

# ATL\_Hawks\_Project

June 1, 2023

## 1 Atlanta Hawks Assessment

```
[ ]: import warnings
warnings.filterwarnings('ignore')
```

```
import pandas as pd
import numpy as np
from plotnine import *
```

```
[ ]: nba_draft = pd.read_csv("https://raw.githubusercontent.com/ryanking916/Data/
    ↪main/nbaplayersdraft.csv")
nba_draft.head()
```

```
[ ]:      id  year  rank  overall_pick team      player  college \
0    1  1989    1          1  SAC  Pervis Ellison  Louisville
1    2  1989    2          2  LAC   Danny Ferry      Duke
2    3  1989    3          3  SAS   Sean Elliott   Arizona
3    4  1989    4          4  MIA    Glen Rice    Michigan
4    5  1989    5          5  CHH    J.R. Reid      UNC
```

```
      years_active  games  minutes_played  ...  3_point_percentage \
0             11.0   474.0         11593.0  ...              0.050
1             13.0   917.0         18133.0  ...              0.393
2             12.0   742.0         24502.0  ...              0.375
3             15.0  1000.0         34985.0  ...              0.400
4             11.0   672.0         15370.0  ...              0.135
```

```
      free_throw_percentage  average_minutes_played  points_per_game \
0              0.689              24.5              9.5
1              0.840              19.8              7.0
2              0.799              33.0             14.2
3              0.846              35.0             18.3
4              0.716              22.9              8.5
```

```
      average_total_rebounds  average_assists  win_shares \
0              6.7              1.5             21.8
```

|   |     |     |      |
|---|-----|-----|------|
| 1 | 2.8 | 1.3 | 34.8 |
| 2 | 4.3 | 2.6 | 55.7 |
| 3 | 4.4 | 2.1 | 88.7 |
| 4 | 5.0 | 1.0 | 22.5 |

|   | win_shares_per_48_minutes | box_plus_minus | value_over_replacement |
|---|---------------------------|----------------|------------------------|
| 0 | 0.090                     | -0.5           | 4.4                    |
| 1 | 0.092                     | -0.9           | 4.9                    |
| 2 | 0.109                     | 0.2            | 13.5                   |
| 3 | 0.122                     | 0.8            | 24.9                   |
| 4 | 0.070                     | -2.9           | -3.7                   |

[5 rows x 24 columns]

## 1.1 Part 1: Data Comprehension

### 1.1.1 (A) Which NBA team(s) has drafted the most players who...

a. Went to Duke and were drafted in or before the 2000 draft?

```
[ ]: duke_players = nba_draft[(nba_draft['college'] == 'Duke') & (nba_draft['year'] ≤ 2000)]

teams = duke_players.groupby(['team']).size().reset_index(name='Count')
max = teams['Count'].max()
teams
teams_with_max = teams[teams['Count'] == max].index.tolist()
print("The NBA teams that have drafted the most players who went to Duke and
were drafted in or before the 2000 draft were: ")
for i in teams_with_max:
    print(teams['team'][i])
```

The NBA teams that have drafted the most players who went to Duke and were drafted in or before the 2000 draft were:

DAL

MIN

PHO

b. Have a first name that begins with D and were drafted in an even year draft?

```
[ ]: players = (nba_draft.loc[(nba_draft['player'].str[0] == 'D') &
(nba_draft['year'] % 2 == 0)])
teams = players.groupby(['team']).size().reset_index(name='Count')
teams
max = teams['Count'].max()
teams_with_max = teams[teams['Count'] == max].index.tolist()
```

```
print("The NBA teams that have drafted the most players who have a first name_
↳that begins with D and were drafted in an even year draft were: ")
for i in teams_with_max:
    print(teams['team'][i])
```

The NBA teams that have drafted the most players who have a first name that begins with D and were drafted in an even year draft were:

BOS

MIL

SEA

### 1.1.2 (B) Describe the relationship between a team's first round pick slot in one year with their first-round pick slot in the subsequent year

```
[ ]: def round_determiner(pick_num, year_num):
    if (year_num >= 1989 and year_num <= 1994) and (pick_num >= 1 and pick_num <=
↳27):
        return 1
    elif (year_num >= 1995 and year_num <= 2004) and (pick_num >= 1 and pick_num_
↳<= 29):
        return 1
    elif (year_num >= 2005 and year_num <= 2021) and (pick_num >= 1 and pick_num_
↳<= 30):
        return 1
    else:
        return 2

nba_draft['Round'] = nba_draft.apply(lambda row:
↳round_determiner(row['overall_pick'], row['year']), axis = 1)

first_round_slots = nba_draft[['year', 'overall_pick', 'Round', 'team']]
first_round_slots = first_round_slots[first_round_slots['Round'] == 1]

team_pick_slots = first_round_slots.groupby(['team', 'year']).
↳mean()['overall_pick'].reset_index()
team_pick_slots['Subsequent_Year_Pick'] = team_pick_slots.
↳groupby('team')['overall_pick'].shift(-1)

correlation = team_pick_slots['overall_pick'].
↳corr(team_pick_slots['Subsequent_Year_Pick'])

print("The Correlation Coefficient between a team's first-round pick slot in_
↳one year and their first round pick slot in the subsequent year is ")
print(round(correlation, 3))
```

