

# AWS Lambda with Pandas and NumPy



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AWS Lambda does not include Pandas/NumPy Python libraries by default. How use Pandas and NumPy with Lambda functions?



## Problem statement

There are no default Pandas in AWS Lambda. You can see AWS Lambda execution environment and available libraries here. Let's verify and create AWS Lambda Python 3.6 function with code below:

```
1 import pandas as pd
2
```

```
3 def lambda_handler(event, context):  
4     pass
```

lambda\_function.py hosted with ❤ by GitHub

[view raw](#)

Lambda's response:

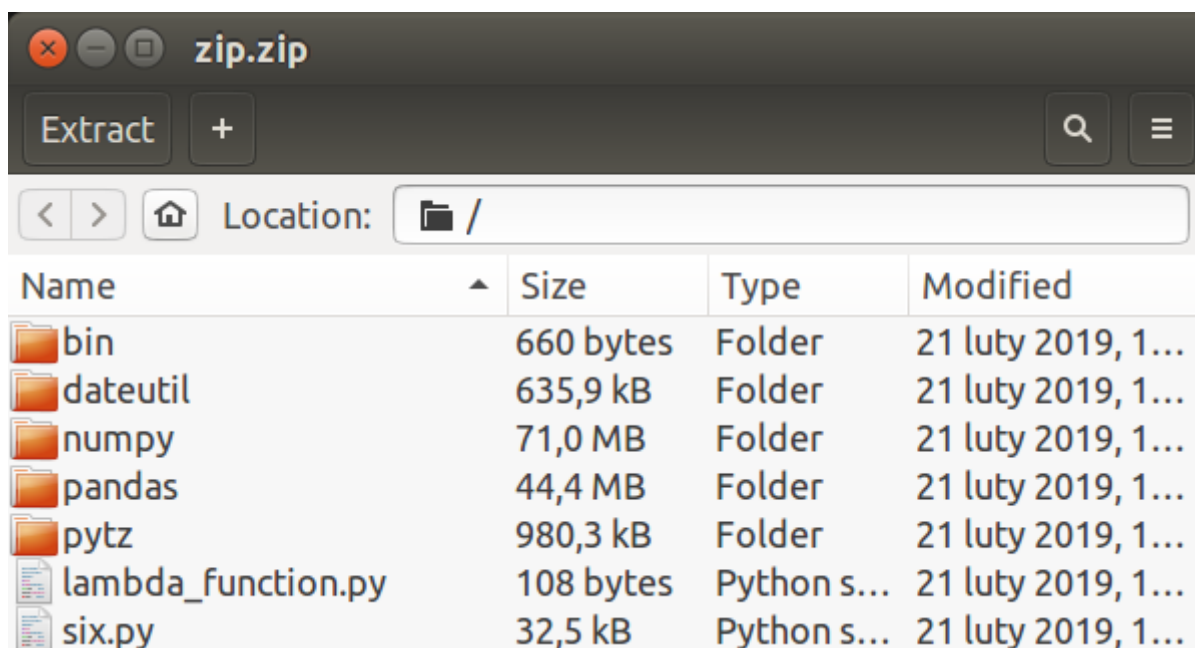
```
Unable to import module 'lambda_function': No module named 'pandas'
```

Create new local directory with `lambda_function.py` file. Install Pandas to local directory with pip:

```
$ pip install -t . pandas
```

Remove `*.dist-info` and `__pycache__`. Prepare `zip.zip` archive with `lambda_function.py` file and Pandas:

```
$ rm -r *.dist-info __pycache__  
$ zip -r zip.zip .
```



zip.zip archive with `lambda_function.py` file and Pandas

Create new lambda function (e.g. medium). Go to Function code section and select Upload a .zip file from Code entry type dropdown. Click Upload button. Upload zip.zip file. Finally click Save button:

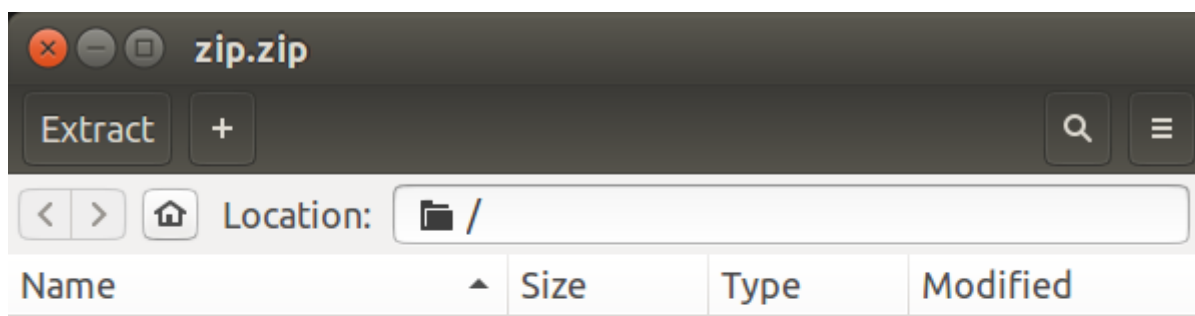
The screenshot shows the AWS Lambda console interface for a function named 'medium'. The 'Function code' section is active, showing the 'Code entry type' dropdown set to 'Upload a .zip file'. The 'Runtime' is set to 'Python 3.6' and the 'Handler' is 'lambda\_function.lambda\_handler'. The 'Function package' section shows an 'Upload' button next to 'zip.zip (33.4 MB)'. The 'Save' button is highlighted in red. The 'Environment variables' section is also visible below.








