

AI-school

Data Science - Big Data Analytics






# Presentación Programa



1. **Primeros Pasos**
2. **Instalación de software**
3. **GIT**
6. **Lenguajes de programación**
7. **R language**
8. **Python**



# Primeros pasos: Equipos

					
Model	Apple 15" MacBook Pro	ASUS ROG Strix GL553VE	Lenovo Yoga 730	HP ZBook F1M37UT#ABA 15.6-Inch Laptop	Acer Aspire VX 15 Gaming Laptop
BLW's Score	95	90	87	85	83
MSRP	from \$2,049.99	from \$1,699.85	from \$655.16	\$499.99	\$1,899.95
More Information	<a href="#">VIEW ON AMAZON</a>	<a href="#">VIEW ON AMAZON</a>	<a href="#">VIEW ON AMAZON</a>	<a href="#">VIEW ON AMAZON</a>	<a href="#">VIEW ON AMAZON</a>
Processor	Intel i7 2.2 GHz (4.1 GHz Turbo Boost)	Intel Core i7-7700U 2.8 GHz	Intel Core i7-8250U	Intel Core i7 4th Gen 4810MQ 2.8 GHz	Intel Core i7-7700HQ 3.8 GHz
RAM	16GB DDR3	16GB DDR4	8GB DDR4	16GB DDR3	16GB DDR4
Hard Disk	512GB SSD	256GB SSD + 1TB HDD	256GB SSD	256GB SSD	256GB SSD
Display	15" Retina Display (2880 x 1800)	15.6" FHD (1920 x 1080)	15.6 FHD IPS (1920x1080)	15.6" FHD (1920 x 1080)	15.6" Full HD (1920 x 1080)
Graphics	Radeon Pro 560X	NVIDIA GeForce GTX 1050TI	Intel UHD Graphics 620	NVIDIA Quadro K2100M	NVIDIA GeForce GTX 1050 Ti
OS	MacOS	Windows 10	Windows 10	Windows 8	Windows 10
Weight	4.02 pounds	5.5 pounds	2.65 pounds	9.95 pounds	5.5 pounds
Battery Life	10 hours	5 hours	8 hours	6 hours	6 hours



