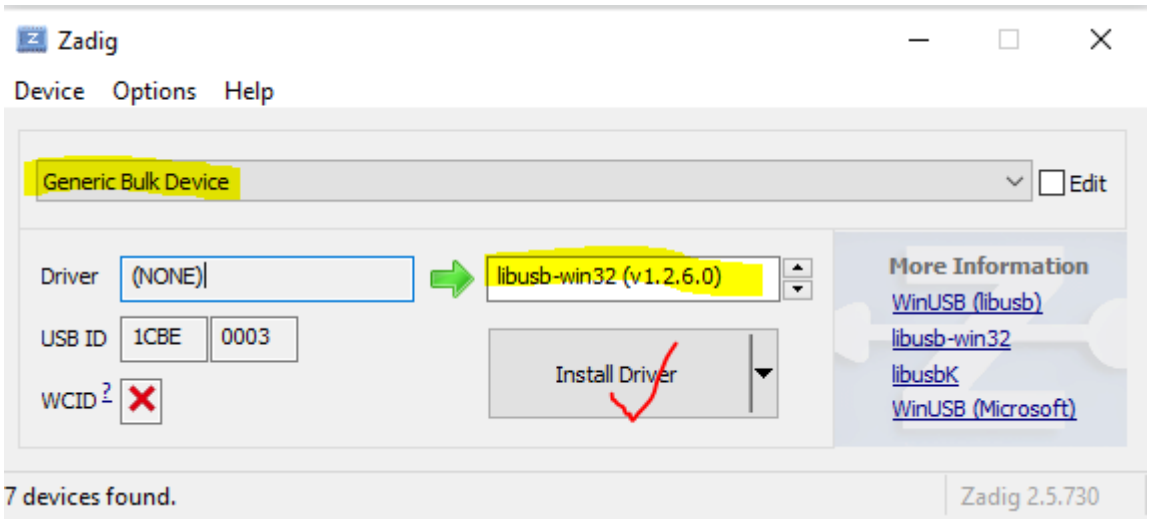
After connecting Tiva C board to PC via Device USB connector on Tiva-C and keep it connected for next parts also. Note the position of slide switch in TivaC photograph

