ATTENDANCE AUTOMATION SYSTEM USING FACE DETECTION AND RECOGNITION

Installation and Configuration Guide

Version- 1.0.0

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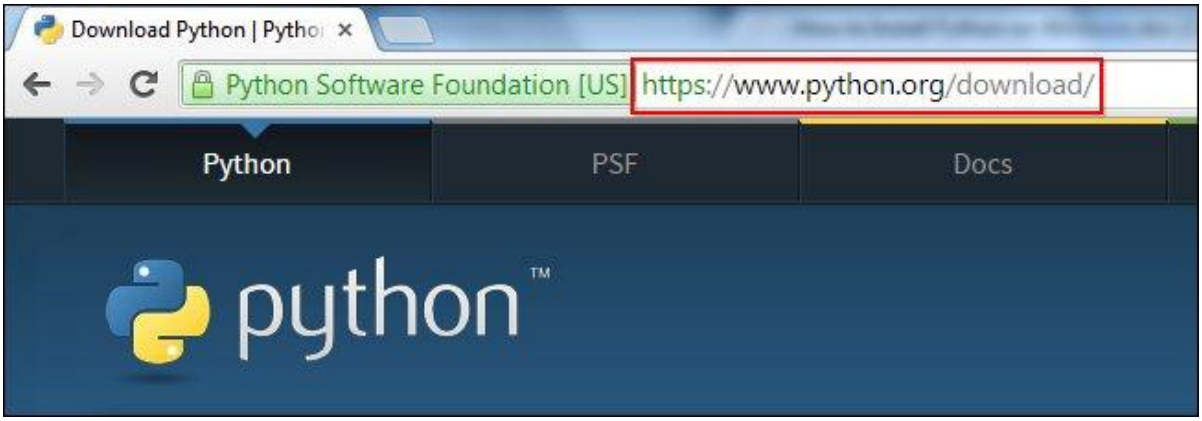
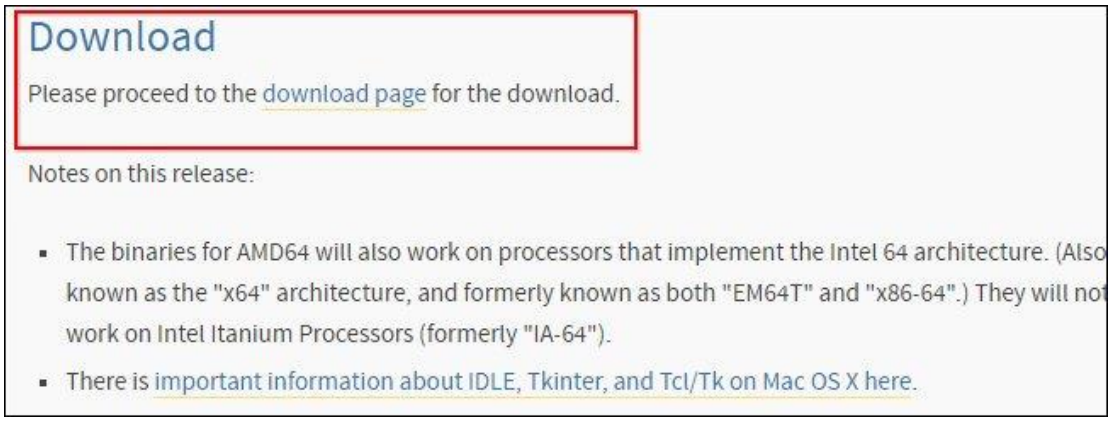
1. Installation of Python

If you don't already have a copy of Python installed on your computer, you will need to open up your Internet browser and go to the Python download page.