# Primeros pasos

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# Primeros pasos



open source  
hardware



open source





# Primeros pasos



The Apache Software  
Foundation



Joomla!  
...because open source matters



WORDPRESS



open source  
initiative



ANDROID



ubuntu





# Primeros pasos



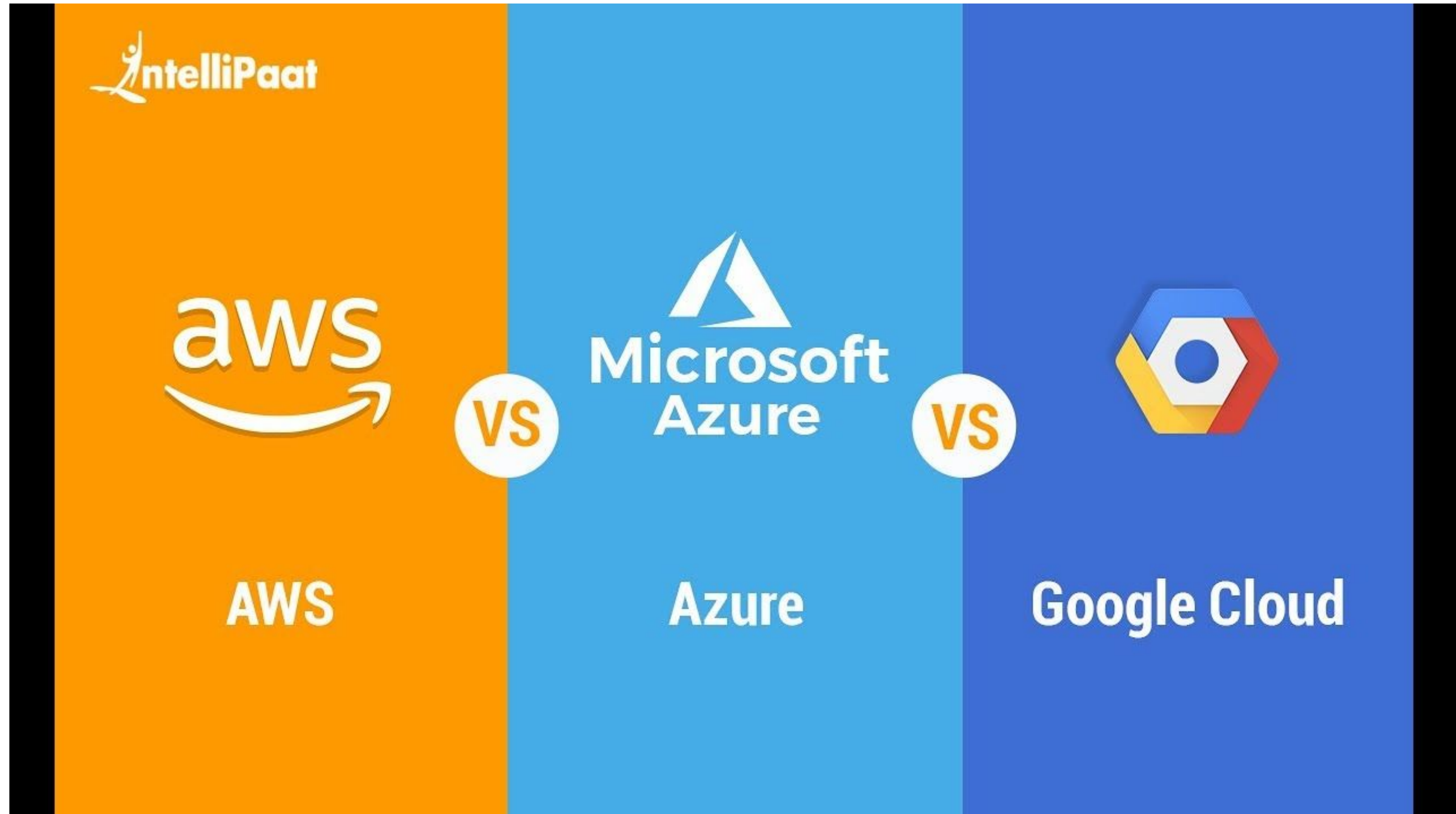


# Primeros pasos



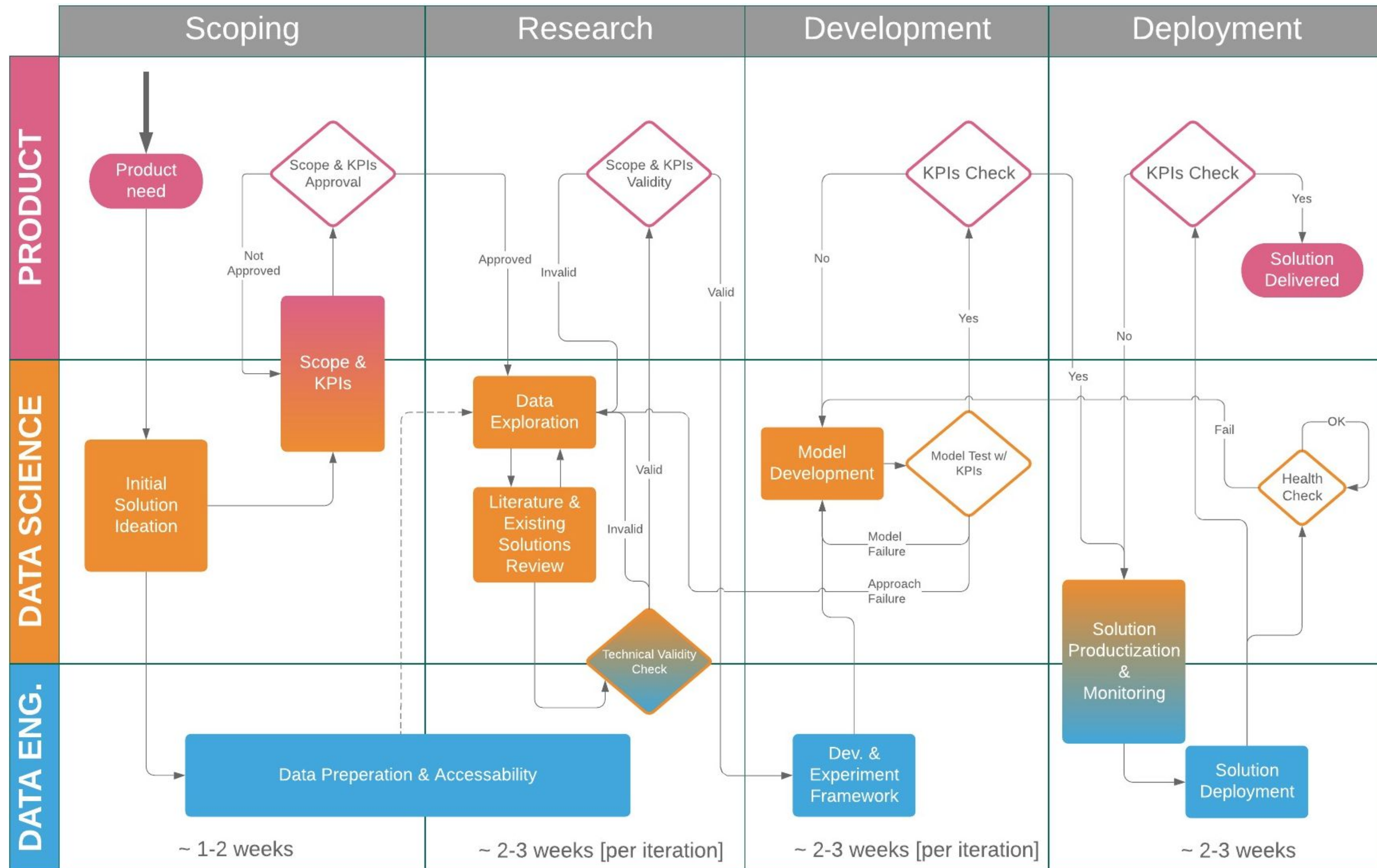


# Primeros pasos



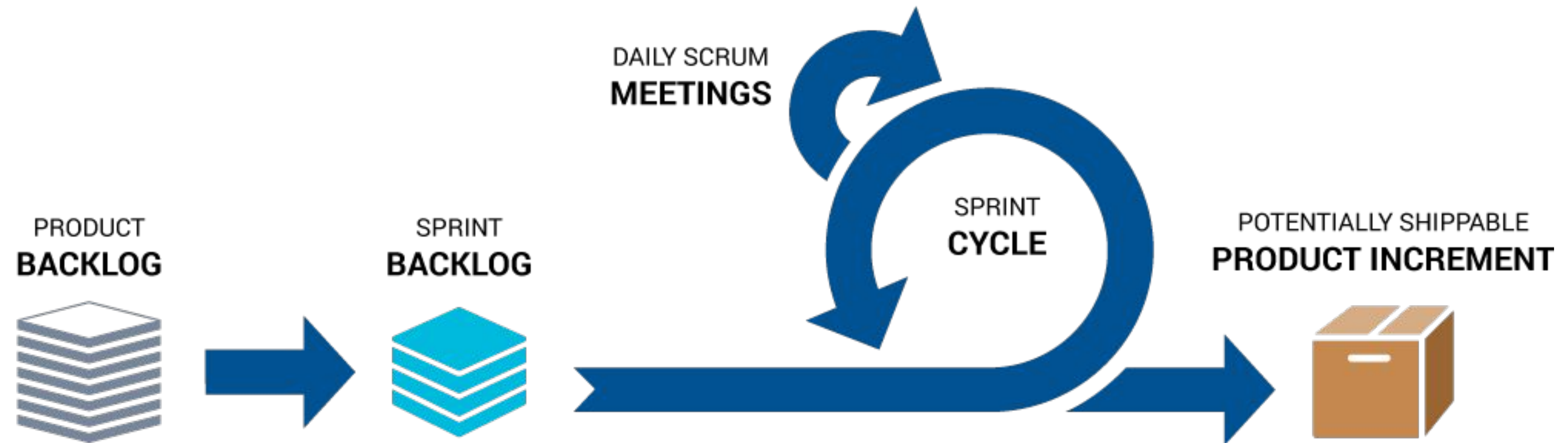


# Primeros pasos





# Primeros pasos





# Primeros pasos

## flat backlog

sprint 1

sprint 2

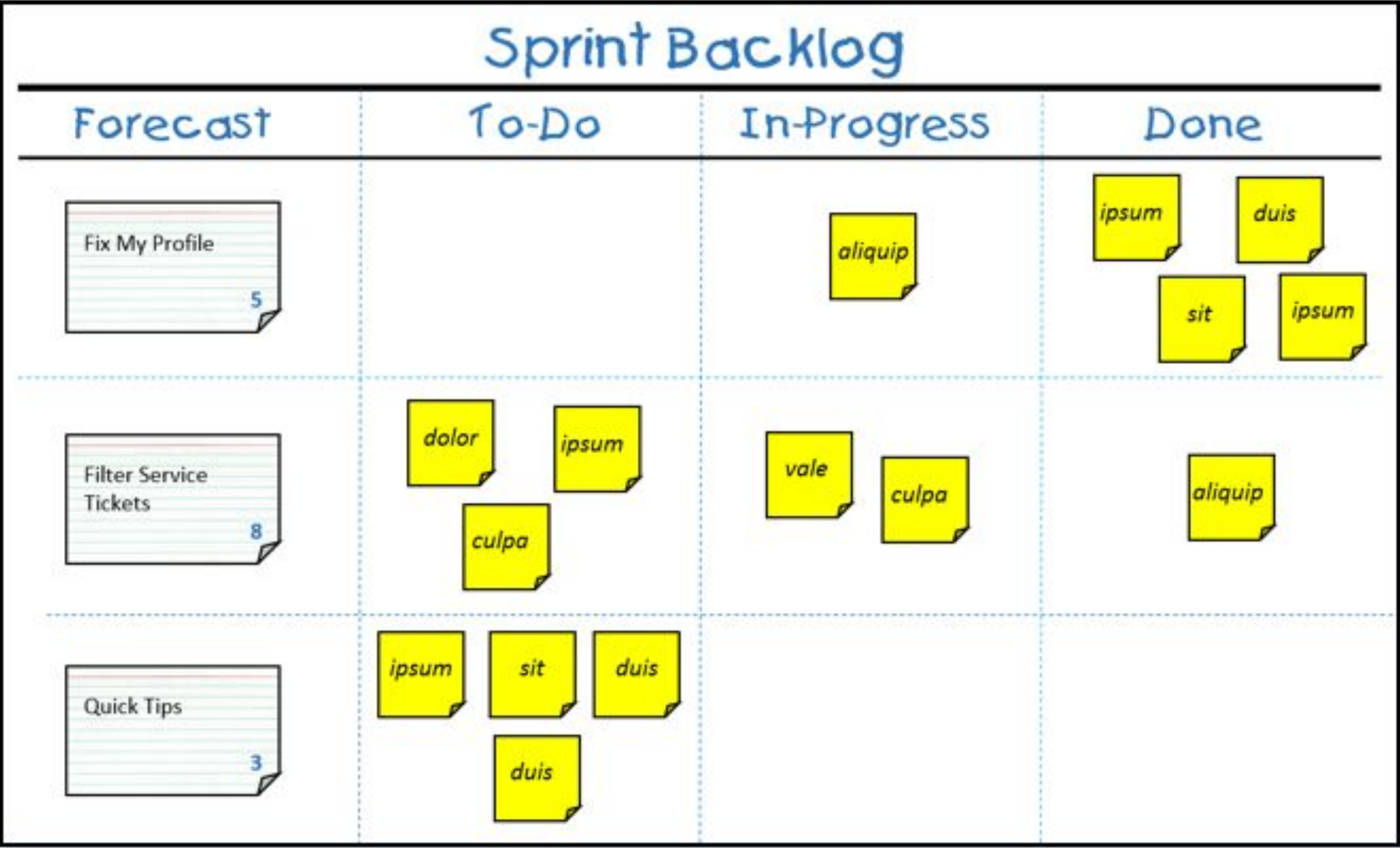
