

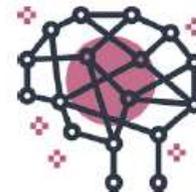
# THE ROLE OF LIBRARY VERSIONS IN DEVELOPER-CHATGPT CONVERSATIONS



Rachna Raj



Dr. Diego Costa



# Developer seeking help from ChatGPT



**R You**  
Hi ChatGPT,

I am new to plotting graphs. I want to create a list of evenly spaced number over a range and plot the sine of each number. Please help me write a python code in 4 lines for that with comments to help me understand.

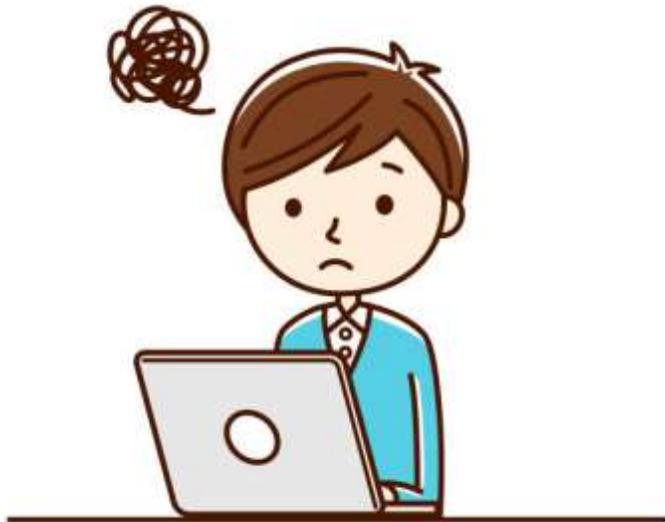
python

Copy code

```
import numpy as np # Import numpy library for numerical operations
import matplotlib.pyplot as plt # Import matplotlib library for plotting

x = np.linspace(0, 20, 100) # Create an array of 100 evenly spaced numbers from 0 to 20
plt.plot(x, np.sin(x)) # Plot the sine of each number
plt.show() # Display the plot
```

# Developer seeking help from ChatGPT



Suggested code is **incompatible** to my local environment setup!

✖ Runtime Error (NZEC) ⓘ

🕒 Execution Time: 0.09 sec

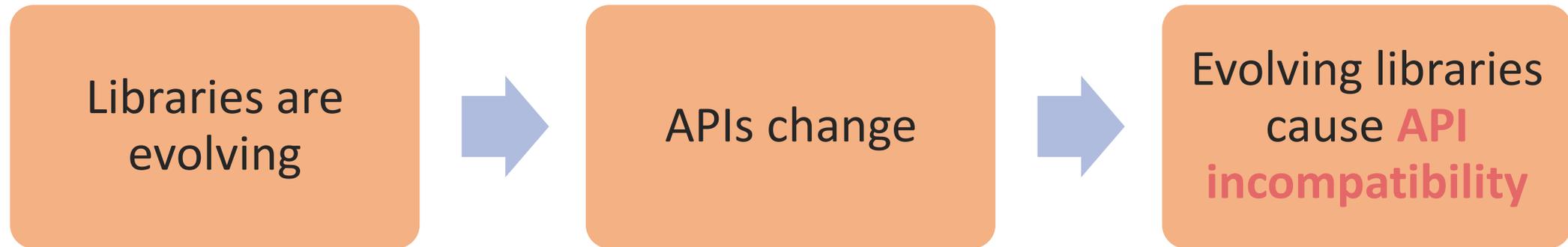
Traceback (most recent call last):

File "code.py2", line 1, in

```
import numpy as np # Import numpy library for numerical operations
```

ImportError: No module named numpy

# Why worry about library versions ?



# Why worry about library versions ?

Libraries are **evolving** → APIs change → Evolving libraries cause **API incompatibility**