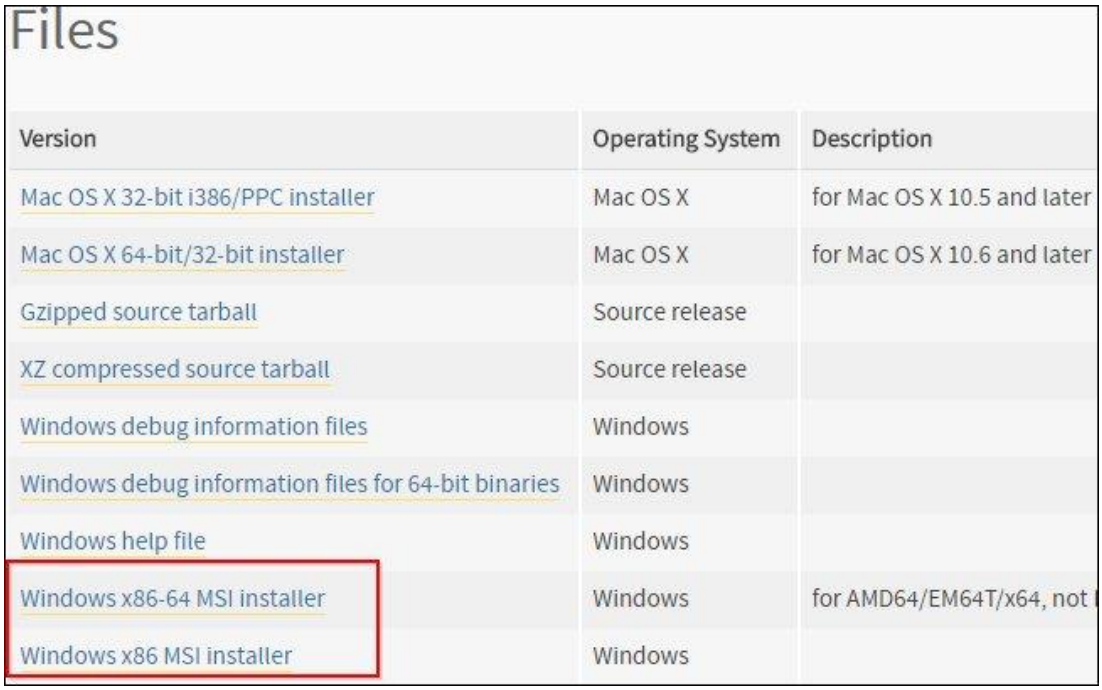


Now that you are on the download page, select which of the software builds you would like to download. For the purposes of this article we will use the most up to date version available (Python 3.4.1).

Once you have clicked on that, you will be taken to a page with a description of all the new updates and features of 3.4.1, however, you can always read that while the download is in process. Scroll to the bottom of the page till you find the "Download" section and click on the link that says "download page."



Now you will scroll all the way to the bottom of the page and find the "Windows x86 MSI installer." If you want to download the 86-64 bit MSI, feel free to do so. We believe that even if you have a 64-bit operating system installed on your computer, the 86-bit MSI is preferable. We say this because it will still run well and sometimes, with the 64-bit architectures, some of the compiled binaries and Python libraries don't work well.



Files

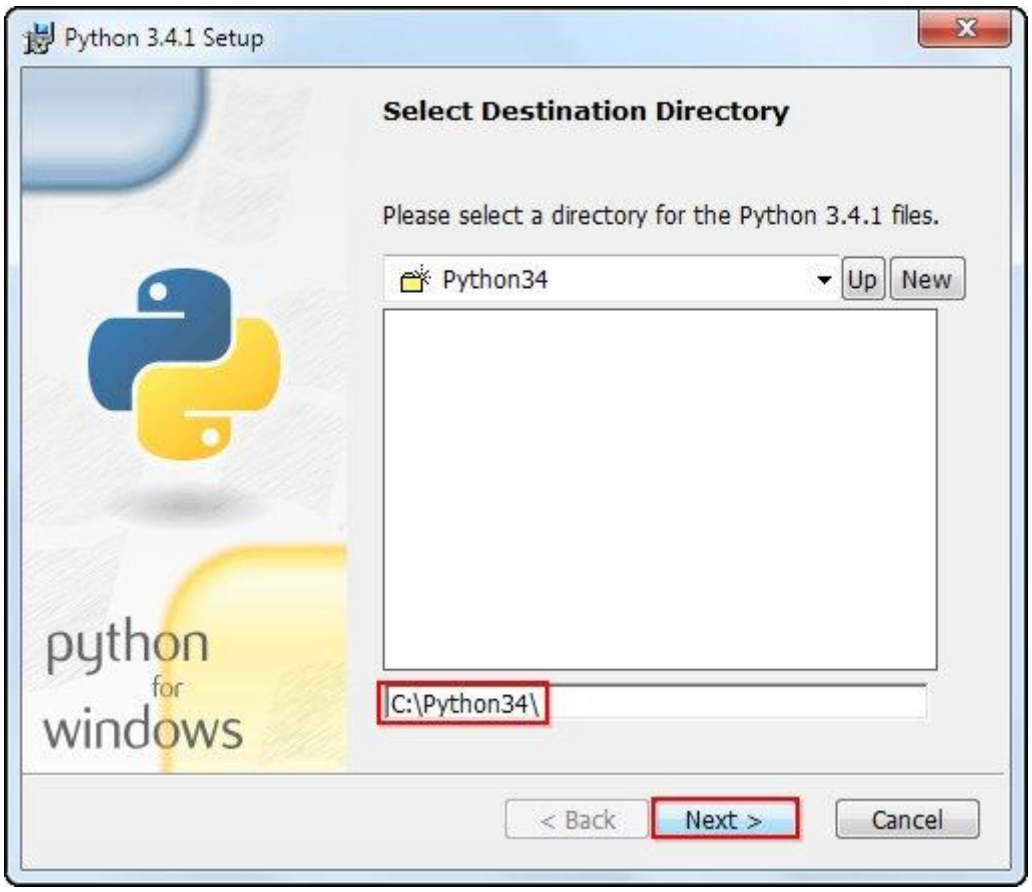
Version	Operating System	Description
Mac OS X 32-bit i386/PPC installer	Mac OS X	for Mac OS X 10.5 and later
Mac OS X 64-bit/32-bit installer	Mac OS X	for Mac OS X 10.6 and later
Gzipped source tarball	Source release	
XZ compressed source tarball	Source release	
Windows debug information files	Windows	
Windows debug information files for 64-bit binaries	Windows	
Windows help file	Windows	
Windows x86-64 MSI installer	Windows	for AMD64/EM64T/x64, not I
Windows x86 MSI installer	Windows	

Installing Python

Once you have downloaded the Python MSI, simply navigate to the download location on your computer, double clicking the file and pressing Run when the dialog box pops up.

If you are the only person who uses your computer, simply leave the “Install for all users” option selected. If you have multiple accounts on your PC and don’t want to install it across all accounts, select the “Install just for me” option then press “Next.”

If you want to change the install location, feel free to do so; however, it is best to leave it as is and simply select next.