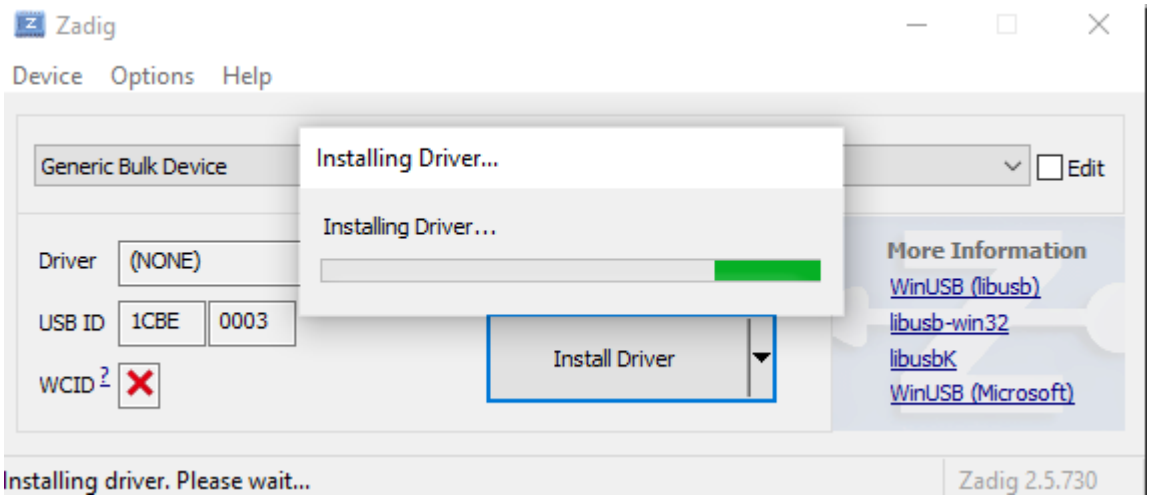


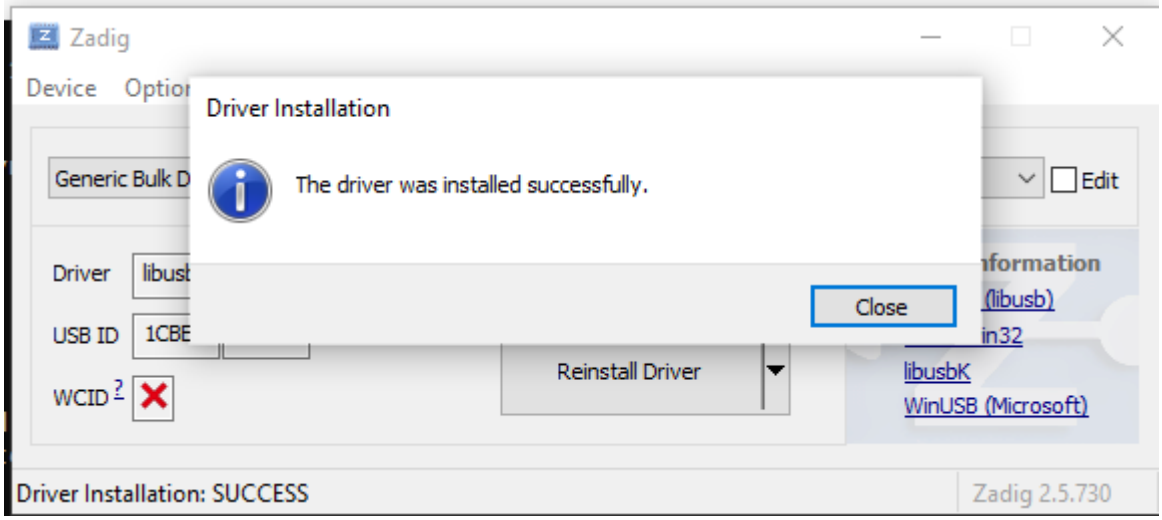
Download Zadig



Open
note: Tiva-C in connected to PC and open zadig-2.5.exe that you downloaded, select Generic Bulk Device and libusb-win(v1.2.6.0) and click Install Driver


Zadig
Device Options Help
Generic Bulk Device
Edit
Driver (NONE)
libusb-win32 (v1.2.6.0)
USB ID 1CBE 0003
WCID ?
Install Driver
More Information
WinUSB (libusb)
libusb-win32
libusbK
WinUSB (Microsoft)
7 devices found.
Zadig 2.5.730