## story map

version 1.0

version 2.0



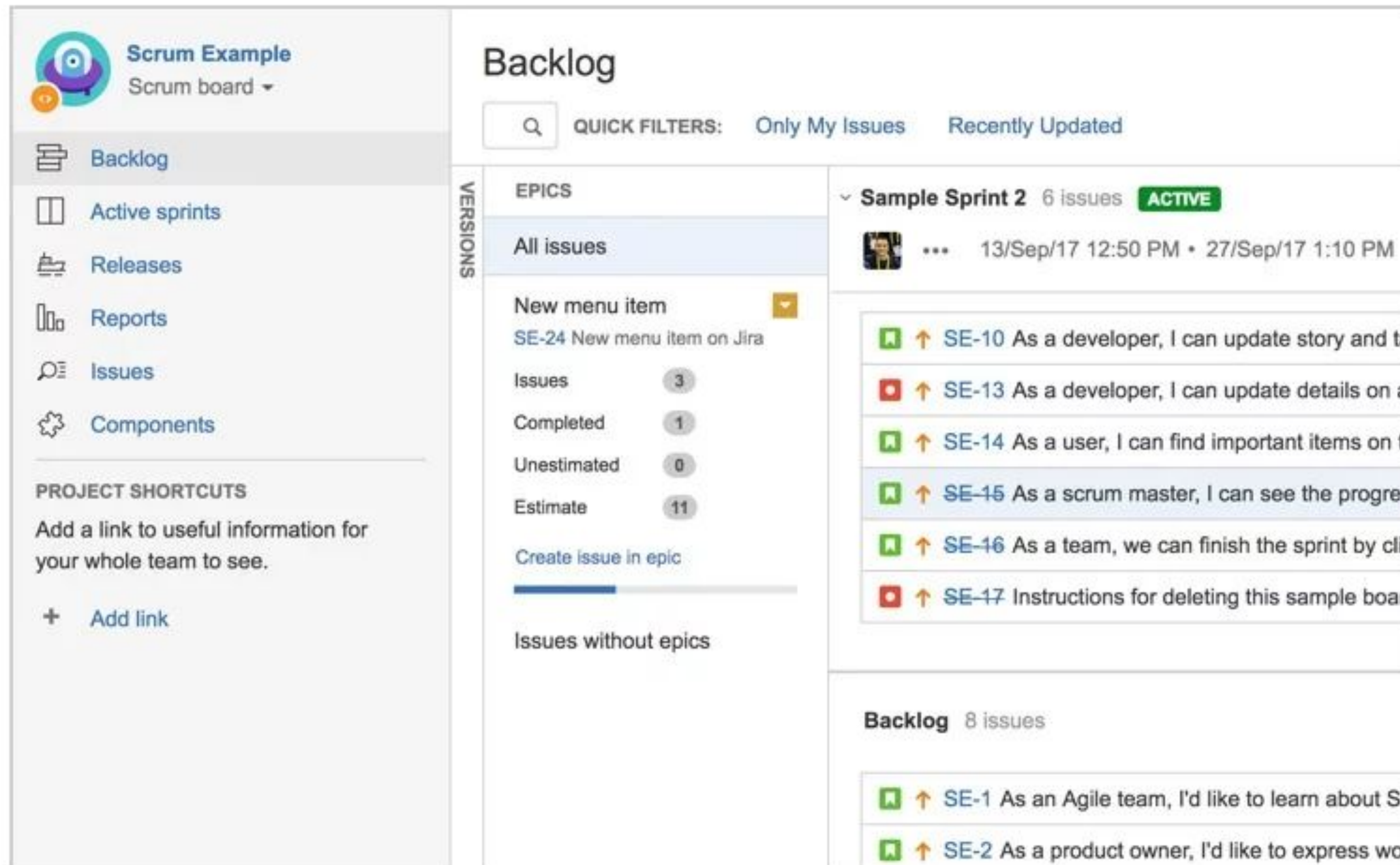
# Primeros pasos





# Primeros pasos

## Scrum



The screenshot shows the Jira Scrum board interface for a project named "Scrum Example". The left sidebar contains navigation links: Backlog, Active sprints, Releases, Reports, Issues, and Components. Below these are project shortcuts. The main area is titled "Backlog" and includes a search bar and quick filters for "Only My Issues" and "Recently Updated". The "Sample Sprint 2" is active, showing a list of issues with their status, priority, and due date. The bottom section shows the "Backlog" with 8 issues.