**We deal with API incompatibility by specifying library versions.**

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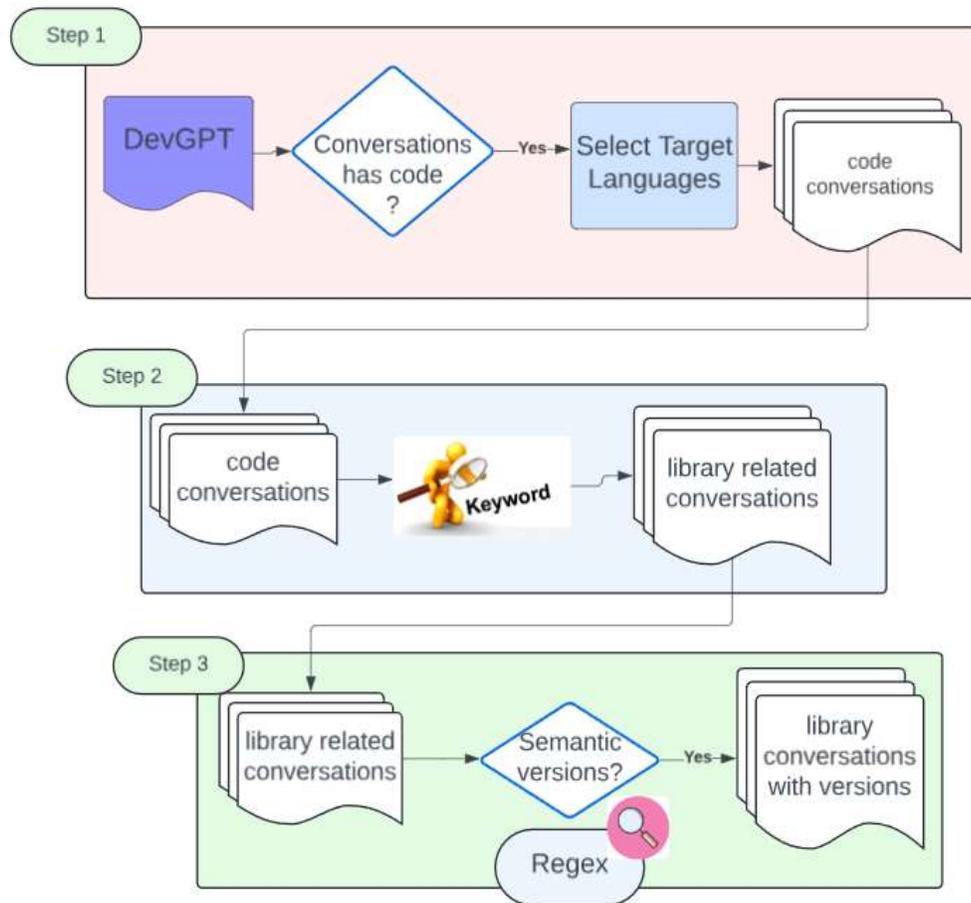
# Objective of our study

An empirical study analyzing **code-related conversations** to examine the **role of library versions**

How **often** are library versions discussed in library-related conversations ?

What is the **role** of library versions in library-related conversations ?