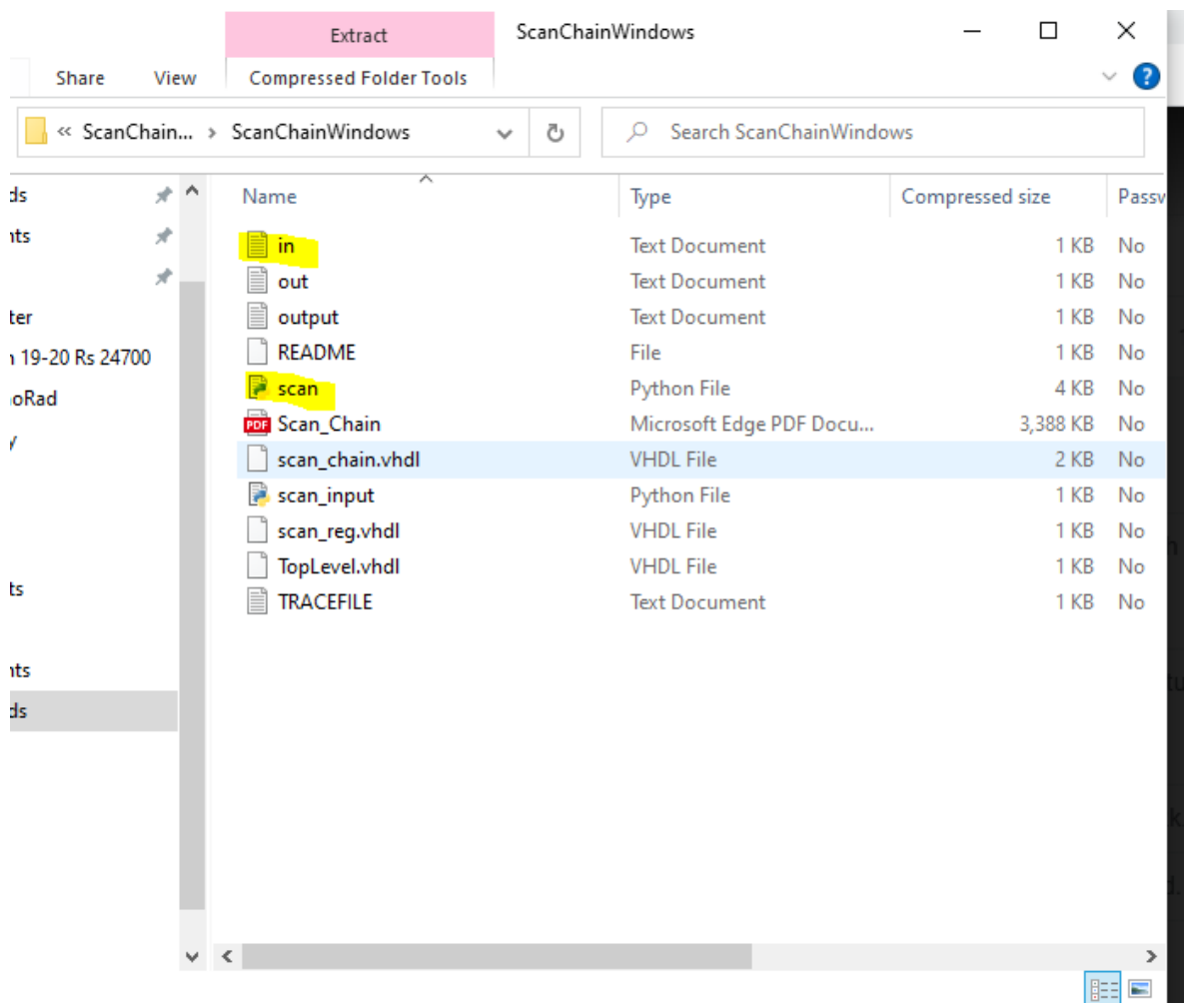

Zadig
Device Options Help
Generic Bulk Device
Installing Driver...
Installing Driver...
Edit
Driver (NONE)
USB ID 1CBE 0003
WCID ?
Install Driver
More Information
WinUSB (libusb)
libusb-win32
libusbK
WinUSB (Microsoft)
Installing driver. Please wait...
Zadig 2.5.730


Zadig
Device
Driver Installation
The driver was installed successfully.
Close
Edit
Driver
USB ID 1CBE
WCID ?
Reinstall Driver
(libusb)
libusbK
WinUSB (Microsoft)
Driver Installation: SUCCESS
Zadig 2.5.730

Close zadig

Test your Installation

After connecting Tiva-C to PC (don't make any other connections other than USB of Tiva_C Device to PC as we are just testing our installation) First download scan chain folder from Teams or moodle