**Scrum Example**  
Scrum board

Backlog

Active sprints

Releases

Reports

Issues

Components

PROJECT SHORTCUTS

Add a link to useful information for your whole team to see.

+ Add link

Backlog

QUICK FILTERS: Only My Issues Recently Updated

EPICS

All issues

New menu item

SE-24 New menu item on Jira

Issues 3

Completed 1

Unestimated 0

Estimate 11

Create issue in epic

Issues without epics

Sample Sprint 2 6 issues ACTIVE

13/Sep/17 12:50 PM • 27/Sep/17 1:10 PM

SE-10 As a developer, I can update story and ta

SE-13 As a developer, I can update details on a

SE-14 As a user, I can find important items on t

SE-15 As a scrum master, I can see the progres

SE-16 As a team, we can finish the sprint by cli

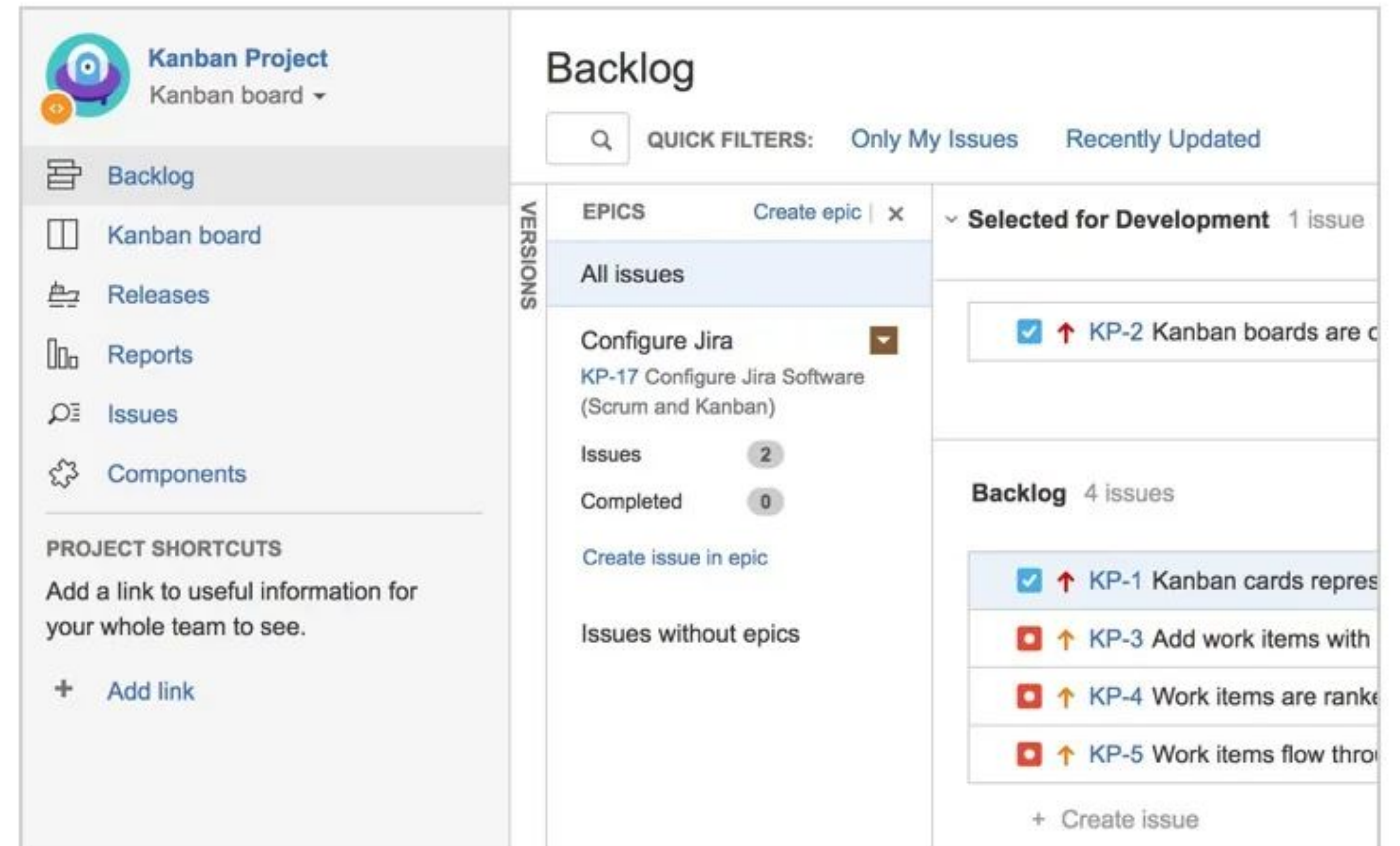
SE-17 Instructions for deleting this sample boar

Backlog 8 issues

SE-1 As an Agile team, I'd like to learn about Sc

SE-2 As a product owner, I'd like to express wo

## Kanban



The screenshot shows the Jira Kanban board interface for a project named "Kanban Project". The left sidebar contains navigation links: Backlog, Kanban board, Releases, Reports, Issues, and Components. Below these are project shortcuts. The main area is titled "Backlog" and includes a search bar and quick filters for "Only My Issues" and "Recently Updated". The "Selected for Development" section shows a list of issues with their status, priority, and due date. The bottom section shows the "Backlog" with 4 issues.

**Kanban Project**  
Kanban board

Backlog

Kanban board

Releases

Reports

Issues

Components

PROJECT SHORTCUTS

Add a link to useful information for your whole team to see.

+ Add link

Backlog

QUICK FILTERS: Only My Issues Recently Updated

EPICS

Create epic

All issues

Configure Jira

KP-17 Configure Jira Software (Scrum and Kanban)

Issues 2

Completed 0

Create issue in epic

Issues without epics

Selected for Development 1 issue

KP-2 Kanban boards are c

Backlog 4 issues

KP-1 Kanban cards repres

KP-3 Add work items with

KP-4 Work items are ranke

KP-5 Work items flow thro

+ Create issue



# Instalación software



 ANACONDA NAVIGATOR

[Sign in to Anaconda Cloud](#)

 Home

 Environments

 Projects (beta)

 Learning

 Community

[Documentation](#)

[Developer Blog](#)

[Feedback](#)



Applications on

root

[Channels](#)

[Refresh](#)



jupyter  
notebook

5.0.0

Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.

[Launch](#)



qtconsole

4.3.0

PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.

[Launch](#)

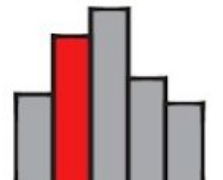


spyder

3.1.4

Scientific PYTHON Development EnviRonment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features

[Launch](#)



glueviz

0.10.4

Multidimensional data visualization across files. Explore relationships within and among related datasets.

