

Harness analytical strengths: SAS, R, Python Web Services

Trends and Technology – TT11

Sandeep Juneja, Ben Bocchicchio

SAS Institute, Cary, North Carolina, USA



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Configuring Virtual Machine

- Using VirtualBox, Create Virtual Machine using Ubuntu Image

General

Name: Ubuntu_20
Operating System: Ubuntu (64-bit)

System

Base Memory: 8192 MB
Processors: 4
Boot Order: Floppy, Optical, Hard Disk
Acceleration: VT-x/AMD-V, Nested Paging, KVM Paravirtualization

Display

Video Memory: 32 MB
Graphics Controller: VBoxVGA
Remote Desktop Server: Disabled
Recording: Disabled

Storage

Controller: IDE
IDE Primary Master: [Optical Drive] VBoxGuestAdditions.iso (58.16 MB)
Controller: SATA
SATA Port 0: Ubuntu_19.vhd (Normal, 50.00 GB)

Audio

Host Driver: Windows DirectSound
Controller: ICH AC97

Network

Adapter 1: Intel PRO/1000 MT Desktop (Bridged Adapter, Intel(R) Dual Band Wireless-AC 8260)
Adapter 2: Intel PRO/1000 MT Desktop (Host-only Adapter, 'VirtualBox Host-Only Ethernet Adapter')

Storage

Storage Devices

Controller: IDE
VBoxGuestAdditions.iso

Controller: SATA
Ubuntu_19.vhd

Network

Adapter 1 Adapter 2 Adapter 3 Adapter 4

☒ Enable Network Adapter

Attached to: Bridged Adapter

Name: Intel(R) Dual Band Wireless-AC 8260

Advanced

Adapter Type: Intel PRO/1000 MT Desktop (82540EM)

Promiscuous Mode: Allow All

MAC Address: 080027E42256

☒ Cable Connected

Port Forwarding

Network

Adapter 1 Adapter 2 Adapter 3 Adapter 4

☒ Enable Network Adapter

Attached to: Host-only Adapter

Name: VirtualBox Host-Only Ethernet Adapter

Advanced

Adapter Type: Intel PRO/1000 MT Desktop (82540EM)

Promiscuous Mode: Allow All

MAC Address: 080027EBAA6

☒ Cable Connected

Port Forwarding

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Configuring Python Environment

- `sudo snap install [pycharm-professional|pycharm-community] - -classic`
- In PyCharm Community Edition, File -> Properties -> Python Interpreter

The screenshot shows the 'Python Interpreter' configuration window in PyCharm. The left sidebar has 'Python Interpreter' selected under 'Project: webservice'. The main area shows a table of installed packages and their versions. A blue arrow points to the 'Python Interpreter' text on the right, and another blue arrow points to the '+' button at the bottom left of the package list.

Package	Version	Latest version
Flask	1.1.2	1.1.2
Flask-SQLAlchemy	2.4.4	▲ 2.5.1
Jinja2	2.11.2	▲ 2.11.3
MarkupSafe	1.1.1	1.1.1
Pillow	8.0.1	▲ 8.1.2
PyJWT	2.0.0	▲ 2.0.1
SQLAlchemy	1.3.22	▲ 1.4.2
Werkzeug	1.0.1	1.0.1
attrs	20.3.0	20.3.0
cffi	1.14.4	▲ 1.14.5
cheroot	8.5.1	▲ 8.5.2
click	7.1.2	7.1.2
cryptography	3.2.1	▲ 3.4.6
flask-swagger-ui	3.36.0	3.36.0
iniconfig	1.1.1	1.1.1
itsdangerous	1.1.0	1.1.0
jaraco.funcitools	3.0.1	▲ 3.2.1
lxml	4.6.2	4.6.2
more-itertools	8.6.0	▲ 8.7.0
numpy	1.19.4	▲ 1.20.1
packaging	20.8	▲ 20.9
pandas	1.1.5	▲ 1.2.3

