

Configuration Manual

MSc Internship Cyber Security

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National College of Ireland



MSc Project Submission Sheet

| School | of | Computii | ng |
|--------|----|----------|----|
| | | | |
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| Student Name: | Nilisha B. Wandile | |
|----------------|---|---------------------------|
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| Student ID: | X18134416 | |
| | MSc in Cyber Security | |
| Programme: | , , | Year: 2019-2020 |
| | | |
| Module: | MSc Internship | |
| | | |
| Lecturer: | Ben Fletcher | |
| Submission Due | | |
| Date: | 12/12/2019 | |
| | Advanced techniques for storing passwo | rds using image |
| Project Title: | steganography and multi-level encryptic | n with password splitting |
| - | method | |
| Word Count: | 1920 | Page Count: 25 |

I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.

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| Attach a completed copy of this sheet to each project (including multiple copies) | |
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| Signature: | |
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| Penalty Applied (if applicable): | |

Background

In this project we have used 3 technologies, Python version 3.7, Spyder 3.7.4 which is a Scientific Python Development Environment and Anaconda 3.7 to display the results in the console. Anaconda is an opensource distribution where codes in Python, R, machine learning programs can be performed [1]. Sections below highlight the configuration steps for each tool on operating systems like Windows 10, Mac and Linux.

Section 1

1.1 Python v. 3.7

1.1.1 Windows 10

Before downloading the python version 3.7, first, it is important to check if python is already installed on the system. This can be done by opening the command prompt and type python. If it is already there, it will take you to python and low something like this:

```
Command Prompt - python

Microsoft Windows [Version 10.0.18362.476]

(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\nilis>python

Python 3.7.4 (default, Aug 9 2019, 18:34:13) [MSC v.1915 64 bit (AMD64)] :: Anaconda, Inc. on win32

Figure 1: Checking python on cmd
```

If python is not installed in the system already, follow the below steps-

Step 1: Go to python's official website or visit <u>python.org/downloads/</u> and click on downloads. Click on View the full list of downloads.



| Want to hel <u>Docker ima</u> Looking for Looking for a spec | p test development versions of Python? <u>Prerelea</u> <u>ges</u> Python 2.7? See below for specific releases ific release? on number: | <u>ses</u> , | | |
|---|--|--------------|----------------|---|
| Release version | Release date | | Click for more | |
| Python 3.5.9 | Nov. 2, 2019 | 🕹 Download | Release Notes | A |
| Python 3.5.8 | Oct. 29, 2019 | 🕹 Download | Release Notes | |
| Python 2.7.17 | Oct. 19, 2019 | ownload 🕹 | Release Notes | |
| Python 3.7.5 | Oct. 15, 2019 | ownload | Release Notes | |
| Python 3.8.0 | Oct. 14, 2019 | ownload 🕹 | Release Notes | |
| Python 3.7.4 | July 8, 2019 | ownload 🕹 | Release Notes | |
| | | | | |
| Python 3.6.9 | July 2, 2019 | ownload 🌜 | Release Notes | |

Step 2: Click on Python 3.7.4 download as we have used this version for our proposed solution.

Step 3: Once, the download is finished, locate the exe file and execute it.

Step 4: If any version of python is already installed on the system it will display below screen-



Click on Upgrade Now

Else, a box with the below steps will be shown.

Click on Install Now and make sure to check both the checkboxes Install launcher for all users (recommended) and the Add Python 3.7 to PATH.



Step 5: Click on Install Now

After clicking on **Install Now**, a pop-up will be displayed asking, **"Do you want to allow this app to make changes to your device**". Click on the **Yes** button.

Step 6:

Python 3.7.4 (64-bit) Setup window will be displayed showing with setup progress.



During this process, it will install various libraries and packages which will be displayed above the progress bar. Once the installation is complete below pop-up will appear on the screen showing a message **Setup was successful**.



Step 7: Click the **Close** button.

If the environment variable needs to be configured permanently it can be done in Windows at the user level and system level. It can be configured temporarily in the command prompt [2].

To verify the installation is successful or not, go to command prompt and type python. A window like Figure 1 will be displayed confirming the successful installation.