The Correlation Coefficient between a team's first round pick slot in one year and their first round pick slot in the subsequent year is

0.419

**1.1.3** A correlation coefficient of 0.419 indicates that there is a positive correlation between the two variables. Having a positive correlation in this situation means that as the first-round slot in one year increases, the first-round pick slot in the next year also tends to increase. However, the correlation coefficient value of 0.419 is fairly moderate in strength, which means there is a relationship between the two variables, but it is not a strong relationship. There are likely other factors that contribute to a team's draft position in subsequent years. In actual terms, this positive correlation suggests that teams with higher first-round pick slots in one year are more likely to have higher pick slots in the next year. This could be due to factors like trades, free agent signings, team performance, or draft techniques employed by the teams.

## 1.2 Part 2: Analytical Acumen

```
[ ]: # doesn't show this cells output when downloading PDF
!pip install gwpy &> /dev/null

# installing necessary files
!apt-get install texlive texlive-xetex texlive-latex-extra pandoc
!sudo apt-get update
!sudo apt-get install texlive-xetex texlive-fonts-recommended
↳ texlive-plain-generic

# installing py pandoc
!pip install py pandoc

# connecting your google drive
from google.colab import drive
drive.mount('/content/drive')

# copying your file over. Change "Class6-Completed.ipynb" to whatever your file
↳ is called (see top of notebook)
!cp "drive/My Drive/Colab Notebooks/ATL_Hawks_Project.ipynb" ./

# Again, replace "Class6-Completed.ipynb" to whatever your file is called (see
↳ top of notebook)
!jupyter nbconvert --to PDF "ATL_Hawks_Project.ipynb"
```