# Finding library related conversations



## ChatGPT

Certainly! Since you're working on Compute Canada and might not have access to the latest versions of Python packages via `pip`, you can install specific versions of the libraries you need. Here are the correct commands to install the libraries you mentioned:

```

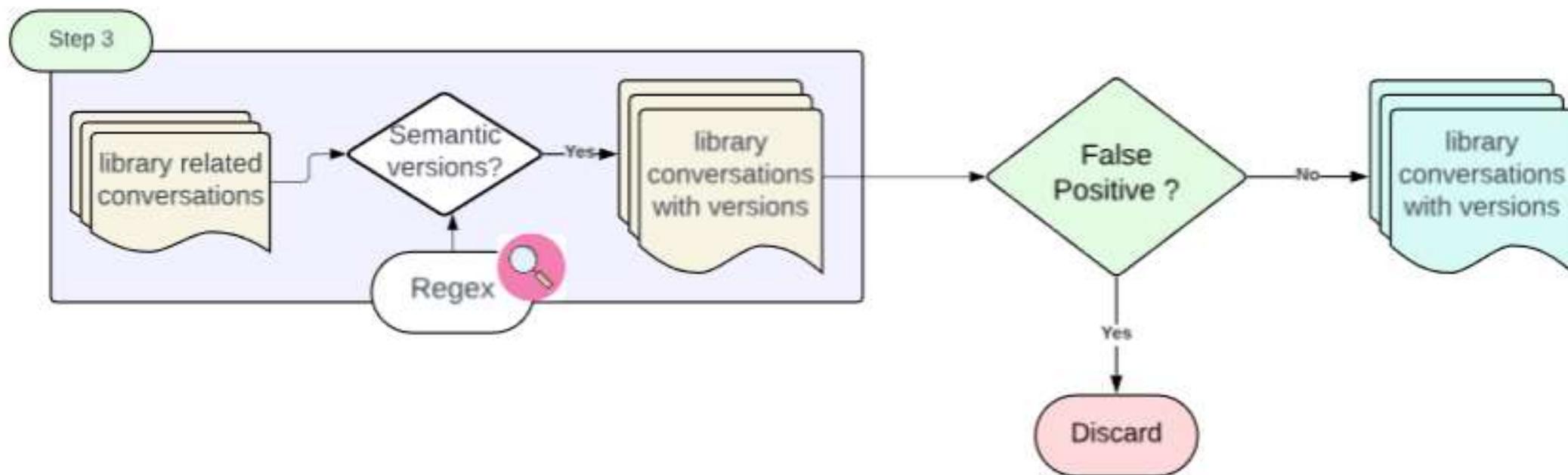
bash
Copy code

pip3 install -q -U bitsandbytes==0.42.0
pip3 install -q -U peft==0.8.2
pip3 install -q -U trl==0.7.10
pip3 install -q -U accelerate==0.27.1
pip3 install -q -U datasets==2.17.0
pip3 install -q -U transformers==4.38.1
pip3 install -q -U numpy
pip3 install -q -U fire
pip3 install -q -U nltk
  
```

These commands will install the specified versions of each library. Replace `pip3` with `pip` if `pip` is the alias for Python 3's `pip` on your system.

## Library conversations with versions

# How often are library versions discussed in library-related conversations?



# How often are library versions discussed in library-related conversations?

47 out of 486 (9.67%) conversations have mentions of library versions.



ChatGPT

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pip3 install -q -U trl==0.7.10  
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# How often are library versions discussed in library-related conversations?

47 out of 486 (9.67%) conversations have mentions of library versions.

Only a minority of library-related conversations mentions library versions.