Scroll down in the window and find the “Add Python.exe to Path” and click on the small red “x.” Choose the “Will be installed on local hard drive” option then press “Next.”

You will notice that the installation will bring up a command prompt window while Python downloads and installs "Pip." Pip is just a package management tool. This will allow you to install all the additional Python packages that are available for download through PyPI (Python Package Index).

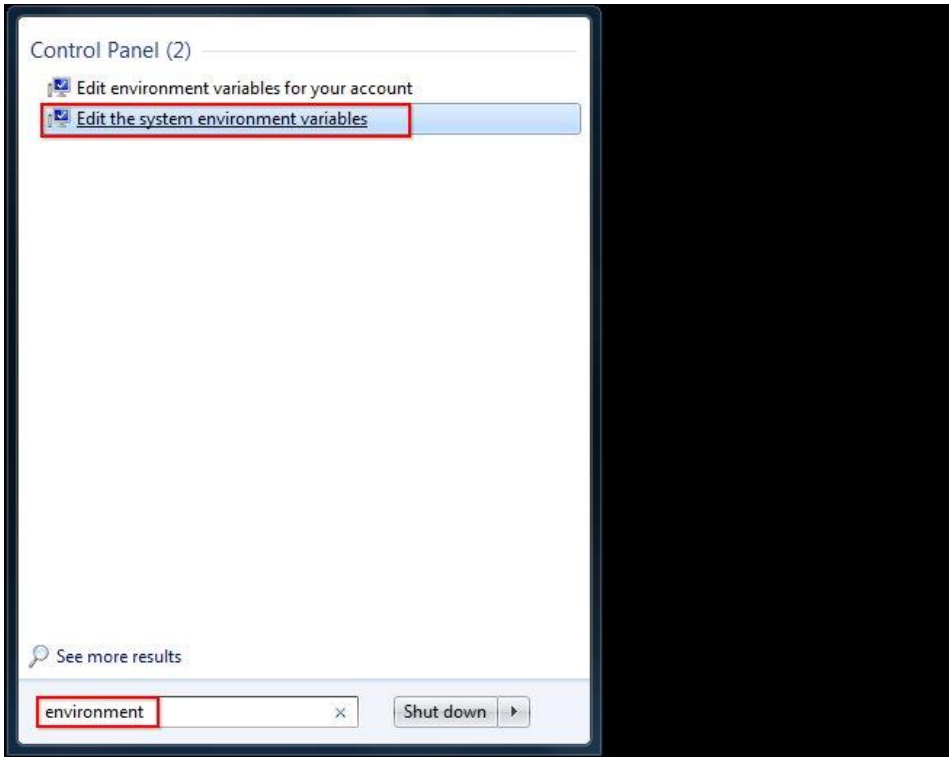
Now that you have completed the installation process, click on "Finish."

Adding Python to System Path Variable

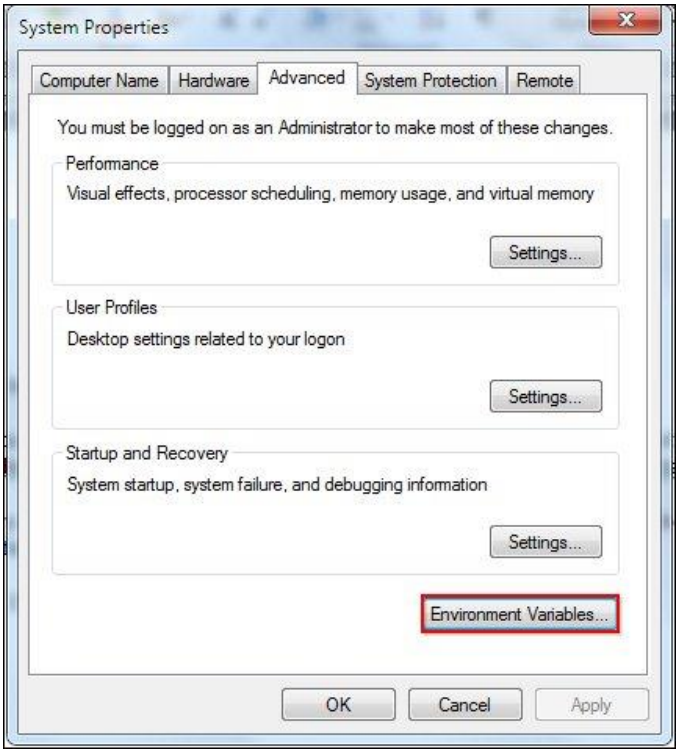
If you decided to use the Python 3.4.1, you will not need to follow this process. You can simply skip ahead to the next section. The reason is that the new update integrates this process in the installation phase and so you no longer need to manually add the System Path Variable. If you want to add a second set of variables for Python, you can still follow the procedure but replace "27" with "34."

If you chose to use the 2.7.3 version of Python, you will need to follow these steps. Once you have successfully installed Python, it is time to add it to the System Path Variable. Doing this will allow Python to run scripts on your computer without any conflicts of problems.