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
pandoc is already the newest version (2.5-3build2).
pandoc set to manually installed.
The following additional packages will be installed:
  dvipng fonts-droid-fallback fonts-lato fonts-lmodern fonts-noto-mono
  fonts-texgyre fonts-urw-base35 javascript-common libapache-pom-java
```

libcommons-logging-java libcommons-parent-java libfontbox-java libfontenc1  
libgs9 libgs9-common libharfbuzz-icu0 libidn11 libijs-0.35 libjbig2dec0  
libjs-jquery libkpathsea6 libpdfbox-java libptexenc1 libruby2.7 libsyntax2  
libteckit0 libtexlua53 libtexluajit2 libwoff1 libzzip-0-13 lmodern  
poppler-data preview-latex-style rake ruby ruby-minitest ruby-net-telnet  
ruby-power-assert ruby-test-unit ruby-xmlrpc ruby2.7 rubygems-integration  
t1utils teckit tex-common tex-gyre texlive-base texlive-binaries  
texlive-fonts-recommended texlive-latex-base texlive-latex-recommended  
texlive-pictures texlive-plain-generic tipa xfonts-encodings xfonts-utils

Suggested packages:

fonts-noto fonts-freefont-otf | fonts-freefont-ttf apache2 | lighttpd  
| httpd libavalon-framework-java libcommons-logging-java-doc  
libexcalibur-logkit-java liblog4j1.2-java poppler-utils ghostscript  
fonts-japanese-mincho | fonts-ipafont-mincho fonts-japanese-gothic  
| fonts-ipafont-gothic fonts-arphic-ukai fonts-arphic-uming fonts-nanum ri  
ruby-dev bundler debhelper gv | postscript-viewer perl-tk xpdf | pdf-viewer  
xzdec texlive-fonts-recommended-doc texlive-latex-base-doc python3-pygments  
icc-profiles libfile-which-perl libspreadsheet-parseexcel-perl  
texlive-latex-extra-doc texlive-latex-recommended-doc texlive-luatex  
texlive-pstricks dot2tex prerex ruby-tcltk | libtcltk-ruby  
texlive-pictures-doc vprerex default-jre-headless

The following NEW packages will be installed:

dvisvgm fonts-droid-fallback fonts-lato fonts-lmodern fonts-noto-mono  
fonts-texgyre fonts-urw-base35 javascript-common libapache-pom-java  
libcommons-logging-java libcommons-parent-java libfontbox-java libfontenc1  
libgs9 libgs9-common libharfbuzz-icu0 libidn11 libijs-0.35 libjbig2dec0  
libjs-jquery libkpathsea6 libpdfbox-java libptexenc1 libruby2.7 libsyntax2  
libteckit0 libtexlua53 libtexluajit2 libwoff1 libzzip-0-13 lmodern  
poppler-data preview-latex-style rake ruby ruby-minitest ruby-net-telnet  
ruby-power-assert ruby-test-unit ruby-xmlrpc ruby2.7 rubygems-integration  
t1utils teckit tex-common tex-gyre texlive texlive-base texlive-binaries  
texlive-fonts-recommended texlive-latex-base texlive-latex-extra  
texlive-latex-recommended texlive-pictures texlive-plain-generic  
texlive-xetex tipa xfonts-encodings xfonts-utils

0 upgraded, 59 newly installed, 0 to remove and 34 not upgraded.

Need to get 169 MB of archives.

After this operation, 537 MB of additional disk space will be used.

Get:1 <http://archive.ubuntu.com/ubuntu focal/main amd64 fonts-droid-fallback all 1:6.0.1r16-1.1> [1,805 kB]

Get:2 <http://archive.ubuntu.com/ubuntu focal/main amd64 fonts-lato all 2.0-2> [2,698 kB]

Get:3 <http://archive.ubuntu.com/ubuntu focal/main amd64 poppler-data all 0.4.9-2> [1,475 kB]

Get:4 <http://archive.ubuntu.com/ubuntu focal/universe amd64 tex-common all 6.13> [32.7 kB]

Get:5 <http://archive.ubuntu.com/ubuntu focal/main amd64 fonts-urw-base35 all 20170801.1-3> [6,333 kB]

Get:6 <http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libgs9-common>

all 9.50~dfsg-5ubuntu4.7 [681 kB]  
 Get:7 http://archive.ubuntu.com/ubuntu focal/main amd64 libidn11 amd64  
 1.33-2.2ubuntu2 [46.2 kB]  
 Get:8 http://archive.ubuntu.com/ubuntu focal/main amd64 libijs-0.35 amd64  
 0.35-15 [15.7 kB]  
 Get:9 http://archive.ubuntu.com/ubuntu focal/main amd64 libjbig2dec0 amd64  
 0.18-1ubuntu1 [60.0 kB]  
 Get:10 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libgs9 amd64  
 9.50~dfsg-5ubuntu4.7 [2,173 kB]  
 Get:11 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libkpathsea6  
 amd64 2019.20190605.51237-3ubuntu0.1 [57.0 kB]  
 Get:12 http://archive.ubuntu.com/ubuntu focal/main amd64 libwoff1 amd64  
 1.0.2-1build2 [42.0 kB]  
 Get:13 http://archive.ubuntu.com/ubuntu focal/universe amd64 dvisvgm amd64  
 2.8.1-1build1 [1,048 kB]  
 Get:14 http://archive.ubuntu.com/ubuntu focal/universe amd64 fonts-lmodern all  
 2.004.5-6 [4,532 kB]  
 Get:15 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 fonts-noto-mono  
 all 20200323-1build1~ubuntu20.04.1 [80.6 kB]  
 Get:16 http://archive.ubuntu.com/ubuntu focal/universe amd64 fonts-texgyre all  
 20180621-3 [10.2 MB]  
 Get:17 http://archive.ubuntu.com/ubuntu focal/main amd64 javascript-common all  
 11 [6,066 B]  
 Get:18 http://archive.ubuntu.com/ubuntu focal/universe amd64 libapache-pom-java  
 all 18-1 [4,720 B]  
 Get:19 http://archive.ubuntu.com/ubuntu focal/universe amd64 libcommons-parent-  
 java all 43-1 [10.8 kB]  
 Get:20 http://archive.ubuntu.com/ubuntu focal/universe amd64 libcommons-logging-  
 java all 1.2-2 [60.3 kB]  
 Get:21 http://archive.ubuntu.com/ubuntu focal/main amd64 libfontenc1 amd64  
 1:1.1.4-0ubuntu1 [14.0 kB]  
 Get:22 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libharfbuzz-  
 icu0 amd64 2.6.4-1ubuntu4.2 [5,580 B]  
 Get:23 http://archive.ubuntu.com/ubuntu focal/main amd64 libjs-jquery all  
 3.3.1~dfsg-3 [329 kB]  
 Get:24 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 libptexenc1  
 amd64 2019.20190605.51237-3ubuntu0.1 [35.5 kB]  
 Get:25 http://archive.ubuntu.com/ubuntu focal/main amd64 rubygems-integration  
 all 1.16 [5,092 B]  
 Get:26 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 ruby2.7 amd64  