[Install](#)



orange3

3.4.1

Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with a large toolbox.

[Install](#)



rstudio

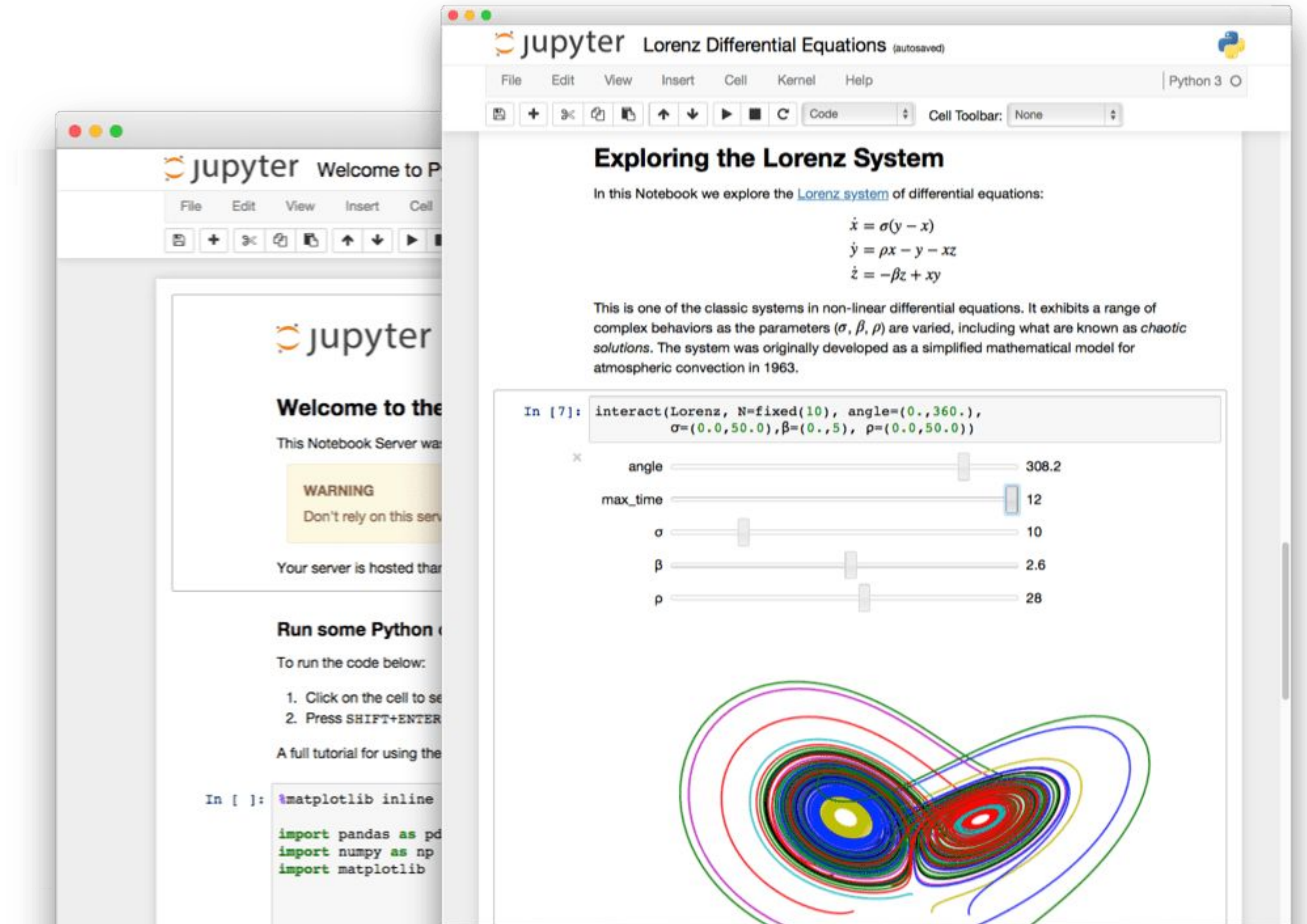
1.0.136

A set of integrated tools designed to help you be more productive with R. Includes R essentials and notebooks.

[Install](#)