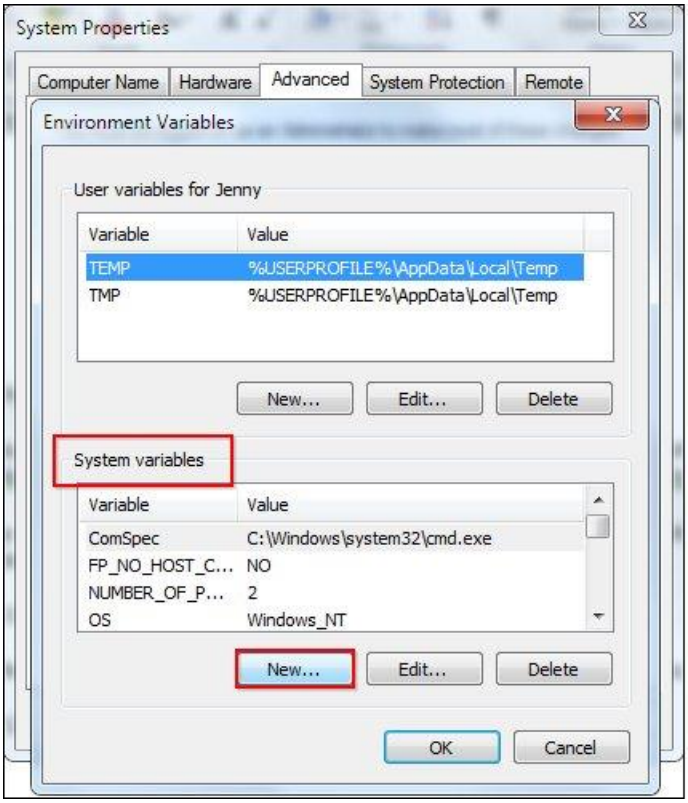
Begin by opening the start menu and typing in "environment" and select the option called "Edit the system environment variables."



When the “System Properties” window appears, click on “Environment Variables…”

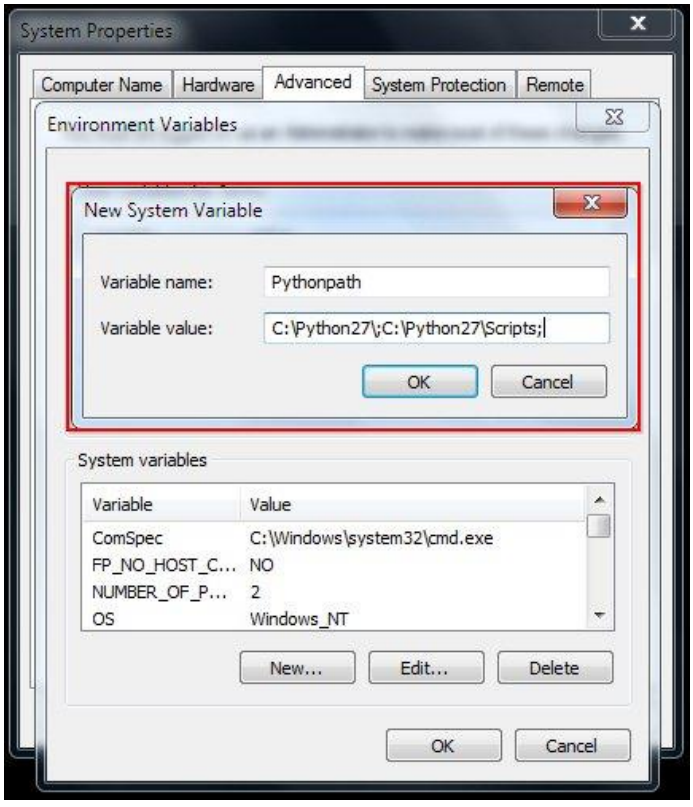


Once you have the “Environment Variables” window open, direct your focus to the bottom half. You will notice that it controls all the “System Variables” rather than just this associated with your user. Click on “New…” to create a new variable for Python.



Simply enter a name for your Path and the code shown below. For the purposes of this example we have installed Python 2.7.3, so we will call the path: "Pythonpath."

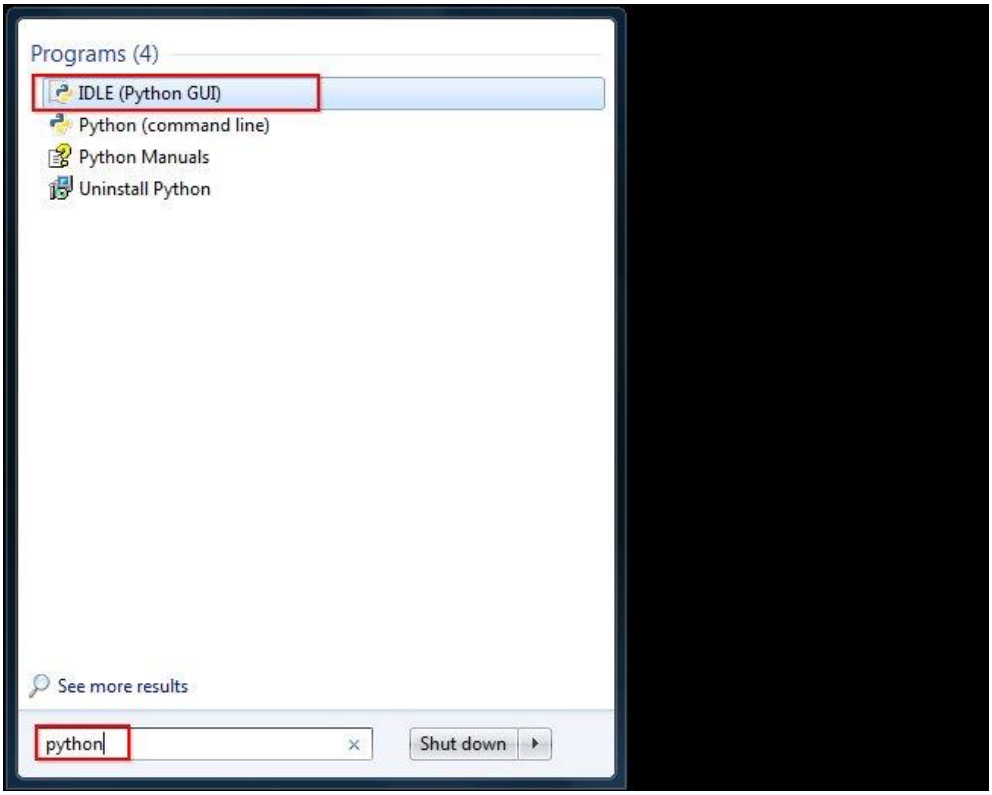
The string that you will need to enter is: "*C:\Python27\;C:\Python27\Scripts;*"