 2.7.0-5ubuntu1.11 [95.6 kB]  
 Get:27 http://archive.ubuntu.com/ubuntu focal/main amd64 ruby amd64 1:2.7+1  
 [5,412 B]  
 Get:28 http://archive.ubuntu.com/ubuntu focal/main amd64 rake all 13.0.1-4 [61.6  
 kB]  
 Get:29 http://archive.ubuntu.com/ubuntu focal/main amd64 ruby-minitest all  
 5.13.0-1 [40.9 kB]  
 Get:30 http://archive.ubuntu.com/ubuntu focal/main amd64 ruby-net-telnet all

0.1.1-2 [12.6 kB]  
 Get:31 <http://archive.ubuntu.com/ubuntu> focal/main amd64 ruby-power-assert all  
 1.1.7-1 [11.4 kB]  
 Get:32 <http://archive.ubuntu.com/ubuntu> focal/main amd64 ruby-test-unit all  
 3.3.5-1 [73.2 kB]  
 Get:33 <http://archive.ubuntu.com/ubuntu> focal/main amd64 ruby-xmlrpc all 0.3.0-2  
 [23.8 kB]  
 Get:34 <http://archive.ubuntu.com/ubuntu> focal-updates/main amd64 libruby2.7  
 amd64 2.7.0-5ubuntu1.11 [3,533 kB]  
 Get:35 <http://archive.ubuntu.com/ubuntu> focal-updates/main amd64 libsyntax2  
 amd64 2019.20190605.51237-3ubuntu0.1 [55.0 kB]  
 Get:36 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 libteckit0 amd64  
 2.5.8+ds2-5ubuntu2 [320 kB]  
 Get:37 <http://archive.ubuntu.com/ubuntu> focal-updates/main amd64 libtexlua53  
 amd64 2019.20190605.51237-3ubuntu0.1 [105 kB]  
 Get:38 <http://archive.ubuntu.com/ubuntu> focal-updates/main amd64 libtexluajit2  
 amd64 2019.20190605.51237-3ubuntu0.1 [235 kB]  
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 0.13.62-3.2ubuntu1 [26.2 kB]  
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 1:1.0.5-0ubuntu1 [573 kB]  
 Get:41 <http://archive.ubuntu.com/ubuntu> focal/main amd64 xfonts-utils amd64  
 1:7.7+6 [91.5 kB]  
 Get:42 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 lmodern all  
 2.004.5-6 [9,474 kB]  
 Get:43 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 preview-latex-style  
 all 11.91-2ubuntu2 [184 kB]  
 Get:44 <http://archive.ubuntu.com/ubuntu> focal/main amd64 t1utils amd64 1.41-3  
 [56.1 kB]  
 Get:45 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 teckit amd64  
 2.5.8+ds2-5ubuntu2 [687 kB]  
 Get:46 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 tex-gyre all  
 20180621-3 [6,209 kB]  
 Get:47 <http://archive.ubuntu.com/ubuntu> focal-updates/universe amd64 texlive-  
 binaries amd64 2019.20190605.51237-3ubuntu0.1 [8,041 kB]  
 Get:48 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 texlive-base all  
 2019.20200218-1 [20.8 MB]  
 Get:49 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 texlive-fonts-  
 recommended all 2019.20200218-1 [4,972 kB]  
 Get:50 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 texlive-latex-base  
 all 2019.20200218-1 [990 kB]  
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 recommended all 2019.20200218-1 [15.7 MB]  
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 2019.20200218-1 [14.4 kB]  
 Get:53 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 libfontbox-java all  
 1:1.8.16-2 [207 kB]  
 Get:54 <http://archive.ubuntu.com/ubuntu> focal/universe amd64 libpdfbox-java all

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1:1.8.16-2 [5,199 kB]
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all 2019.20200218-1 [4,492 kB]
Get:56 http://archive.ubuntu.com/ubuntu focal/universe amd64 texlive-latex-extra
all 2019.202000218-1 [12.5 MB]
Get:57 http://archive.ubuntu.com/ubuntu focal/universe amd64 texlive-plain-
generic all 2019.202000218-1 [24.6 MB]
Get:58 http://archive.ubuntu.com/ubuntu focal/universe amd64 tipa all 2:1.3-20
[2,978 kB]
Get:59 http://archive.ubuntu.com/ubuntu focal/universe amd64 texlive-xetex all
2019.20200218-1 [14.6 MB]
Fetched 169 MB in 4s (45.2 MB/s)
Extracting templates from packages: 100%
Preconfiguring packages ...
Selecting previously unselected package fonts-droid-fallback.
(Reading database ... 122542 files and directories currently installed.)
Preparing to unpack .../00-fonts-droid-fallback_1%3a6.0.1r16-1.1_all.deb ...
Unpacking fonts-droid-fallback (1:6.0.1r16-1.1) ...
Selecting previously unselected package fonts-lato.
Preparing to unpack .../01-fonts-lato_2.0-2_all.deb ...
Unpacking fonts-lato (2.0-2) ...
Selecting previously unselected package poppler-data.
Preparing to unpack .../02-poppler-data_0.4.9-2_all.deb ...
Unpacking poppler-data (0.4.9-2) ...
Selecting previously unselected package tex-common.
Preparing to unpack .../03-tex-common_6.13_all.deb ...
Unpacking tex-common (6.13) ...
Selecting previously unselected package fonts-urw-base35.
Preparing to unpack .../04-fonts-urw-base35_20170801.1-3_all.deb ...
Unpacking fonts-urw-base35 (20170801.1-3) ...
Selecting previously unselected package libgs9-common.
Preparing to unpack .../05-libgs9-common_9.50~dfsg-5ubuntu4.7_all.deb ...
Unpacking libgs9-common (9.50~dfsg-5ubuntu4.7) ...
Selecting previously unselected package libidn11:amd64.
Preparing to unpack .../06-libidn11_1.33-2.2ubuntu2_amd64.deb ...
Unpacking libidn11:amd64 (1.33-2.2ubuntu2) ...
Selecting previously unselected package libijs-0.35:amd64.
Preparing to unpack .../07-libijs-0.35_0.35-15_amd64.deb ...
Unpacking libijs-0.35:amd64 (0.35-15) ...
Selecting previously unselected package libjbig2dec0:amd64.
Preparing to unpack .../08-libjbig2dec0_0.18-1ubuntu1_amd64.deb ...
Unpacking libjbig2dec0:amd64 (0.18-1ubuntu1) ...
Selecting previously unselected package libgs9:amd64.
Preparing to unpack .../09-libgs9_9.50~dfsg-5ubuntu4.7_amd64.deb ...
Unpacking libgs9:amd64 (9.50~dfsg-5ubuntu4.7) ...
Selecting previously unselected package libkpathsea6:amd64.
Preparing to unpack .../10-libkpathsea6_2019.20190605.51237-3ubuntu0.1_amd64.deb
...