Python Interpreter

Add Package

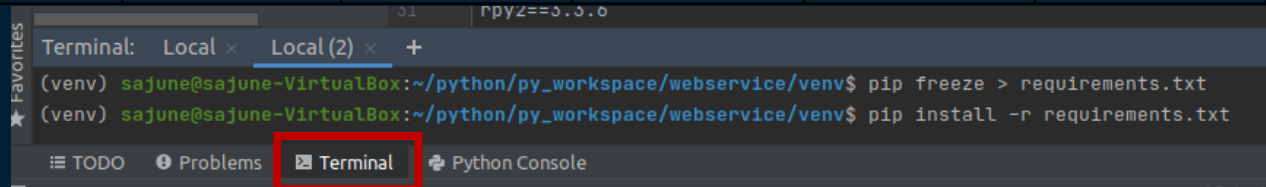
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Configuring Python Environment

- Use Requirements.txt to capture / install requirements

attrs==20.3.0	iniconfig==1.1.1	packaging==2.0.8	pyparsing==2.4.7	six==1.15.0	Flask-SQLAlchemy==2.4.4	more-itertools==8.6.0	py==1.10.0
ffi==1.14.4	itsdangerous==1.1.0	pandas==1.1.5	pytest==6.2.1	SQLAlchemy==1.3.22	pycparser==2.20	rpy2==3.3.6	redis==3.5.3
cheroot==8.5.1	jaraco.functools==3.0.1	Pillow==8.0.1	python-dateutil==2.8.1	toml==0.10.2	flask-swagger-ui==3.36.0	numpy==1.19.4	Werkzeug==1.0.1
click==7.1.2	Jinja2==2.11.2	pkg-resources==0.0.0	python-docx==0.8.10	tzlocal==2.1	PyJWT==2.0.0	saspy==3.6.4	cryptography==3.2.1
lxml==4.6.2	pluggy==0.13.1	pytz==2020.4	uuid==1.30	Flask==1.1.2	MarkupSafe==1.1.1		

- pip freeze > requirements.txt
- pip install -r requirements.txt



The screenshot shows a terminal window with two tabs: 'Local' and 'Local (2)'. The active tab is 'Local (2)'. The terminal output shows the following commands and their results:

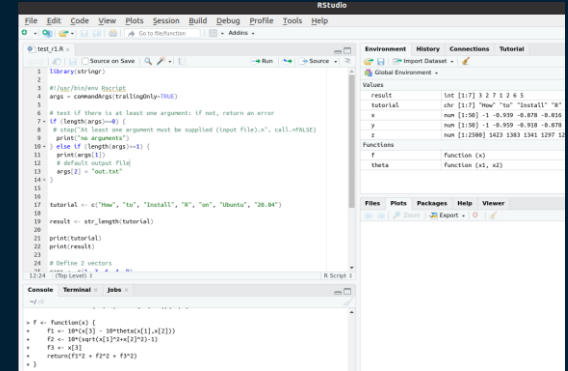
```
(venv) sajune@sajune-VirtualBox:~/python/py_workspace/websevice/venv$ pip freeze > requirements.txt
(venv) sajune@sajune-VirtualBox:~/python/py_workspace/websevice/venv$ pip install -r requirements.txt
```

The terminal window is part of an IDE interface, with a sidebar on the left showing 'Favorites' and a bottom bar with 'TODO', 'Problems', 'Terminal' (highlighted with a red box), and 'Python Console'.