To set the environment variable temporarily, use set command on command prompt.

```
C:\>set PATH=C:\Program Files\Python 3.7;%PATH%
C:\>set PYTHONPATH=%PYTHONPATH%;C:\My_python_lib
C:\>python
```

Figure 2: Set command on command prompt [3]

1.1.2 macOS

The macOS comes with Python 2.7 pre-installed by Apple [4]. But since we need python 3.7.4 we will have to follow the same steps as windows.

Step 1: Go to python's official website or visit <u>python.org/downloads/</u> and click on **Downloads**. Click on **View the full list of downloads**.

| Python | | Doca Pyrit | | |
|---------------------------------------|-----------------------------|--|-------------------------------------|--------------|
| 🥹 python" | | Donate | Search | GO Socialize |
| About | Downloads Documen | station Community Si | uccess Stories News | Events |
| Download | All refeases Source code | Download for Windows | 7 | |
| Looking for Python | Windows Mac OS X | Note that Python 3.5+ connot b or earlier. | e used on Windows XP | |
| Want to help test di Docker images | Other Platforms | Not the OS you are looking for? F many operating systems and em View the full list of downloads. | Python can be used on eronments. | |
| Looking for Python | Alternative Implementations | | | |

After clicking on that, you will be taken to the below screen.

Step 2: Click on Download macOS 64-bit installer.

| Python Releases for Mac OS | X |
|--|--|
| Latest Python 3 Release - Python 3.8.0 | |
| Latest Python 2 Release - Python 2.7.17 | |
| Stable Releases | Pre-releases |
| Python 3.5.9 - Nov. 2, 2019 | Python 3.8.1rc1 - Dec. 10, 2019 |
| No files for this release. | No files for this release. |
| Python 3.5.8 - Oct. 29, 2019 | Python 3.9.0a1 - Nov. 19, 2019 |
| No files for this release. | Download macOS 64-bit installer |
| Python 2.7.17 - Oct. 19, 2019 | Python 3.5.8rc2 - Oct. 12, 2019 |
| Download macOS 64-bit/32-bit installer | No files for this release. |
| Download macOS 64-bit installer | Python 2.7.17rc1 - Oct. 9, 2019 |
| Python 3.7.5 - Oct. 15, 2019 | Download macOS 64-bit/32-bit installer |
| Download macOS 64-bit/32-bit installer | Download macOS 64-bit installer |
| Download macOS 64-bit installer | Python 3.7.5rc1 - Oct. 2, 2019 |
| Python 3.8.0 - Oct. 14, 2019 | Download macOS 64-bit/32-bit installer |
| Download macOS 64-bit installer | Download macOS 64-bit installer |
| Python 3.7.4 - July 8, 2019 | Python 3.8.0rc1 - Oct. 1, 2019 |
| Download macOS 64-bit/32-bit installer | Download macOS 64-bit installer |
| Download macOS 64-bit installer | Python 3.5.8rc1 - Sept. 9, 2019 |

Follow steps 3 to 7, same as the Windows.

Else, the user just needs to update the existing version which requires **Homebrew Package** Manager

To install homebrew on the system, follow below steps,

Step 1: Open the terminal on the macOS from the Applications section and then Utilities. Now in the terminal, you can enter the following command-

```
/usr/bin/ruby -e "$(curl -fsSL
https://raw.githubusercontent.com/Homebrew/install/master/install)"
```



Step 2: You will be asked to enter the system password to install Homebrew.



Installation Successful! A message will be displayed and now you are ready to install Python 3 on your system.

Step 3: To install Python 3, open the terminal follow Step 1 and enter the below command.

brew install python3

Once the command has been processed, Python's version 3 would be installed on your macOS.



Step 4: To confirm the successful installation, enter below commands-

python

pip3

Finally, the below window will be displayed [5].