```



```

Unpacking libkpathsea6:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Selecting previously unselected package libwoff1:amd64.
Preparing to unpack .../11-libwoff1_1.0.2-1build2_amd64.deb ...
Unpacking libwoff1:amd64 (1.0.2-1build2) ...
Selecting previously unselected package dvisvgm.
Preparing to unpack .../12-dvisvgm_2.8.1-1build1_amd64.deb ...
Unpacking dvisvgm (2.8.1-1build1) ...
Selecting previously unselected package fonts-lmodern.
Preparing to unpack .../13-fonts-lmodern_2.004.5-6_all.deb ...
Unpacking fonts-lmodern (2.004.5-6) ...
Selecting previously unselected package fonts-noto-mono.
Preparing to unpack .../14-fonts-noto-mono_20200323-1build1~ubuntu20.04.1_all.deb ...
Unpacking fonts-noto-mono (20200323-1build1~ubuntu20.04.1) ...
Selecting previously unselected package fonts-texgyre.
Preparing to unpack .../15-fonts-texgyre_20180621-3_all.deb ...
Unpacking fonts-texgyre (20180621-3) ...
Selecting previously unselected package javascript-common.
Preparing to unpack .../16-javascript-common_11_all.deb ...
Unpacking javascript-common (11) ...
Selecting previously unselected package libapache-pom-java.
Preparing to unpack .../17-libapache-pom-java_18-1_all.deb ...
Unpacking libapache-pom-java (18-1) ...
Selecting previously unselected package libcommons-parent-java.
Preparing to unpack .../18-libcommons-parent-java_43-1_all.deb ...
Unpacking libcommons-parent-java (43-1) ...
Selecting previously unselected package libcommons-logging-java.
Preparing to unpack .../19-libcommons-logging-java_1.2-2_all.deb ...
Unpacking libcommons-logging-java (1.2-2) ...
Selecting previously unselected package libfontenc1:amd64.
Preparing to unpack .../20-libfontenc1_1%3a1.1.4-0ubuntu1_amd64.deb ...
Unpacking libfontenc1:amd64 (1:1.1.4-0ubuntu1) ...
Selecting previously unselected package libharfbuzz-icu0:amd64.
Preparing to unpack .../21-libharfbuzz-icu0_2.6.4-1ubuntu4.2_amd64.deb ...
Unpacking libharfbuzz-icu0:amd64 (2.6.4-1ubuntu4.2) ...
Selecting previously unselected package libjs-jquery.
Preparing to unpack .../22-libjs-jquery_3.3.1~dfsg-3_all.deb ...
Unpacking libjs-jquery (3.3.1~dfsg-3) ...
Selecting previously unselected package libptexenc1:amd64.
Preparing to unpack .../23-libptexenc1_2019.20190605.51237-3ubuntu0.1_amd64.deb
...
Unpacking libptexenc1:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Selecting previously unselected package rubygems-integration.
Preparing to unpack .../24-rubygems-integration_1.16_all.deb ...
Unpacking rubygems-integration (1.16) ...
Selecting previously unselected package ruby2.7.
Preparing to unpack .../25-ruby2.7_2.7.0-5ubuntu1.11_amd64.deb ...
Unpacking ruby2.7 (2.7.0-5ubuntu1.11) ...