Upload function package

Let's check new Lambda function response:

```
Unable to import module 'lambda_function': Missing required dependencies ['numpy']
```

What? As you can see below, zip.zip archive include NumPy.



	bin	660 bytes	Folder	21 luty 2019, 1...
	dateutil	635,9 kB	Folder	21 luty 2019, 1...
	numpy	71,0 MB	Folder	21 luty 2019, 1...
	pandas	44,4 MB	Folder	21 luty 2019, 1...
	pytz	980,3 kB	Folder	21 luty 2019, 1...
	lambda_function.py	108 bytes	Python s...	21 luty 2019, 1...
	six.py	32,5 kB	Python s...	21 luty 2019, 1...

zip.zip archive with lambda\_function.py file, Pandas, and Numpy

Standard method does not work. AWS Lambda need special Pandas/NumPy. Let's fix it.

**Note:** Do not forget clean your working environment, first. Remove pandas , numpy , and \*.dist-info directories:

```
$ rm -r pandas numpy *.dist-info
```

## Solution

AWS Lambda use Amazon Linux operating system. Idea is download Pandas and NumPy compatible with Amazon Linux.

Pandas. Navigate to <https://pypi.org/project/pandas/#files>. Search for and download newest \*manylinux1\_x86\_64.whl package. In my case for Python 3.6 is pandas-0.24.1-cp36-cp36m-manylinux1\_x86\_64.whl file.

NumPy. Do the same for NumPy. File is numpy-1.16.1-cp36-cp36m-manylinux1\_x86\_64.whl.

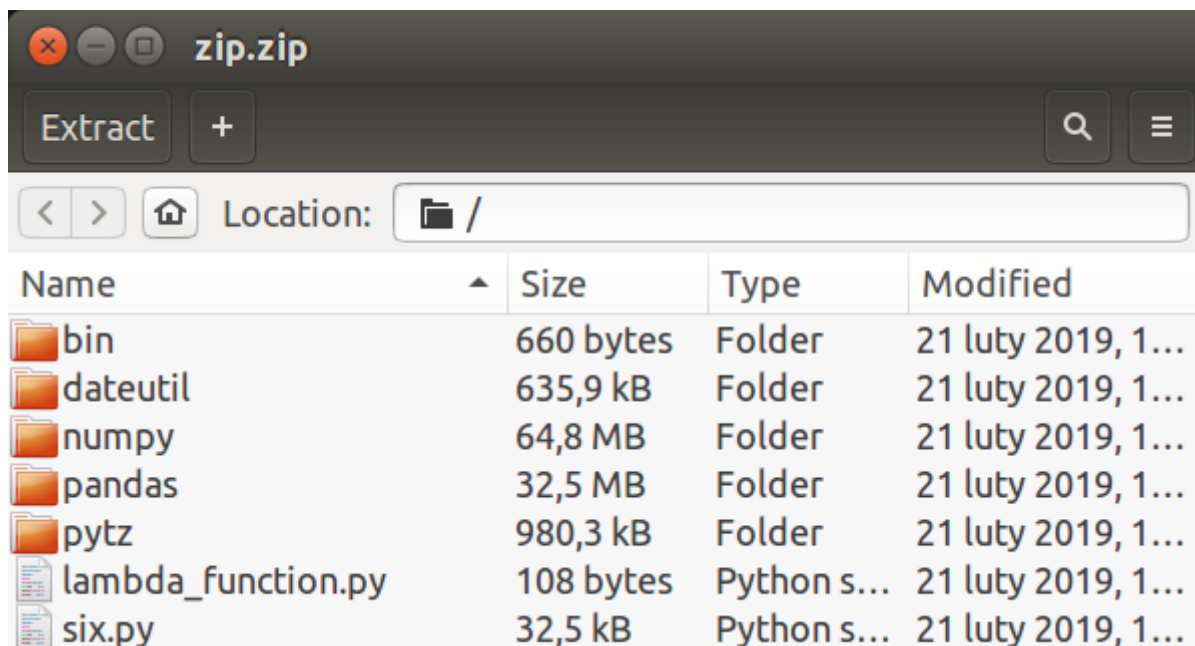
Download whl files to directory with lambda\_function.py . Unzip whl files.

```
$ unzip numpy-1.16.1-cp36-cp36m-manylinux1_x86_64.whl
$ unzip pandas-0.24.1-cp36-cp36m-manylinux1_x86_64.whl
```