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Configuring R Environment

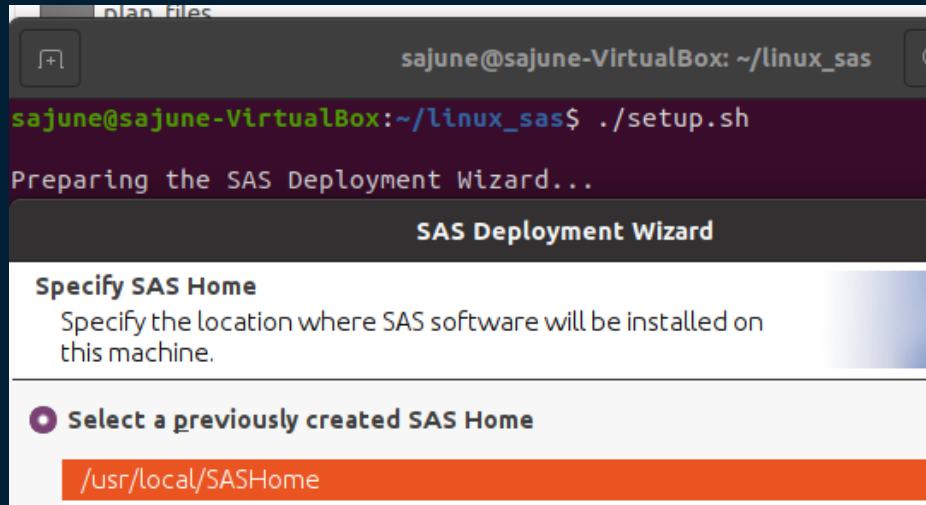
- Step 1 Install R Environment
 - `$ sudo apt update`
 - `$ sudo apt-get install r-base`
- Step 2 Download R Studio
 - `$ wget https://download1.rstudio.org/desktop/bionic/amd64/rstudio-1.3.1093-amd64.deb`
- Step 3 Install R Studio
 - `$ sudo apt install ./rstudio-1.3.1093-amd64.deb`
- Step 4 Verify R Studio
 - `$ rstudio`



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Configuring SAS Environment

- Step 1: Make setup.sh executable in SAS Depot
 - `$ chmod +x setup.sh`
- Step 2 : Execute setup.sh script and follow the instructions
 - `$./setup.sh`



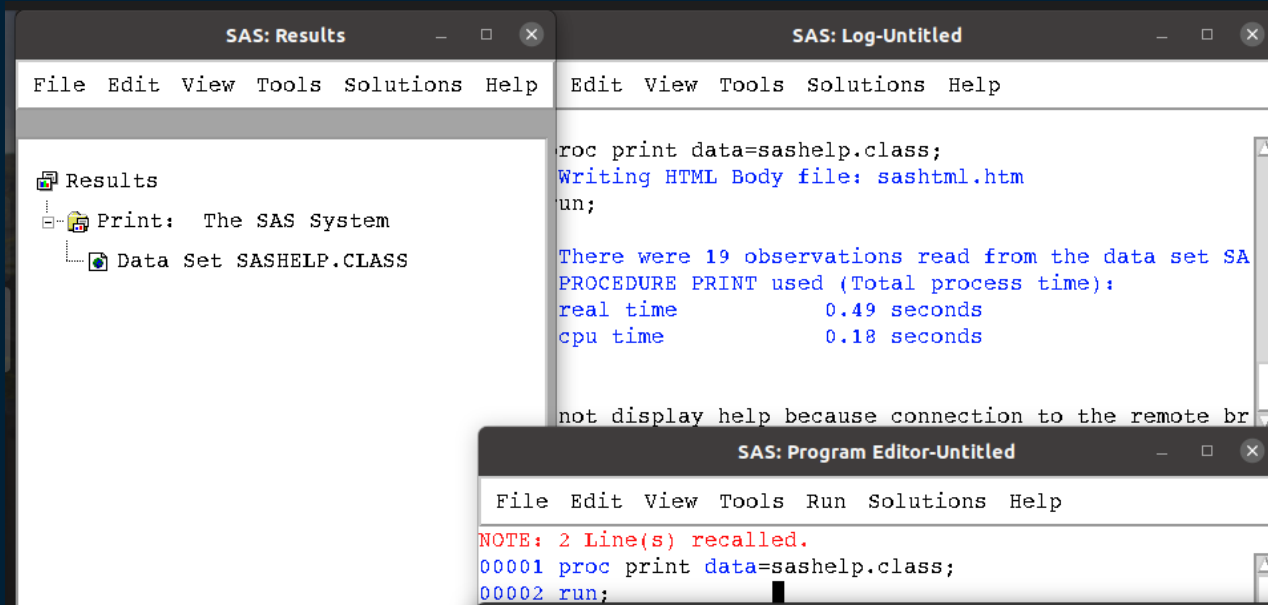
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Configuring SAS Environment

- Step 3: Verify SAS Installation

- `$./sas_u8`

```
sajune@sajune-VirtualBox:/usr/local/SASHome/SASFoundation/9.4/bin$ ./sas_u8
```



