Full Legal Name	Location (Country)	Email address	Non-Contributing Member (X)
Author 1	Country 1	email1@example.com	
Author 2	Country 2	email2@example.com	
Author 3	Country 3	email3@example.com	

Statement of integrity: By typing the names of all group members in the text box below, you confirm that the assignment submitted is original work produced by the group (excluding any non-contributing members identified with an "X" above).	
Team member 1	Author 1
Team member 2	Author 2
Team member 3	Author 3

Use the box below to explain any attempts to reach out to a non-contributing member. Type (N/A) if all members contributed. **Note:** you may be required to provide proof of your outreach to non-contributing members upon request.
N/A (just two members in the group)

Contents

Submission 1: Title Submission One

Abstract: Replace this text: Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

The complete source code is provided in the Appendix at the end of this document.

1 *Subsection title*

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Example Book[1] citation. Example Textbook[2] citation. Example Article[3] citation. Example URL or Internet source[4] citation. Example citation in text (Shreve, 2004, p. 25). Example of citation in text: as noted by Shreve (2004) . . .

Example code snippet:

```
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[2] WorldQuant University (2020). "Unit 4: Scalability and an Introduction to EOS." in: *MScFE 670 Data Feeds and Technology (C18-S4)* Module 5, pp. 21–27.

[3] Afiruddin Tapa, Soh Chuen Yean, and Shahrul Nizam Ahmad (2016). "Modified Moving-average Crossover Trading Strategy: Evidence in Malaysia Equity Market." In: *International Journal of Economics and Financial Issues* S7.6, pp. 149–153. URL: https://pdfs.semanticscholar.org/a9b8/04feff6dd6b29bf0777f2b05727d7ed79e0a.pdf.

[4] Investopedia (n.d.). "Sharpe Ratio." In: *Investopedia* (). URL: https://www.investopedia.com/terms/s/sharperatio.asp.

```

# Show example
dollar_bars.head()

```

2 *Subsection title*

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4 *Subsection title*

5 Conclusion

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Submission 2: Title Submission Two

Abstract: Replace this text: Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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Submission 3: Title Submission Three

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Appendix: Source codes

1 Appendix: Source code for submission 1

```
# -*- coding: utf-8 -*-
"""gw1_WQU_MLiF_GroupWork-sub1.ipynb

Original file is located at
    https://colab.research.google.com/drive/1Sp50

---  ---  ---  ---  ---  ---  ---

# WorldQuant University
##  (19/11) MScFE 650 Machine Learning in Finance (C18-S4)
## Group work Assignment  \ :: \  Timezone Group 2-A  \ :: \ Submission 1

Tea Toradze

November 2019

---  ---  ---  ---  ---  ---  ---
"""

# Load packages
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import plotly.graph_objects as go

# %matplotlib inline
plt.rcParams['figure.figsize'] = [9, 5]



"""**Task 1.
Create time bars.**
"""

# Read the data
time_bars = pd.read_csv('time_bars.csv')
time_bars.index = pd.to_datetime(time_bars.index)

# Show example
dollar_bars.head()



"""**Task 2.
Plot the time bars.**
"""

# Plotting time bars
fig = go.Figure(data=go.Ohlc(x=time_bars['date'],
                    open=time_bars['open'],
                    high=time_bars['high'],
                    low=time_bars['low'],
```

```
                    close=time_bars['close']))
fig.update_layout(title = 'Time Bars')
fig.show()



"""**Task 3.
Compute the serial correlation**
"""
```

2 Appendix: Source code for submission 2

```
# -*- coding: utf-8 -*-
"""gw1_WQU_MLiF_GroupWork-sub1.ipynb

Original file is located at
    https://colab.research.google.com/drive/1Sp50

---   ---   ---   ---   ---   ---   ---

# WorldQuant University
##  (19/11) MScFE 650 Machine Learning in Finance (C18-S4)
## Group work Assignment  \ :: \  Timezone Group 2-A  \ :: \ Submission 1

Tea Toradze

November 2019

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"""**Task 3.
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3 Appendix: Source code for submission 3

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##  (19/11) MScFE 650 Machine Learning in Finance (C18-S4)
## Group work Assignment  \ :: \  Timezone Group 2-A  \ :: \ Submission 1

Tea Toradze

November 2019

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