1.1.3 Linux

All Linux systems including the OS mentioned below, come with Python pre-installed on it. To check that, enter below command-

```
$ python --version
```

Enter below command to check the latest version of python 3.x.x-

```
$ python3 --version
```

To download it from the official python website, follow below steps-

Step 1: Go to python's official website or visit <u>python.org/downloads/</u> and click on **Source** Code.

| Python | PSF | Dacs PyPi | Jobs | Community |
|------------------------------------|---------------------------------------|---|---|-------------------------------|
| 🍦 python` | | Donate | Q Search | GO Socialize |
| About | Downloads Docume | ntation Community Su | ccess Stories News | Events |
| # Python 3: Lis | All releases | Download for Windows | | |
| >>> fealts = [* >>> lead fealts | Source code | Pethon 3.8.0 | | e one of the |
| frults] | Windows | Note that Puthan 3.5+ control he | used on Windows XP | ids. Lists can be built in |
| [.swww.'', .vbb | Mac OS X | or earlier. | | |
| # List and the | Other Platforms | Not the OS you are looking for? Py many operating systems and envi | rthon can be used on ironments. | |
| >>> list(enumer | Ucerse | View the full list of downloads. | | |
| f(e) cause }; | Alternative Implementations | | | |
| | Python is a progra and integrate s | mming language that lets systems more effectively. 2 | you work quickly <u> 22 Learn More</u> | |

The below screen will appear, click on Python 3.7.4 and download it.

| Python >>> Downloads >>> Source code | |
|---|---|
| Python Source Releases | |
| Latest Python 3 Release - Python 3.8.0 | |
| Latest Python 2 Release - Python 2.7.17 | |
| Stable Releases | Pre-releases |
| Python 3.5.9 - Nov. 2, 2019 | Python 3.8.Ircl - Dec. 10, 2019 |
| Download Gzipped source tarball | No files for this release. |
| Download XZ compressed source tarball | Python 3.9.0a1 - Nov. 19, 2019 |
| Python 3.5.8 - Oct. 29, 2019 | Download Gzipped source tarball |
| Download Gzipped source tarball | Download XZ compressed source tarball |
| Download XZ compressed source tarball | Python 3.5.8rc2 - Oct. 12, 2019 |
| Python 2.7.17 - Oct. 19, 2019 | Download Gzipped source tarball |
| Download Gzipped source tarball | Download XZ compressed source tarball |
| Download XZ compressed source tarball | Python 2.7.17rc1 - Oct. 9, 2019 |
| Python 3.7.5 - Oct. 15, 2019 | Download Gzipped source tarball |
| Download Gzipped source tarball | Download XZ compressed source tarball |
| Download XZ compressed source tarball | Python 3.7.5rc1 - Oct. 2, 2019 |
| Python 3.8.0 - Oct. 14, 2019 | Download Gzipped source tarball |
| Download Gzipped source tarball | Download XZ compressed source tarball |
| Download XZ compressed source tarball | Python 3.8.0rc1 - Oct. 1, 2019 |
| Python 3.7.4 - July 8, 2019 | Download Gzipped source tarball |
| Download Gzipped source tarball | Download XZ compressed source tarball |
| Download XZ compressed source tarball | Python 3.5.8rc1 - Sept. 9, 2019 |

The best way to do it in a single step is through commands.

Enter below command-

\$ wget https://www.python.org/ftp/python/3.7.4/Python-3.7.4.tgz

For a successful installation of python 3.7.4, we need some prerequisites and other sources to be ready. Enter below commands-

```
$ sudo apt-get update
$ sudo apt-get upgrade
$ sudo apt-get install -y make build-essential libssl-dev zlib1g-dev
libbz2-dev libreadline-dev libsqlite3-dev wget curl llvm libncurses5-
dev libncursesw5-dev xz-utils tk-dev
```

Now the system is ready to unpack the downloaded files.

Go to the downloads directory by entering **cd downloads** in the terminal and enter below command-

Now the installation would be completed on your system.

Enter the below command and confirm the installation [5].

```
python --version
```

Section 2

2.1 Spyder 3.7.4 and Anaconda 3.7

2.1.1 Windows

Spyder comes by default with the Anaconda Python distribution and comes with all the resources you may need to get started [6].

To download and install both the tools, follow the below steps.

Step 1: Go to the official site of Spyder <u>www.spyder-ide.org/</u> and click on **Download** as shown in the below figure.