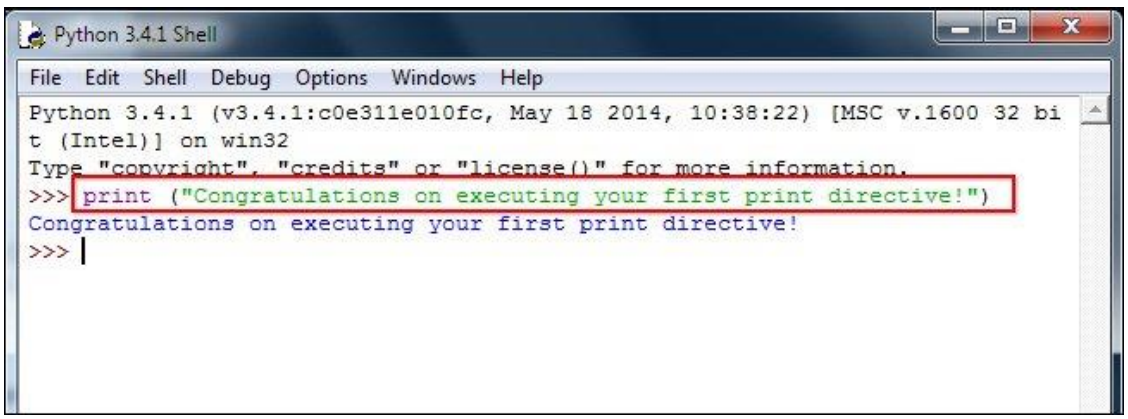
Press “OK,” then “OK,” then “OK,” then the red “X” to accept all changes and exit the “System Properties” window.

Simple Print Directive

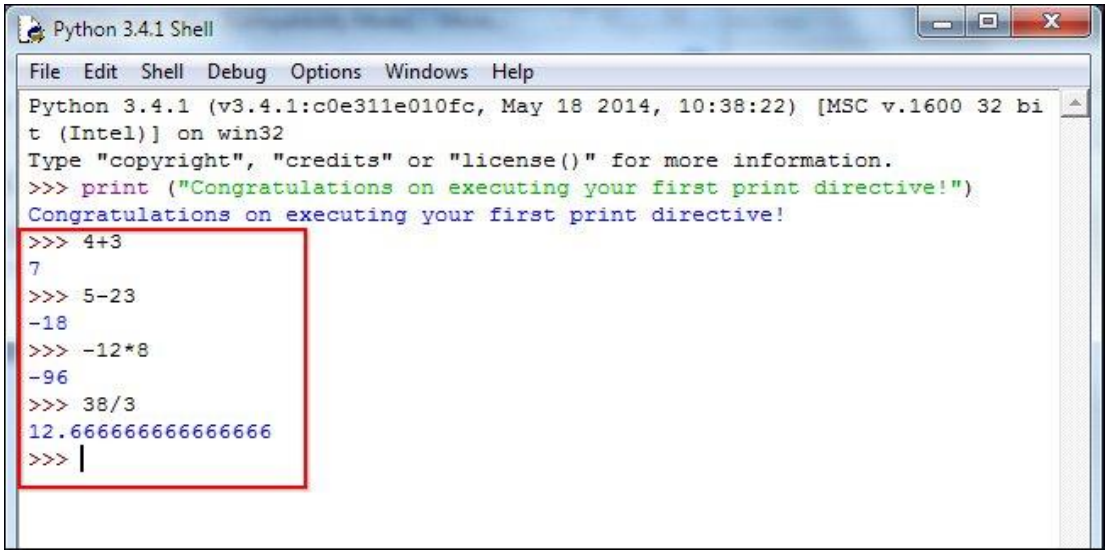
Now that we have successfully completed the installation process and added our “Environment Variable,” you are ready to create your first basic Python script. Let’s begin by opening Python’s GUI by pressing “Start” and typing “Python” and selecting the “IDLE (Python GUI).”



Once the GUI is open, we will begin by using the simplest directive possible. This is the “print” directive which simply prints whatever you tell it to, into a new line. Start by typing a print directive like the one shown in the image below or copy and paste this text then press “Enter”: print (“Congratulations on executing your first print directive!”)



With Python 3, the interactive mode signaled by the presence of ">>>" means you can do things like simple math without any directives. Try doing a few simple problems as shown in the image below.