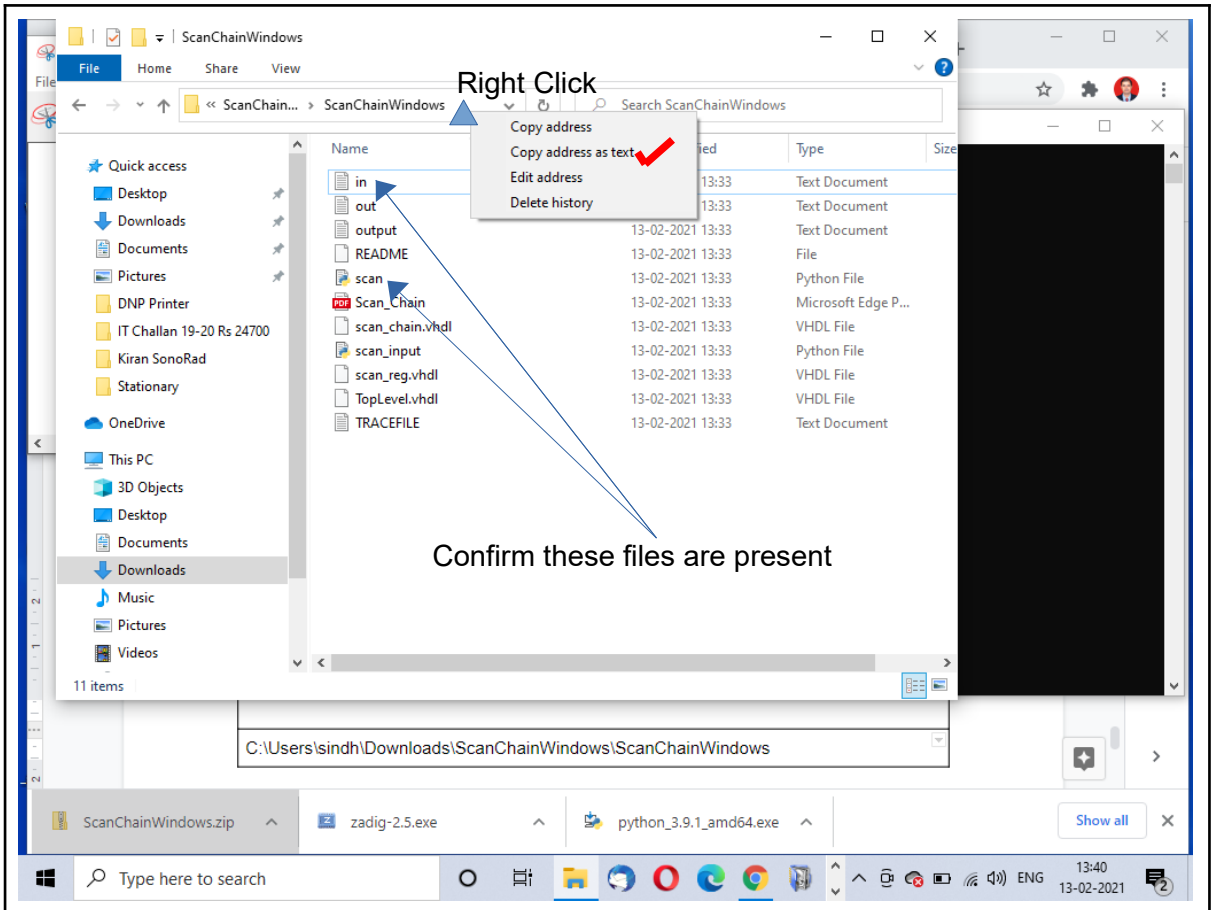


In scan chain folder shared with you download and extract the folder in some location in your PC Here, there should be **no spaces** in the path to this directory.