```

```

Selecting previously unselected package ruby.
Preparing to unpack .../26-ruby_1%3a2.7+1_amd64.deb ...
Unpacking ruby (1:2.7+1) ...
Selecting previously unselected package rake.
Preparing to unpack .../27-rake_13.0.1-4_all.deb ...
Unpacking rake (13.0.1-4) ...
Selecting previously unselected package ruby-minitest.
Preparing to unpack .../28-ruby-minitest_5.13.0-1_all.deb ...
Unpacking ruby-minitest (5.13.0-1) ...
Selecting previously unselected package ruby-net-telnet.
Preparing to unpack .../29-ruby-net-telnet_0.1.1-2_all.deb ...
Unpacking ruby-net-telnet (0.1.1-2) ...
Selecting previously unselected package ruby-power-assert.
Preparing to unpack .../30-ruby-power-assert_1.1.7-1_all.deb ...
Unpacking ruby-power-assert (1.1.7-1) ...
Selecting previously unselected package ruby-test-unit.
Preparing to unpack .../31-ruby-test-unit_3.3.5-1_all.deb ...
Unpacking ruby-test-unit (3.3.5-1) ...
Selecting previously unselected package ruby-xmlrpc.
Preparing to unpack .../32-ruby-xmlrpc_0.3.0-2_all.deb ...
Unpacking ruby-xmlrpc (0.3.0-2) ...
Selecting previously unselected package libruby2.7:amd64.
Preparing to unpack .../33-libruby2.7_2.7.0-5ubuntu1.11_amd64.deb ...
Unpacking libruby2.7:amd64 (2.7.0-5ubuntu1.11) ...
Selecting previously unselected package libsyntax2:amd64.
Preparing to unpack .../34-libsyntax2_2019.20190605.51237-3ubuntu0.1_amd64.deb
...
Unpacking libsyntax2:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Selecting previously unselected package libteckit0:amd64.
Preparing to unpack .../35-libteckit0_2.5.8+ds2-5ubuntu2_amd64.deb ...
Unpacking libteckit0:amd64 (2.5.8+ds2-5ubuntu2) ...
Selecting previously unselected package libtexlua53:amd64.
Preparing to unpack .../36-libtexlua53_2019.20190605.51237-3ubuntu0.1_amd64.deb
...
Unpacking libtexlua53:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Selecting previously unselected package libtexluaajit2:amd64.
Preparing to unpack
.../37-libtexluaajit2_2019.20190605.51237-3ubuntu0.1_amd64.deb ...
Unpacking libtexluaajit2:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Selecting previously unselected package libzip-0-13:amd64.
Preparing to unpack .../38-libzip-0-13_0.13.62-3.2ubuntu1_amd64.deb ...
Unpacking libzip-0-13:amd64 (0.13.62-3.2ubuntu1) ...
Selecting previously unselected package xfonts-encodings.
Preparing to unpack .../39-xfonts-encodings_1%3a1.0.5-0ubuntu1_all.deb ...
Unpacking xfonts-encodings (1:1.0.5-0ubuntu1) ...
Selecting previously unselected package xfonts-utils.
Preparing to unpack .../40-xfonts-utils_1%3a7.7+6_amd64.deb ...
Unpacking xfonts-utils (1:7.7+6) ...

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Selecting previously unselected package lmodern.
Preparing to unpack .../41-lmodern_2.004.5-6_all.deb ...
Unpacking lmodern (2.004.5-6) ...
Selecting previously unselected package preview-latex-style.
Preparing to unpack .../42-preview-latex-style_11.91-2ubuntu2_all.deb ...
Unpacking preview-latex-style (11.91-2ubuntu2) ...
Selecting previously unselected package t1utils.
Preparing to unpack .../43-t1utils_1.41-3_amd64.deb ...
Unpacking t1utils (1.41-3) ...
Selecting previously unselected package teckit.
Preparing to unpack .../44-teckit_2.5.8+ds2-5ubuntu2_amd64.deb ...
Unpacking teckit (2.5.8+ds2-5ubuntu2) ...
Selecting previously unselected package tex-gyre.
Preparing to unpack .../45-tex-gyre_20180621-3_all.deb ...
Unpacking tex-gyre (20180621-3) ...
Selecting previously unselected package texlive-binaries.
Preparing to unpack .../46-texlive-
binaries_2019.20190605.51237-3ubuntu0.1_amd64.deb ...
Unpacking texlive-binaries (2019.20190605.51237-3ubuntu0.1) ...
Selecting previously unselected package texlive-base.
Preparing to unpack .../47-texlive-base_2019.20200218-1_all.deb ...
Unpacking texlive-base (2019.20200218-1) ...
Selecting previously unselected package texlive-fonts-recommended.
Preparing to unpack .../48-texlive-fonts-recommended_2019.20200218-1_all.deb ...
Unpacking texlive-fonts-recommended (2019.20200218-1) ...
Selecting previously unselected package texlive-latex-base.
Preparing to unpack .../49-texlive-latex-base_2019.20200218-1_all.deb ...