You have successfully installed Python, added the environment variables, executed simple print directives, and solved math problems. Congratulations.

2. Installation of Libraries

2.1 How to install .exe Files

Steps:

1. Go to Software Folder inside the CD
2. Go to Library folder inside the Software Folder
3. There would be three .exe files

    1. matplotlib-1.4.3.win-amd64-py2.7.exe
    2. numpy-MKL-1.9.1.win-amd64-py2.7.exe
    3. Pillow-2.1.0.win-amd64-py2.7.exe

4. To install these files just double click on these files one by one and follow general installation procedeure.

2.1 How to install .whl Files

Steps:

1. Go to Software Folder inside the CD
2. Go to Library folder inside the Software Folder
3. There would be one .whl file and 6 .whl files in matplotlib.pylab files directory.

    1. scikit_learn-0.15.2-cp27-none-win_amd64.whl

    // matplotlib.pylab files

        1. pyparsing-2.0.3-py2-none-any
        2. python_dateutil-2.4.2-py2.py3-none-any
        3. pytz-2015.4-py2.py3-none-any
        4. scipy-0.15.1-cp27-none-win_amd64
        5. setuptools-17.1.1-py2.py3-none-any
        6. six-1.9.0-py2.py3-none-any

4. First open a console then cd to where you've downloaded your file like some-package.whl and use

```
pip install some-package.whl
```

Note: if pip.exe is not recognized, you may find it in the "Scripts" directory from where python has been installed. If pip is not installed, this page can help: How do I install pip on Windows?

5. Go to the C:\Python27\Scripts Directory
6. Copy all .whl files here
7. Now open console by pressing Shift+ Right Click and selection "open command window here"
8. Now use this command

```
pip install some-package.whl
```

3. Installation of OpenCV

1. Open Python IDLE. Enter `import numpy` and make sure Numpy is working fine.
2. Download latest OpenCV release from sourceforge site and double-click to extract it.
3. Goto **Software/opencv/build/python/2.7** folder.
4. Copy **cv2.pyd** to **C:/Python27/lib/site-packeges**.
5. Open Python IDLE and type following codes in Python terminal.

```
>>> import cv2
>>> print cv2.__version__
```

6. If the results are printed out without any errors, congratulations!!! You have installed OpenCV-Python successfully.

4. Setup a Database:

4.1 Installation

1. Go to http://sqlitebrowser.org/
2. Download Windows.exe file on your system
3. Install this file using simple installation procedure

4.2 Configuration

1. Open Sqlite Browser
2. Click on New Database
3. Enter file name “EmpData.db”
4. A Window will open next to create a Table in the Database
5. Click on cancel
6. Then click on “Execute SQL” Button.
7. Then Execute Following Command.

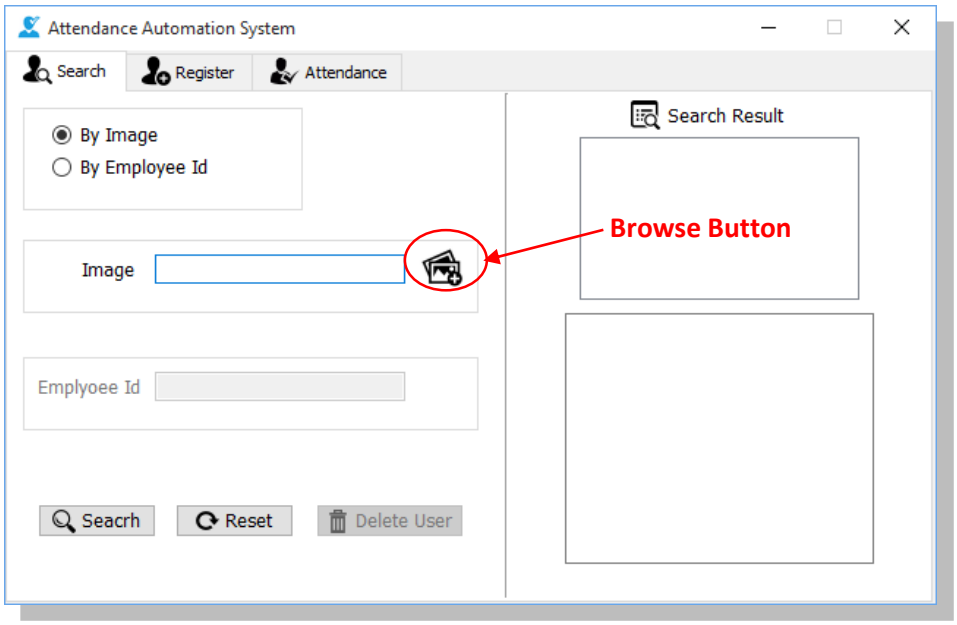
“*CREATE TABLE `MainInfo` (*
`EmpId` NUMERIC,
`EFName` TEXT,
`EName` TEXT,
`DOB` TEXT,
`Gender` TEXT,
`BG` TEXT,
`Address` TEXT,
`Profile` TEXT,
`Manager` TEXT,
`Department` TEXT,
`Doj` TEXT,
`LastDate` TEXT,
`Contact` TEXT,
PRIMARY KEY(EmpId)
);