If the folder that you extracted in previous step is in other drive than C-Drive then first enter Drive name in command prompt e.g Drive D->

```
C:\Users\sindh>D:

D:\>
```

Copy the location of extracted scan-chain folder and in command prompt enter command - chdir <location of scan_chain_folder> as shown in images below




```
D:\>C:

C:\Users\sindh>chdir C:\Users\sindh\Downloads\ScanChainWindows\ScanChainWindows\

C:\Users\sindh\Downloads\ScanChainWindows\ScanChainWindows>
```

With Tiva C connected to PC – in Windows command prompt, enter command -
py scan.py in.txt out.txt tiva

```
C:\Users\sindh\Downloads\ScanChainWindows\ScanChainWindows>py scan.py in.txt out.txt tiva
Scan chain v3.0
Wadhwani Electronics Laboratory, IIT Bombay
```

If the output appears as shown, **you are ready** for scan chain experiment, else contact your TA.

```
C:\Users\sindh\Downloads\ScanChainWindows\ScanChainWindows>py scan.py in.txt
out.txt tiva
Scan chain v3.0
Wadhwani Electronics Laboratory, IIT Bombay

Initiating connection with the device..
DEVICE ID 1cbe:0003 on Bus 000 Address 001 =================
 bLength             :  0x12 (18 bytes)
 bDescriptorType     :   0x1 Device
 bcdUSB              : 0x110 USB 1.1
 bDeviceClass        :  0xff Vendor-specific
 bDeviceSubClass     :   0x0
 bDeviceProtocol     :   0x0
```

```
 bMaxPacketSize0        :   0x40 (64 bytes)
 idVendor               : 0x1cbe
 idProduct              : 0x0003
 bcdDevice              :  0x100 Device 1.0
 iManufacturer          :    0x1 Texas Instruments
 iProduct               :    0x2 Generic Bulk Device
 iSerialNumber          :    0x3 12345678
 bNumConfigurations     :    0x1
  CONFIGURATION 1: 500 mA ==================================
   bLength              :    0x9 (9 bytes)
   bDescriptorType      :    0x2 Configuration
   wTotalLength         :   0x20 (32 bytes)
   bNumInterfaces       :    0x1
   bConfigurationValue  :    0x1
   iConfiguration       :    0x5 Bulk Data Configuration
   bmAttributes         :   0xc0 Self Powered
   bMaxPower            :   0xfa (500 mA)
    INTERFACE 0: Vendor Specific ============================
     bLength            :    0x9 (9 bytes)
     bDescriptorType    :    0x4 Interface
     bInterfaceNumber   :    0x0
     bAlternateSetting  :    0x0
     bNumEndpoints      :    0x2
     bInterfaceClass    :   0xff Vendor Specific
     bInterfaceSubClass :    0x0
     bInterfaceProtocol :    0x0
     iInterface         :    0x4 Bulk Data Interface
      ENDPOINT 0x81: Bulk IN ================================
       bLength          :    0x7 (7 bytes)
       bDescriptorType  :    0x5 Endpoint
       bEndpointAddress :   0x81 IN
       bmAttributes     :    0x2 Bulk
       wMaxPacketSize   :   0x40 (64 bytes)
       bInterval        :    0x0
      ENDPOINT 0x1: Bulk OUT ================================
       bLength          :    0x7 (7 bytes)
       bDescriptorType  :    0x5 Endpoint
       bEndpointAddress :    0x1 OUT
       bmAttributes     :    0x2 Bulk
       wMaxPacketSize   :   0x40 (64 bytes)
       bInterval        :    0x0
Device found..
Please wait, Setting it's configuration...
Done !
Claiming interface..
Connection established.

Ready to roll!!!

#------ Command -  1 : SDR 3 TDI(0) 2 TDO(0) MASK(F) ------#

Successfully entered the input..

#------ Command -  2 : RUNTEST 1 MSEC ------#
```

```
#------ Command -  3 : SDR 3 TDI(7) 2 TDO(3) MASK(F) ------#

Successfully entered the input..
Sampling out data..
F
Output Comparison :  Success

#------ Command -  4 : RUNTEST 1 MSEC ------#

Sampling out data..
F
Output Comparison :  Failure
NOT OK. Check Output file for incorrect outputs.
Transaction Complete.
```