# Instalación software





# Instalación software







# Instalación software





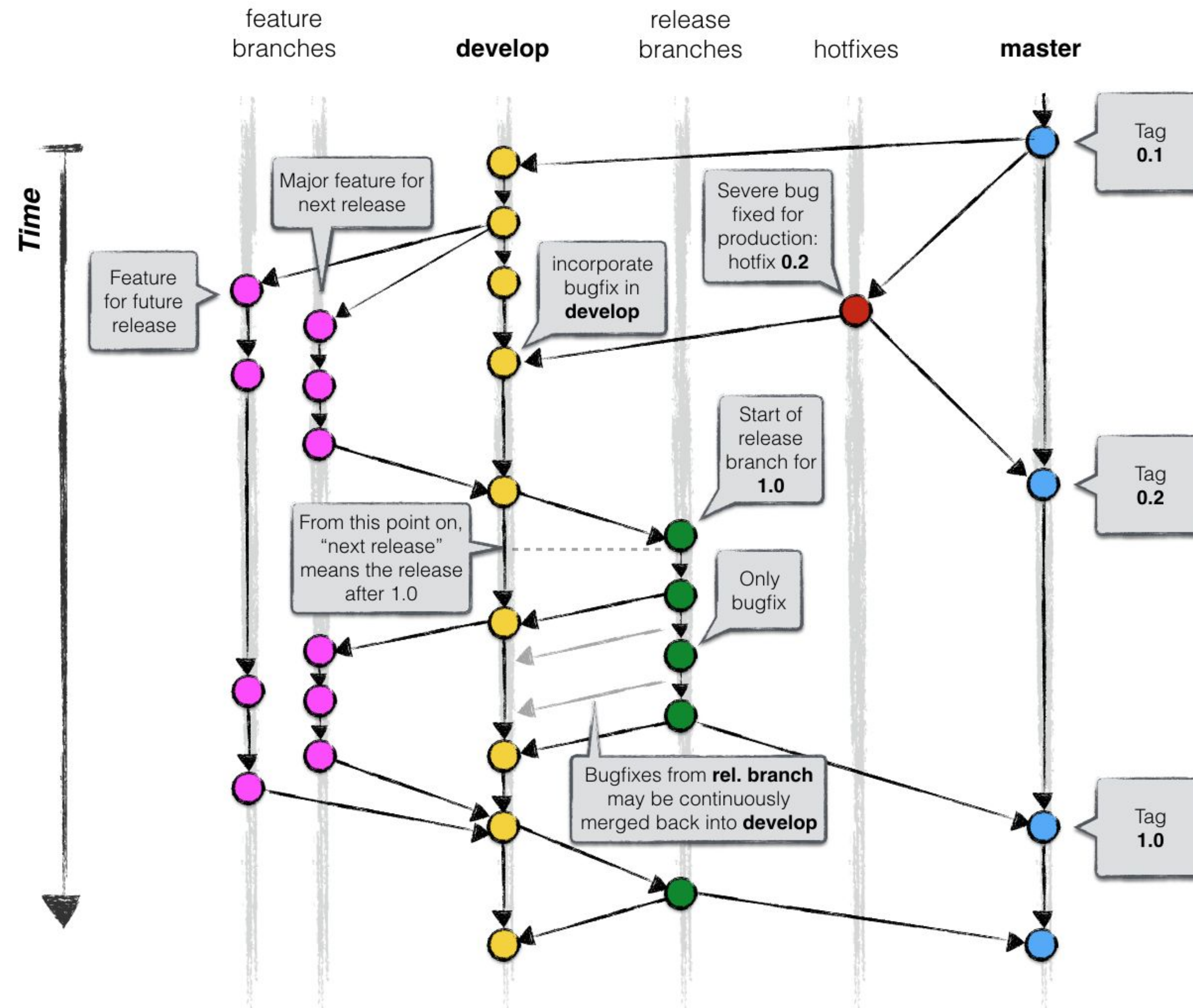
# Instalación software

## Comparing GitLab Terminology

 <b>Bitbucket</b>	<b>GitHub</b>	 <b>GitLab</b>	So, what does it mean?
Pull Request	Pull Request	Merge Request	In GitLab a request to merge a feature branch into the official master is called a Merge Request.
Snippet	Gist	Snippet	Share snippets of code. Can be public, internal or private.
Repository	Repository	Project	In GitLab a Project is a container including the Git repository, discussions, attachments, project-specific settings, etc.
Teams	Organizations	Groups	In GitLab, you add projects to groups to allow for group-level management. Users can be added to groups and can manage group-wide notifications.