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Troubleshooting SAS Environment

- If SAS UI fails to start due to missing libXp.so.6, follow below instructions
- `$ sudo apt-get update`
- `$ wget ftp.us.debian.org/debian/pool/main/libx/libxp/libxp6_1.0.2-2_amd64.deb`
- `$ sudo dpkg -i libxp6_1.0.2-2_amd64.deb`



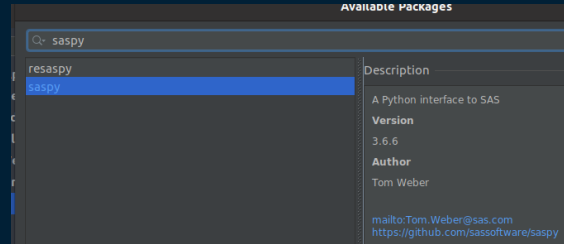
libxp6_1.0.2-2_amd64.deb

- Reference: <https://www.codersgeek.in/2020/05/how-to-install-libxpso6-in-linux.html?m=1>

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Configuring SASPy

- Step 1: Install saspy
- `$ pip install saspy`



- Step 2: configure saspy
 - Make a copy of sascfg.py -> sascfg_personal.py under folder:
`venv/lib/python3.8/site-packages/saspy`
 - Verify config name in sascfg_personal.py
 - Specify saspath



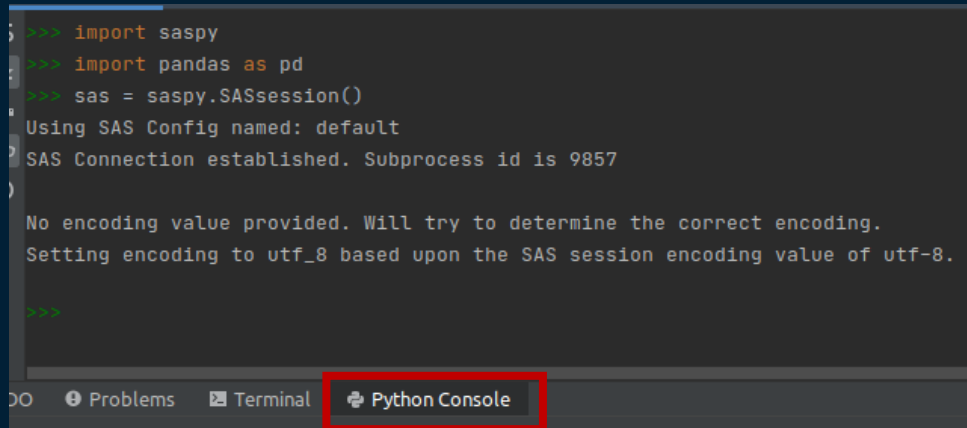
```
91 #
92 default = {'saspath' : '/usr/local/SASHome/SASFoundation/9.4/bin/sas_u8'}
93
```

Reference : <https://sassoftware.github.io/saspy/install.html>

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Configuring SASPy

- Step 3: Verify SAS Connection
 - Select Python Console and execute below commands and verify SAS session initialization



```
>>> import saspy
>>> import pandas as pd
>>> sas = saspy.SASsession()
Using SAS Config named: default
SAS Connection established. Subprocess id is 9857

No encoding value provided. Will try to determine the correct encoding.
Setting encoding to utf_8 based upon the SAS session encoding value of utf-8.

>>>
```

The screenshot shows a Python console window with a dark background. The code entered is: `>>> import saspy`, `>>> import pandas as pd`, and `>>> sas = saspy.SASsession()`. The output shows: `Using SAS Config named: default`, `SAS Connection established. Subprocess id is 9857`, and a message about encoding: `No encoding value provided. Will try to determine the correct encoding. Setting encoding to utf_8 based upon the SAS session encoding value of utf-8.` The console tabs at the bottom are 'Problems', 'Terminal', and 'Python Console', with 'Python Console' highlighted by a red rectangle.

Reference : <https://sassoftware.github.io/saspy/install.html>

Questions

Contact: Sandeep.Juneja@sas.com



sas.com