Unpacking texlive-latex-base (2019.20200218-1) ...
Selecting previously unselected package texlive-latex-recommended.
Preparing to unpack .../50-texlive-latex-recommended_2019.20200218-1_all.deb ...
Unpacking texlive-latex-recommended (2019.20200218-1) ...
Selecting previously unselected package texlive.
Preparing to unpack .../51-texlive_2019.20200218-1_all.deb ...
Unpacking texlive (2019.20200218-1) ...
Selecting previously unselected package libfontbox-java.
Preparing to unpack .../52-libfontbox-java_1%3a1.8.16-2_all.deb ...
Unpacking libfontbox-java (1:1.8.16-2) ...
Selecting previously unselected package libpdfbox-java.
Preparing to unpack .../53-libpdfbox-java_1%3a1.8.16-2_all.deb ...
Unpacking libpdfbox-java (1:1.8.16-2) ...
Selecting previously unselected package texlive-pictures.
Preparing to unpack .../54-texlive-pictures_2019.20200218-1_all.deb ...
Unpacking texlive-pictures (2019.20200218-1) ...
Selecting previously unselected package texlive-latex-extra.
Preparing to unpack .../55-texlive-latex-extra_2019.202000218-1_all.deb ...
Unpacking texlive-latex-extra (2019.202000218-1) ...
Selecting previously unselected package texlive-plain-generic.
Preparing to unpack .../56-texlive-plain-generic_2019.202000218-1_all.deb ...

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Unpacking texlive-plain-generic (2019.202000218-1) ...
Selecting previously unselected package tipa.
Preparing to unpack .../57-tipa_2%3a1.3-20_all.deb ...
Unpacking tipa (2:1.3-20) ...
Selecting previously unselected package texlive-xetex.
Preparing to unpack .../58-texlive-xetex_2019.20200218-1_all.deb ...
Unpacking texlive-xetex (2019.20200218-1) ...
Setting up javascript-common (11) ...
Setting up libharfbuzz-icu0:amd64 (2.6.4-1ubuntu4.2) ...
Setting up fonts-lato (2.0-2) ...
Setting up fonts-noto-mono (20200323-1build1~ubuntu20.04.1) ...
Setting up libwoff1:amd64 (1.0.2-1build2) ...
Setting up ruby-power-assert (1.1.7-1) ...
Setting up libtexlua53:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Setting up libijs-0.35:amd64 (0.35-15) ...
Setting up libtexluaajit2:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Setting up libfontbox-java (1:1.8.16-2) ...
Setting up rubygems-integration (1.16) ...
Setting up libzip-0-13:amd64 (0.13.62-3.2ubuntu1) ...
Setting up fonts-urw-base35 (20170801.1-3) ...
Setting up poppler-data (0.4.9-2) ...
Setting up ruby-minitest (5.13.0-1) ...
Setting up tex-common (6.13) ...
update-language: texlive-base not installed and configured, doing nothing!
Setting up libfontenc1:amd64 (1:1.1.4-0ubuntu1) ...
Setting up ruby-test-unit (3.3.5-1) ...
Setting up libjbig2dec0:amd64 (0.18-1ubuntu1) ...
Setting up libidn11:amd64 (1.33-2.2ubuntu2) ...
Setting up libteckit0:amd64 (2.5.8+ds2-5ubuntu2) ...
Setting up libapache-pom-java (18-1) ...
Setting up ruby-net-telnet (0.1.1-2) ...
Setting up xfonts-encodings (1:1.0.5-0ubuntu1) ...
Setting up t1utils (1.41-3) ...
Setting up fonts-texgyre (20180621-3) ...
Setting up libkpathsea6:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Setting up fonts-lmodern (2.004.5-6) ...
Setting up fonts-droid-fallback (1:6.0.1r16-1.1) ...
Setting up libjs-jquery (3.3.1~dfsg-3) ...
Setting up ruby-xmlrpc (0.3.0-2) ...
Setting up libsynctex2:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Setting up libgs9-common (9.50~dfsg-5ubuntu4.7) ...
Setting up teckit (2.5.8+ds2-5ubuntu2) ...
Setting up libpdfbox-java (1:1.8.16-2) ...
Setting up libgs9:amd64 (9.50~dfsg-5ubuntu4.7) ...
Setting up preview-latex-style (11.91-2ubuntu2) ...
Setting up libcommons-parent-java (43-1) ...
Setting up dvisvgm (2.8.1-1build1) ...
Setting up libcommons-logging-java (1.2-2) ...

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Setting up xfonts-utils (1:7.7+6) ...
Setting up libptexenc1:amd64 (2019.20190605.51237-3ubuntu0.1) ...
Setting up texlive-binaries (2019.20190605.51237-3ubuntu0.1) ...
update-alternatives: using /usr/bin/xdvi-xaw to provide /usr/bin/xdvi.bin
(xdvi.bin) in auto mode
update-alternatives: using /usr/bin/bibtex.original to provide /usr/bin/bibtex
(bibtex) in auto mode