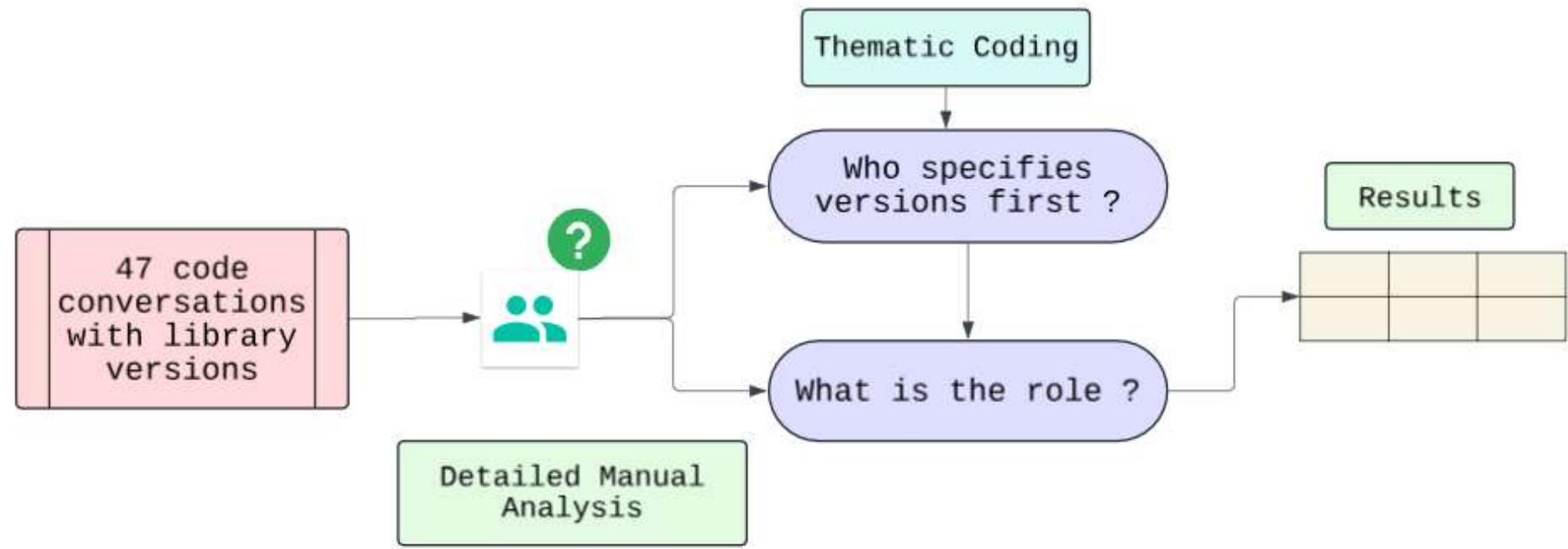
ChatGPT

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pip3 install -q -U nltk
```

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# What is the role of library versions in library-related conversations



# Who specifies the version first?



For **8** conversations, Chat-GPT reacts proactively suggesting code/solution with specific library version.

Your package.json should then look like this:

```
json Copy code
{
  "name": "banzuke-surfing-game",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "jest"
  },
  "keywords": [],
  "author": "",
  "license": "ISC",
  "devDependencies": {
    "jest": "^27.0.6"
  }
}
```

# Who specifies the version first?

**R** You

Please help me write a code to plot a graph. I want to create a list of evenly placed numbers and plot sine graph for that. Code should not be more than 4 lines. My local python version is 2.8. I read that only specific version of matplotlib is compatible with python2. Please suggest a code that does not run into error due to version incompatibility.



**39** out of 47, user provides details about library versions to ChatGPT.

# Who specifies the version first?



Your package.json should then look like this:

```
json Copy code
{
  "name": "banzuke-surfing-game",
  "version": "1.0.0",
  "main": "index.js",
  "scripts": {
  },
  "keywords": [],
  "author": "",
  "license": "ISC",
  "devDependencies": {
    "jest": "^27.0.6"
  }
}
```

In most cases, the user specifies the library version first to solve code-related issues.

For 8 conversations, Chat-GPT repeatedly proactively suggesting code/solution with specific library version.

# What was the **role** ?

## Configuration Setup

In **13** instances,  
Developer shares  
the whole  
package. Json file



### ChatGPT

Thank you for sharing the `package.json` file. This provides valuable insights into your tech stack and the packages you're currently using. Here are some considerations for refactoring:

I apologize for the confusion. The correct package for solid-js web platform should be `@solid-js/web`, but as of my training cutoff in September 2021, such package doesn't exist.

To use SolidJS for building user interfaces, we only need `solid-js`. Also, we will need `vite-plugin-solid` for bundling with Vite. Let's install the correct packages.

Here's the corrected installation command:

```
bash
```

[Copy code](#)

```
npm install --save express solid-js@latest vite vite-plugin-solid
```

# What was the **role** ?

## Troubleshooting incompatibility issues

**10** out of 47  
examples where  
Developer  
seeking help to  
fix dependency  
conflict problems



You

```
5.011 npm ERR! Could not resolve dependency:
5.011 npm ERR! peer react@"<18.0.0" from @testing-library/react@12.1.5
5.012 npm ERR! node_modules/@testing-library/react
5.012 npm ERR! @testing-library/react@"^12.1.0" from the root project
5.012 npm ERR!
5.012 npm ERR! Fix the upstream dependency conflict, or retry
5.012 npm ERR! this command with --force or --legacy-peer-deps
5.012 npm ERR! to accept an incorrect (and potentially broken) dependency resolution.
-----
```

# What was the **role** ?

Troubleshooting incompatibility issues

Users send their configuration files in the hopes that they receive tailored responses.

10 out of 47 examples where Developer

Users hope that ChatGPT can help them fix their incompatibility issues.

5.011 npm ERR! Could not resolve dependency:  
5.011 npm ERR! peer react@"^18.0.0" from @testing-library/react@12.1.5  
5.012 npm ERR! node\_modules/@testing-library/react  
5.012 npm ERR! @testing-library/react@"^12.1.0" from the root project  
5.012 npm ERR!  
5.012 npm ERR! Unmet peer dependency: react@>=16.14.0  
5.012 npm ERR! This command will force a legacy peer dep  
5.012 npm ERR! to accept an incorrect (and potentially broken) dependency resolution.

# Conclusion

Library version is **rarely** part of ChatGPT and developer conversation.

When library used is mentioned, it often brought up by users trying to:

- Get **compatible responses**
- Troubleshooting **incompatibility errors**

## Future research:

- How good is ChatGPT at understanding API versions?

# How often are library versions discussed in library-related conversations?

47 out of 486 (9.67%) conversations have mentions of library versions.

**ChatGPT**  
 Certainly! Since you're working on Compute Canada and might not have access to the latest versions of Python packages via 'pip', you can install specific versions of the libraries you need. Here are the correct commands to install the libraries you mentioned:

```
pip3 install -q -i https://byte01-040-0
pip3 install -q -i pip3-0.8.0
pip3 install -q -i v1-0.7.00
pip3 install -q -i wordlecode-0.01.1
pip3 install -q -i detransform-0.17.0
pip3 install -q -i transformers-4.30.1
pip3 install -q -i numpy
pip3 install -q -i Elix
pip3 install -q -i etix
```

These commands will install the specified versions of each library. Replace 'pip3' with 'pip' if 'pip' is the alias for Python 3's 'pip' on your system.

# THANK YOU

# Who specifies the version first?

**R** You  
 Please help me write a code to plot a graph. I want to create a list of evenly placed numbers and plot sine graph for that. Code should not be more than 4 lines. My local python version is 2.8. I read that only specific version of matplotlib is compatible with python2. Please suggest a code that does not run into error due to version incompatibility.



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## Configuration Setup

In 13 instances, Developer shares the whole package. Json file

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 Thank you for sharing the package.json file. This provides valuable insights into your tech stack and the packages you're currently using. Here are some considerations for refactoring:

I apologize for the confusion. The correct package for solid-js web platform should be '@solid-js/web', but as of my training cutoff in September 2021, such package doesn't exist.

To use SolidJS for building user interfaces, we only need '@solid-js'. Also, we will need 'vite-plugin-solid' for bundling with Vite. Let's install the correct packages.

Here's the corrected installation command:

```
npm install --save express solid-js@latest vite vite-plugin-solid
```

# What was the role ?

## Troubleshooting incompatibility issues

10 out of 47 examples where Developer seeking help to fix dependency conflict problems

**R** You  
 5.011 npm ERR! Could not resolve dependency:  
 5.011 npm ERR! peer react@"<18.0.0" from @testing-library/react@12.1.5  
 5.012 npm ERR! node\_modules/@testing-library/react  
 5.012 npm ERR! @testing-library/react@"12.1.0" from the root project  
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# What was the **role** ?

## Pinning Dependencies

**8** samples where developer passes library versions as a parameter.

### Anonymous

I need some place on the page to render the contents of localStorage on every page load. After I get this working I will want to add to my unit tests to ensure that this will always happen.

index.html

```
<!DOCTYPE html>
<html>
<head>
  <title>Banzuke Surfing Game</title>
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
  <!-- Link to the external CSS file -->
```

### ChatGPT

To fix this error, you need to pass in a configuration object with a valid url to the JSDOM constructor. The url doesn't have to point to an actual server, but it should be formatted like a valid URL.

Update your JSDOM instantiation to include a url, like so:

game.test.js

javascript

 Copy code

```
const jsdom = require('jsdom');
const { JSDOM } = jsdom;
```

# Sample Example 1.

**R** You

Please help me write a code to plot a graph. I want to create a list of evenly placed numbers and plot sine graph for that. Code should not be more than 4 lines. My local python version is 2.8. I read that only specific version of matplotlib is compatible with python2. Please suggest a code that does not run into error due to version incompatibility.



**ChatGPT**

Certainly! Here's a concise code snippet that accomplishes what you're looking for:

```
python Copy code  
  
import matplotlib.pyplot as plt  
import numpy as np  
  
plt.plot(np.linspace(0, 10, 100), np.sin(np.linspace(0, 10, 100))); plt.show()
```