8. Now Save “EmpData.db” in AASFDR/Database/DB

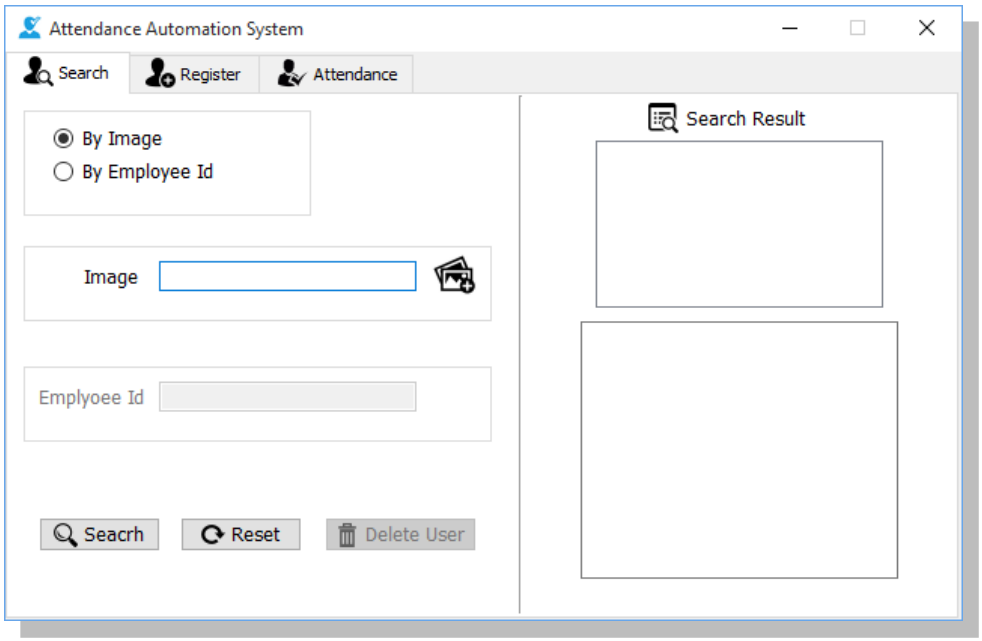
4. End User Manual

Application Can be run by double clicking on main.py in AASFDR folder.

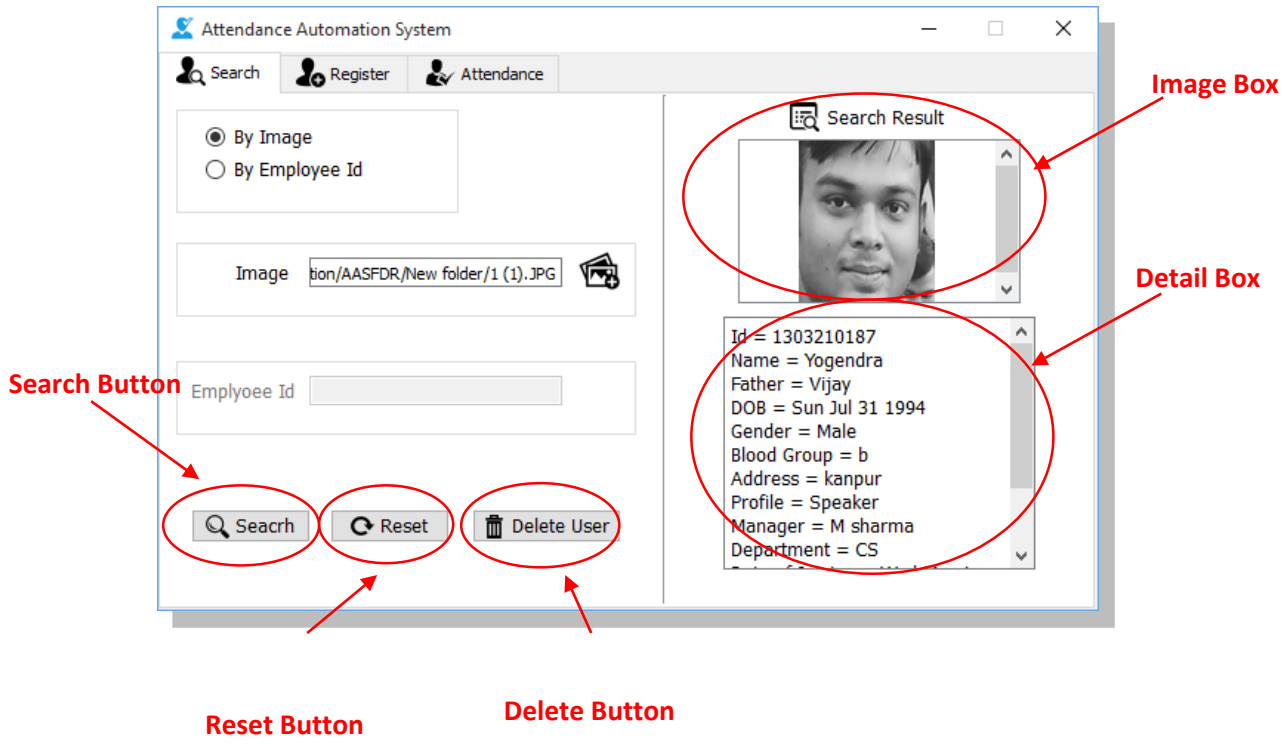
1. By Image: User have to input the path of the image to be search in database by clicking on browse button.