Step 2: Now click on **Download Spyder with Anaconda** and it will redirect you to below page-

| Anaconda Distri | bution | | | | | | |
|--|---------------------------------------|------------|-----------|-------|--------------------|------------|--|
| The World's Most Popular Python/R Das | a Science Platform | | | | | | |
| Download | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| The open-source Aneconde Distribution is the | re easiest way to perform Python/R. | - | H | | 10 | - | |
| over 15 million users, worldwide, it is the indu | way standard for developing. | eaver . | 堂 | NumPy | SciPy | 9 Numba | |
| becong, and training on a single machine, an | abling individual data scientists to: | nandas | rð | 0 | 1 | | |
| Manage libraries, dependencies, and s | ervmonments with Coinda | Paliting | DASK | Bokah | Intel [®] | * me.moon | |
| Develop and train machine learning an | d deep learning models with scala- | @matplottb | | H.0 | TersorFlow | CONDA | |
| warn, Tenco/Piow, and Theato | | | - Central | | | | |
| ieann, TensorFlow, and Theano • Analyze data with scalability and perfo | emonce with Deck, NumPy, pantal, | | | | | | |
| Network, Sendor Theaho Anseyze case with ocalisating and performed Number Visualize results with Metplotots, Boker | Interce with Desk, NumPy, pendal, | | | | | | |

Click on Windows and below, you will see another window

| Windows d | macOS 👌 Linux | |
|---|--|--|
| Anaconda 2019.10 f | or Windows Installer | |
| Python 3.7 version Counted 64-Bit Graphical Installer (H02 MB) 32-Bit Graphical Installer (H10 MB) | Python 2.7 version Countoad 64-Bit Graphical Installer (413 MB) 32-Bit Graphical Installer (356 MB) | |
| | | |

Click on Download and Python 3.7 version for windows will be downloaded

Step 3: Locate the exe file and run.



Click on Next.

| Anaconda3 2019.10 (64- | _ | | \times | | |
|--|--|--------------------------------|--------------------|-----------|-----|
| | License Agreem Please review the 2019.10 (64-bit). | e nt license terms b | efore installing A | naconda3 | 1 |
| Press Page Down to see th | e rest of the agreem | ent. | | | |
| Anaconda End User Licens | e Agreement | | | | ^ |
| Copyright 2015, Anacond | a, Inc. | | | | |
| All rights reserved under t | he 3-dause BSD Lice | nse: | | | |
| Redistribution and use in s permitted provided that the | ource and binary for the following condition | ms, with or with s are met: | out modification, | are | |
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| If you accept the terms of agreement to install Anaco | the agreement, dick nda3 2019.10 (64-bi | I Agree to cont t). | inue. You must a | ccept the | |
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Click I Agree.

| O Anaconda3 20 | 19.10 (64-1 | bit) Setup | | _ | | | Х |
|-------------------------------|--------------|--|--|-----------------|---------|---------|-------|
| | ONDA | Select Installati Please select the Anaconda3 2019 | on Type type of install 10 (64-bit). | ation you would | like to | perform | n for |
| Install for: Just Me (reco | ommended) |) | | | | | |
| ○ All Users (red | quires admir | n privileges) | | | | | |
| Anaconda, Inc. — | | | < Back | Next > | | Cance | 2 |

Select the radio button Just Me (recommended).

| O Anaconda3 2019.10 (64- | bit) Setup | | — | | \times |
|---|--|---|--------------|-------------------|----------|
| | Choose Install Loc | ation | | | |
| | Choose the folder in | which to install Anac | onda3 20 | 19.10 (64 | bit). |
| Setup will install Anaconda folder, click Browse and se | 3 2019.10 (64-bit) in th ect another folder. Clic | e following folder. To k Next to continue. | install in a | a different | : |
| | | | | | |
| Destination Folder | | | | | |
| | | | Deere | 100 | |
| C:\Users\nilis\Anacond | 83 | | Brow | SC | |
| C:\Users\nilis\Anacono | | | Brow | /SC | |
| C:\Users\nilis\Anacono Space required: 2.9GB Space available: 281.5GB | 183 |] | Brow | /3C | |
| C:\Users\nilis\Anacono Space required: 2.9GB Space available: 281.5GB Anaconda, Inc. | ia <u>s</u> | | Brow | /3C | |