Setting up lmodern (2.004.5-6) ...
Setting up texlive-base (2019.20200218-1) ...
mktexlsr: Updating /var/lib/texmf/ls-R-TEXLIVEDIST...
mktexlsr: Updating /var/lib/texmf/ls-R-TEXMFMAIN...
mktexlsr: Updating /var/lib/texmf/ls-R...
mktexlsr: Done.
tl-paper: setting paper size for dvips to a4:
/var/lib/texmf/dvips/config/config-paper.ps
tl-paper: setting paper size for dvipdfmx to a4:
/var/lib/texmf/dvipdfmx/dvipdfmx-paper.cfg
tl-paper: setting paper size for xdvi to a4: /var/lib/texmf/xdvi/XDvi-paper
tl-paper: setting paper size for pdftex to a4:
/var/lib/texmf/tex/generic/config/pdftexconfig.tex
Setting up tex-gyre (20180621-3) ...
Setting up texlive-plain-generic (2019.202000218-1) ...
Setting up texlive-latex-base (2019.20200218-1) ...
Setting up texlive-latex-recommended (2019.20200218-1) ...
Setting up texlive-pictures (2019.20200218-1) ...
Setting up texlive-fonts-recommended (2019.20200218-1) ...
Setting up tipa (2:1.3-20) ...
Regenerating '/var/lib/texmf/fmtutil.cnf-DEBIAN'... done.
Regenerating '/var/lib/texmf/fmtutil.cnf-TEXLIVEDIST'... done.
update-fmtutil has updated the following file(s):
    /var/lib/texmf/fmtutil.cnf-DEBIAN
    /var/lib/texmf/fmtutil.cnf-TEXLIVEDIST
If you want to activate the changes in the above file(s),
you should run fmtutil-sys or fmtutil.
Setting up texlive (2019.20200218-1) ...
Setting up texlive-latex-extra (2019.202000218-1) ...
Setting up texlive-xetex (2019.20200218-1) ...
Setting up rake (13.0.1-4) ...
Setting up libruby2.7:amd64 (2.7.0-5ubuntu1.11) ...
Setting up ruby2.7 (2.7.0-5ubuntu1.11) ...
Setting up ruby (1:2.7+1) ...
Processing triggers for fontconfig (2.13.1-2ubuntu3) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for tex-common (6.13) ...
Running updmap-sys. This may take some time... done.
Running mktexlsr /var/lib/texmf ... done.

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Building format(s) --all.

This may take some time... done.

Hit:1 <http://archive.ubuntu.com/ubuntu> focal InRelease

Get:2 <http://archive.ubuntu.com/ubuntu> focal-updates InRelease [114 kB]

Get:3 <https://cloud.r-project.org/bin/linux/ubuntu> focal-cran40/ InRelease  
[3,622 B]

Hit:4 [https://developer.download.nvidia.com/compute/cuda/repos/ubuntu2004/x86\\_64](https://developer.download.nvidia.com/compute/cuda/repos/ubuntu2004/x86_64)  
InRelease

Hit:5 <http://ppa.launchpad.net/c2d4u.team/c2d4u4.0+/ubuntu> focal InRelease

Get:6 <http://archive.ubuntu.com/ubuntu> focal-backports InRelease [108 kB]

Get:7 <http://security.ubuntu.com/ubuntu> focal-security InRelease [114 kB]

Hit:8 <http://ppa.launchpad.net/cran/libgit2/ubuntu> focal InRelease

Hit:9 <http://ppa.launchpad.net/deadsnakes/ppa/ubuntu> focal InRelease

Get:10 <http://archive.ubuntu.com/ubuntu> focal-updates/main amd64 Packages [3,252  
kB]

Hit:11 <http://ppa.launchpad.net/graphics-drivers/ppa/ubuntu> focal InRelease

Get:12 <http://archive.ubuntu.com/ubuntu> focal-updates/universe amd64 Packages  
[1,351 kB]

Hit:13 <http://ppa.launchpad.net/ubuntugis/ppa/ubuntu> focal InRelease

Get:14 <http://security.ubuntu.com/ubuntu> focal-security/restricted amd64  
Packages [2,345 kB]

Get:15 <http://security.ubuntu.com/ubuntu> focal-security/universe amd64 Packages  
[1,056 kB]

Get:16 <http://security.ubuntu.com/ubuntu> focal-security/main amd64 Packages  
[2,772 kB]

Fetched 11.1 MB in 2s (5,055 kB/s)

Reading package lists... Done

Reading package lists... Done

Building dependency tree

Reading state information... Done

texlive-fonts-recommended is already the newest version (2019.20200218-1).

texlive-fonts-recommended set to manually installed.

texlive-plain-generic is already the newest version (2019.202000218-1).

texlive-plain-generic set to manually installed.

texlive-xetex is already the newest version (2019.20200218-1).

0 upgraded, 0 newly installed, 0 to remove and 38 not upgraded.

Looking in indexes: <https://pypi.org/simple>, <https://us-python.pkg.dev/colab-wheels/public/simple/>

Collecting py pandoc

Downloading py pandoc-1.11-py3-none-any.whl (20 kB)

Installing collected packages: py pandoc

Successfully installed py pandoc-1.11