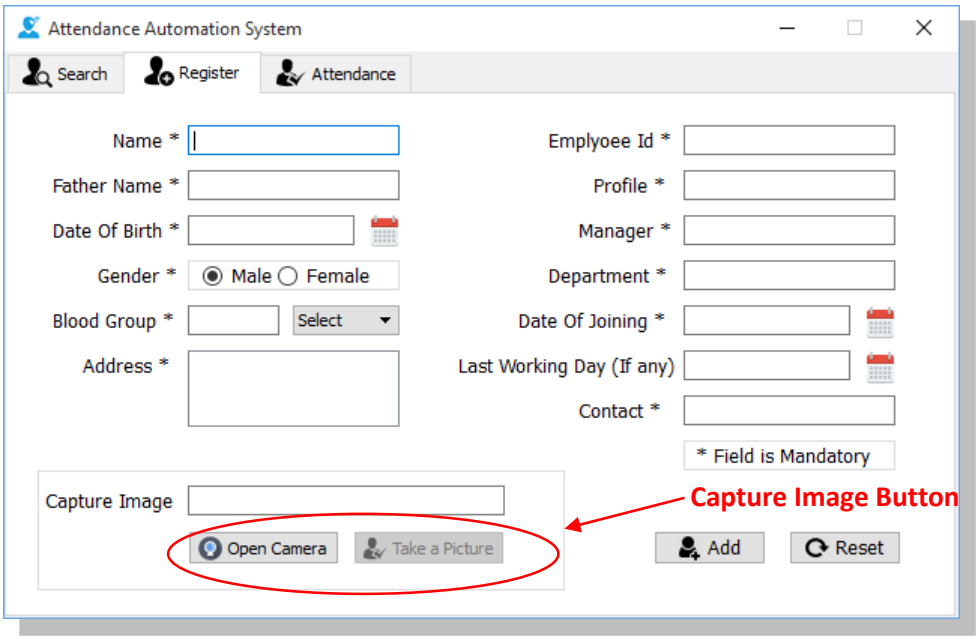
2. By Employee: User can also enter the employee id to search an employee, his details and his image by selecting By Employee ID (Radio Button) :



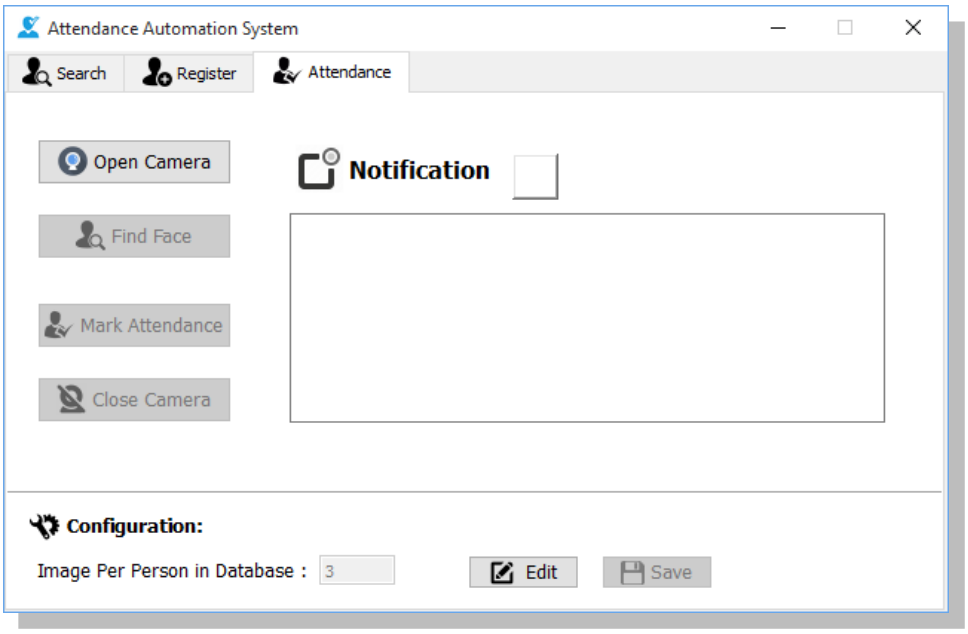
3. Search: After Click on Search Result will be shown in Image Box and Detail Box



4. Reset: By clicking on Reset all fields became Blank.
5. Delete: By clicking on Delete, Use will be deleted from the database.
6. New User: A new Employee can be added by entering all his details and giving the path of folder containing his/her images by clicking on browse Button. 'Last Working Day' field is optional and all others are Mandatory.



7. Attendance System:



8. Open Camera: By clicking on this button Webcam will be open and if there would be a face in Webcam, a green rectangle would be drawn around the face in the webcam.
9. Find Face: By clicking on this button face which is appearing in webcam is searched in the data database and employee id is shown in the message box.
10. Mark Attendance: By clicking on this attendance is mark on the database with the current timestamp and employee id whose face is appearing in the webcam and message "Attendance has been Marked Successfully Employee Id = XXXXXX" is shown in Message Box.
11. Close Camera: By clicking on this button camera is closed.
12. Configuration:
13. Image per Person in Database: This is the maximum no of images any employee have in database. By default this value is 3 which can be edit using Edit and Save button. It is suggested that it should keep large (1<X<25).

5 ABOUT:

Software Name:	ATTENDANCE AUTOMATION USING FACE DETECTION AND RECOGNISATION SYSTEM
Version:	1.0.0
Developed By:	Umang Gupta
Instructor:	Mr Hukum Singh (Unit IT Head)
Developed at:	ITC Limited, Saharanpur
Duration:	6 Weeks