Click on the **Browse** button and select a path where you want to store Anaconda3on your system and click **Next.**

| 0 4 | Anaconda3 2019.10 (64- | bit) Setup | | _ | | × |
|------|--|---|---|--|-----|-----|
| C | ANACONDA | Advanced Installation Customize how Anacond | Options la integrates (| with Windows | | |
| Anad | Advanced Options Add Anaconda to Not recommended. I menu and select "An Anaconda get found cause problems requ Register Anaconce This will allow other p PyCharm, Wing IDE, detect Anaconda as conda, Inc. | my PATH environment var nstead, open Anaconda wi aconda (64-bit)". This "add before previously installed iring you to uninstall and re da as my default Python 3. orograms, such as Python 1 PyDev, and MSI binary pa the primary Python 3.7 on | iable th the Windov to PATH" opt software, bu einstall Anacor 7 Fools for Visua ckages, to au the system. | ws Start tion makes It may nda. al Studio tomatically | | |
| | | < | Back | Install | Can | cel |

Here, check the **Register Anaconda as my default Python 3.7** option and click on the **Install** button.

Step 4: Now open Anaconda by typing in Anaconda Prompt (Anaconda3) in the search bar.



The Anaconda3 prompt will display something like this



You can locate your window by typing in cd command and the name of the directory where you have stored Anaconda3

Step 5: Simultaneously, open Spyder by typing in Spyder (Anaconda 3) in the search bar to start writing your program.

| All Apps Documents Email Web | Mor | re ▼ Feedback ··· |
|--------------------------------------|-----|------------------------------|
| Best match | | |
| Spyder (Anaconda3) App | | * |
| Search the web | | Spyder (Anaconda3) |
| Spyder (Anaconda3) - See web results | > | App |
| Command | | |
| spyder (Anaconda3) | > | □ [*] Open |
| | | 🔽 Run as administrator |
| | | Den file location |
| | | -🛱 Pin to Start |
| | | -🛤 Pin to taskbar |
| | | 🗓 Uninstall |
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Once Spyder opens, below window will be displayed-



Start wring your program here.

For our program, we required some packages to be installed on Anaconda to import some libraries and execute our program.

Step 6: Now go back to Anaconda and install required packages by entering below commands-

pip install pycryptodome

pip install simple-crypt

This will install the packages required for encryption and decryption. The rest of the packages required to run the program are pre-installed.

Step 7: Now the Anaconda 3 Distribution is ready to run the program on Windows. Get to the directory where the program is stored by typing in the path and below command-

python stegnocode3.py

2.1.2 macOS

Step 1: Go to the official site of Spyder <u>www.spyder-ide.org/</u> and click on **Download** as shown in the below figure.



Step 2: Now click on **Download Spyder with Anaconda** and it will redirect you to below page-

| | Produzs | Why Aneconde [®] | Solutions | Resource | is Comp | sty Ca | mart Us | Dewnload | ٩ |
|--|--|---------------------------|-------------------|----------|---------|------------------|------------|----------|---|
| Anaconda D | istribution | | | | | | | | |
| The World's Most Popular Pyr | non/R Data Science Platform | | | | | | | | |
| Download | | | | | | | | | |
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| data science and machine learny over 15 million users worldwide. I feeting, and terming on a single in | g on Linux, Windows, and Mac OS X is the industry standard for develop actime, enabling individual data scie | Wth Mg. | ([§]). | | NumPy | Sally | 9 Numba |] | |
| Guickly download 1500- P Manage libraries, depender | thon R data science packages cles, and environments with Conda | | pandas | DASK | 0 | National Section | - Datashad | - | |
| Develop and train intechine learn, TansorFlow, and The | warning and deep learning models a inc | with scilla | - | | н,о | TensorFlow | COND | ĸ | |
| Analyze data with scalability and Numbe | and performance with Dask, NumPy | X Daugas | | | | | · · | 1 | |
| Visualize results with Matpi | 200, Boken, Detauheder, and Holovia | F91. | | | | | | | |
| | | | | | | | | | |
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Click on macOS and below, you will see another window