# GIT



<https://rogerdudler.github.io/git-guide/index.es.html>



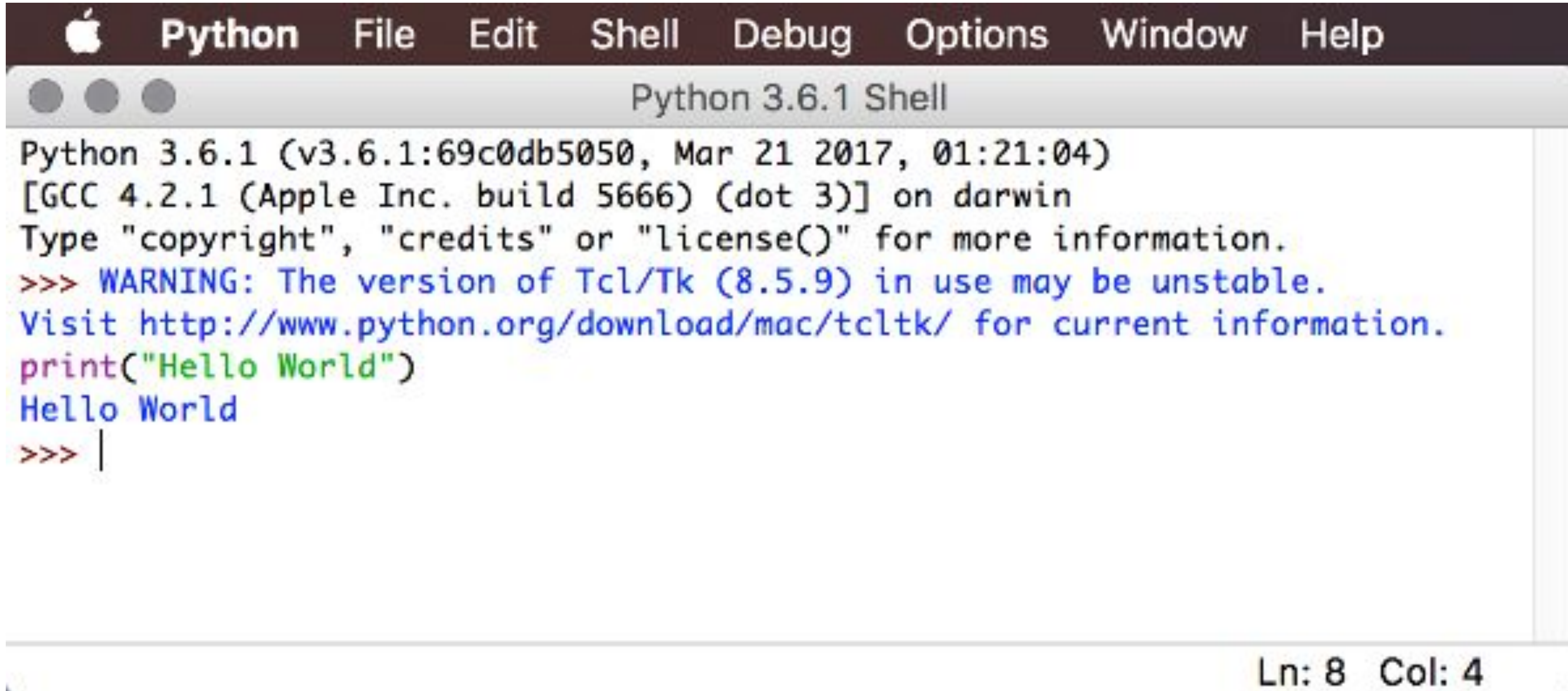
# GIT

## simple daily git workflow





# from 'Hello World'...

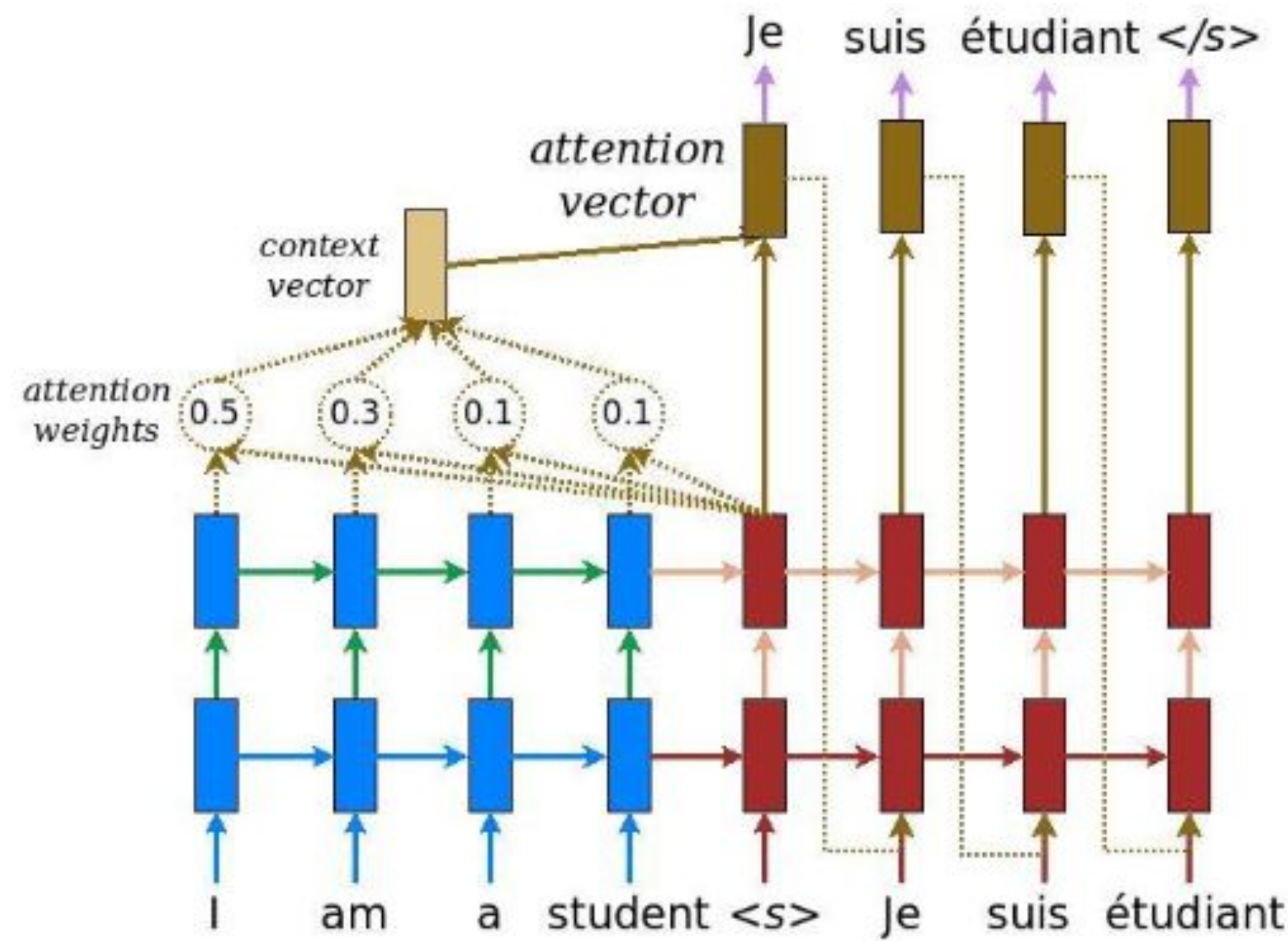
A screenshot of a Python 3.6.1 Shell window on a Mac. The window has a dark title bar with an Apple logo and menu items: Python, File, Edit, Shell, Debug, Options, Window, Help. Below the title bar is a light gray bar with window control buttons and the text 'Python 3.6.1 Shell'. The main area is a text editor showing the output of a Python script. The text is as follows:

```
Python 3.6.1 (v3.6.1:69c0db5050, Mar 21 2017, 01:21:04)
[GCC 4.2.1 (Apple Inc. build 5666) (dot 3)] on darwin
Type "copyright", "credits" or "license()" for more information.
>>> WARNING: The version of Tcl/Tk (8.5.9) in use may be unstable.
Visit http://www.python.org/download/mac/tcltk/ for current information.
print("Hello World")
Hello World
>>> |
```

At the bottom right of the window, the status bar shows 'Ln: 8 Col: 4'.



# ... to Artificial Intelligence



The input is put through an encoder model which gives us the encoder output of shape  $(batch\_size, hidden\_size)$ .

Here are the equations that are implemented:

$$\alpha_{ts} = \frac{\exp(\text{score}(\mathbf{h}_t, \bar{\mathbf{h}}_s))}{\sum_{s'=1}^S \exp(\text{score}(\mathbf{h}_t, \bar{\mathbf{h}}_{s'}))} \quad \text{[Attention weights]}$$

$$\mathbf{c}_t = \sum_s \alpha_{ts} \bar{\mathbf{h}}_s \quad \text{[Context vector]}$$

$$\mathbf{a}_t = f(\mathbf{c}_t, \mathbf{h}_t) = \tanh(\mathbf{W}_c[\mathbf{c}_t; \mathbf{h}_t]) \quad \text{[Attention vector]}$$

$$\text{score}(\mathbf{h}_t, \bar{\mathbf{h}}_s) = \begin{cases} \mathbf{h}_t^\top \mathbf{W} \bar{\mathbf{h}}_s & \text{[Luong's multiplicative style]} \\ \mathbf{v}_a^\top \tanh(\mathbf{W}_1 \mathbf{h}_t + \mathbf{W}_2 \bar{\mathbf{h}}_s) & \text{[Bahdanau's additive style]} \end{cases}$$

```
print("Attention weights shape: (batch_size, sequence_length, 1) {}".format(attention_weights.shape))
```

```
[ ] class Decoder(tf.keras.Model):
    def __init__(self, vocab_size, embedding_dim, dec_units, batch_sz):
        super(Decoder, self).__init__()
        self.batch_sz = batch_sz
        self.dec_units = dec_units
        self.embedding = tf.keras.layers.Embedding(vocab_size, embedding_dim)
        self.gru = tf.keras.layers.GRU(self.dec_units,
                                       return_sequences=True,
                                       return_state=True,
                                       recurrent_initializer='glorot_uniform')

        self.fc = tf.keras.layers.Dense(vocab_size)

        # used for attention
        self.attention = BahdanauAttention(self.dec_units)

    def call(self, x, hidden, enc_output):
        # enc_output shape == (batch_size, max_length, hidden_size)
        context_vector, attention_weights = self.attention(hidden, enc_output)

        # x shape after passing through embedding == (batch_size, 1, embedding_dim)
        x = self.embedding(x)

        # x shape after concatenation == (batch_size, 1, embedding_dim + hidden_size)
        x = tf.concat([tf.expand_dims(context_vector, 1), x], axis=-1)

        # passing the concatenated vector to the GRU
        output, state = self.gru(x)

        # output shape == (batch_size * 1, hidden_size)
        output = tf.reshape(output, (-1, output.shape[2]))

        # output shape == (batch_size, vocab)
        x = self.fc(output)

        return x, state, attention_weights
```