**Note:** Lambda with Python 3.7 requires pytz lib: \$ pip install -t . pytz

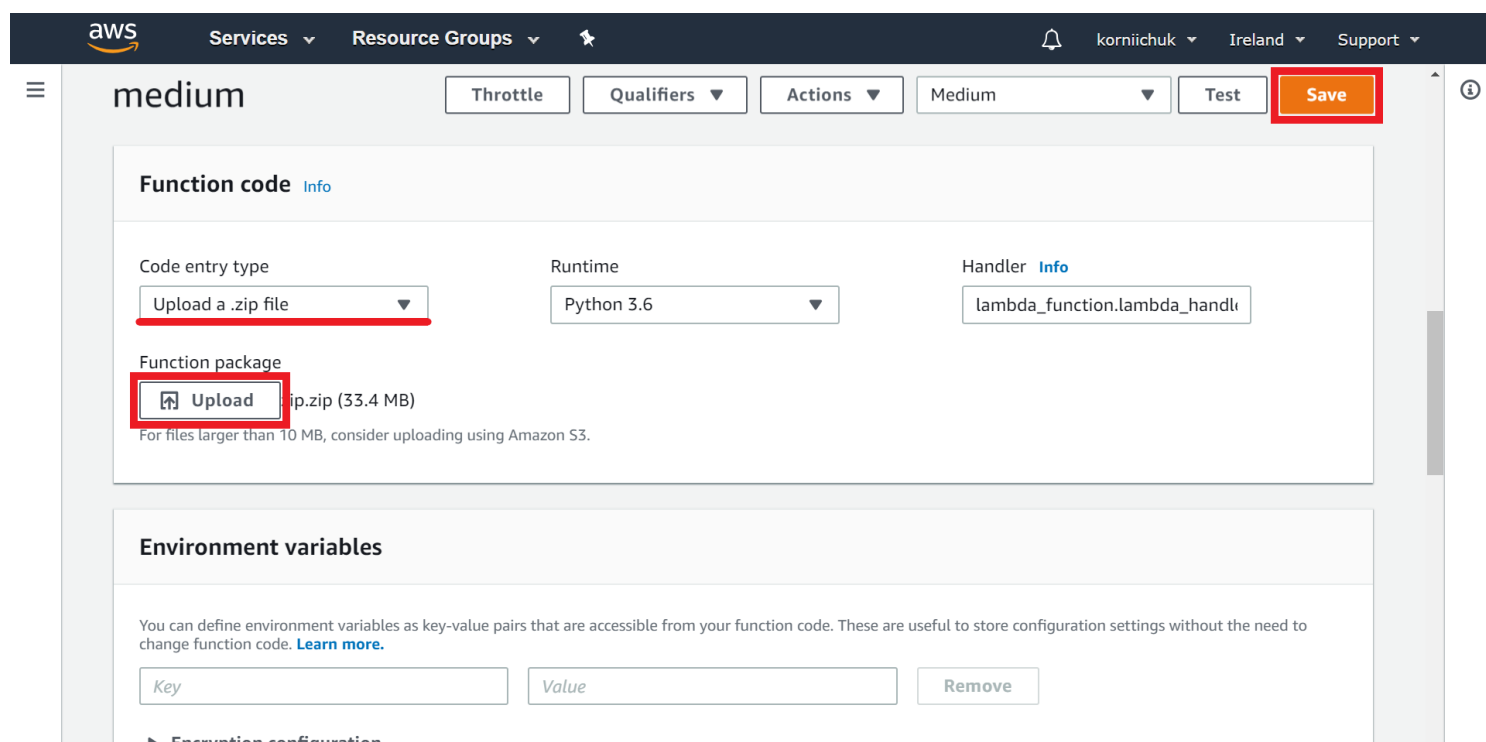
Remove whl files, \*.dist-info , and \_\_pycache\_\_ . Prepare new zip.zip archive:

```
$ rm -r *.whl *.dist-info __pycache__  
$ zip -r zip.zip .
```



zip.zip archive for Amazon Linux with lambda\_function.py file, Pandas, and Numpy

Navigate to lambda function (e.g. medium). Go to Function code section and select Upload a .zip file from Code entry type dropdown. Click Upload button. Upload zip.zip file. Finally click Save button:



Upload function package

Let's check new Lambda function response:

Execution result: succeeded

Congrats!

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