| Anaconda 2019.10 for macOS Installer Python 3.7 version Download 64-Bit Graphical Installer (854 MB) 64-Bit Command Line Installer (854 MB) 64-Bit Command Line Installer (854 MB) | 🐔 Windows 🗳 n | necOS 👌 Linux |
|---|---|--|
| Python 3.7 version Python 2.7 version Download Download 64-Bit Graphical Installer (854 MB) 64-Bit Command Line Installer (424 MB) 64-Bit Graphical Installer (537 MB) 64-Bit Command Line Installer (420 MB) | Anaconda 2019.10 fo | or macOS Installer |
| Download Download 64-Bit Graphical Installer (654 MB) 64-Bit Command Line Installer (424 MB) 64-Bit Graphical Installer (637 MB) 64-Bit Command Line Installer (400 MB) | Python 3.7 version | Python 2.7 version |
| 64-Bit Graphical Installer (654 MB) 64-Bit Company (637 MB) 64-Bit Command Line Installer (424 MB) 64-Bit Command Line Installer (400 MB) | Download | Download |
| | 64-Bit Graphical Installer (654 MB) 64-Bit Command Line Installer (424 MB) | 64-Bit Graphical Installer (637 MB) 64-Bit Command Line Installer (409 MB) |

Click on Download and Python 3.7 version for macOS will be downloaded

Run the downloaded file and the below window will be displayed.



Click on Continue



Click on **Continue**

Please note that while installing Anaconda on macOS, it will modify the bash file with Anaconda3.

| | 💗 Install Anaconda3 |
|--------------------|--|
| | Important Information |
| Introduction | Anaconda is the most popular Python data science platform. See <u>https://www.anaconda.com/downloads</u> /. |
| Read Me | By default, this installer modifies your bash profile to put |
| License | Anaconda3 in your PATH. To disable this, choose "Customize" |
| Destination Select | option. If you do not do this, you will need to add ~/anaconda3/ |
| Installation Type | bin to your PATH manually to run the commands, or run all |
| Installation | Anaconda's commands explicitly from that path. |
| Microsoft VSCode | To install to a different location, select "Change Install Location, " at the "Installation Type" phase, then choose "Install |
| Summary | on a specific disk", choose the disk you wish to install on, and |
| ANACONDA | click "Choose Folder". The "Install for me only" option will install Anaconda3 to the default location, ~/anaconda3. The packages included in this installation are: defaults::alabaster 0.7.10 defaults::anaconda-client 1.6.9 defaults::anaconda-project 0.8.2 |
| | Print Save Go Back Continue |

Click on **Continue** again.

Now, below **Software License Agreement** will appear.



Read the Software License Agreement and click on Continue.

| 0 (| 0 | | 🥪 Install Anaconda3 |
|-----|---------------|-------------------------------------|---|
| | | To continue ins the software lie | stalling the software you must agree to the terms of cense agreement. |
| | Inti | Click Agree to c | ontinue or click Disagree to cancel the installation and |
| 0 | Rea | quit the Installer | r. |
| • | Lic | | |
| | De | Read License | Disagree |
| | Ins | | net. |
| | Instal | lation | * Redistributions of source and must retain the above convisit paties |
| | Micro Sumn | soft VSCode hary | this list of conditions and the following disclaimer. * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution. * Neither the name of Anaconda, Inc. ("Anaconda, Inc.") nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission. |
| A | NA | CONDA | THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED |
| | | | Print Save Go Back Continue |

| • • 0 | 😺 Install Anaconda3 | 3 |
|--|--|---|
| | Standard Install on "Macintosh | HD" |
| Introduction Read Me License Destination Select Installation Type Installation Microsoft VSCode Summary | This will take 2.05 GB of spa Click Install to perform a sta on the disk "Macintosh HD". | ace on your computer. Indard installation of this software |
| | Customize | Go Back Install |

Click on Install.