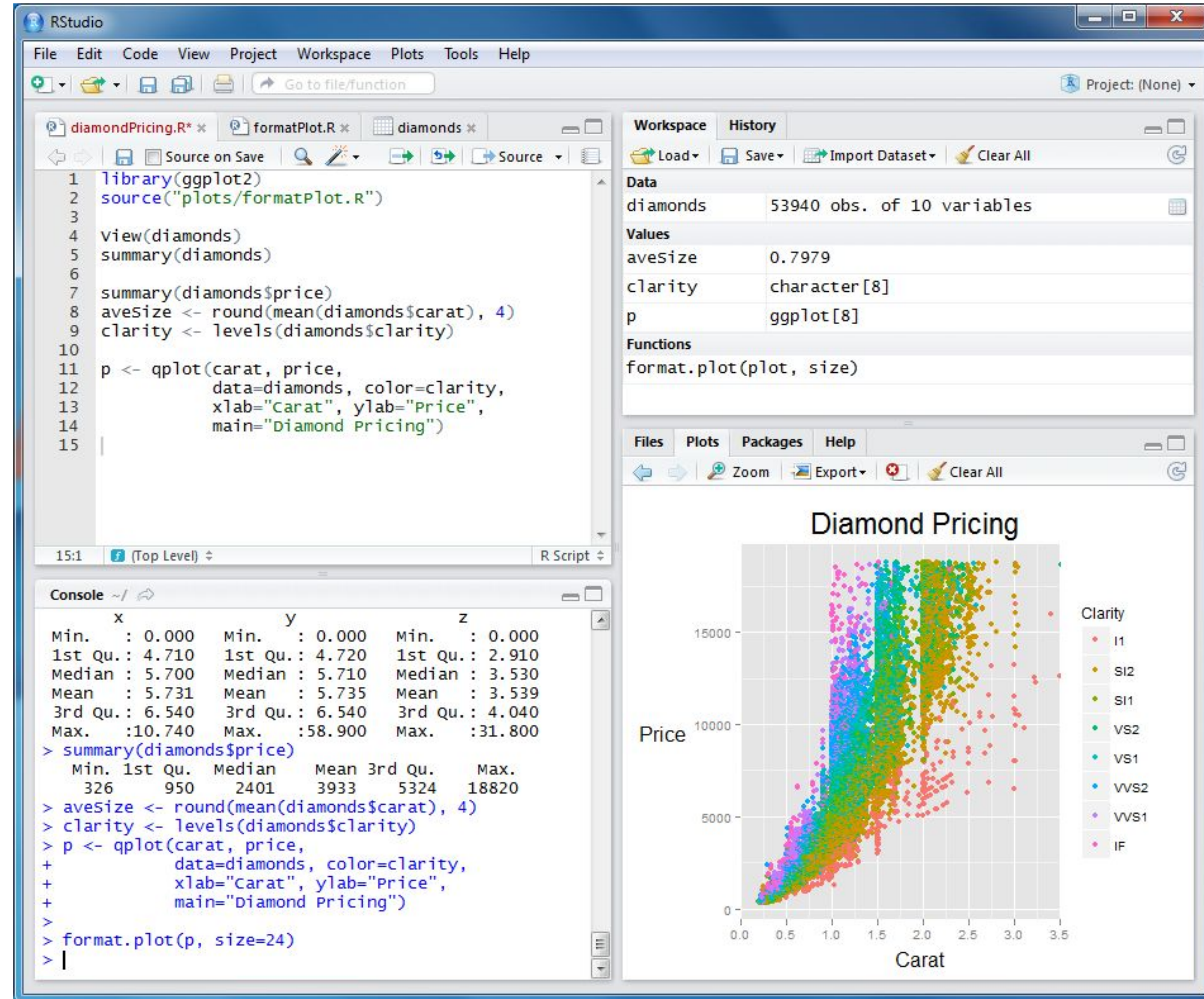
```
[ ] decoder = Decoder(vocab_tar_size, embedding_dim, units, BATCH_SIZE)

sample_decoder_output, _, _ = decoder(tf.random.uniform((64, 1)),
                                      sample_hidden, sample_output)
```

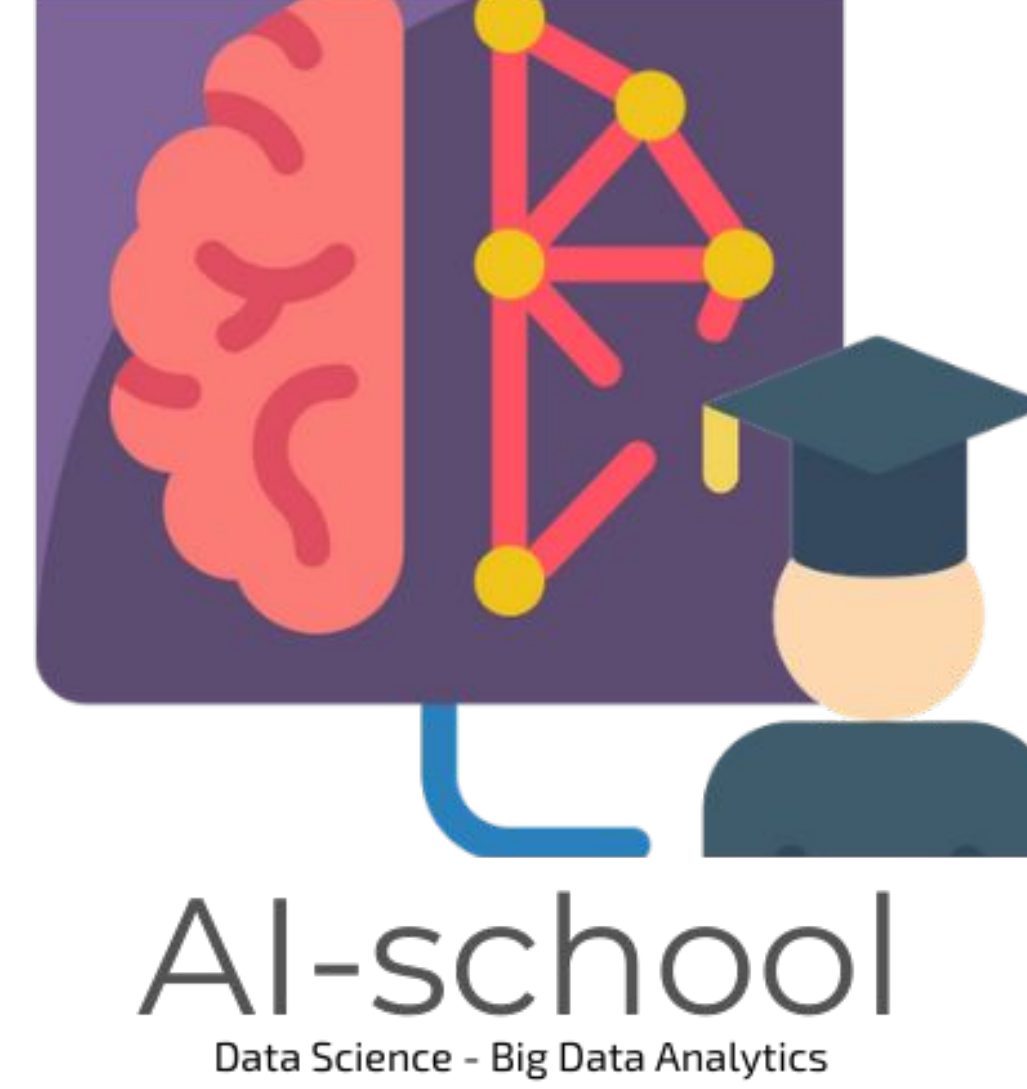




# Instalación software







# ¿Dudas - Preguntas?