```python
import re
import numpy as np
import string
import pandas as pd
import matplotlib as mpl
import matplotlib.pyplot as plt
%matplotlib inline

from subprocess import check_output
from wordcloud import WordCloud, STOPWORDS
```

```python
stopwords = set(STOPWORDS)
sentences ="""We are about to study the idea of a computational process.
Computational processes are abstract beings that inhabit computers.
As they evolve, processes manipulate other abstract things called data.
The evolution of a process is directed by a pattern of rules
called a program. People create programs to direct processes. In effect,
we conjure the spirits of the computer with our spells."""
```

```python
wordcloud = WordCloud(
                        background_color='white',
                        stopwords=stopwords,
                        max_words=200,
                        max_font_size=40,
                        random_state=42
                      ).generate(sentences)

fig, axes = plt.subplots(nrows=1, ncols=1, figsize=(10, 10))
axes.imshow(wordcloud)
axes.axis('off')
fig.tight_layout()
```



```python
sentences = """We are about to study the idea of a computational process.
Computational processes are abstract beings that inhabit computers.
As they evolve, processes manipulate other abstract things called data.
The evolution of a process is directed by a pattern of rules
called a program. People create programs to direct processes. In effect,
we conjure the spirits of the computer with our spells."""
```

```python
# remove special characters
sentences = re.sub('[^A-Za-z0-9]+', ' ', sentences)

# remove 1 letter words
sentences = re.sub(r'(?:^| )\w(?:$| )', ' ', sentences).strip()

# lower all characters
sentences = sentences.lower()
print(sentences)
```

```
    we are about to study the idea of computational process computational processes are abstract beings that inhabit computers a
```

```
words = sentences.split()
vocab = set(words)
print(words)
print(vocab)
```

```
['we', 'are', 'about', 'to', 'study', 'the', 'idea', 'of', 'computational', 'process', 'computational', 'processes', 'are',
{'direct', 'we', 'by', 'other', 'create', 'inhabit', 'conjure', 'that', 'with', 'effect', 'evolution', 'rules', 'evolve', 'p
```

```
vocab_size = len(vocab)
embed_dim = 10
context_size = 2
```

```
word_to_ix = {word: i for i, word in enumerate(vocab)}
ix_to_word = {i: word for i, word in enumerate(vocab)}
print(word_to_ix)
print(ix_to_word)
```

```
{'direct': 0, 'we': 1, 'by': 2, 'other': 3, 'create': 4, 'inhabit': 5, 'conjure': 6, 'that': 7, 'with': 8, 'effect': 9, 'evo
{0: 'direct', 1: 'we', 2: 'by', 3: 'other', 4: 'create', 5: 'inhabit', 6: 'conjure', 7: 'that', 8: 'with', 9: 'effect', 10:
```

```
data = []
for i in range(2, len(words) - 2):
    context = [words[i - 2], words[i - 1], words[i + 1], words[i + 2]]
    target = words[i]
    data.append((context, target))
print(data[:5])
```

```
[(['we', 'are', 'to', 'study'], 'about'), (['are', 'about', 'study', 'the'], 'to'), (['about', 'to', 'the', 'idea'], 'study'
```

```
embeddings =  np.random.random_sample((vocab_size, embed_dim))
print(embeddings)
```

```
[[4.10744134e-01 9.70470642e-01 7.21952784e-01 4.32854823e-01
  7.96969673e-01 4.04660540e-02 7.44067409e-01 3.77606926e-01
  2.29132802e-02 3.19514492e-01]
 [1.93346010e-02 7.45227876e-01 3.72021447e-01 7.73159287e-02
  2.62723461e-02 4.99686416e-01 2.51208269e-01 1.09833965e-02
  2.54451073e-02 6.90534486e-01]
 [1.85049218e-01 8.09941334e-01 6.92674008e-01 9.90107751e-01
  4.13597752e-01 1.87988423e-01 5.25218468e-01 6.87753381e-02
  9.11168736e-01 2.05274462e-01]
 [9.34875863e-01 1.48803634e-01 9.90609237e-01 1.45373713e-01
  4.52064194e-01 8.25736495e-01 5.39879892e-01 3.77581076e-01
  7.22230264e-01 1.30270628e-01]
 [6.99099706e-01 4.35451176e-01 9.59940131e-01 1.48657798e-01
  2.29092748e-01 7.57573451e-01 9.02636628e-03 7.98276358e-01
  5.32991804e-01 4.93954669e-01]
 [7.96076311e-01 6.82211111e-01 1.47407316e-02 1.72451604e-01
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  7.10074400e-01 6.02629802e-01]
 [8.13851555e-01 7.73503500e-02 3.34119044e-01 9.45791482e-01
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  3.60275442e-01 2.73057088e-01]
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  1.94963906e-01 6.46735604e-01]
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  7.25821162e-01 3.49446626e-01]
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  5.78035132e-01 7.69976517e-01]
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  2.77692917e-01 8.54691780e-01 5.67096855e-01 6.13466530e-01
  5.34968939e-02 1.84959979e-01]
 [9.35986860e-01 1.10362837e-01 9.38576334e-01 9.50478594e-02
```

```
  6.08767382e-01 6.71124291e-01 7.36298962e-02 7.89499719e-01
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  4.26973586e-01 8.06412948e-01]
 [9.22146139e-01 4.46526530e-01 4.91615465e-01 9.92686861e-01
  7.41698235e-01 6.14902294e-01 6.36764484e-02 9.40175500e-01
  6.62883504e-01 5.86580197e-01]
 [3.78594933e-01 2.90727629e-01 8.67006864e-04 7.16513176e-01
  8.26190397e-01 5.86858980e-01 8.25245260e-01 6.50171620e-01
  9.12396877e-01 5.37803768e-01]
```

Start coding or generate with AI.