Now you will be asked to put your credentials. Use the same credentials that you have set for your mac to open the system. Once you enter the correct credentials, click on **Install Software**.

| 000 | 🥪 Install Anaconda3 | |
|---|--|--|
| | Installing Anaconda3 | |
| Introduction Read Me License Destination Select Installation Type | Preparing for installation | |
| Installation | | |
| Microsoft VSCode Summary | Installer is trying to install new software. Enter your password to allow this. User Name: | |
| ANACOND, | Password: | |
| | Cancel Install Software | |

You will be prompted with the below window asking to install VSCode. VSCode is a code editor. We do not need that as we already have Spyder. Click on **Continue**.

| | 🥪 Install Anaconda3 | |
|--|---|---|
| Introduction Read Me License Destination Select Installation Type Installation Microsoft VSCode Summary | Microsoft Visual Studio Code Anaconda has partnered with Microsoft to bring you Visual Studio Code. Visual Studio Code is a free, open source, streamlined cross-platform code editor with excellent support for Python code editing, IntelliSense, debugging, linting, version control, and more. To install VS Code, you will require Internet Connectivity. Click the button below to install Visual Studio Code Visual Studio Code License Install Microsoft VSCode | |
| | Go Back Continu | e |

Finally, a screen will be displayed mentioning that the installation was completed successfully [7]



Step 3: Now open the terminal and install the required packages by entering below commands-

pip install pycryptodome

pip install simple-crypt

Step 4: Now the Anaconda 3 Distribution is ready to run the program on macOS. Get to the directory where the program is stored by typing in the path and below command-

python stegnocode3.py

2.1.3 Linux

Step 1: Go to the official site of Spyder <u>www.spyder-ide.org/</u> and click on **Download** as shown in the below figure.



Step 2: Now click on **Download Spyder with Anaconda** and it will redirect you to below page-

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Click on Linux and below, you will see another window

| Python 3.7 version Download 64-Bit (x086) Installer (500 MB) 64-Bit (x086) Installer (200 MB) | 🗮 Windows 🔹 mecOS 🔬 Linux | | |
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| Python 3.7 version Python 2.7 version Download Download 64-Bit (x086) Installer (\$06 MB) 64-Bit (x086) Installer (\$27 MB) 64-Bit (PowerB and PowerB) Installer (\$20 MB) 64-Bit (PowerB and PowerB) Installer (\$25 MB) | Anacono | da 2019.10 for Linux Installer | |
| Download Download 64-Bit (x06) Installer (\$00 MB) 64-Bit (x06) Installer (477 MB) 64-Bit (Power8 and Power9) Installer (320 MB) 64-Bit (Power8 and Power9) Installer (295 MB) | Python 3.7 version | Python 2.7 version | |
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Click on Download and Python 3.7 version for Linux will be downloaded

Step 3: Anaconda recommends <u>verifying the integrity with SHA-256</u>. Open the terminal on the Linux system and enter the below command [1].

sha256sum /path/filename

Step 4: Enter the following command to install Anaconda for Python 3.7

bash ~/Downloads/Anaconda3-2019.10-Linux-x86_64.sh

Replace **Downloads** in the path with the path where the downloaded installer file exists.

Step 5: Now a window will be displayed saying **In order to continue the installation process, please review the license agreement.** Click **Enter** to view the license agreement and type on **Yes** to agree.

```
Welcome to Anaconda3 2019.10

In order to continue the installation process, please review the

license

agreement.

Please, press ENTER to continue

>>>

...

Do you approve the license terms? [yes no]
```

Step 6: Now you will be to choose the location for the installation. Press **Enter** to set the default location.

```
Anaconda3 will now be installed into this location:
/home/<u>nilis</u>/anaconda3
- Press ENTER to confirm the location
- Press CTRL-C to abort the installation
- Or specify a different location below
```

[/home/nilis/anaconda3] >>>

Step 7: Once the installation is successful, type yes to use conda command.

```
...
installation finished.
Do you wish the installer to prepend the Anaconda3 install <u>location</u>
to PATH in your /home/<u>nilis/.bashrc</u> ? [yes_no]
[yes] >>>
```

Step 8: Activate the installation using below command

source ~/.bashrc

Step 9: Type in conda command to test it working fine [8].

conda list

Step 10: Install the required packages by entering the below commands.

pip install pvcrvptodome

pip install simple-crypt

Step 11: Now the Anaconda 3 Distribution is ready to run the program on Linux. Get to the directory where the program is stored by typing in the path and below command-

python stegnocode3.py

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